Area: **Preston/Issaquah**

Status: _____

DocID 18 4006

Source: GeoEngineers [redacted]

Local ID#1 (Project no.) 2067-010-R02 /060895

Local ID#2 _____

Site Address Grand Ridge

Date: 12/06/07 By: [redacted] KAT

- [x] **Title page with the following information:**
  - *Company (Author) name*
  - *Report date*
  - *Project Name*
  - *Company's job number*
  - *Site address*
- [x] Executive Summary / Introduction of the report
- [x] Table of contents
- [x] Project Location Map / Vicinity Map
- [x] **Site / Exploration Plans, Boring Location Plans**
- [x] Cross-sections / Subsurface profiles
- [x] **Exploration Logs**
- [x] Monitoring Well Logs
- [ ] Cone Penetrometer Logs
- [x] Groundwater Elevation Tables / Data

- [x] Includes data from Previous Reports not included
- [ ] No new data /data review
- [ ] Missing Data /Illegible Data
  Explanation _____

Comments: USE ALL OF THE EXPLORATION DATA, UNLESS ALREADY ENTERED → Only Monitoring Well (MW-X) & Piezometer stations (GP-X) entered

ArcView MJ Layers BB GW SB

Checked GH Chckd MJ Chckd MJ

Mary Ann Reinhart
18406

Grand Ridge Draft Environmental Impact Statement

Volume I

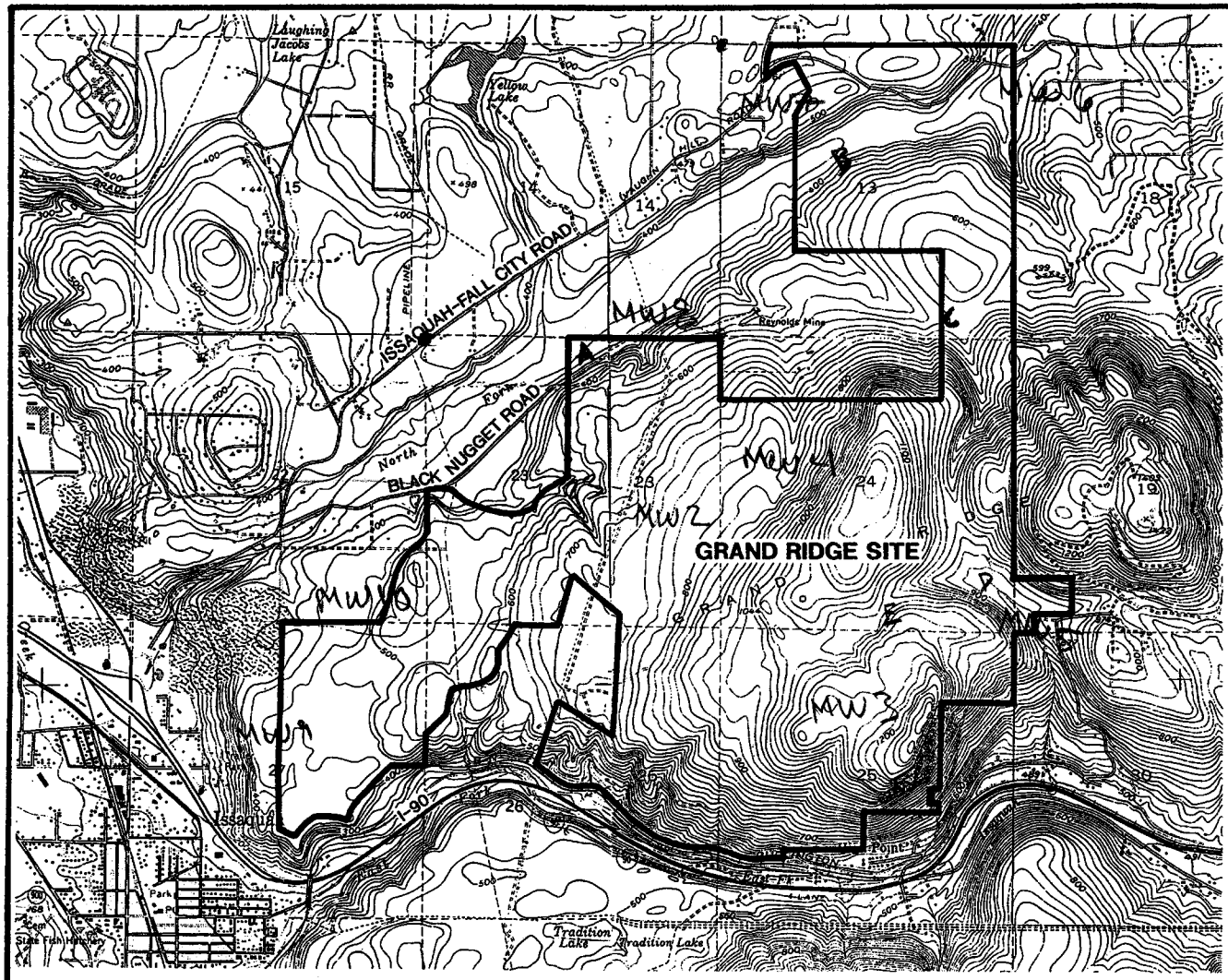
Appendix B — Geotechnical Report
Appendix C — Surface Water Quality Evaluations

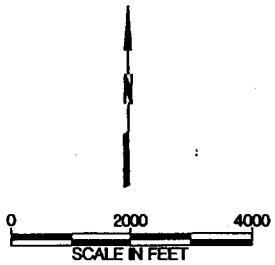
If wells
contain 0 Readings
Instead of Using 0
put 9999 in
Readings - BB
else you get errors

King County
Department of Development and Environmental Services
Environmental Division

Printed on Recycled Paper

June 1995





Reference: USGS 7.5' topographic quadrangle maps "Fall City, Wash." and "Issaquah, Wash.," both dated 1973.

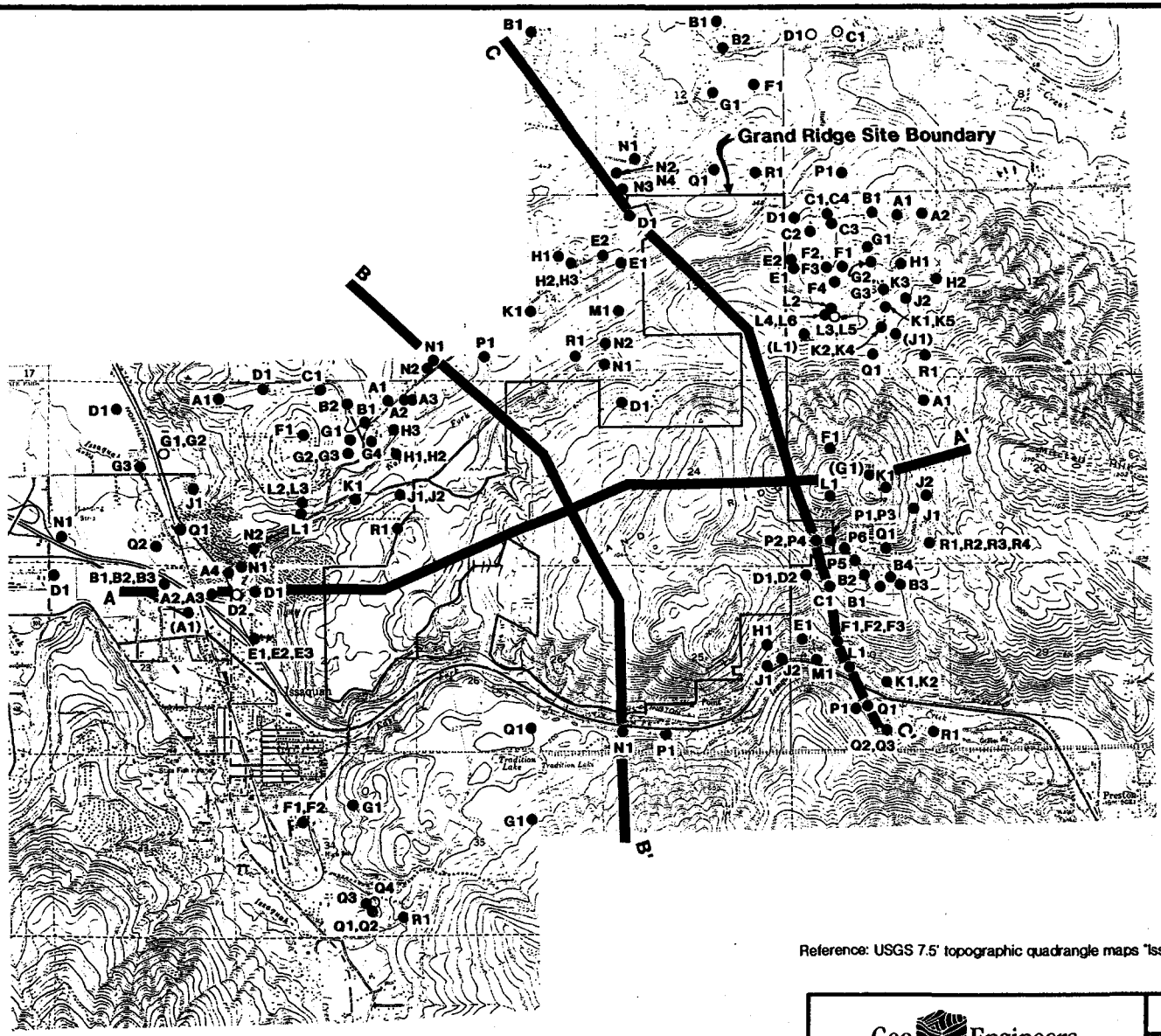
Geo Engineers

VICINITY MAP

FIGURE 1

2067-010-R10 BOH 11/9/94 (B)

C-2-9



N

0 3000 6000
SCALE IN FEET

EXPLANATION:

A1 ● WATER WELL

C1 ○ ABANDONED WELL

A ——— A' GEOLOGIC CROSS SECTION (SEE PLATES 1 AND 3)

Notes: 1. Water wells were not field located. Parentheses indicate well location known only to nearest quarter or half quarter section.

2. Water well locations are based on well logs from The Department of Ecology.

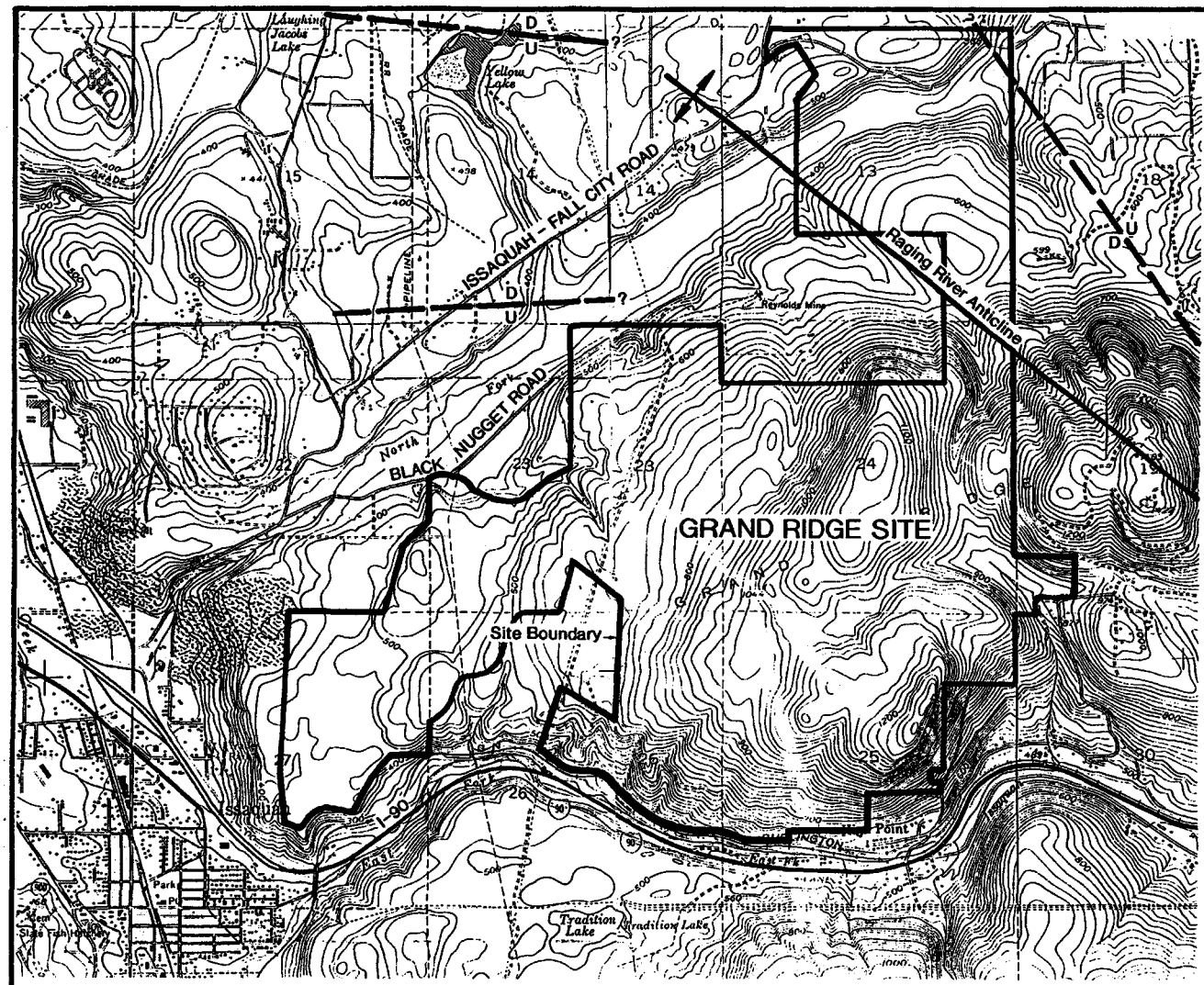
Reference: USGS 7.5' topographic quadrangle maps "Issaquah, Wash.," and "Fall City, Wash.," photorevised 1973.

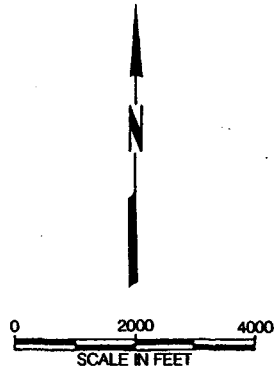
Geo Engineers

WATER WELL LOCATION MAP

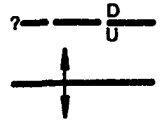
FIGURE 2

2067-010-R02 EAH-BDH 11/9/94





EXPLANATION:



INFERRED FAULT
D = DOWN
U = UP

ANTICLINE, SHOWING APPROXIMATE AXIAL TRACE (CONCEALED ON SITE)

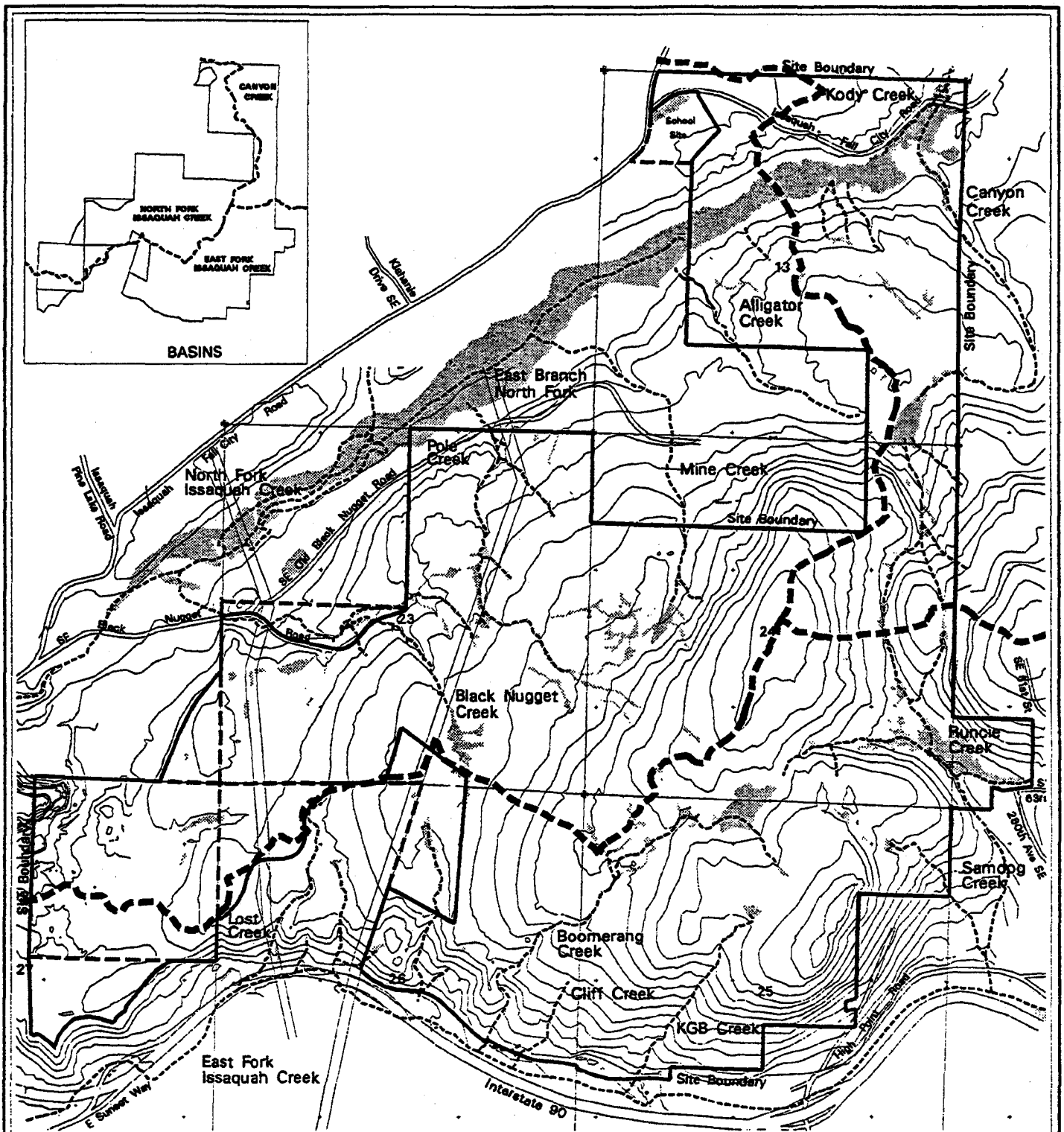
Reference: USGS 7.5' topographic quadrangle maps "Fall City, Wash." and "Issaquah, Wash.," both dated 1973.

Geo Engineers

BEDROCK STRUCTURE

FIGURE 3

2067010 R07 NEB:BDH 4/12/95
Dsk. 9/1/94



Source: GeoEngineers, 1995

FIGURE 4

SEDIMENT TRANSPORT BASINS

LEGEND

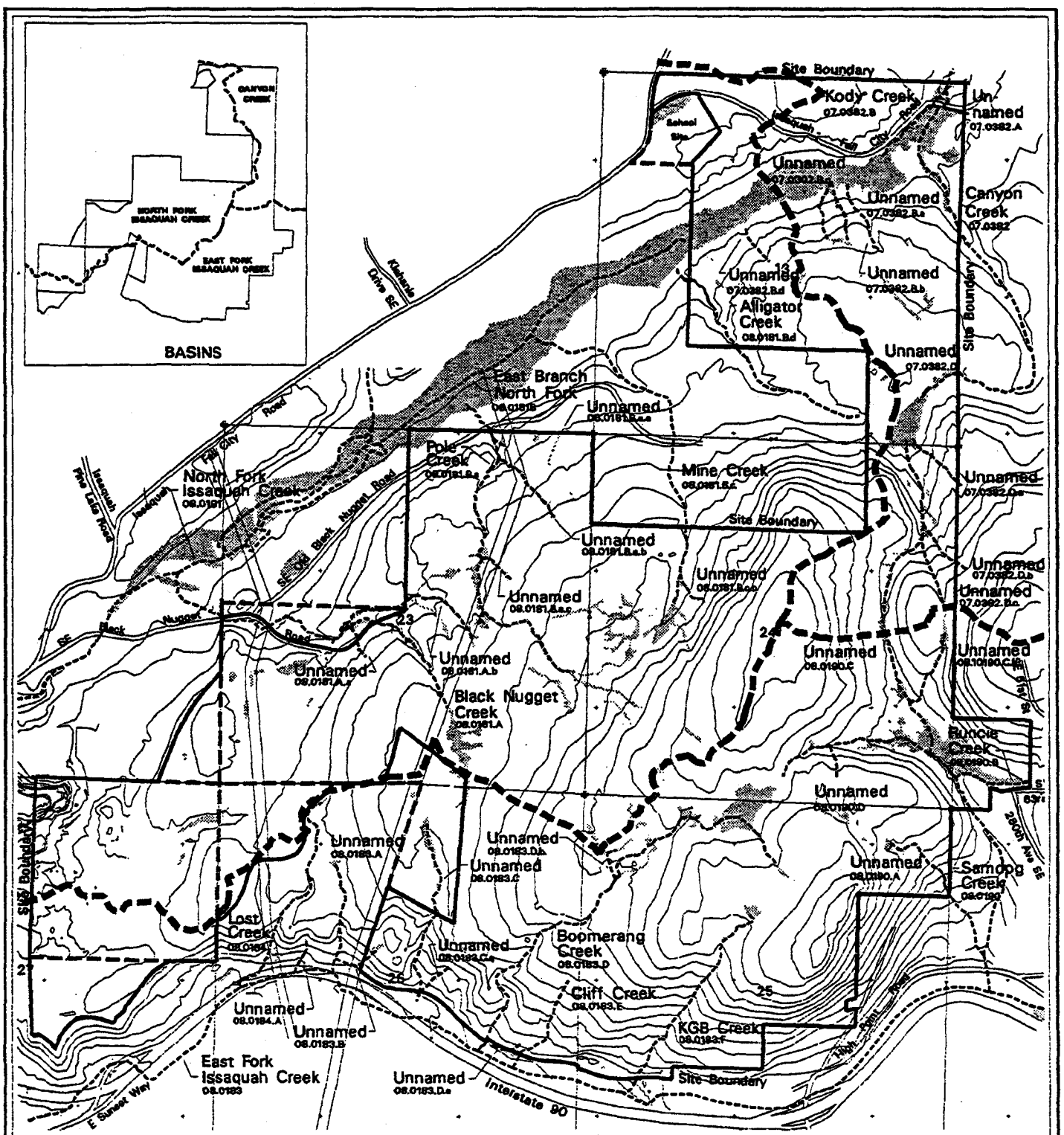
- SEDIMENT TRANSPORT BASIN BOUNDARY
- STREAM
- WETLAND

0 1000 2000 3000

SCALE IN FEET

Contour Interval 50 Feet

GRAND RIDGE EIS



Source: GeoEngineers, 1995

LEGEND
- DRAINAGE BASIN BOUNDARY
- STREAM
- WETLAND

0 1000 2000 3000
SCALE IN FEET

Contour Interval 50 Feet

FIGURE 5
DRAINAGE BASINS, STREAMS AND WETLANDS

GRAND RIDGE EIS

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GRAND RIDGE EIS

Well No.[1]	Section	Owner	Est. Well Elev. (feet)[2]	Completion Date	Well Type[3]	Well Casing Diameter (inches)	Depth of Well[4] (feet)	Water-Bearing Material	Top of Water-bearing Zone (feet)	Completion Interval[5] (feet)	Static Water Level (feet)	Date Measured
T. 24 N., R. 6 E.												
B1	11	Sanderberg, Al	420	05/19/88	O	6	99	--	--	Abandonment	--	--
B1	12	Brenna, Paul	460	08/24/76	D	6	160	sand & silt	147	147-157	120	08/24/76
B2 (G)	12	Holtzner, Bruce	410	1967	C	7	320	--	--	--	173	1967
F1	12	Ferguson, Roland C.	410	04/05/84	D	6	62	sand & gravel	--	57-62	48	04/05/84
G1	12	Gartner, Otto H.	425	05/28/70	D	6	83	gravel & sand	78	78-83	52	03/28/70
N1	12	Klinefelter, Fred	420	03/29/74	D	6	97	coarse sand	--	91-96	79	03/04/74
N2	12	Klinefelter, Fred	440	11/04/77	D	6	367	silt & sand	--	352-362	110	11/04/77
N3	12	Graham Homes	465	08/19/78	D	6	208 (210)	sand	185	198-208	140	08/19/78
N4	12	Tyers, Sharon	440	12/14/89	D	6	78	clay, sand, gravel	68	67-72	57	12/14/89
Q1	12	Clauson, Stanley	380	10/27/78	D	6	82	gravel & sand	74	77-82	70	10/27/78
R1	12	Grout, Milton (Cnyn Crk Wtr A)	425	10/10/77	C	8	108 (94)	sand & gravel	--	93-108	83	10/10/77
D1	13	Maesner, Bill	470[285]	05/15/84	D	6	78	coarse sand & gravel	28	72-77	9	05/15/84
E1	13	Miller, Jack	480	03/06/74	D	6	73	--	--	U	47	03/06/74
E2	13	Livingstone, Duncan C.	505[350]	11/20/73	D	6	158	sand & gravel, tr. clay	103	150-155	143	11/20/73
M1	13	Seatt, Ray H.	460	11/20/74	D	6	70	hardpan gravel	56	60-70	45	11/20/74
N1	13	Greenburg, Al	465	02/23/87	I	6,4	100	gray solid rock	89	40-95	20	02/23/87
N2	13	Foote, Steve	475	09/27/87	D	6,4	90	white sandstone	73	U	30	09/25/87
H1	14	Lundine, C & Don	480	11/24/69	D	6	124	sand & gravel	107	114-124	--	--
H2	14	Universal Land	470	08/30/91	D	6	115	--	--	N	95	08/30/91
H3	14	Aho, Jeanne W.	460	02/15/77	D	8	154	sand & gravel	83	150-154	95	--
K1	14	Caldwell, Lauretta	460	03/31/84	D	6	94	med-co sa w/ occ gvl	--	84-94	61	03/31/84
N1	14	Turgeon, Armand L.	375	12/13/71	D	6	420	sand	--	165-178	110	12/13/71

Notes appear on page 7 of 7.

TABLE 1 (Page 2 of 7)

Well No.[1]	Section	Owner	Est. Well Elev. (feet)[2]	Completion Date	Well Type[3]	Well Casing Diameter (inches)	Depth of Well[4] (feet)	Water-Bearing Material	Top of Water-bearing Zone (feet)	Completion Interval[5] (feet)	Static Water Level (feet)	Date Measured
N2	14	Leaf, George & Pat	455	01/24/76	D	6	146	gravel	142	N	117	--
P1	14	Mills, J.H.	375[425]	1952	D	6	101	--	13	N	--	--
R1	14	Nelson, Neil	455	05/27/86	D	6	63	sand & gravel	29	58-63	9	05/28/86
A1	21	MacDonald, Greg	125[320]	12/06/73	C	8	120	sandstone	34	N	35	12/05/73
C1	21	Anderson, Daniel T.	45	05/02/77	D	8	200	--	--	N	130	05/02/77
G1	21	Henry Bacon	45[62]	06/26/90	D	6	55	--	--	N	0	6/90
G2	21	Henry Bacon	45[62]	06/26/90	I	6	55	--	--	N	0	6/90
G3	21	Peters, C.W.	40	--	D	1.5	70	--	--	U	50	--
J1	21	Sammamish Water Co. (Peters)	75	1955	D?	6	150	sand & gravel	100	U	flowing	--
N1	21	Pickering Bros.	55[51]	06/15/57	D	6	76	sand & gravel	--	71-76	flowing	06/15/57
Q1	21	Tibbetts, Irving	60[60]	--	D	1.5	60	--	--	U	flowing	--
Q2	21	Kowalski, Linda	70	05/22/85	D	6	82	sand & gravel	8	71-76	flowing	05/25/85
A1	22	Prescott, Bruce	425	08/16/64	D	6	85	sand & gravel	62	80-85	54	08/15/64
A2	22	Bathel, Bernard	425	10/05/73	D	6	155	--	81	90-100	66	10/05/73
A3	22	Bathel, Bernie	430	01/15/79	--	6	225	--	--	N	70	01/12/79
B1 (D)	22	McBride, John	395	12/10/79	C	6,4	340 (338)	sandstone	90	U	-2	12/18/79
B2	22	Ronald H. Wilson	380	10/02/78	D	6,4	200	clay & gravel, sandstone	--	100-200	30	10/02/78
C1	22	Ramey, Jack	390	09/10/77	D	11,6?	240	--	130	U	40	--
D1	22	Leitch-Warren	445	12/27/72	D	6	220	sandstone	70	180-220	15	--
F1	22	Overdale Water Assoc.	585[442]	08/22/58	C	12	510 (550)	sandstone	70	U	101	08/22/58
G1	22	Gutschmidt, Roy A.	425	08/07/75	D	6	67	sand & gravel	58	N	37	08/01/75
G2	22	Gutschmidt, Roy	420[340]	03/20/78	D	8	83	"shell" & sandstone	17	N	20	03/20/78
G3	22	Gutschmidt, Roy	420[350]	--	D	6	470	--	125	N	--	--
G4	22	Target, Don	425	03/01/85	D	6	40	--	18	N	7	03/01/85
H1	22	Sherrell, G.W.	350[430]	11/20/51	D,S	48 (tile)	54	sand & gravel	51	U	45.17	11/20/51
H2	22	Drazick, Joe	350	03/15/76	D	6	86	sand & gravel	80	81-86	40	03/15/76

Notes appear on page 7 of 7.

TABLE 1 (Page 3 of 7)

Well No.[1]	Section	Owner	Est. Well Elev. (feet)[2]	Completion Date	Well Type[3]	Well Casing Diameter (inches)	Depth of Well[4] (feet)	Water-Bearing Material	Top of Water-bearing Zone (feet)	Completion Interval[5] (feet)	Static Water Level (feet)	Date Measured
H3	22	Taylor, W.E.	375	04/12/77	D	6	143	--	133	N	129	04/12/77
J1 (K)	22	Dean, James	365	10/21/81	D	6	78	sand & gravel	16	N	54	10/21/81
J2	22	Dean, Jim	365	10/21/77	D	6	97 (78)	sand & gravel	96	N	61	10/21/77
K1	22	Ball, Mel	325	02/03/82	M	6,4	90	rock, coal	60	50-80	5	12/03/82
L1	22	Mix, Tom	325	04/03/81	C	6	67	--	--	N	18	04/03/81
L2	22	Bernert, Larry	375[275]	06/20/77	C	6	204	sandstone	--	N	75	06/20/77
N1	22	Pacific NW Bell	75	05/11/77	--	6	52	silt, sand & gravel	--	47-52	23.2	05/03/77
N2	22	Kramer, Frank	165[100]	07/10/51	D	6	42	sand & gravel	--	U	3.25	--
R1	22	Cunningham, Mike	500	01/10/77	D	6	60	sand & gravel	53	N	40	01/10/77
A1	24	Nielson, Dreas & Jamie	780	07/09/90	D	6	93	--	--	N	43	07/09/90
D1	24	Hensley, Dwayne	795	10/19/88	D	6	150	sandstone	110	90-140	15	10/19/88
H1	25	Jenson, Maxine	630	12/22/80	D	6	80	--	--	N	23	12/22/80
J1	25	Barnes, James	590[410]	01/19/81	D	6	130	"shell & shell stone," black rock	92	67-128	64	01/19/81
J2	25	Schlicting, Bill	585	01/00/00	D	6	235	--	--	N	5	08/21/88
N1	25	Barlbo, Lester E.	540	11/02/79	D	6	188	basalt	58	170-188	136	11/02/79
P1	25	Foster, Herb E.	515	09/08/81	D	6	136	shale	136	N	115	09/08/81
Q1	26	Bushey, Willis	495[275]	05/01/74	D	8	42	sand & gravel	28	37-42	23	--
D1	27	Robinson & Noble, Inc.	60	05/10/73	D	6	52	silty sand & gravel	--	48-52	24	05/10/73
D2	27	Unocal	65[65]	08/20/83	--	6	52	--	--	U	11	08/20/83
E1	27	Sammamish Plateau Water Dist	75[70.5]	03/04/86	O	8	187	silt, sand, gravel	8	N	6.15	01/28/86
E2	27	Sammamish Plateau Water Dist	75[75]	06/25/86	O	8	169	sand, gravel, cobbles	31	109-123	15.4	06/20/86
								sand, gravel, cobbles	--	138-148		
E3	27	Evergreen Mobile Co.	78	11/10/71	I	6	93	sand & gravel	--	88-93	2	11/10/71
(A1)	28	Cotterall, Robert	60	12/23/71	D	6	53	sand & gravel	--	U	4	--
A2	28	Bucove, Michael	70	09/04/76	D	6	143	fi-med sand	--	138-143	103	09/04/76

Notes appear on page 7 of 7.

TABLE 1 (Page 6 of 7)

Well No.[1]	Section	Owner	Est. Well Elev. (feet)[2]	Completion Date	Well Type[3]	Well Casing Diameter (inches)	Depth of Well[4] (feet)	Water-Bearing Material	Top of Water-bearing Zone (feet)	Completion Interval[5] (feet)	Static Water Level (feet)	Date Measured
L4	18	Miller, John	520	02/18/87	D	6	98	--	--	N	38	02/18/87
L5	18	Myers, Marv	590	09/01/87	D	6	280	gray clay	80	--	--	--
L6	18	Myers, Marv	660	10/18/87	D	6	102	till	80	N	--	--
Q1	18	Shepard, Bill	650	04/22/87	D	6,4.5	185	green sand rock	140	175-185	20	04/22/87
R1	18	Strom, Rune	730[375]	12/01/78	D	6	200	clay, sand & gravel	190	195-200	142	--
A1	19	McBarron, Glen	730	05/12/87	D	6	127	--	--	N	22	05/12/87
F1	19	Schmidt, Greg	1240	08/16/90	D	6	115	sand & gravel	108	N	29	08/16/90
G1 (N)	19	Weckworth, H & Rothen, W.	1410	05/25/80	--	8,6	305 (303)	sandstone	65	U	148	--
J1	19	Smith, Wayne L.	1050	07/24/80	D	6,4	220	gray solid rock	20	100-200	52	07/24/80
J2	19	Fletcher, R. & Wesson, D.	930	05/18/79	O	8	460	--	--	N	--	--
K1	19	Taylor, Bob	1375	05/14/90	D	6	283	sandstone	--	192-212	35	05/14/90
L1	19	Bartholomew, Brian	1295	10/13/89	D	6	280	gray shale	180	70-270	80	10/13/89
P1	19	Hunt, Gene	920	09/14/86	D	6	140	gray sandstone	--	120-140	35	--
P2	19	Runcie, Kim	900	08/10/78	D	8,6	260	--	--	U	70	08/10/78
P3	19	Montgomery, John	920	01/01/87	D	6	215	blue hardpan(boulders)	--	N	100	01/01/87
P4	19	Tinker, John	920	05/21/88	D	8,6	350	gray sandstone w/shale layers	--	160-260	45	05/21/88
P5	19	Lane, Chet	975[1000]	--	D	8	53	gravel & sand	33	48-53	32	02/20/74
P6	19	Beatty, Paul	960	12/30/76	D	8,6	44	brown hardpan gravel	35	N	25	12/30/76
Q1	19	Aichinger, Harry H.	990	--	--	--	--	--	--	--	--	--
R1	19	Fletcher, Rick	1030[412]	01/12/91	D	6,4	185	shale?	--	N	-3	01/12/91
R2	19	Stettler, Paul	1030	08/18/83	D	6	220	soft rock	21	N	40	08/18/83
R3	19	Pearson, Fritz	1030[1050]	02/19/68	D	8,6	149	rock	--	U	--	--
R4	19	Grand Ridge Cooperative	1030[1400]	--	D,I	--	--	--	--	--	--	--
B1	30	Humes, Barry	965[392]	12/13/90	D	6,4	238	multicolored shale	30	N	--	--
B2	30	Whitfield, Don	995	09/05/68	D	10,8	192	gray rock	--	150-180	60	09/05/68
B3 (C)	30	Maybry, Jay & Kay	900	05/01/69	C	8,6	216 (236)	firm sandstone	--	N	--	--

Notes appear on page 7 of 7.

TABLE 1 (Page 3 of 7)

Well No.[1]	Section	Owner	Est. Well Elev. (feet)[2]	Completion Date	Well Type[3]	Well Casing Diameter (inches)	Depth of Well[4] (feet)	Water-Bearing Material	Top of Water-bearing Zone (feet)	Completion Interval[5] (feet)	Static Water Level (feet)	Date Measured
H3	22	Taylor, W.E.	375	04/12/77	D	6	143	--	133	N	129	04/12/77
J1 (K)	22	Dean, James	365	10/21/81	D	6	78	sand & gravel	16	N	54	10/21/81
J2	22	Dean, Jim	365	10/21/77	D	6	97 (78)	sand & gravel	96	N	61	10/21/77
K1	22	Ball, Mel	325	02/03/82	M	6,4	90	rock, coal	60	50-80	5	12/03/82
L1	22	Mix, Tom	325	04/03/81	C	6	67	--	--	N	18	04/03/81
L2	22	Bernert, Larry	375[275]	06/20/77	C	6	204	sandstone	--	N	75	06/20/77
N1	22	Pacific NW Bell	75	05/11/77	--	6	52	silt, sand & gravel	--	47-52	23.2	05/03/77
N2	22	Kramer, Frank	165[100]	07/10/51	D	6	42	sand & gravel	--	U	3.25	--
R1	22	Cunningham, Mike	500	01/10/77	D	6	60	sand & gravel	53	N	40	01/10/77
A1	24	Nielson, Dreas & Jamie	780	07/09/90	D	6	93	--	--	N	43	07/09/90
D1	24	Hensley, Dwayne	795	10/19/88	D	6	150	sandstone	110	90-140	15	10/19/88
H1	25	Jenson, Maxine	630	12/22/80	D	6	80	--	--	N	23	12/22/80
J1	25	Barnes, James	590[410]	01/19/81	D	6	130	"shell & shell stone," black rock	92	67-128	64	01/19/81
J2	25	Schlicting, Bill	585	01/00/00	D	6	235	--	--	N	5	08/21/88
N1	25	Barlbo, Lester E.	540	11/02/79	D	6	188	basalt	58	170-188	136	11/02/79
P1	25	Foster, Herb E.	515	09/08/81	D	6	136	shale	136	N	115	09/08/81
Q1	26	Bushey, Willis	495[275]	05/01/74	D	8	42	sand & gravel	28	37-42	23	--
D1	27	Robinson & Noble, Inc.	60	05/10/73	D	6	52	silty sand & gravel	--	48-52	24	05/10/73
D2	27	Unocal	65[65]	08/20/83	--	6	52	--	--	U	11	08/20/83
E1	27	Sammamish Plateau Water Dist	75[70.5]	03/04/86	O	8	187	silt, sand, gravel	8	N	6.15	01/28/86
E2	27	Sammamish Plateau Water Dist	75[75]	06/25/86	O	8	169	sand, gravel, cobbles	31	109-123	15.4	06/20/86
								sand, gravel, cobbles	--	138-148		
E3	27	Evergreen Mobile Co.	78	11/10/71	I	6	93	sand & gravel	--	88-93	2	11/10/71
(A1)	28	Cotterall, Robert	60	12/23/71	D	6	53	sand & gravel	--	U	4	--
A2	28	Bucove, Michael	70	09/04/76	D	6	143	fi-med sand	--	138-143	103	09/04/76

Notes appear on page 7 of 7.

TABLE 1 (Page 4 of 7)

Well No.[1]	Section	Owner	Est. Well Elev. (feet)[2]	Completion Date	Well Type[3]	Well Casing Diameter (inches)	Depth of Well[4] (feet)	Water-Bearing Material	Top of Water-bearing Zone (feet)	Completion Interval[5] (feet)	Static Water Level (feet)	Date Measured
A3	28	King County Water Dist. #82	70[72]	08/29/84	M	16	190	sand, gravel, cobbles	--	105-120	12.6	08/26/80
										125-135		
										145-165		
										170-179		
A4	28	Salenus, Dave	70	12/01/75	C	6	57 (56)	gravel	--	47-57	1.5	11/30/71
B1	28	City of Issaquah	65[60]	--	O	8	650	sand & gravel	--	330-450	7	03/07/81
B2	28	City of Issaquah	65[60]	01/04/85	M	16	200	sand & gravel	--	77-112	7.5	09/30/81
B3	28	City of Issaquah	65[60]	--	M	16,12	412	sand & gravel	--	323-405	7.5	09/25/81
D1	28	Zetec, Inc.	70	10/15/82	D	6	78	sand & gravel	--	73-78	-2	10/14/78
F1	34	Issaquah, City of	155	08/25/76	M, O	8	205	sand & gravel	128	164-198	118.5	08/23/76
F2	34	Issaquah, City of	155	09/22/75	M	8	168	sand & gravel	160	160-168	120.1	09/09/75
G1	34	Diede, Leroy	415	07/22/76	D	6	106	--	98	N	95	07/22/76
Q1	34	Vandeventer, Howard L.	155	06/11/66	D	6	123	--	55	N	52	06/11/66
Q2	34	Gauron, Richard F.	155	05/22/79	D	6	95	--	--	N	35	05/22/79
Q3	34	Golob, Dave	170[270]	10/01/79	D	8	290	--	--	N	74	12/27/79
Q4	34	Golob, Dave	170	09/12/79	D	8	98	--	96	N	--	--
R1	34	Stream, Bruce	525	11/07/75	D	6	32	hardpacked gravel	24	22-32	14	11/07/75
G1	35	Owen, Burt	600	11/22/80	D	6	102	large rocks & sand		97-102	96	11/22/80
T. 24 N., R. 7 E.												
C1	7	Boeing, William E.	355	12/03/76	D	8	270	--	--	N	none	--
D1	7	Boeing, William E.	385	12/15/76	I	8	163	--	--	N	none	--
P1	7	Grout, Milton	430	10/10/77	D	8	108	coarse sand, gvl & cobbles	--	N	83	--
A1 (B)	18	Hayward, Joe[?]	525	08/20/80	M	6	130	sand & gravel	85	N	50	08/20/80
A2	18	Demartini, David	535	07/30/78	D	6	138	gravel	123	N	73.83	07/30/78
B1	18	Robinson, Craig	460	11/04/83	D	6	63	sand & gravel	56	N	20	11/04/83

Notes appear on page 7 of 7.

TABLE 1 (Page 5 of 7)

Well No.[1]	Section	Owner	Est. Well Elev. (feet)[2]	Completion Date	Well Type[3]	Well Casing Diameter (inches)	Depth of Well[4] (feet)	Water-Bearing Material	Top of Water-bearing Zone (feet)	Completion Interval[5] (feet)	Static Water Level (feet)	Date Measured
C1	18	Radek, Jeffry M.	425	08/14/89	D	6	209	fine sand	203	N	60	08/14/89
C2	18	Kenyon, R.E.	445[500]	07/16/75	D	6	70	clay, sand & gravel	55	55-60	16	07/16/75
C3	18	Carrol, Terrance	450	10/27/73	D	6	270	gravel, some clay & sand	68	U	100	10/26/73
C4	18	Schmelzer, Ed	425	06/24/81	D	6	88	gravel & co sand	87	N	43	06/26/81
D1	18	Cooper, Jerry	390	08/20/82	D	6	180	sand & gravel	--	N	73	08/20/82
E1	18	Woodruff, Lance	460	03/27/90	D	6	98	sand & gravel w/clay layers	--	N	48	03/24/90
E2	18	Crockmes, C. Bud	430	06/28/78	D	6	65	--	--	N	12	06/28/78
F1	18	Smith, Jan	515[360]	08/31/77	D	6	283	"shell" (shale?)	275	N	133	09/16/77
F2	18	Johnson, Ed	515	--	D	6	118	--	--	U	--	--
F3	18	Shedrock, Ed	515	08/31/77	D	6	80	sand & gravel	65	N	46	08/31/77
F4	18	Gilmore, A.	540	07/22/75	D	6	98	--	85	N	-2	08/22/75
G1	18	Stockholm, James	555[600]	09/21/83	M	6	254	--	--	N	75	09/21/83
G2	18	Anderson, Earl D.	585	11/07/83	D	6	97	gravel & sand	78	N	62	11/07/83
G3	18	Wilger, Angella & Kevin	585	08/10/90	D	6	169	sand & gravel	148	N	77	08/10/90
H1	18	Avery, Keith & Carl	630[410]	01/30/89	D	6	120	gravel & sand	100	U	95	03/20/89
H2	18	Ridgley, Robert	720	06/18/80	D	6	93	sand	80	N	68	06/18/80
(J1)	18	O'Sullivan, Jim	715[700]	08/01/83	D	6	221	sand & gravel	185	N	42	08/01/83
J2	18	Casky, G.	710[780]	08/01/83	D	6	202	--	--	N	165	08/24/83
K1	18	Miller, John R.	645	11/15/83	D	6	240	clay & gravel, sandstone	16	N	190	11/15/83
K2	18	Blaskovich, Ed	655[720]	06/19/78	M	6	187	--	--	N	137	06/19/78
K3	18	Stevens, Mike	610[700]	11/07/80	D	6	160	coarse sand	--	156-159	110	11/07/80
K4	18	Eggleston, Carol	715	07/12/85	M	6	100	gravel	85	N	30	07/12/85
K5	18	Preble, Robert A.	695	06/26/79	D	6	158	sand & gravel	156	N	120	06/26/79
(L1)	18	Voelker, Bob	599	05/20/87	D	6	108	med to co sand	--	103-108	38	05/19/87
L2	18	Yerkes, J.W.	570	08/02/86	D	6	84	sand & gravel	50	N	23	08/02/86
L3	18	Bauer, Greg	575	10/30/91	D	10	23	--	--	N	--	--

Notes appear on page 7 of 7.

TABLE 1 (Page 6 of 7)

Well No.[1]	Section	Owner	Est. Well Elev. (feet)[2]	Completion Date	Well Type[3]	Well Casing Diameter (inches)	Depth of Well[4] (feet)	Water-Bearing Material	Top of Water-bearing Zone (feet)	Completion Interval[5] (feet)	Static Water Level (feet)	Date Measured
L4	18	Miller, John	520	02/18/87	D	6	98	--	--	N	38	02/18/87
L5	18	Myers, Marv	590	09/01/87	D	6	280	gray clay	80	--	--	--
L6	18	Myers, Marv	660	10/18/87	D	6	102	till	80	N	--	--
Q1	18	Shepard, Bill	650	04/22/87	D	6,4.5	185	green sand rock	140	175-185	20	04/22/87
R1	18	Strom, Rune	730[375]	12/01/78	D	6	200	clay, sand & gravel	190	195-200	142	--
A1	19	McBarron, Glen	730	05/12/87	D	6	127	--	--	N	22	05/12/87
F1	19	Schmidt, Greg	1240	08/16/90	D	6	115	sand & gravel	108	N	29	08/16/90
G1 (N)	19	Weckworth, H & Rothen, W.	1410	05/25/80	--	8,6	305 (303)	sandstone	65	U	148	--
J1	19	Smith, Wayne L.	1050	07/24/80	D	6,4	220	gray solid rock	20	100-200	52	07/24/80
J2	19	Fletcher, R. & Wesson, D.	930	05/18/79	O	8	460	--	--	N	--	--
K1	19	Taylor, Bob	1375	05/14/90	D	6	283	sandstone	--	192-212	35	05/14/90
L1	19	Bartholomew, Brian	1295	10/13/89	D	6	280	gray shale	180	70-270	80	10/13/89
P1	19	Hunt, Gene	920	09/14/86	D	6	140	gray sandstone	--	120-140	35	--
P2	19	Runcie, Kim	900	08/10/78	D	8,6	260	--	--	U	70	08/10/78
P3	19	Montgomery, John	920	01/01/87	D	6	215	blue hardpan(boulders)	--	N	100	01/01/87
P4	19	Tinker, John	920	05/21/88	D	8,6	350	gray sandstone w/shale layers	--	160-260	45	05/21/88
P5	19	Lane, Chet	975[1000]	--	D	8	53	gravel & sand	33	48-53	32	02/20/74
P6	19	Beatty, Paul	960	12/30/76	D	8,6	44	brown hardpan gravel	35	N	25	12/30/76
Q1	19	Aichinger, Harry H.	990	--	--	--	--	--	--	--	--	--
R1	19	Fletcher, Rick	1030[412]	01/12/91	D	6,4	185	shale?	--	N	-3	01/12/91
R2	19	Stettler, Paul	1030	08/18/83	D	6	220	soft rock	21	N	40	08/18/83
R3	19	Pearson, Fritz	1030[1050]	02/19/68	D	8,6	149	rock	--	U	--	--
R4	19	Grand Ridge Cooperative	1030[1400]	--	D,I	--	--	--	--	--	--	--
B1	30	Humes, Barry	965[392]	12/13/90	D	6,4	238	multicolored shale	30	N	--	--
B2	30	Whitfield, Don	995	09/05/68	D	10,8	192	gray rock	--	150-180	60	09/05/68
B3 (C)	30	Maybry, Jay & Kay	900	05/01/69	C	8,6	216 (236)	firm sandstone	--	N	--	--

Notes appear on page 7 of 7.

TABLE 1 (Page 7 of 7)

Well No.[1]	Section	Owner	Est. Well Elev. (feet)[2]	Completion Date	Well Type[3]	Well Casing Diameter (inches)	Depth of Well[4] (feet)	Water-Bearing Material	Top of Water-bearing Zone (feet)	Completion Interval[5] (feet)	Static Water Level (feet)	Date Measured
B4	30	Croft, Dennis C.	920	04/05/79	D	8	186	sand & gravel	171	N	115	04/05/79
C1	30	Reeves, Tom	920	09/22/79	D	6	180	broken black basalt	114	106-176	67	09/24/79
D1	30	Smith, Brian & Adrienne	835	04/22/91	M	6,4	210	rock	150	100-200	40	04/22/91
D2	30	Martin, Tobin	840	08/07/70	D	10,8	215	blue sandstone	155	155-215	130	08/06/70
E1	30	Carlson, Bob or Ron	515	11/07/77	D	8,6	277	gray rock	220	219-269	80	11/07/77
F1	30	Pearson, Fritz	720	10/09/80	D	6	320	sand & gravel	80	N	--	--
F2	30	Loranger, Joe	720	11/10/87	D	6,5	270	basalt	--	160-209	--	--
F3	30	Pearson, Gosta B.	720	10/15/80	M	6,4	320	gray rock	--	220-320	5	10/15/80
K1	30	Munsinger	520	08/21/72	D	10,8,6	98	sand & gravel	86	90-95	72	--
K2	30	Molczan, George	520	05/12/79	D	8,6	300	gray basalt	220	280-300	--	--
L1	30	Pearson, Richard	630	02/03/77	D	8,6	60	sand w/silt	31	28-33	18	02/03/77
M1	30	Chaudin, Joseph	510	11/27/89	D	6,4	80	gray shale, sand, gv,cl	31	20-80	16	11/27/89
P1	30	Sotterthwaite, Dale	545[320]	10/01/78	D	8	184	--	--	N	0	10/01/78
Q1	30	Jenneskens, Ted	515[240]	08/30/91	D	6,4	225	shale	75	100-220	42	08/27/91
Q2	30	Cannon, James F.	560	06/30/85	D	6,4.5	306	sand rock	--	--	137	--
Q3	30	Bernard, Paul (Formby)	560[340]	12/09/68	C	6	125	--	--	N	5	12/09/68
R1	30	Gerke, Bob	510	05/31/83	C	6,4	223	black rock	126	12-223	52	05/26/83

Notes:

[1]Water well locations are shown on Figure 2. Letter designations in parentheses are locations in the Washington (State) Department of Health (1989) listing.

[2]Elevations estimated from the topographic map. Elevations given on the well logs noted in brackets.

[3]Well type is designated as follows: D - Domestic well, M - Municipal well, C - Community well, I - Irrigation well, S - Stock well, O - Other.

[4]Depths in parentheses are from the DOH listing.

[5]Completion interval indicated as follows: N - not screened or perforated, U - no data.

'--' = information was not included in well log.

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TABLE 2 (Page 1 of 8)
WATER WELL TEST DATA
GRAND RIDGE EIS

Well No.[1]	Section	Type Test	Pump Test Data: Rate[2] (gpm)	Pump Test Data: Drawdown (feet)	Pump Test Data: Test Duration (hours)	Pump Test Data: Specific Capacity (gpm/ft. drawdown)	Water-Bearing Material	Elevation: Top of Water-Bearing Zone (feet)	Elevation: Top of Producing Interval (feet)	Elevation: Static Water Level (feet)	SWL Height Above Producing Zone[3] (feet)	Chemical Data from Well Logs
T. 24 N., R. 6 E.												
B1	11	--	--	--	--	--	--	--	--	--	--	--
B1	12	Bailer	30	20	4	1.5	sand & silt	313	--	340	--	--
		Pump	10.5	17	4	0.6						
B2	12	Bailer	30	0	1	--	--	--	--	237	--	Tested
F1	12	Bailer	13	2	1.5	6.5	sand & gravel	--	353	362	9	--
G1	12	Pump	20	0	2	--	gravel & sand	347	--	373	--	--
N1	12	Bailer	12	0	1	--	coarse sand		329	341	12	--
N2	12	Bailer	10	20	3	0.5	silt & sand		88	330	242	--
N3	12	Bailer	17	35	1.5	~.5	sand	280	267	325	58	--
N4	12	Bailer	12	4	1	3	clay, sand, gravel	372	373	383	10	--
Q1	12	Bailer	10	1	1	.10	gravel & sand	302	303	310	7	--
		Pump	50	2	24	25						
R1	12	Bailer	55	2	2	27.5	sand & gravel	--	--	342	--	Tested, Iron
D1	13	Bailer	50	8	1	6.3	coarse sand & gravel	442	398	461	63	--
E1	13	Bailer	10	9	1	1.1	--	--	--	433	--	--
E2	13	Bailer	20	5	1	4.0	sand & gravel, tr. clay	402	355	362	7	--
M1	13	Bailer	7	14	2	0.5	hardpan gravel	404	400	415	15	--
N1	13	Air jet	5	65	2.5	0.1	gray solid rock	376	425	445	20	--
N2	13	Bailer	20 (25)	3	0.75	6.7	white sandstone	402	--	445	--	--
H1	14	--	20	20	1	1.0	sand & gravel	373	366	--	--	--
H2	14	--	--	--	--	--	--	--	--	375	--	--
H3	14	Bailer	30	25	1.5	1.2	sand & gravel	377	310	365	55	--

Notes appear on page 8 of 8.

TABLE 2 (Page 2 of 8)

Well No.[1]	Section	Type Test	Pump Test Data: Rate[2] (gpm)	Drawdown (feet)	Test Duration (hours)	Specific Capacity (gpm/ft. drawdown)	Water-Bearing Material	Elevation: Top of Water-Bearing Zone (feet)	Top of Producing Interval (feet)	Static Water Level (feet)	SWL Height Above Producing Zone[3] (feet)	Chemical Data from Well Logs
K1	14	Bailer	24	2	1	12.0	med-co sa w/ occ gvl	--	376	399	23	--
N1	14	Bailer	12	20	2	0.6	sand	--	210	265	55	--
N2	14	Bailer	15	4	1.5	3.8	gravel	313	--	338	--	--
P1	14	Bailer	25	--	--	--	--	362	--	--	--	--
R1	14	Bailer	30	--	1	--	sand & gravel	426	397	446	49	--
A1	21	Bailer	7 (30)	50	1	0.1	sandstone	91	--	90	--	--
C1	21	Bailer	30	50	1	0.6	--	--	--	-85	--	--
G1	21	--	--	--	--	--	--	--	--	>45	1 psi, artesian	--
G2	21	--	--	--	--	--	--	--	--	>45	0.5 psi, artesian	--
G3	21	--	--	--	--	--	--	--	--	-10	--	--
J1	21	Pump	300	125	4.5	2.4	sand & gravel	-25	--	>75	artesian	Fe=0.33 ppm, H=62
N1	21	Bailer	30	25	--	1.2	sand & gravel	--	-16	>55	artesian	--
Q1	21	--	--	--	--	--	--	--		>60	artesian	H=58 ppm, Cl=10 ppm sulphur smell, some orange flocculent
Q2	21	--	12	--	--	--	sand & gravel	62	-1	70	71	--
A1	22	Bailer	15	11	0.5	1.4	sand & gravel	363	345	371	26	--
A2	22	Bailer	10	18	2	0.6	--	344	335	359	24	--
A3	22	Bailer	1.5	150		0.0	--	--	--	360	--	--
B1	22	--	--	--	--	--	sandstone	305	--	397	--	--
B2	22	Bailer	0.5	160	3	0.0	clay & gravel, sandstone		280	350	70	--
C1	22	Bailer	9	200	1.75	0.0	--	260	--	350	--	salty taste
D1	22	Bailer	15	135	2	0.1	sandstone	375	265	430	165	--
F1	22	Pump	60 (25)	216	--	0.3	sandstone	515	--	484	--	--
G1	22	Bailer	20	10	3	2.0	sand & gravel	367	--	388	--	--
G2	22	Bailer	5	40	1	0.1	"shell" & sandstone	403	--	400	--	Fe=15 ppm

Notes appear on page 8 of 8.

TABLE 2 (Page 3 of 8)

Well No.[1]	Section	Type Test	Pump Test Data: Rate[2] (gpm)	Drawdown (feet)	Test Duration (hours)	Specific Capacity (gpm/ft. drawdown)	Water-Bearing Material	Elevation: Top of Water-Bearing Zone (feet)	Top of Producing Interval (feet)	Static Water Level (feet)	SWL Height Above Producing Zone[3] (feet)	Chemical Data from Well Logs
G3	22	Bailer	10	--	--	--	--	295	--	--	--	salty
G4	22	Air Jet	40	12	3	3.3	--	407	--	418	--	--
H1	22	--	--	--	--	--	sand & gravel	299	--	304.83	--	H=44 ppm, Cl=7 ppm
H2	22	Bailer	15	40	3	0.4	sand & gravel	270	269	310	41	--
H3	22	Bailer	12	3	4	4.0	--	242	--	246	--	
J1	22	Bailer	30	8	1	3.8	sand & gravel	349	--	311	--	--
J2	22	Bailer	15	12	1	1.3	sand & gravel	269	--	304	--	--
K1	22	Bailer	10 (5)	60	3	0.2	rock, coal	265	275	320	45	--
L1	22	Bailer	20	--	1	--	--	--	--	307	--	--
L2	22	Bailer	2	120	2	0.0	sandstone	--	--	300	--	--
N1	22	Bailer	10	1	2	10.0	silt, sand & gravel	--	28	51.8	23.8	--
N2	22	--	--	--	--	--	sand & gravel	165	--	161.75	--	H=72, Cl=8 [ppm?]
R1	22	Bailer	11	6	3.5	1.8	sand & gravel	447	--	460	--	--
A1	24	Air	8	stem @ 91	1	--	--		--	737	--	--
D1	24	Air	0.5	stem @ 145	2	--	sandstone	685	705	780	75	--
H1	25	Bailer	10	40	3	0.3	--		--	607	--	--
J1	25	Bailer	15	--	1	--	"shell & shell stone," black rock	498	523	526	3	--
J2	25	Air	4	stem @ 136	1	--	--		--	580	--	--
N1	25	Bailer	3	46	1	0.1	basalt	482	370	404	34	--
P1	25	Bailer	15	4	1	3.8	shale	379	--	400	--	--
Q1	26	Bailer	30	0	1	--	sand & gravel	467	458	472	14	--
D1	27	Pump	10	1	2	10.0	silty sand & gravel	--	12	36	24	--
D2	27	--	--	--	--	--	--	--	--	54	--	--
E1	27	Pump	370	20.59	24	18.0	silt, sand, gravel	67	--	68.85	--	tested
E2	27	Pump	475	10.74	28	44.2	sand, gravel, cobbles	44	-34	59.6	93.6	tested
						--	sand, gravel, cobbles	--	-63	--	122.6	

Notes appear on page 8 of 8.

TABLE 2 (Page 4 of 8)

Well No.[1]	Section	Type Test	Pump Test Data: Rate[2] (gpm)	Drawdown (feet)	Test Duration (hours)	Specific Capacity (gpm/ft. drawdown)	Water-Bearing Material	Elevation: Top of Water-Bearing Zone (feet)	Top of Producing Interval (feet)	Static Water Level (feet)	SWL Height Above Producing Zone[3] (feet)	Chemical Data from Well Logs
E3	27	Bailer	30	--	--	--	sand & gravel	--	-10	76	--	--
(A1)	28	Bailer	40	18	1.5	2.2	sand & gravel	--	--	56	--	iron
A2	28	Bailer	20	2	1	10.0	fi-med sand	--	-68	-33	35	--
A3	28	Pump	1977	22	8	89.9	sand, gravel, cobbles	--	-35	57.4	92.4	tested
						--		--	-55	--	112.4	--
						--		--	-75	--	132.4	--
						--		--	-100	--	157.4	--
A4	28	Bailer	25	41	4	0.6	gravel	--	23	68.5	45.5	--
B1	28	Pump	60	9	5	6.7	sand & gravel	--	-265	58	323	tested
B2	28	Pump	250	56	24	4.5	sand & gravel	--	-12	57.5	69.5	tested
B3	28	Pump	1000	128	24	7.8	sand & gravel	--	-258	57.5	315.5	tested
D1	28	Bailer	12	47	1	0.3	sand & gravel	--	-3	72	75	--
F1	34	Pump	200	4.6	1	43.5	sand & gravel	27	-9	36.5	45.5	tested
		Pump	300	9	2	33.3						
		Pump	380	13.1	12	29.0						
F2	34	Pump	100	12.7	1	7.9	sand & gravel	-5	-5	34.9	39.9	tested
		Pump	200	27.4	4	7.3						
G1	34	Bailer	10	1	4	10.0	--	317	--	320	--	--
Q1	34	Bailer	20	30	2	0.7	--	100	--	103	--	--
Q2	34	est.	10	--	--	--	--	--	--	120	--	--
Q3	34	--	--	--	--	--	--	--	--	96	--	--
Q4	34	--	--	--	--	--	--	74	--	170	--	--
R1	34	Bailer	22	3	4	7.3	hardpacked gravel	501	503	511	8	--
G1	35	Bailer	5	35	1	0.1	large rocks & sand	--	503	504	1	--

Notes appear on page 8 of 8.

TABLE 2 (Page 5 of 8)

Well No.[1]	Section	Type Test	Pump Test Data: Rate[2] (gpm)	Drawdown (feet)	Test Duration (hours)	Specific Capacity (gpm/ft. drawdown)	Water-Bearing Material	Elevation: Top of Water-Bearing Zone (feet)	Top of Producing Interval (feet)	Static Water Level (feet)	SWL Height Above Producing Zone[3] (feet)	Chemical Data from Well Logs
T. 24 N., R. 7 E.												
C1	7	--	--	--	--	--	--	--	--	--	--	--
D1	7	--	--	--	--	--	--	--	--	--	--	--
P1	7	Bailer	55	2	2	27.5	coarse sand, gvl & cobbles	--	--	347	--	--
A1	18	Bailer	35	40	2.5	0.9	sand & gravel	440	--	475	--	--
A2	18	Bailer	12	3	8	4.0	gravel	412	--	461.17	--	--
B1	18	Bailer	15	20	1	0.8	sand & gravel	404	--	440	--	--
C1	18	Air jet	15	stem @ 190	2.5	--	fine sand	222	--	365	--	--
C2	18	Bailer	20	0	1	--	clay, sand & gravel	390	390	429	39	--
		Pump	40	8	1	5.0						
C3	18	Bailer	20	90	6	0.2	gravel, some clay & sand	382	--	350	--	--
C4	18	Bailer	7.5	30	2	0.3	gravel & co sand	338	--	382	--	--
		Pump	10	39	2	0.3						
D1	18	Bailer	30	21	1	1.4	sand & gravel	--	--	317	--	--
E1	18	Bailer	9	29	1.5	0.3	sand & gravel w/clay layers	--	--	412	--	--
E2	18	Bailer	12	--	--	--	--	--	--	418	--	--
F1	18	Bailer	7	140	2	0.1	"shell" (shale?)	240		382	--	--
		Pump	15	72	1	0.2						
F2	18	Bailer	10	--	--	--	--	--	--	515	--	--
F3	18	Bailer	15	19	1	0.8	sand & gravel	450	--	469	--	--
F4	18	Bailer	30	80	1	0.4	--	455	--	542	--	--
(G1)	18	Bailer	10	135	3	0.1	--	--	--	480	--	--
G2	18	Bailer	12	20	1	0.6	gravel & sand	--	--	523	--	--
G3	18	Air	40	stem @ 169	1	--	sand & gravel	437	--	508	--	--
H1	18	Bailer	10	0	1	--	gravel & sand	530	--	535	--	--
H2	18	Bailer	10	12	4	0.8	sand	640	--	652	--	--

Notes appear on page 8 of 8.

TABLE 2 (Page 6 of 8)

Well No.[1]	Section	Type Test	Pump Test Data: Rate[2] (gpm)	Drawdown (feet)	Test Duration (hours)	Specific Capacity (gpm/ft. drawdown)	Water-Bearing Material	Elevation: Top of Water-Bearing Zone (feet)	Top of Producing Interval (feet)	Static Water Level (feet)	SWL Height Above Producing Zone[3] (feet)	Chemical Data from Well Logs
(J1)	18	Bailer	10	155	3	0.1	sand & gravel	530	--	673	--	--
J2	18	Bailer	10	10	3	1.0	--	--	--	545	--	--
K1	18	Bailer	4	30	1	0.1	clay & gravel, sandstone	629	--	455	--	--
K2	18	Bailer	15	3	2	5.0	--	--	--	518	--	--
K3	18	Bailer	10	25	2	0.4	coarse sand	--	454	500	46	--
K4	18	Air jet	24	35	3	0.7	gravel	630	--	685	--	--
K5	18	Bailer	14	23	4	0.6	sand & gravel	539	--	575	--	--
(L1)	18	Bailer	25	22	1	1.1	med to co sand	--	496	561	65	--
L2	18	Bailer	28	4	1	7.0	sand & gravel	520	--	547	--	--
L3	18	--	--	--	--	--	--	--	--	--	--	--
L4	18	Bailer	30	4	0.25	7.5	--	--	--	482	--	--
L5	18	--	--	--	--	--	gray clay	510	--	--	--	"stinky water"
L6	18	Pump	25	2	3	12.5	till	580	--	--	--	--
		Bailer	40	6	0.75	6.7						
Q1	18	Bailer	7	150	2	0.0	green sand rock	510	475	630	155	--
R1	18	Bailer	10	6	4	1.7	clay, sand & gravel	540	535	588	53	--
A1	19	Bailer	8	85	1	0.1	--	--	--	708	--	--
F1	19	Air	80	stem @ 115	1	--	sand & gravel	1132	--	1211	--	--
(G1)	19	Pump	30	25	5	1.2	sandstone	1345	--	1262	--	--
J1	19	Bailer	4	150	4	0.0	gray solid rock	1030	950	998	48	--
J2	19	--	--	--	--	--	--	--	--	--	--	--
K1	19	Air	18	stem @ 260	3	--	sandstone	--	1183	1340	157	--
L1	19	Air?	5-6	stem @ 260	2.5	--	gray shale	1115	1225	1215	-10	--
P1	19	Bailer	45	50	1	0.9	gray sandstone	--	800	885	85	--
P2	19	Bailer	2	180	4	0.0	--	--	--	830	--	--
P3	19	Bailer	2.5	80	1	0.0	blue hardpan (boulders)	--	--	820	--	--

Notes appear on page 8 of 8.

TABLE 2 (Page 7 of 8)

Well No.[1]	Section	Type Test	Pump Test Data: Rate[2] (gpm)	Pump Test Data: Drawdown (feet)	Pump Test Data: Test Duration (hours)	Pump Test Data: Specific Capacity (gpm/ft. drawdown)	Water-Bearing Material	Elevation: Top of Water-Bearing Zone (feet)	Elevation: Top of Producing Interval (feet)	Elevation: Static Water Level (feet)	SWL Height Above Producing Zone[3] (feet)	Chemical Data from Well Logs
P4	19	Bailer	.75-1	190	3	0.0	gray sandstone w/shale layers	--	760	875	115	--
P5	19	Pump	22	8	24	2.8	gravel & sand	942	927	943	16	--
		Bailer	30	20	1	1.5						
P6	19	Bailer	10	7	4	1.4	brown hardpan gravel	925	--	935	--	--
Q1	19	--	--	--	--	--	--	--	--	--	--	--
R1	19	Air	30	stem @ 180	1	--	shale?	--	--	1033	--	--
R2	19	Bailer	15	100	1	0.2	soft rock	1009	--	990	--	--
R3	19	Bailer	19	110	3	0.2	rock	--	--	--	--	--
R4	19	--	--	--	--	--	--	--	--	--	--	--
B1	30	Air	0.5	stem @ 230	1	--	multicolored shale	935	--	--	--	--
B2	30	Bailer	20	20	1	1.0	gray rock	--	845	935	90	--
B3	30	Bailer	15	30	--	0.5	firm sandstone	--	--	900	--	--
B4	30	Bailer	14	55	4	0.3	sand & gravel	749	--	805	--	--
C1	30		8	--	--	--	broken black basalt	806	814	853	39	--
D1	30	Air	10- 12	stem @ 165	2.5	--	rock	685	735	795	60	--
D2	30	Bailer	15	15	2	1.0	blue sandstone	685	685	710	25	--
E1	30	Bailer	20	100	4	0.2	gray rock	295	296	435	139	--
F1	30	--	1	@ 90	--	--	sand & gravel	640	--	720	--	--
F2	30	Bailer	3.5	0	2	--	basalt	--	560	720	160	--
F3	30	Bailer	20	250	4	0.1	gray rock	--	500	715	215	--
K1	30	Bailer	15	4	2	3.8	sand & gravel	434	430	448	18	--
K2	30	--	20	--	--	--	gray basalt	300	240	520	280	--
L1	30	Bailer	10	7	3	1.4	sand w/silt	599	602	612	10	--
M1	30	Bailer	32	20	1	1.6	gray shale, sand, gv,cl	479	490	494	4	--
P1	30	Bailer	8	100	2	0.1	--	--	--	545	--	--

Notes appear on page 8 of 8.

TABLE 2 (Page 8 of 8)

Well No.[1]	Section	Type Test	Pump Test Data: Rate[2] (gpm)	Pump Test Data: Drawdown (feet)	Pump Test Data: Test Duration (hours)	Pump Test Data: Specific Capacity (gpm/ft. drawdown)	Water-Bearing Material	Elevation: Top of Water-Bearing Zone (feet)	Elevation: Top of Producing Interval (feet)	Elevation: Static Water Level (feet)	SWL Height Above Producing Zone[3] (feet)	Chemical Data from Well Logs
Q1	30	Bailer	10	150	1	0.1	shale	440	415	473	58	--
Q2	30	Bailer	2- 3	280	0.67	0.0	sand rock	--	--	423	--	--
Q3	30	Bailer	10	30	1	0.3	--	--	--	555	--	--
R1	30	Bailer	10	150	1	0.1	black rock	384	498	458	-40	--

Notes:

[1]Water well locations are shown in Figure 2.

[2]Rates in parentheses are taken from the DOH (1989) listing.

[3]SWL = Static water level.

"--" = information was not included in well log.

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TABLE 3
DESCRIPTION OF GEOLOGIC UNITS
GRAND RIDGE EIS

Symbol	Geologic Unit	Permeability	Density/ Hardness	Organic Content
Qp	Quaternary peat Organic-rich sediments deposited mostly in closed depressions. Peaty deposits less than 5 feet in thickness may not be mapped.	Low	Low	Low to High
Qal	Quaternary alluvium Unconsolidated, well-sorted sand, silt and gravel deposits.	Moderate	Low	Low
Qvo	Quaternary Vashon recessional outwash (undifferentiated) Stratified to nonstratified, well-sorted to moderately sorted sand and gravel deposits.	Moderate to High	Moderate	Low
Qvd	Quaternary Vashon deltaic deposit Well-sorted to poorly sorted, stratified to nonstratified sand and gravel deposits.	Moderate to High	Moderate	Low
Qvt	Quaternary Vashon till Nonsorted, nonstratified silty gravelly sand with cobbles and boulders.	Low	High	Low
Qva	Quaternary Vashon advance sand and gravel Stratified to nonstratified, well-sorted to poorly sorted sand and gravel deposits.	Moderate to High	High	Low
Qvl	Quaternary Vashon advance lacustrine deposits Laminated deposits of clayey silt and silt to fine sand.	Low	Moderate to High	Low
Qo	Quaternary pre-Vashon deposits Predominantly fine-grained deposits.	Low	Moderate to High	Low
Tv	Tertiary volcanic rocks (undifferentiated) Volcanic sandstone, conglomerate, breccia, tuff and basaltic lava flows. Upper Eocene and Oligocene in age.	Low to High	Moderate to High	Low
Tr	Tertiary Renton Formation Feldspathic and micaceous sandstone, carbonaceous claystone and coal. Upper Eocene in age.	Low to High	Moderate to High	Low
Tt	Tertiary Tukwila Formation Andesitic volcanic sandstone, tuffaceous siltstone, tuff breccia, volcanic conglomerate and lava flows; locally interstratified with arkosic and chloritic sandstone beds, carbonaceous shales, siltstones, and impure coals. Middle and Upper Eocene in age.	Low to High	Moderate to High	Low

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TABLE 4 (Page 1 of 2)
DESCRIPTION OF SOIL CLASSIFICATIONS
GRAND RIDGE EIS

Series Name and Map Symbol	SCS Series Abbreviation	Slopes (percent)	Depth from Surface (inches)	Soil Layer Descriptions		Parent Material	Runoff	Permeability
				USDA	USCS			
Alderwood Ag	AgC	6 to 15	0 to 27 >27	gravelly sandy loam weakly to strongly consolidated till	SM	Till	slow to medium	Moderately rapid in surface layer and subsoil; very slow below a depth of 24 to 40 inches. Water moves on top of substrate in winter.
	AgD	15 to 30	0 to 40 >40	gravelly sandy loam weakly to strongly consolidated till	SM	Till	medium	Moderately rapid in surface layer and subsoil; very slow below a depth of 40 inches. Water moves on top of substrate in winter.
Alderwood-Kitsap Ak	AkF	25 to 70	0 to 40 >40	gravelly sandy loam silt loam silty clay loam	SM ML MH	Till and Glacio-lacustrine	rapid to very rapid	Above 24 inches variable (slow to rapid); below 24 inches very slow. Water flows on top of substrate in winter.
Beausite Be	BeD	15 to 40	0-19 19 to 38 >38	gravelly sandy loam very gravelly sandy loam sandstone	SM GM	Sandstone	rapid	Moderately rapid.
	BeF	40 to 75	0-19 19 to 38 >38	same as BeD	Same as BeD	Sandstone	very rapid	Moderately rapid.
Everett Ev	EvC	5 to 15	0 to 17 17 to 32 32 to 60+	gravelly sandy loam very sandy gravelly loam very gravelly coarse sand	SM GM GW or GP	Outwash	slow to medium	Moderately rapid 0 to 17 inches; rapid 17 to 32 inches; very rapid below 32 inches.
	EvD	15 to 30	0 to 17 17 to 32 32 to 60+	same as EvC	Same as EvC	Outwash	medium to rapid	Moderately rapid 0 to 17 inches, rapid 17 to 32 inches, very rapid below 32 inches.
Indianola In	InD	15 to 30	0 to 30 30 to 60	loamy fine sand sand	SM SP-SM	Outwash	medium	Rapid to 30 inches; very rapid below 30 inches.
Neilton Ne	NeC	2 to 15	0 to 18 18 to 60	very gravelly loamy sand very gravelly sand	GP-GM GW or GP	Outwash	slow to medium	Rapid to 18 inches; very rapid below 60 inches.
Norma No	No	0 to 2	0 to 60	sandy loam	SM	Alluvium	slow	Moderately rapid.

Notes appear on page 2 of 2.

TABLE 4 (Page 2 of 2)

Series Name and Map Symbol	SCS Series Abbreviation	Slopes (percent)	Depth from Surface (inches)	Soil Layer Descriptions		Parent Material	Runoff	Permeability
				USDA	USCS			
Ovall Ov	OvD	15 to 25	0 to 36 36+	gravelly loam weathered andesite	SC or SM	Andesite and glacial deposits	medium	Moderate. Water may flow along andesite in winter.
	OvF	40 to 75	0 to 36 36+	same as OvD	Same as OvD	Andesite and glacial deposits	rapid to very rapid	Moderate. Water may flow along andesite in winter.
Seattle Sk	Sk	less than 1	0 to 60	mucky peat	Pt	--	ponded	Moderate.

Source: United States Department of Agriculture, Soil Conservation Service, November 1973, "Soil Survey, King County Area, Washington."

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TABLE 5 (Page 1 of 6)
DESCRIPTION OF GEOMORPHIC SUBAREAS

Subarea	Area (acres)	Description	Dominant Processes	Estimated Sediment Flux tons/year	Estimated Sediment Flux tons/acre/year
A	1.9	Hummocky 0-2% slopes. Ponded water with seasonal flow to North Fork Issaquah Creek. Partially includes Wetland NF21 (also known as Wetland 7).	Wetland deposition	+0.06	+0.03
B	7.8	Uniform to slightly irregular 30% slopes. Evidence of overland flow in swales. Includes Black Nugget Road.	Soil creep	+0.67	+0.09
C	10	Uniform 45-50% slopes with occasional swales. Evidence of overland flow in swales.	Soil creep	-0.96	-0.09
D	26	Pole Creek. Well-defined channel with seasonal stream. Occasional landsliding noted along the ravine walls. Evidence of coal mine spoils in channel.	Stream erosion	-8.16	-0.31
E	1.9	Uniform 15-20% slopes. Includes powerline easement and part of Pole Creek ravine. Evidence of ponded water and overland flow in service road for powerlines.	Soil creep	-0.64	-0.34
F	50	Uniform to slightly hummocky 5-15% slopes. Evidence of seasonally ponded water and overland flow in small localized areas. Includes wetlands NF8 and NF9.	Soil creep	+0.01	+<0.01
G	37	Uniform to slightly irregular 10% slopes.	Soil creep	-0.04	-<0.01
H	7.4	Uniform to slightly hummocky 5-15% slopes. Evidence of seasonally ponded water and overland flow in small localized areas.	Soil creep	+0.08	+0.01
I	4.1	Uniform 15-20% slopes. Evidence of ponded water and overland flow in service road for powerlines.	Soil creep	-0.09	-0.02
J	6.1	Tributary to Black Nugget Creek. Uniform 10-20% slopes. Evidence of seasonal streamflow and overland flow in swales.	Stream erosion Sheet wash Soil creep	-3.51	-0.58
K	1.2	Wetland NF19. Uniform 0-5% slopes. Closed depression with high water outlet to Subarea J.	Wetland deposition Soil creep	+<0.01	+<0.01
L	1.2	Uniform 15-20% slopes. Evidence of ponded water and overland flow in service road for powerlines.	Soil creep	-0.05	-0.04
M	22	Uniform 10-20% slopes. Evidence of seasonally ponded water and overland flow.	Soil creep	-0.72	-0.03
N	8.8	Black Nugget Creek. Well-defined stream channel with seasonal stream. Ravine walls are uniform 30-50% slopes.	Stream erosion Soil creep	-4.34	-0.50
O	13	Uniform 5-10% slopes. Evidence of seasonally ponded water in small isolated depressions.	Soil creep	+0.04	+<0.01
P	2.9	Uniform 15-20% slopes. Evidence of ponded water and overland flow in service road for powerlines.	Soil creep	-0.06	-0.02
Q	14	Uniform to slightly hummocky 5-15% slopes. Evidence of seasonally ponded water in small depressions.	Soil creep	+<0.01	+<0.01
R	12	Uniform 5-10% slopes. Evidence of seasonally ponded water in small depressions.	Soil creep	-0.08	-0.01
S	1.6	Uniform 15-20% slopes. Evidence of ponded water and overland flow in service road for powerlines.	Soil creep	-0.03	-0.02

Notes appear on page 6 of 6.

TABLE 5 (Page 2 of 6)

Subarea	Area (acres)	Description	Dominant Processes	Estimated Sediment Flux tons/year	Estimated Sediment Flux tons/acre/year
T	1.7	Uniform, slightly hummocky 5-15% slopes. Evidence of seasonally ponded water and overland flow in small, local areas.	Soil creep	-0.01	-0.01
U	9.5	Uniform 0-5% slopes. Evidence of seasonally ponded water and overland flow. Includes Wetland NF18, a tributary to Black Nugget Creek.	Wetland deposition	+0.02	+<0.01
V	55	Uniform 5-10% slopes. Includes Wetland NF17.	Soil creep	+0.53	+0.01
W	39	Slightly hummocky 5-15% slopes. Evidence of seasonally ponded water.	Soil creep	-0.03	-<0.01
X	14	Uniform 0-5% slopes. Evidence of seasonally ponded water. Includes Wetland NF11, a tributary to Pole Creek.	Wetland deposition	+0.12	+0.01
Y	26	Slightly hummocky 5-15% slopes. Evidence of seasonally ponded water. Includes wetlands NF12 and NF13.	Soil creep	-0.03	-<0.01
Z	8.7	Mine Creek. Well-defined stream channel with perennial stream. Local landsliding noted along ravine wall. Evidence of coal mine spoils in channel. Stream flows into North Fork Issaquah Creek.	Stream erosion	-1.15	-0.13
AA	14	Uniform 25% slopes.	Soil creep	+0.84	+0.06
AB	35	Uniform 25-45% slopes. Evidence of seasonally ponded water. Evidence of overland flow in swales. Evidence of block sliding.	Soil creep Block slides	-1.05	-0.03
AC	103	Uniform to hummocky 5-30% slopes. Evidence of seasonally ponded water and deposition in areas between hummocks. Includes Wetland NF16.	Soil creep	-1.48	-0.01
AD	51	Uniform 5-10% slopes. Evidence of seasonally ponded water in small localized areas.	Soil creep	-0.44	-0.01
AE	51	Uniform to slightly irregular 0-15% slopes. Evidence of seasonally ponded water in small isolated areas.	Soil creep	-0.06	-<0.01
AF	46	Uniform 10 to 20% slopes. Includes wetlands EF11, NF22 and NF24.	Soil creep	-0.06	-<0.01
AG	27	Uniform 5-10% slopes. Evidence of seasonally ponded water and deposition in swales. Includes wetlands EF9, EF10 and NF15.	Soil creep	-0.05	-<0.01
AH	26	Uniform 0-5% slopes. Includes Wetland EF8. Evidence of seasonally ponded water.	Wetland deposition	+1.12	+0.04
AI	34	Uniform 25-35% slopes. Evidence of localized overland flow.	Soil creep	-1.00	-0.03
AJ	2.2	Uniform 10-20% slopes. Includes Wetland EF7. Evidence of overland flow and seasonal flow in swale.	Wetland deposition	+0.02	+0.01
AK	6.8	Uniform 25-35% slopes. Evidence of localized overland flow.	Soil creep	+0.04	+0.01
AL	4.8	Uniform 10-20% slopes. Includes wetland EF4. Evidence of overland flow and seasonal flow in swale.	Stream erosion	-1.32	-0.28
AM	92	Uniform 2-5% slopes. Evidence of seasonally ponded water and overland flow. Evidence for recent tension cracks noted on slopes adjacent to Subarea BY.	Soil creep	-0.07	+<0.01

Notes appear on page 6 of 6.

TABLE 5 (Page 3 of 6)

Subarea	Area (acres)	Description	Dominant Processes	Estimated Sediment Flux tons/year	Estimated Sediment Flux tons/acre/year
AN	1.9	Uniform 0-5% slopes. Includes Wetland EF12, tributary to KGB Creek. Evidence of seasonally ponded water.	Wetland deposition	+0.02	+0.01
AO	21	Uniform 60% slopes. Includes Wetland EF14.	Soil creep	-0.61	-0.03
AP	3.3	An unnamed creek (08.0183.A). Well-defined stream channel with 20-40% slopes and seasonal flow. Includes Wetland EF13. Flows to East Fork Issaquah Creek.	Soil creep Stream erosion	-2.75	-0.83
AQ	30	Uniform 20-40% slopes. Slump along railroad grade cut. Evidence for local sliding.	Soil creep	-2.45	-0.08
AR	8.3	Boomerang Creek. Well defined stream channel with 30-40% slopes and seasonal flow. Evidence of local slides along ravine wall. Flows to East Fork Issaquah Creek.	Stream erosion Soil creep	-11.82	-1.42
AS	75	Uniform 25-50% slopes. Evidence of localized overland flow.	Soil creep	-1.48	-0.02
AT	5.1	Cliff Creek. Well-defined stream channel with 40% slopes and seasonal flow.	Stream erosion	-2.94	-0.58
AU	40	Uniform 60-70% slopes. Tukwila Formation (bedrock) outcrops are visible.	Soil creep	-1.20	-0.03
AV	9.6	KGB Creek. Well-defined stream channel with seasonal streamflow.	Stream erosion Soil creep	-3.48	-0.36
AW	80	Uniform 60-70% slopes. Tukwila Formation (bedrock) outcrops are visible.	Soil creep	-3.26	-0.04
AX	35	Uniform 25-30% slopes.	Soil creep	-0.06	-<0.01
AY	8.6	Uniform 65% slopes. Evidence of overland flow in swales. Recent tension cracks noted on slopes.	Soil creep	-0.39	-0.05
AZ	5.5	An unnamed creek (08.0190.A). Well-defined stream channel with 30% slopes and seasonal flow. Includes Wetland EF6.	Soil creep Stream erosion	-1.53	-0.28
BA	1.2	Uniform 0 to 5% slopes. Includes Wetland NF1.	Wetland deposition	+0.02	+0.02
BB	61	Uniform 0-5% slopes.	Soil creep	-0.04	-<0.01
BC	46	Slightly irregular 25-45% slopes.	Soil creep	-1.15	-0.03
BD	38	Includes wetlands NF2 and CC5 (Wetland 7). Uniform 0-5% slopes. Evidence of ponded water and streamflow along the southern edge of wetland.	Wetland deposition	+4.67	+0.12
BE	8.5	Uniform 5-10% slopes. Includes part of Wetland CC5 (Wetland 7). Evidence of overland flow and seasonally ponded water.	Soil creep	-0.07	-0.01
BF	88	Uniform to undulating 10-45% slopes. High incidence of rills and overland flow. Stream channels with ponded water in larger swales. Includes wetlands NF3, NF4 and NF5. Evidence of local debris flows and slumps between Elevations 400 and 525 feet.	Stream erosion Rill erosion Sheet wash Landsliding	-9.51	-0.11
BG	12	Alligator Creek. Well-defined stream channel with seasonal streamflow. Uniform 20-30% slopes. Evidence of sliding along ravine walls. Flows into North Fork Issaquah Creek.	Stream erosion Soil creep	-5.17	-0.43
BH	2.9	Uniform 5-10% slopes. Evidence of seasonally ponded water in small depressions.	Soil creep	-<0.01	-<0.01

Notes appear on page 6 of 6.

TABLE 5 (Page 4 of 6)

Subarea	Area (acres)	Description	Dominant Processes	Estimated Sediment Flux tons/year	Estimated Sediment Flux tons/acre/year
BI	7.9	Uniform 5-10% slopes. Evidence of seasonally ponded water in small depressions.	Soil creep	+0.01	+<0.01
BJ	103	Uniform 5-10% slopes. Evidence of seasonally ponded water in small depressions. Includes wetlands CC2, CC3 and NF7.	Soil creep	+0.35	+<0.01
BK	5.3	Wetland, tributary to Canyon Creek. Uniform 0-5% slopes. Evidence of overland flow and seasonally ponded water.	Wetland deposition	+2.08	+0.39
BL	2.7	Wetland with well-defined stream channel and perennial stream. Tributary to Canyon Creek. Uniform 10% channel slopes.	Wetland deposition Stream erosion	+1.59	+0.59
BM	13	Uniform to hummocky 40-70% slopes. Evidence of slumps on upper slopes.	Mass wasting Soil creep	-0.23	-0.02
BN	15	Uniform 50-60% slopes. Evidence of overland flow in swales.	Soil creep	-1.40	-0.09
BO	2.3	Poorly defined stream channel with seasonal flow.	Stream erosion	-0.17	-0.07
BP	15	Well-defined stream channel with perennial flow. Uniform 10% channel slopes. Evidence of local slides along ravine wall.	Stream erosion Soil creep	-1.20	-0.08
BQ	11	Uniform 15% slopes.	Soil creep	-0.21	-0.02
BR	44	Uniform 30% slopes.	Soil creep	-1.78	-0.04
BS	13	Uniform 30% slopes. Evidence of overland flow in swales.	Soil creep	+0.18	+0.01
BT	27	Uniform 20-30% slopes. Evidence of seasonally ponded water. Local rills.	Soil creep Rill erosion	+0.98	+0.04
BU	17	Uniform 35-45% slopes. Evidence of overland flow.	Soil creep	-0.27	-0.02
BV	9.9	Undulating 5-20% slopes. Evidence of local overland flow and seasonally ponded water.	Soil creep	-0.18	-0.02
BW	4.6	Uniform 15% slopes.	Soil creep	-0.47	-0.10
BX	27	Uniform 55% slopes.	Soil creep	-0.28	-0.01
BY	33	Samdog Creek and wetland. Well-defined stream channel with perennial streamflow through wetland. Uniform 0-5% slopes.	Stream erosion Wetland deposition	+6.01	+0.18
BZ	3.1	Uniform 0-5% slopes.	Soil creep	-0.07	-0.02
CA	21	Uniform 25-50% slopes. Evidence of overland flow between Elevations 925 and 975 feet. Evidence of slumps.	Soil creep Mass wasting	-1.82	-0.09
CB	20	Canyon Creek. Well-defined stream channel. Forms an alluvial fan within wetland. Crossed by a road at north end. Culverts limit flow and off-site sediment transport. Local slide within the Canyon Creek ravine.	Alluvial fan Deposition	+8.93	+0.45
CC	0.32	Undulating to smooth 0-10% slopes, seasonal ponded water.	Soil creep	-<0.01	-<0.01
CD	0.36	Slightly undulating 0-10% slopes with seasonal ponded water.	Soil creep	-<0.01	-<0.01
CE	0.56	Smooth <5% slope, in easement with dense soil.	Soil creep	-<0.01	-<0.01
CF	2.6	Tributary to unnamed creek; well-defined channel with steep, smooth side slopes; slumping at head. Includes wetlands EF18 and EF19.	Stream erosion Soil creep	-2.42	-0.95
CG	23	Undulating 5-25% slopes with mining-related disturbed soil, seasonal ponding.	Soil creep	+0.58	+0.03
CJ	8.2	Smooth, 0-10% slopes, local seasonal ponding.	Soil creep	-0.02	-<0.01

Notes appear on page 6 of 6.

TABLE 5 (Page 5 of 6)

Subarea	Area (acres)	Description	Dominant Processes	Estimated Sediment Flux tons/year	tons/acre/year
CK	16	Smooth, undulating 20-30% slope with variable understory.	Soil creep	-0.29	-0.02
CM	4.6	Smooth, undulating 0-70% slope, includes wet slump and Wetland NF26.	Mass wasting Wetland deposition	-2.45	-0.54
CN	1.0	Tributary to Black Nugget Creek, smooth, undulating 0-45% slope, variable understory cover.	Soil creep	-0.56	-0.56
CO	4.2	Smooth 50% slope with areas of 5-10% slope, recent clearing and construction (no canopy, dense soil). Evidence of saturated overland flow.	Soil creep	-0.40	-0.09
CP	16	Undulating 0-25% slope includes wetlands NF27 and part of NF28.	Soil creep	-0.01	-<0.01
CQ	19	Hummocky ≤25% slope, includes wetlands NF31 and NF32; NF32 is a manmade channel.	Soil creep	+0.17	+0.01
CR	14	Undulating 0-15% slope.	Soil creep	+0.06	+<0.01
CV	6.2	Slightly hummocky 20-30% slope, overland flow along road.	Soil creep	-0.31	-0.05
CX	2.5	Smooth 5-35% easement slope with very dense soil. Evidence of sheetwash on trails.	Sheetwash	+0.13	+0.05
CY	3.6	Smooth 0-5% easement slope with dense soil. Possible sheetwash.	Soil creep	+0.14	+0.04
CZ	4.2	Smooth 0-5% easement slope with dense soil. Includes parts of wetlands NF28 and NF30.	Soil creep Wetland deposition	+0.31	+0.07
DA	1.7	Smooth 10-50% easement slope with dense soil. Manmade swale with disturbed soil.	Sheetwash Soil creep	-0.16	-0.10
DD	3.9	Smooth 45-85% slope, possible spring near base of knob.	Soil creep	+0.46	+0.12
DE	5.6	Smooth 5-10% slope with variable understory, includes wetlands NF29 and NF30.	Wetland deposition	-0.73	-0.13
DF	2.0	Slightly hummocky 30% slope. Soil mounded and disturbed by logging.	Sheetwash Soil creep	-0.01	-0.01
DG	18	Smooth, slightly undulating 4-26% slope, variable understory and exposed soil. Area logged (15-20 years ago) with extensive logging roads and paths.	Soil creep Shallow rilling	-0.04	-<0.01
DH	10	Slightly hummocky 5-10% slope, evidence of seasonal ponding. Local areas of overland flow.	Soil creep	-0.02	-<0.01
DI	17	Smooth, slightly undulating 5-50% slope with variable canopy and understory.	Sheetwash Soil creep	-0.64	-0.04
DJ	9.1	Hummocky 10% slope, soil is disturbed by logging.	Soil creep	-<0.01	-<0.01
DK	19	Smooth, hummocky 0-5% slope, includes wetlands NF34 and NF35; area disturbed by quarry (detention ponds, 100% exposed soil).	Wetland deposition Soil creep	+0.02	+<0.01
DL	17	Smooth, hummocky 0-45% slopes, variable canopy, understory, and areas of disturbed soil.	Soil creep Sheetwash	-0.03	-<0.01
DM	9.7	Slightly undulating 0-3% slope, top of hill, disturbed by logging.	Soil creep	-0.02	-<0.01
DO	6.8	Smooth, undulating 40-55 % slope.	Soil creep	-0.28	-0.04
DQ	12	Smooth 5-15% slope with local seasonal ponding.	Soil creep	-<0.01	-<0.01
DR	46	Undulating 0-5% slope, local seasonal ponding.	Soil creep	-0.91	-0.02
DS	8.9	Smooth, undulating 5-30% sloping, irregular terrain.	Soil creep	+0.10	+0.01

Notes appear on page 6 of 6.

TABLE 5 (Page 6 of 6)

Subarea	Area (acres)	Description	Dominant Processes	Estimated Sediment Flux	
				tons/year	tons/acre/year
QE	33	Undulating 0-15% slopes in active gravel mining area; bare soil with sparse vegetation.	Soil creep	+0.17	+0.01
QH	22	Undulating 0-15% slopes in active gravel mining area; local rilling, bare soil with sparse vegetation.	Soil creep	-0.79	-0.04
QL	24	Smooth 15% to subvertical slopes in active gravel mining area; rilling and gullying, bare soil with sparse vegetation; local seeps.	Soil creep	-1.36	-0.06

Notes:
"-" = erosion; "+" = deposition
+ <0.01 = less than 0.01 tons/acre/year of deposition
- <0.01 = less than 0.01 tons/acre/year of erosion

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TABLE 6 (Page 1 of 2)
DESCRIPTION OF COAL MINE SURFACE FEATURES
MINE SURFACE FEATURE INVENTORY
GRAND RIDGE EIS

Mine Surface Feature Number[1]	Plan Dimension (ft)	Depth (ft)	Comments	Relative Hazard[2]
Grand Ridge Mine				
1	110x90	45	Vegetated, cone-shaped depression.	Medium
2	12x6	6	Vegetated, trench-shaped depression.	Medium
3	60x50	20	Unvegetated, concave-shaped depression with seasonal standing water.	High
4	180x130	50	Vegetated, cone-shaped depression.	Medium
5	100x80	45	Vegetated, cone-shaped depression with several fallen trees.	High
6	20x20	12	Vegetated, cone-shaped depression. Noted as 'shaft depression' on GeoDimensions map.	Medium
7	25x25	15	Vegetated, cone-shaped depression.	Medium
8	8x8	--	Vegetated, steep-sided depression located within road grade. Known mine entry.	Medium
9	--	--	Known mine entry. Not observed.	Medium
10	Varies (10x15 is typical)	5-15	Ten to fifteen vegetated, steep-sided depressions located over the main access tunnel to the Grand Ridge Mine.	Medium
Reynolds Mine				
11	--	1-2	Several cracks in ground surface in the vicinity of coal spoils.	Medium
12	Varies (10x15 is typical)	6	Four vegetated, steep-sided depressions. Recent subsidence of fill material indicated by landowner.	Medium
13	--	--	Several small pits filled by landowner, no surface expression observed.	Medium
14	--	--	Known mine entry. Not observed.	High
15	--	--	Two known mine entries. Not observed.	High
16	8x8	--	Vertical shaft. Filled with water.	High

Notes appear on page 2 of 2.

TABLE 6 (Page 2 of 2)

Mine Surface Feature Number[1]	Plan Dimension (ft)	Depth (ft)	Comments	Relative Hazard[2]
Black Nugget Mine				
17	--	--	Two near-horizontal mine openings at the base of a steep ravine. Two other known mine entries were not observed.	Medum to High
Issaquah Stripping Operation				
18	500x100	10	A rectangular excavation that intersects Mine Creek. Sedimentation has reduced the depth from 40 feet to 10 feet.	Low
Finn Mine				
19, 20	--	--	Two known mine entries. Not observed.	High
21	--	--	Mine entry. Not observed in field.	High

Notes:

[1]Surface mine features are the result of poorly backfilled or nonbackfilled mine workings or of shallow mine workings that are collapsing. Mine surface feature numbers refer to locations on Plate 6.

[2]The Mine Hazard designations are based on the degree of danger posed by each hazard to the public. A low hazard indicates no present threat of human injury but may not be completely stable. A medium hazard indicates partially open or actively collapsing structures that have the potential to become a high hazard. A high hazard includes openings or dilapidated structures that are easily accessible to the public and pose a real potential for injury from falls, caving, landslides, jagged equipment, entrapment, poisonous gases or drowning.

"--" = no data available or not applicable

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TABLE 7
SUMMARY OF ESTIMATED WATER BUDGET[1]
FOR GRAND RIDGE DEVELOPMENT
WATER YEARS 1991[2], 1992, 1993

Existing Conditions[3]

Water Year	Precipitation[4] (inches)	Evapo-Transpiration	RO from Pervious	Shallow GW Recharge[5]	Deep Infiltration	GW to Baseflow	RO from Impervious	Change in Soil Moisture	Rounding Error
1990-91	58.2	17.3	4.8	36.0	24.8	11.1	0.2	-0.1	0.1
1991-92	46.1	20.0	1.8	23.4	16.2	7.2	0.1	0.6	0.2
1992-93	49.2	21.5	1.3	26.7	18.4	8.2	0.1	-0.3	0.0

Planned Community: Alternative 1

1990-91	58.2	18.0	4.4	29.6	20.4	9.1	6.2	-0.1	0.2
1991-92	46.1	19.7	1.7	19.4	13.4	6.0	4.8	0.5	0.0
1992-93	49.2	21.2	1.2	22.2	15.3	6.8	4.9	-0.3	0.1

Five-Acre Short Plats: Alternative 2

1990-91	58.2	17.2	5.9	33.8	23.3	10.4	1.4	0.0	0.0
1991-92	46.1	19.6	2.4	22.3	15.4	6.9	1.1	0.6	0.1
1992-93	49.2	21.2	1.7	25.6	17.7	7.9	1.1	-0.4	0.0

Notes:

[1]All values in inches/year.

[2]Precipitation data from Snoqualmie Falls and SeaTac weather stations.

[3]Alternative 3/No Action equivalent to Existing Conditions prior to development.

[4]Total precipitation = overland flow + evapotranspiration losses + ground water recharge.4

[5]Shallow ground water recharge = shallow ground water to baseflow + deep ground water recharge - change in soil moisture.

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TABLE 8 (Page 1 of 6)
ESTIMATED NET SEDIMENT FLUX - GEOMORPHIC SUBAREAS[1,2]

Geomorphic Subarea	Area (acres)	Dominant Processes[3]			Estimated Net Sediment Flux (tons/year)				
						During Construction[4]		After Construction	
		Existing	During Construction	After Construction	Existing	Alt. 1	Alt. 2	Alt. 1	Alt. 2
A	1.9	Wetland deposition	Wetland deposition	Wetland deposition	+0.06	+0.06	+11.82	+0.06	+0.65
B	7.8	Soil creep	Sheet wash	Sheet wash	+0.67	+23.59	-19.53	+1.50	-0.31
C	10	Soil creep	Sheet wash	Soil creep	-0.96	+6.53	+13.24	-0.76	-0.46
D	26	Stream erosion	Stream erosion	Stream erosion	-8.16	-12.15	-12.16	-12.15	-12.15
E	1.9	Soil creep	Soil creep Sheet wash	Soil creep	-0.64	-0.14	+0.41	-0.63	-0.60
F	50	Soil creep Wetland deposition	Sheet wash Wetland deposition	Sheet wash Wetland deposition	+0.01	+1.84	+9.05	+0.07	+0.38
G	37	Soil creep	Sheet wash	Sheet wash	-0.04	-27.18	-38.93	-0.78	-1.39
H	7.4	Soil creep	Sheet wash	Sheet wash	+0.08	-4.91	-3.26	+0.08	-0.04
I	4.1	Soil creep	Sheet wash	Soil creep	-0.09	+3.68	+7.78	+0.01	+0.19
J	6.1	Stream erosion Sheet wash Soil creep	Stream erosion	Stream erosion	-3.51	-3.86	-3.86	-3.86	-3.86
K	1.2	Wetland deposition Soil creep	Wetland deposition	Wetland deposition	+<0.01	+0.85	+1.60	+0.03	+0.05
L	1.2	Soil creep	Sheet wash	Sheet wash	-0.05	+1.21	+2.57	-0.02	+0.04
M	22	Soil creep	Sheet wash	Sheet wash	-0.72	-10.50	-28.30	-1.18	-2.15
N	8.8	Stream erosion Soil creep	Stream erosion	Stream erosion	-4.34	-4.77	-4.77	-4.77	-4.77
O	13	Soil creep	Sheet wash	Sheet wash	+0.04	-5.80	-7.88	+0.04	-0.25
P	2.9	Soil creep	Sheet wash	Sheet wash Soil creep	-0.06	+3.53	+4.62	+0.04	+0.11
Q	14	Soil creep	Sheet wash	Sheet wash	+<0.01	+6.60	+10.38	+0.18	+0.38
R	12	Soil creep	Sheet wash	Sheet wash	-0.08	-7.56	-6.28	-0.28	-0.30
S	1.6	Soil creep	Sheet wash	Soil creep	-0.03	-0.03	-0.03	-0.03	-0.03
T	1.7	Soil creep	Sheet wash	Sheet wash	-0.01	-1.29	-2.23	-0.01	-0.09
U	9.5	Wetland deposition	Wetland deposition	Wetland deposition	+0.02	+9.67	+16.95	+0.24	+0.66

Notes appear on page 6 of 6.

TABLE 8 (Page 2 of 6)

Geomorphic Subarea	Area (acres)	Dominant Processes[3]			Estimated Net Sediment Flux (tons/year)				
						During Construction[4]		After Construction	
		Existing	During Construction	After Construction	Existing	Alt. 1	Alt. 2	Alt. 1	Alt. 2
V	55	Soil creep	Sheet wash Wetland deposition	Sheet wash Wetland deposition	+0.53	+10.45	+30.48	+1.14	+2.55
W	39	Soil creep	Sheet wash	Sheet wash	-0.03	-27.21	-44.59	-0.77	-1.58
X	14	Wetland deposition	Wetland deposition	Wetland deposition	+0.12	+4.88	+9.02	+0.27	+0.49
Y	26	Soil creep Wetland deposition	Sheet wash Wetland deposition	Sheet wash Wetland deposition	-0.03	-16.24	-25.29	-0.48	-0.91
Z	8.7	Stream erosion	Stream erosion Wetland deposition	Stream erosion Wetland deposition	-1.15	+0.70	+31.27	-1.25	+0.18
AA	14	Soil creep	Sheet wash	Sheet wash	+0.84	+0.84	-39.79	+0.84	-1.16
AB	35	Soil creep Block slides	Sheet wash Block slides	Sheet wash Block slides	-1.05	-1.10	-1.11	-1.64	-1.78
AC	103	Soil creep	Sheet wash	Sheet wash	-1.48	-49.88	-97.57	-3.42	-6.45
AD	51	Soil creep	Sheet wash	Sheet wash	-0.44	-1.32	+5.31	-0.46	-0.20
AE	51	Soil creep	Sheet wash	Sheet wash	-0.06	-0.06	-64.33	-0.06	-2.25
AF	46	Soil creep	Sheet wash	Sheet wash	-0.06	-15.09	-26.90	-0.48	-0.98
AG	27	Soil creep	Sheet wash	Sheet wash	-0.05	-1.94	-17.95	-0.10	-0.65
AH	26	Wetland deposition	Wetland deposition	Wetland deposition	+1.12	+73.24	+171.73	+4.22	+8.68
AI	34	Soil creep	Sheet wash	Sheet wash	-1.00	-44.04	-146.44	-3.10	-7.79
AJ	2.2	Wetland deposition	Wetland deposition	Wetland deposition	+0.02	+4.74	+7.13	+0.18	+0.25
AK	6.8	Soil creep	Sheet wash	Sheet wash	+0.04	+10.18	+12.03	+0.38	+0.47
AL	4.8	Stream erosion	Stream erosion	Stream erosion	-1.32	-1.45	-1.45	-1.45	-1.45
AM	92	Soil creep	Sheet wash	Sheet wash	-0.07	-5.21	-16.14	+0.70	+0.68
AN	1.9	Wetland deposition	Wetland deposition	Wetland deposition	+0.02	+2.38	+3.54	+0.10	+0.14
AO	21	Soil creep	Soil creep	Soil creep	-0.61	-0.61	-0.62	-0.61	-0.61
AP	3.3	Stream erosion Soil creep	Stream erosion	Stream erosion	-2.75	-3.44	-3.44	-3.44	-3.44
AQ	30	Soil creep	Sheet wash	Soil creep	-2.45	-1.96	+5.75	-2.43	-2.02
AR	8.3	Stream erosion Soil creep	Stream erosion	Stream erosion	-11.82	-12.40	-12.40	-12.40	-12.40
AS	75	Soil creep	Sheet wash	Sheet wash	-1.48	+0.09	-218.96	-1.43	-12.03
AT	5.1	Stream erosion	Stream erosion	Stream erosion	-2.94	-3.23	-3.23	-3.23	-3.23

Notes appear on page 6 of 6.

TABLE 8 (Page 3 of 6)

Geomorphic Subarea	Area (acres)	Dominant Processes[3]			Estimated Net Sediment Flux (tons/year)				
						During Construction[4]		After Construction	
		Existing	During Construction	After Construction	Existing	Alt. 1	Alt. 2	Alt. 1	Alt. 2
AU	40	Soil creep	Sheet wash	Soil creep	-1.20	-0.19	-42.82	-1.27	-3.21
AV	9.6	Stream erosion Soil creep	Stream erosion	Stream erosion	-3.48	-3.78	-3.78	-3.78	-3.78
AW	80	Soil creep	Sheet wash	Soil creep Sheet wash	-3.26	+45.47	+13.42	-1.04	-2.33
AX	35	Soil creep	Sheet wash	Sheet wash	-0.06	-119.02	-154.27	-5.80	-7.50
AY	8.6	Soil creep	Sheet wash	Sheet wash	-0.39	+0.86	-19.22	-0.33	-1.27
AZ	5.5	Stream erosion Soil creep	Stream erosion	Stream erosion	-1.53	-49.71	-54.85	-4.17	-4.58
BA	1.2	Wetland deposition	Wetland deposition	Wetland deposition	+0.02	+25.93	+31.75	+2.35	+1.16
BB	61	Soil creep	Sheet wash	Sheet wash	-0.04	-36.17	-62.27	-3.22	-2.27
BC	46	Soil creep	Sheet wash	Sheet wash	-1.15	+5.46	-44.36	-0.62	-3.60
BD	38	Wetland deposition	Wetland deposition	Wetland deposition	+4.67	+7.45	+554.62	+7.45	+33.03
BE	8.5	Soil creep	Sheet wash	Soil creep	-0.07	-0.07	-6.02	-0.07	-0.26
BF	88	Stream erosion Sheet wash Landsliding	Sheet wash	Sheet wash	-9.51	-9.51	-556.28	-9.51	-35.19
BG	12	Stream erosion	Stream erosion	Stream erosion	-5.17	-5.65	-5.65	-5.65	-5.65
BH	2.9	Soil creep	Sheet wash	Sheet wash	-<0.01	-<0.01	-2.95	-<0.01	-0.10
BI	7.9	Soil creep	Sheet wash	Sheet wash	+0.01	-0.01	-1.03	-0.01	-0.03
BJ	103	Soil creep	Sheet wash	Sheet wash	+0.35	+0.21	-102.01	+0.21	-3.29
BK	5.3	Wetland deposition	Wetland deposition	Wetland deposition	+2.08	+1.75	+57.68	+1.75	+4.47
BL	2.7	Wetland deposition Stream erosion	Wetland deposition Stream erosion	Wetland deposition Stream erosion	+1.59	+1.68	+25.83	+1.68	+2.84
BM	13	Mass wasting Soil creep	Sheet wash	Sheet wash	-0.23	-0.23	-36.77	-0.23	-1.91
BN	15	Soil creep	Sheet wash	Soil creep	-1.40	-1.30	+0.59	-1.30	-1.20
BO	2.3	Stream erosion	Stream erosion	Stream erosion	-0.17	-0.19	-0.19	-0.19	-0.19
BP	15	Stream erosion Soil creep	Stream erosion	Stream erosion	-1.20	-0.93	+18.79	-0.93	-0.15

Notes appear on page 6 of 6.

TABLE 8 (Page 4 of 6)

Geomorphic Subarea	Area (acres)	Dominant Processes[3]			Estimated Net Sediment Flux (tons/year)				
						During Construction[4]		After Construction	
		Existing	During Construction	After Construction	Existing	Alt. 1	Alt. 2	Alt. 1	Alt. 2
BQ	11	Soil creep	Sheet wash	Soil creep	-0.21	-0.21	-20.10	-0.21	-1.17
BR	44	Soil creep	Sheet wash	Sheet wash	-1.78	-1.78	-157.45	-1.78	-9.55
BS	13	Soil creep	Sheet wash	Sheet wash	+0.18	+0.18	-8.47	+0.18	-0.22
BT	27	Soil creep Rill erosion	Sheet wash	Sheet wash	+0.98	+0.98	+61.33	+0.98	+4.03
BU	17	Soil creep	Sheet wash	Sheet wash	-0.27	-0.27	-46.66	-0.27	-2.45
BV	9.9	Soil creep	Sheet wash	Sheet wash	-0.18	-0.18	-15.38	-0.18	-0.90
BW	4.6	Soil creep	Sheet wash	Soil creep	-0.47	-0.47	-4.41	-0.47	-0.65
BX	27	Soil creep	Sheet wash	Soil creep Sheet wash	-0.28	-0.28	-28.71	-0.28	-1.65
BY	33	Stream erosion Wetland deposition	Wetland deposition Sheet wash Stream erosion	Wetland deposition Sheet wash Stream erosion	+6.01	+23.20	+171.39	+6.98	+13.74
BZ	3.1	Soil creep	Sheet wash	Sheet wash	-0.07	-0.07	-12.73	-0.07	-0.65
CA	21	Soil creep Mass wasting	Sheet wash	Sheet wash	-1.82	-9.94	-13.13	-2.83	-2.56
CB	20	Alluvial fan deposition	Alluvial fan deposition	Alluvial fan deposition	+8.93	+9.37	+80.14	+9.37	+12.70
CC	0.32	Soil creep	Soil creep	Soil creep	-<0.01	-<0.01	-<0.01	-<0.01	-<0.01
CD	0.36	Soil creep	Sheet wash	Sheet wash	-<0.01	-<0.01	-0.36	-<0.01	-0.02
CE	0.56	Soil creep	Soil creep	Soil creep	-<0.01	-<0.01	-<0.01	-<0.01	-<0.01
CF	2.6	Stream erosion Soil creep	Stream erosion	Stream erosion	-2.42	-2.42	-1.99	-2.42	-2.40
CG	23	Soil creep	Sheet wash	Sheet wash	+0.58	+16.01	-3.55	+1.22	+1.28
CJ	8.2	Soil creep	Sheet wash	Sheet wash	-0.02	-3.72	-5.55	-0.11	-0.17
CK	16	Soil creep	Sheet wash	Sheet wash	-0.29	-40.95	-57.61	-2.03	-3.14
CM	4.6	Mass wasting Wetland deposition	Wetland deposition Sheet wash	Soil creep Wetland deposition	-2.45	+2.59	+17.73	-0.17	+0.51
CN	1.0	Soil creep	Sheet wash	Sheet wash	-0.56	-4.54	+3.90	-0.17	-0.38
CO	4.2	Soil creep	Sheet wash	Sheet wash	-0.40	+1.29	+7.53	-0.36	-0.19

Notes appear on page 6 of 6.

TABLE 8 (Page 5 of 6)

Geomorphic Subarea	Area (acres)	Dominant Processes[3]			Estimated Net Sediment Flux (tons/year)				
						During Construction[4]		After Construction	
		Existing	During Construction	After Construction	Existing	Alt. 1	Alt. 2	Alt. 1	Alt. 2
CP	16	Soil creep	Sheet wash	Sheet wash	-0.01	-2.46	-8.91	-0.07	-0.26
CQ	19	Soil creep Wetland deposition	Wetland deposition Sheet wash	Wetland deposition Sheet wash	+0.17	+15.20	+22.18	+0.78	+1.31
CR	14	Soil creep	Sheet wash	Sheet wash	+0.06	+6.60	+9.28	+0.37	+0.57
CV	6.2	Soil creep	Sheet wash	Soil creep	-0.31	-7.91	-4.44	-0.63	-0.53
CX	2.5	Sheet wash	Sheet wash	Soil creep	+0.13	+3.30	+1.83	+0.25	+0.21
CY	3.6	Soil creep	Sheet wash	Sheet wash	+0.14	+23.53	+24.15	+1.07	+1.32
CZ	4.2	Soil creep Wetland deposition	Wetland deposition Sheet wash	Wetland deposition Soil creep	+0.31	+1.35	+3.08	+0.36	+0.45
DA	1.7	Sheetwash Soil creep	Sheet wash	Sheet wash	-0.16	-0.16	-0.20	-0.16	-0.18
DD	3.9	Soil creep	Sheet wash	Soil creep	+0.46	+1.19	+2.49	+0.48	+0.53
DE	5.6	Wetland deposition	Sheet wash Wetland deposition	Soil creep Wetland deposition	-0.73	+0.18	+2.38	-0.68	-0.52
DF	2.0	Sheetwash Soil creep	Sheet wash	Sheet wash	-0.01	-3.29	-7.59	-0.12	-0.37
DG	18	Soil creep Shallow rilling	Sheet wash	Sheet wash	-0.04	-3.20	-6.17	-0.16	-0.33
DH	10	Soil creep	Sheet wash	Sheet wash	-0.02	-3.58	-3.02	-0.12	-0.12
DI	17	Sheetwash Soil creep	Sheet wash	Sheet wash	-0.64	-12.15	+3.24	-0.66	-0.39
DJ	9.1	Soil creep	Sheet wash	Sheet wash	-<0.01	-4.09	-0.49	-0.12	-0.02
DK	19	Wetland deposition Soil creep	Wetland deposition Sheet wash	Wetland deposition Sheet wash	+0.02	+23.38	+2.30	+0.93	+0.10
DL	17	Soil creep Sheet wash	Sheet wash	Sheet wash	-0.03	-30.09	-0.03	-1.26	-0.03
DM	9.7	Soil creep	Sheet wash	Sheet wash Soil creep	-0.02	-0.64	-0.02	-0.04	-0.02
DO	6.8	Soil creep	Sheet wash	Soil creep	-0.28	-7.24	-0.29	-0.54	-0.28
DQ	12	Soil creep	Sheet wash	Sheet wash	-<0.01	+1.27	-<0.01	+0.18	-<0.01
DR	46	Soil creep	Sheet wash	Soil creep	-0.91	+7.06	-0.91	-0.66	-0.91

Notes appear on page 6 of 6.

TABLE 8 (Page 6 of 6)

Geomorphic Subarea	Area (acres)	Dominant Processes[3]			Estimated Net Sediment Flux (tons/year)				
						During Construction[4]		After Construction	
		Existing	During Construction	After Construction	Existing	Alt. 1	Alt. 2	Alt. 1	Alt. 2
DS	8.9	Soil creep	Sheet wash	Soil creep	+0.10	+1.44	+0.10	+0.13	+0.10
QE	33	Soil creep	Sheet wash	Soil creep	+0.17	+0.17	+0.17	+0.17	+0.17
QH	22	Soil creep	Sheet wash	Soil creep	-0.79	-4.55	-0.79	-0.88	-0.79
QL	24	Soil creep	Sheet wash	Soil creep	-1.36	+0.15	-0.70	-0.50	-0.69

Notes:

[1]Refer to text for significance of the sediment flux values and guidelines on their interpretation.

[2]To convert tons/year to cubic yards/year, multiply by 0.62.

[3]Refer to text for description of geomorphic processes. Sheet wash includes rilling.

[4]Assumes construction occurs year-round, construction is completed in one year, and erosion control measures are applied in general accordance with King County Surface Water Design Manual.

"-" = net erosion; "+" = net deposition

+ <0.01 = less than 0.01 tons/year of net deposition

- <0.01 = less than 0.01 tons/year of net erosion

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TABLE 9 (Page 1 of 2)
ESTIMATED ANNUAL SEDIMENT YIELD - BASINS (TONS/YEAR)[1,2]

ESTIMATED ANNUAL SEDIMENT YIELD TO OFF-SITE AREAS[3]

Sediment Transport Basin		During Construction[4,5]		After Construction	
	Existing	Alternative 1	Alternative 2	Alternative 1	Alternative 2
North Fork Issaquah Creek	32	120	230	37	43
East Fork Issaquah Creek	44	130	580	51	72
Canyon Creek	3.5	4.0	76	3.6	6.7
Total	79	260	890	91	120

ESTIMATED ANNUAL SEDIMENT YIELD TO ON-SITE WETLANDS[6]

Sediment Transport Basin		During Construction[4,5]		After Construction	
	Existing	Alternative 1	Alternative 2	Alternative 1	Alternative 2
North Fork Issaquah Creek[7]	2.8	44	350	5.6	18
East Fork Issaquah Creek[8]	7.2	100	350	11	23
Canyon Creek[9]	18	18	440	18	38
Total	28	160	1,100	35	79

ESTIMATED ANNUAL SEDIMENT YIELD TO DETENTION OR INFILTRATION PONDS

Sediment Transport Basin		During Construction[4,5]		After Construction	
	Existing	Alternative 1	Alternative 2	Alternative 1	Alternative 2
North Fork Issaquah Creek	NA	2,000	1,800	79	69
East Fork Issaquah Creek	NA	1,600	2,300	67	96
Canyon Creek	NA	15	1,300	0.0	51
Total	NA	3,600	5,400	150	220

Notes appear on page 2 of 2.

TABLE 9 (Page 2 of 2)

ESTIMATED ANNUAL TOTAL SEDIMENT YIELD TO OFF-SITE AREAS, ON-SITE WETLANDS AND DETENTION OR INFILTRATION PONDS

Sediment Transport Basin		During Construction[4,5]		After Construction	
	Existing	Alternative 1	Alternative 2	Alternative 1	Alternative 2
North Fork Issaquah Creek	34	2,200	2,400	120	130
East Fork Issaquah Creek	51	1,800	3,300	130	190
Canyon Creek	21	37	1,800	21	96
Total	110	4,000	7,400	270	420

Note:

[1]Refer to text for significance of the sediment yield values and guidelines on their interpretation. All values, including totals, have been rounded to two significant figures from the calculated value.

[2]To convert tons/year to cubic yards/year, multiply by 0.62.

[3]Sediment yield to off-site areas is the annual amount of sediment transported across site boundaries by all geomorphic processes.

[4]Assumes construction occurs year-round, construction is completed in one year, and erosion control measures are applied in general accordance with the King County Surface Water Design Manual.

[5]Phasing of construction over several years will result in lower annual sediment yield but roughly similar total yield. Construction over multiple years will result in lower annual sediment yield but greater total yield.

[6]Sediment yield to on-site wetlands consists of the net annual amount of sediment deposited in wetland subareas.

[7]Subareas A, K, U, X, BA, BD.

[8]Subareas U, AH, AN, BY.

[9]Subareas BD, BK, BL, CB.

TABLE 10 (Page 1 of 2)
ESTIMATED MITIGATED SEDIMENT YIELD - BASINS (TONS/YEAR)[1,2]

ESTIMATED MITIGATED SEDIMENT YIELD TO OFF-SITE AREAS[3]

Sediment Transport Basin		During Construction[4,5]		After Construction	
	Existing	Alternative 1	Alternative 2	Alternative 1	Alternative 2
North Fork Issaquah Creek	32	50	71	37	43
East Fork Issaquah Creek	44	61	150	51	72
Canyon Creek	3.5	3.7	18	3.6	6.7
Total	79	110	240	91	120

ESTIMATED MITIGATED SEDIMENT YIELD TO ON-SITE WETLANDS[6]

Sediment Transport Basin		During Construction[4,5]		After Construction	
	Existing	Alternative 1	Alternative 2	Alternative 1	Alternative 2
North Fork Issaquah Creek[7]	2.8	11	73	5.6	18
East Fork Issaquah Creek[8]	7.2	25	76	11	23
Canyon Creek[9]	18	18	100	18	38
Total	28	54	250	35	79

ESTIMATED MITIGATED SEDIMENT YIELD TO DETENTION OR INFILTRATION PONDS

Sediment Transport Basin		During Construction[4,5]		After Construction	
	Existing	Alternative 1	Alternative 2	Alternative 1	Alternative 2
North Fork Issaquah Creek	NA	400	360	79	69
East Fork Issaquah Creek	NA	320	470	67	96
Canyon Creek	NA	2.9	250	0	51
Total	NA	720	1,100	150	220

Notes appear on page 2 of 2.

TABLE 10 (Page 2 of 2)

ESTIMATED MITIGATED TOTAL SEDIMENT YIELD TO OFF-SITE AREAS, ON-SITE WETLANDS AND DETENTION OR INFILTRATION PONDS

Sediment Transport Basin		During Construction[4,5]		After Construction	
	Existing	Alternative 1	Alternative 2	Alternative 1	Alternative 2
North Fork Issaquah Creek	34	460	510	120	130
East Fork Issaquah Creek	51	410	700	130	190
Canyon Creek	21	24	370	21	96
Total	110	890	1,600	270	420

Note:

[1]Refer to text for significance of the sediment yield values and guidelines on their interpretation. All values, including totals, have been rounded to two significant figures from the calculated value.

[2]To convert tons/year to cubic yards/year, multiply by 0.62.

[3]Sediment yield to off-site areas is the annual amount of sediment transported across site boundaries by all geomorphic processes.

[4]Assumes construction occurs during dry weather, construction is completed in one year, and erosion control measures are applied in general accordance with the King County Surface Water Design Manual.

[5]Phasing of construction over several years will result in lower annual sediment yield but roughly similar total yield. Construction over multiple years will result in lower annual sediment yield but greater total yield.

[6]Sediment yield to on-site wetlands consists of the net annual amount of sediment deposited in wetland subareas.

[7]Subareas A, K, U, X, BA, BD.

[8]Subareas U, AH, AN, BY.

[9]Subareas BD, BK, BL, CB.

Note: for MW-1 → MW-8 cannot tell if HSA or Air so please add comment in layers for these logs.

APPENDIX A

FIELD EXPLORATION METHODOLOGY

EXPLORATION PROGRAM

Power Borings

Eight monitoring wells (MW-1 through MW-8) were installed at the site in soil borings drilled between September 24 and October 28, 1992. The borings were drilled to depths ranging from 24 to 51 feet below ground surface using 4-inch-diameter hollow-stem auger drilling equipment or 6-inch-diameter Odex air-rotary drilling equipment owned and operated by Holt Testing, Inc. Five additional monitoring wells, MW-9(S), MW-9(D), MW-10A, MW-10B(S), MW-10B(D), were installed in two soil borings between August 15 and October 4, 1994. The borings were drilled to depths ranging from 320 to 602 feet below ground surface using air rotary drilling equipment owned and operated by Dahlman Pump & Well Drilling. The locations of the monitoring wells are shown on Plate 1.

A geologist from our staff examined and classified the soils encountered and prepared a log of each boring. Soils encountered were classified visually in general accordance with ASTM D-2488-90, which is described in Figure A-1. An explanation of the boring log symbols is presented in Figure A-2. The boring logs are shown in Figures A-3 through A-13.

Soil samples were collected from each boring at approximately every 5 feet starting at 2.5 feet by using Dames & Moore 2.4-inch ID (inside diameter) split-barrel samplers lined with brass rings or by collecting grab samples directly from cuttings. The samplers were driven 18 inches by 300-pound down-hole hammers falling a vertical distance of approximately 30 inches. The number of blows needed to advance the sampler the final 12 inches was recorded and indicated adjacent to the corresponding sample notations on the boring logs.

Hand Borings

Twenty-one piezometers [GPA-(1 through 4), GPB-(1 through 4), GPC-(1 through 4), GPD-(1 through 5) and GPE-(1 through 4)] were installed on the site in hand-borings excavated between September 29 and November 3, 1992. The borings were excavated by GeoEngineers personnel to depths ranging from 2.8 to 10.5 feet below ground surface using hand augers and other hand equipment. In general, the borings were excavated to about 1 foot below the depth at which ground water was encountered. Grab samples of representative soil horizons were collected from the borings. The hand boring logs are presented in Figures A-14 through A-21.

Test Pits

Twenty-nine test pits were excavated by Karla Kay Construction between November 11 and November 18, 1994 using a track-mounted backhoe. The test pits were excavated to depths ranging from 3 to 20 feet below the ground surface. The explorations were backfilled with the excavated material upon completion. The approximate locations of the test pits are shown on Plate 1.

An engineering geologist from our staff examined and classified the soils encountered, obtained representative soil samples, and prepared a log of each boring. Soils encountered were classified visually in general accordance with ASTM D-2488-90, which is described in Figure A-1. Detailed test pit logs are presented in Figure A-22 through A-71.

MONITORING WELL CONSTRUCTION

Two-inch-diameter PVC (polyvinyl chloride) well casing was installed in each of the power borings for MW-1 through MW-8 at the completion of drilling. The lower portion of the well casing is slotted to allow entry of water into the well casings. Washed sand was placed in the borehole annulus surrounding the slotted portion of each well casing. The wells were completed below-grade in accordance with state of Washington well construction regulations (WAC 173-160). The well casings are protected within lockable flush-grade monuments. Well construction logs were constructed for each monitoring well.

The monitoring well screens were developed by removing at least five well volumes of water from each well with a stainless steel bailer.

Monitoring wells MW-10A and MW-10B were completed with a 6-inch-diameter steel casing that extends to the bottom of the boring. MW-9 was completed with an 8-inch-diameter steel casing from 2.41 feet above the ground surface to 277 feet below the ground surface and a 6-inch-diameter steel casing that extends from 277 to 602 feet below the ground surface. The steel casing is perforated at selected locations to allow water to enter the casing. Two PVC well casings were installed inside the steel casings for MW-9 and MW-10B. A 1.25-inch-diameter PVC casing was installed in the upper, or shallow, ground water zone for MW-9(S) and MW-10B(S) and a 2-inch-diameter PVC casing was installed in the lower, or deep, ground water zone for MW-9 (D) and MW-10B(D). A single, 2-inch-diameter PVC well casing was installed inside the steel casing for MW-10A.

A 10-foot to 20-foot portion of each PVC well casing is slotted to allow ground water to enter the well casing. Medium sand was placed in the steel casing annulus surrounding the slotted portion of each well. The wells were completed below grade in accordance with state of Washington well construction regulations (WAC 173-160). The well casings are protected within lockable above-grade monuments surrounded by protective steel posts. Well construction details are included on the well logs.

The monitoring well screens were developed by Ramlo Well Drilling using SMEAL well development equipment. At least five well volumes of water were removed from each well in MW-9, MW-10A and MW-10B.

2.5 + x + 1.5 =

PIEZOMETER CONSTRUCTION

Depth?

Piezometers were installed in each of the hand borings at the completion of excavation. Nineteen of the piezometers consist of a 3.5-inch-diameter Pre-Pac filter pack 2.5 feet long, capped at the bottom and topped by 2-inch-diameter PVC riser extending to approximately 1.5 feet above the ground surface. The filter packs for these piezometers consist of 2.0-inch ID PVC screen and 3.5-inch OD (outside diameter) PVC screen with washed sand filling the enclosed annular space. The remaining two piezometers, GPA-4 and GPB-4, were installed within wetland boundaries and are approximately 3 feet deep and consist of 4-foot lengths of 2-inch-diameter PVC with slots cut in the lower 1 foot. The annular space surrounding these piezometers was backfilled with native soil to within 2 feet of the ground surface. A bentonite seal extending from the native soil backfill to the surface prevents surface water infiltration into the well. Locking thermos-type caps were placed on the PVC casings.

Piezometers were installed in test pits TP-1, TP-10, TP-11, TP-12, TP-14, TP-15, TP-16, TP-17, TP-18, TP-19, TP-21, TP-26, TP-28 and TP-29 and were assigned a number corresponding to the test pit number. The piezometers were completed at depths ranging between 1.5 and 19.5 feet below ground surface. The piezometers were constructed of Schedule 40 PVC casing, with the lower 5 or 10 feet of casing slotted to allow entry of water into the well casings.

Each piezometer casing was installed within a temporary 6-inch-diameter PVC casing placed in the test pit excavations. The temporary casing was used to prevent collapse of the test pit walls around the piezometers before placement of a filter pack. A medium-grained silica sand filter pack was placed in the annulus between the slotted portion of the piezometer casing and the temporary casing. Bentonite chips were placed above the filter pack. The temporary casing was withdrawn in stages as the filter pack and bentonite were placed. Locking thermos-type caps were installed on each piezometer.

GROUND WATER ELEVATIONS

The depth to ground water was measured in each monitoring wells MW-1 through MW-8 between October 1992 and October 1993 and in piezometer groups GPA through GPE between November 1992 and October 1993. Surveyed elevations of the casing rims for each monitoring well were supplied to us by David Evans and Associates. A representative from GeoEngineers measured the depth to the ground water table relative to the monitoring well casing rim during each monitoring episode. Measurements were made using an electric water level sounder. Ground water elevations are calculated by subtracting the water table depth from the casing rim elevation. The monitoring results are presented in our draft report, "Baseline Hydrogeologic Studies, Proposed Grand Ridge Project, King County, Washington" dated February 9, 1994.

The depth to ground water in MW-9(S), MW-9(D), MW-10A, MW-10B(S) and piezometers TPP-1 through TPP-29 was measured shortly after the respective dates of installation and monthly between November 1994 and the time of preparation of this report. Procedures used to measure ground water elevations were similar to those used on other wells and piezometers on site except that the casing rim elevations were not surveyed.

Continuous data recorders were installed in MW-9(S), MW-9(D), MW-10A, MW-10B(S), and MW-10B(D) in February 1995 that record the water level elevation every 30 minutes.

LABORATORY TESTING

All soil samples obtained from the power borings, hand borings and test pits were sealed and returned to our laboratory for further examination and testing. Selected samples from the 1994 power borings and test pits were tested to determine their grain-size distribution using a sieve analysis in accordance with ASTM C136-84a. Gradation curves for these samples are presented in Figures A-38 through A-56.

METHODOLOGY FOR DETERMINING HYDRAULIC CONDUCTIVITY

We conducted slug-injection and/or baildown tests on monitoring wells MW-1 through MW-8 and MW-10B(S) to estimate hydraulic conductivity. Procedures for the slug and baildown testing followed guidelines set forth in USGS (United States Geological Survey) Water-Supply Paper 1536-I.

Slug testing consisted of injecting a known volume of water instantaneously into the well bore. Baildown testing consisted of removing a known volume of water instantaneously from the well bore. The ground water elevation in the well was measured with an electric water level sounder before the injection or removal of ground water to establish equilibrium conditions. The ground water elevations were measured after the water was injected or removed. Initially, measurements were taken every 15 seconds while the ground water elevation rapidly approached equilibrium. Measurement frequency decreased as the ground water elevation reached equilibrium. Hydraulic conductivity was calculated using the Bouwer and Rice method for slug tests in unconfined aquifers. The equations used to determine hydraulic conductivity are shown below.

$$K = \frac{(r_c)^2 \ln(Re/r_w)}{2L} \frac{1}{t} \ln \frac{Yo}{Yt}$$

$$\ln Re/r_w = \frac{1.1}{\ln(H/r_w)} + \frac{A+B \ln[(D-H)r_w]}{L/r_w}$$

Where	K	=	aquifer transmissibility
	r_c	=	radius of casing
	Re	=	effective radius (calculated)
	L	=	length of screened section
	r_w	=	radius of well
	H	=	distance from water table to bottom of screened section
	D	=	saturated thickness
	t	=	time of water level measurement
	Yo	=	initial drawdown
	Yt	=	vertical distance between water level at time t and equilibrium
	A and B	=	dimensionless coefficients that are a function of L/r_w (taken from Figure 3 in Bouwer and Rice, 1989)

REFERENCES

Bouwer, H., 1989, "The Bouwer and Rice Slug Test Method-An Update," Ground Water, Volume 27, No.3.

Bentall, Ray, 1963, "Methods of Determining Permeability, Survey Transmissibility and Drawdown," U.S. Geological Survey Water Supply Paper 1536-I.

SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE GRAINED SOILS More Than 50% Retained on No. 200 Sieve	GRAVEL More Than 50% of Coarse Fraction Retained on No. 4 Sieve	CLEAN GRAVEL	GW	WELL-GRADED GRAVEL, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND More Than 50% of Coarse Fraction Passes No. 4 Sieve	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY-GRADED SAND
		SAND WITH FINES	SM	SILTY SAND
			SC	CLAYEY SAND
FINE GRAINED SOILS More Than 50% Passes No. 200 Sieve	SILT AND CLAY Liquid Limit Less Than 50	INORGANIC	ML	SILT
			CL	CLAY
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY Liquid Limit 50 or More	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FAT CLAY
		ORGANIC	OH	ORGANIC CLAY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT

NOTES:

1. Field classification is based on visual examination of soil in general accordance with ASTM D2488-90.
2. Soil classification using laboratory tests is based on ASTM D2487-90.
3. Descriptions of soil density or consistency are based on interpretation of blow count data, visual appearance of soils, and/or test data.

SOIL MOISTURE MODIFIERS:

Dry - Absence of moisture, dusty, dry to the touch

Moist - Damp, but no visible water

Wet - Visible free water or saturated, usually soil is obtained from below water table

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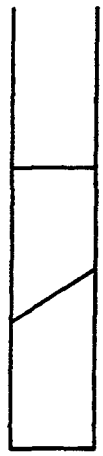
SOIL CLASSIFICATION SYSTEM

FIGURE A-1

LABORATORY TESTS:

AL	Atterberg limits
CP	Compaction
CS	Consolidation
DS	Direct shear
GS	Grain-size
%F	Percent fines
HA	Hydrometer analysis
SK	Permeability
SM	Moisture content
MD	Moisture and density
SP	Swelling pressure
TX	Triaxial compression
UC	Unconfined compression
CA	Chemical analysis

SOIL GRAPH:



SM Soil Group Symbol (See Note 2)

Distinct Contact Between Soil Strata

Gradual or Approximate Location of Change Between Soil Strata

Water Level

Bottom of Boring

BLOW COUNT/SAMPLE DATA:

Blows required to drive a 2.4-inch I.D. split-barrel sampler 12 inches or other indicated distances using a 300-pound hammer falling 30 inches.

- 22 ■ Location of relatively undisturbed sample
- 12 ⊠ Location of disturbed sample
- 17 □ Location of sampling attempt with no recovery

Blows required to drive a 1.5-inch I.D. (SPT) split-barrel sampler 12 inches or other indicated distances using a 140-pound hammer falling 30 inches.

- 10 ◨ Location of sample obtained in general accordance with Standard Penetration Test (ASTM D 1586) procedures
- 26 ⊡ Location of SPT sampling attempt with no recovery

Location of grab sample

"P" indicates sampler pushed with weight of hammer or against weight of drill rig.

NOTES:

1. The reader must refer to the discussion in the report text, the Key to Boring Log Symbols and the exploration logs for a proper understanding of subsurface conditions.
2. Soil classification system is summarized in Figure A-1.

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KEY TO BORING LOG SYMBOLS

FIGURE A-2

LOG OF HAND BORING

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		HAND BORING GPA-1
0.0 - 0.5		Brown forest duff
0.5 - 2.0	SM	Brown silty fine sand with occasional fine gravel and organics (loose, moist)
2.0 - 3.0	SM	Brown silty fine to medium sand with gravel (medium dense, moist)
3.0 - 3.5	GM	Brown silty fine gravel with sand (medium dense, wet)
3.5 - 4.5	GP-GM	Brown fine to coarse gravel with silt and sand (dense, wet)
		Hand boring completed at 4.5 feet on 07/29/92
		Moderate ground water seepage encountered at 3.0 feet
		Severe caving observed below 3.5 feet
		Disturbed soil sample obtained at 4.0 feet
		HAND BORING GPA-2
0.0 - 0.5		Brown forest duff
0.5 - 2.5	SM	Brown silty fine to medium sand, gravel, cobbles and roots (medium dense, moist)
2.5 - 4.0	SP-SM	Light brown fine to medium sand with silt, gravel and occasional cobbles (dense, moist)
4.0 - 7.0	SM	Light brown silty fine to coarse sand with gravel and occasional cobbles (dense, moist)
		Grades to wet at 6.5 feet
		Hand boring completed at 7.0 feet on 10/13/92
		Slight ground water seepage encountered at 6.5 feet
		Disturbed soil sample obtained at 4.0 feet

All Hand Borings GPA-1 → PGPE-4 Have piezometers installed

THE [illegible] BORING LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE HAND BORING AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

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LOG OF HAND BORING

FIGURE A-14

LOG OF HAND BORING

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		HAND BORING GPA-3
0.0 - 0.5		Brown forest duff
0.5 - 2.0	SM	Brown silty fine to medium sand with occasional gravel, cobbles, boulders and roots (medium dense, moist)
2.0 - 5.0	SP-SM	Brown fine to medium sand with silt, gravel and occasional cobbles (dense, moist)
5.0 - 6.5	SM	Brown silty fine to medium sand with gravel and occasional cobbles (dense, moist)
		Grades to wet at 6.5 feet
		Hand boring completed at 6.5 feet on 10/13/92
		Slight ground water seepage encountered at 6.5 feet
		HAND BORING GPA-4
0.0 - 0.5	OL	Black silt with occasional medium sand and gravel (soft, moist)
0.5 - 3.0	ML	Brown silt with occasional sand and gravel (soft, wet)
		Hand boring completed at 3.0 feet on 11/03/92
		Moderate ground water seepage encountered at 3.0 feet
		HAND BORING GPB-1
0.0 - 1.0	OL	Black organic silt with occasional fine sand (soft, moist)
1.0 - 2.0	ML	Dark grayish brown silt with organic matter (soft, moist)
2.0 - 2.5	SM	Grayish brown silty fine sand (medium dense, moist)
2.5 - 3.0	ML	Grayish brown silt with fine sand (stiff, moist)
3.0 - 4.0	SM	Grayish brown silty fine to medium sand (medium dense, moist)
4.0 - 5.5	GM	Brown silty fine gravel with sand (dense, wet)
5.5 - 6.0	SP-SM	Brown fine to medium sand with silt and fine gravel (dense, wet)
		Hand boring completed at 6.0 feet on 10/15/92
		Moderate ground water seepage encountered at 4.0 feet

THE DEPTHS ON THE HAND BORING LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE HAND BORING AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF HAND BORING

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		HAND BORING GPB-2
0.0 - 0.5		Brown forest duff
0.5 - 2.0	ML	Brown silt with a trace of sand (stiff, moist)
2.0 - 5.0	SW-SM	Brown fine to coarse sand with silt and occasional gravel (medium dense, moist)
5.0 - 6.5	GP-GM	Brown fine to coarse gravel with silt and sand (dense, moist)
		Grades to wet at 6.0 feet
		Hand boring completed at 6.5 feet on 10/16/92
		Slight ground water seepage encountered at 6.0 feet
		Finish
0.0 - 0.5		
0.5 - 3.0	ML	[illegible], moist)
3.0 - 3.5	SM	[illegible]vel (medium dense, moist)
3.5 - 4.0	ML	
4.0 - 7.0	GP-GM	Brown fine to coarse gravel with silt and sand (medium dense, moist)
		Grades to wet at 6.5 feet
		Hand boring completed at 7.0 feet on 10/16/92
		Moderate ground water seepage encountered at 6.5 feet
		HAND BORING GPB-4
0.0 - 1.5	PT	Dark brown peat (very soft, wet)
1.5 - 3.5	CL	Gray to greenish gray clay with occasional sand and wood fragments (medium stiff, wet)
		Hand boring completed at 3.5 feet on 11/17/92

THE DEPTHS ON THE HAND BORING LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE HAND BORING AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF HAND BORING

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		HAND BORING GPC-1
0.0 - 0.5	OL	Dark brown organic silt with roots (soft, moist)
0.5 - 1.0	SM	Dark brown silty fine sand with organics and roots (medium dense, moist)
1.0 - 4.5	SP-SM	Brown fine to medium sand with silt and gravel (medium dense, moist)
4.5 - 10.0	SP/SW	Light brown fine to coarse sand with fine gravel (medium dense, moist)
		Grades to wet at 9.0 feet
		Hand boring completed at 10.0 feet on 10/23/92
		Moderate ground water seepage encountered at 9.0 feet
		HAND BORING GPC-2
0.0 - 0.5	OL	Very dark brown organic silt with roots (soft, moist)
0.5 - 1.5	SM	Dark brown silty fine to medium sand with occasional fine gravel (loose, moist)
1.5 - 4.5	SP-SM	Brown fine to medium sand with silt and occasional fine gravel (medium dense, moist)
4.5 - 5.0	SM	Tan and orange mottled silty fine to medium sand with occasional fine gravel (medium dense, moist)
5.0 - 6.0	ML	Tan and orange mottled silt with occasional fine sand (stiff, moist)
6.0 - 9.0	SP	Tan fine to medium sand with a trace of silt and occasional fine gravel (medium dense, moist)
9.0 - 9.5	ML	Tan silt with fine sand (medium stiff, moist)
9.5 - 10.5	SP	Tan medium to coarse sand with occasional fine gravel (medium dense moist)
		Grades to wet at 10.0 feet
		Hand boring completed at 10.5 feet on 10/27/92
		Moderate ground water seepage encountered at 10.0 feet

THE DEPTHS ON THE HAND BORING LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE HAND BORING AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF HAND BORING

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		HAND BORING GPC-3
0.0 - 2.0	SM	Brown silty fine to medium sand with fine gravel and occasional cobbles (medium dense, moist)
2.0 - 5.5	SP-SM	Tannish gray fine to medium sand with silt and fine gravel and lenses of silt with sand at 4.5 - 5.5 feet (medium dense, moist)
5.5 - 6.0	ML	Tan silt with sand (stiff, moist)
6.0 - 8.0	SP	Tan fine sand with occasional gravel and a trace of silt (medium dense, moist)
8.0 - 9.5	ML	Brown silt with occasional sand and gravel (stiff, moist)
9.5 - 10.0	SP	Brown fine to medium sand and occasional gravel (medium dense, wet)
		Hand boring completed at 10.0 feet on 10/23/92
		Moderate ground water seepage encountered at 9.5 feet
		HAND BORING GPC-4
0.0 - 0.5	ML/OL	Very dark brown silt with organics (soft, moist)
0.5 - 3.0	ML	Dark brown silt with sand and occasional gravel (stiff, moist)
3.0 - 4.0	SP-SM	Brown fine to medium sand with silt (medium dense, moist)
4.0 - 5.0	ML	Brown silt with sand and occasional gravel (stiff, moist)
5.0 - 9.0	SP	Brown fine to medium sand with fine gravel (medium dense, moist)
		Grades to tan at 6.5 feet
		Grades to wet at 7.5 feet
		Hand boring completed at 9.0 feet on 10/23/92
		Moderate ground water seepage encountered at 7.5 feet
		HAND BORING GPD-1
0.0 - 7.5	SM	Brown silty fine to coarse sand with gravel (medium dense, moist)
		Grades to tan at 2.5 feet
		Grades to wet at 6.5 feet
		Hand boring completed at 7.5 feet on 10/20/92
		Moderate ground water seepage encountered at 6.5 feet

THE DEPTHS ON THE HAND BORING LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE HAND BORING AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF HAND BORING

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		HAND BORING GPD-2
0.0 - 7.5	SM	Brown silty fine to coarse sand with gravel and occasional cobbles (loose, moist)
7.5 - 9.5	SM	Tan silty fine to medium sand (medium dense, moist)
9.5 - 10.0	SW-SM	Tan fine to coarse sand with silt and occasional fine gravel (medium dense, wet)
10.0 - 10.5	SW	Tan fine to coarse sand with gravel (very dense, wet)
		Hand boring completed at 10.5 feet on 10/21/92
		HAND BORING GPD-3
0.0 - 6.0	SM	Brown silty fine to medium sand with gravel (medium dense, moist)
6.0 - 10.5	GP-GM	Brown fine to coarse gravel with silt and sand (medium dense, moist)
		Hand boring completed at 10.5 feet on 10/21/92
		HAND BORING GPD-4
0.0 - 0.5	ML	Black silt with occasional gravel (soft, moist)
0.5 - 2.0	GM	Dark brown silty fine gravel with sand (medium dense, moist)
2.0 - 6.0	GP-GM	Light brown gravel with silt and sand (medium dense, moist)
		Grades to wet at 5.0 feet
		Hand boring completed at 6.0 feet on 11/03/92
		HAND BORING GPD-5
0.0 - 1.5	OL	Black organic silt (stiff, wet)
1.5 - 3.5	GP-GM	Brown fine gravel with silt, sand and occasional coarse gravel (medium dense, wet)
		Hand boring completed at 3.5 feet on 11/17/92

THE DEPTHS ON THE HAND BORING LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE HAND BORING AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF HAND BORING

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		HAND BORING GPE-1
0.0 - 0.5	PT	Brown peat with roots (very soft, moist)
0.5 - 1.5	SM	Tan silty fine to medium sand with occasional gravel and cobbles (medium dense, moist)
1.5 - 5.0	SP-SM	Brown fine to medium sand with silt and occasional gravel (loose, moist)
		Grades to wet at 2.5 feet
		Hand boring completed at 5.0 feet on 10/19/92
		Moderate ground water seepage encountered at 2.5 feet
		HAND BORING GPE-2
0.0 - 0.5	SM	Dark brown silty fine to coarse sand with occasional roots (loose, moist)
0.5 - 4.5	SP-SM	Reddish brown fine sand with silt and occasional gravel and cobbles (loose, moist)
		Grades to tan at 3.0 feet
4.5 - 7.5	ML	Tan mottled silt with sand and occasional gravel and cobbles (stiff, moist)
		Grades to wet at 6.0 feet
		Hand boring completed at 7.5 feet on 10/20/92
		Moderate ground water seepage encountered at 6.0 feet
		HAND BORING GPE-3
0.0 - 0.5	SM	Dark brown silty fine to medium sand with occasional gravel and cobbles, (loose, moist)
0.5 - 4.5	SP-SM	Tan fine to medium sand with silt, gravel and cobbles (medium dense, moist)
		Hand boring completed at 4.5 feet on 10/20/92

THE DEPTHS ON THE HAND BORING LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE HAND BORING AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF HAND BORING

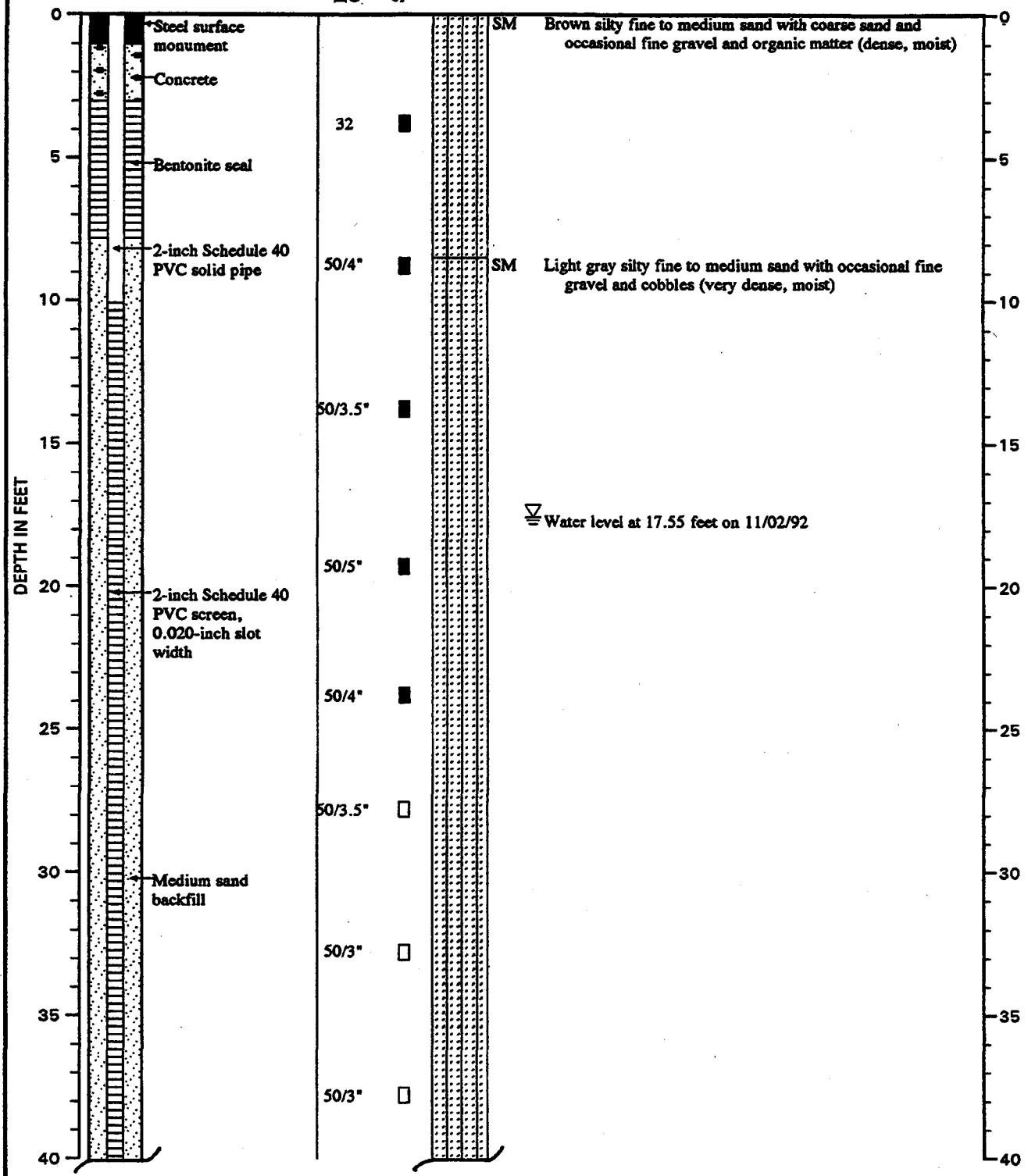
DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		HAND BORING GPE-4
0.0 - 0.5	PT	Black peat and forest duff (soft, moist)
0.5 - 1.0	OL	Very dark brown organic silt (medium stiff, moist)
1.0 - 2.0	CL/CH	Grayish black clay with organic matter and a trace of silt and occasional sand (medium stiff, wet)
2.0 - 3.0	SP	Tan fine to medium sand with occasional organics (medium dense, wet)
3.0 - 3.5	SP-SM	Green fine to medium sand with silt and occasional fine gravel (medium dense, wet) (till)
3.5 - 5.0	SM	Greenish gray silty fine to coarse sand with gravel (medium dense, wet) (till)
		Hand boring completed at 5.0 feet on 10/29/92
		Slight ground water seepage encountered at 1.0 feet

THE DEPTHS ON THE HAND BORING LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE HAND BORING AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

MONITORING WELL NO. MW-1

WELL SCHEMATIC

Casing Elevation (ft.): 629.32
Casing Stickup (ft.):



Note: See Figure A-2 for explanation of symbols

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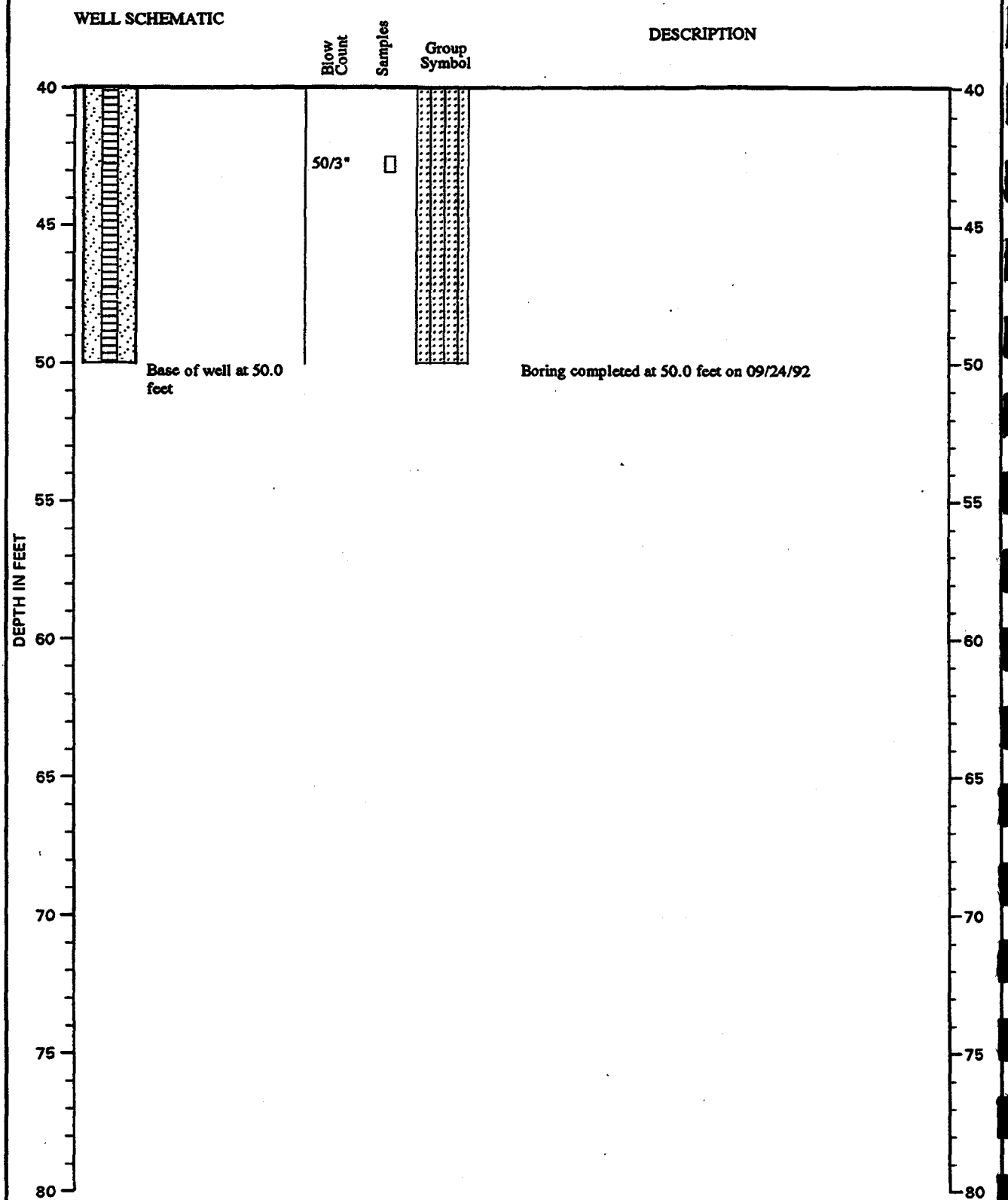
LOG OF MONITORING WELL

FIGURE A-3

:EJN:SAK:CMS 4/12/93

2067-008-R07

MONITORING WELL NO. MW-1
(Continued)



Note: See Figure A-2 for explanation of symbols

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LOG OF MONITORING WELL

FIGURE A-3

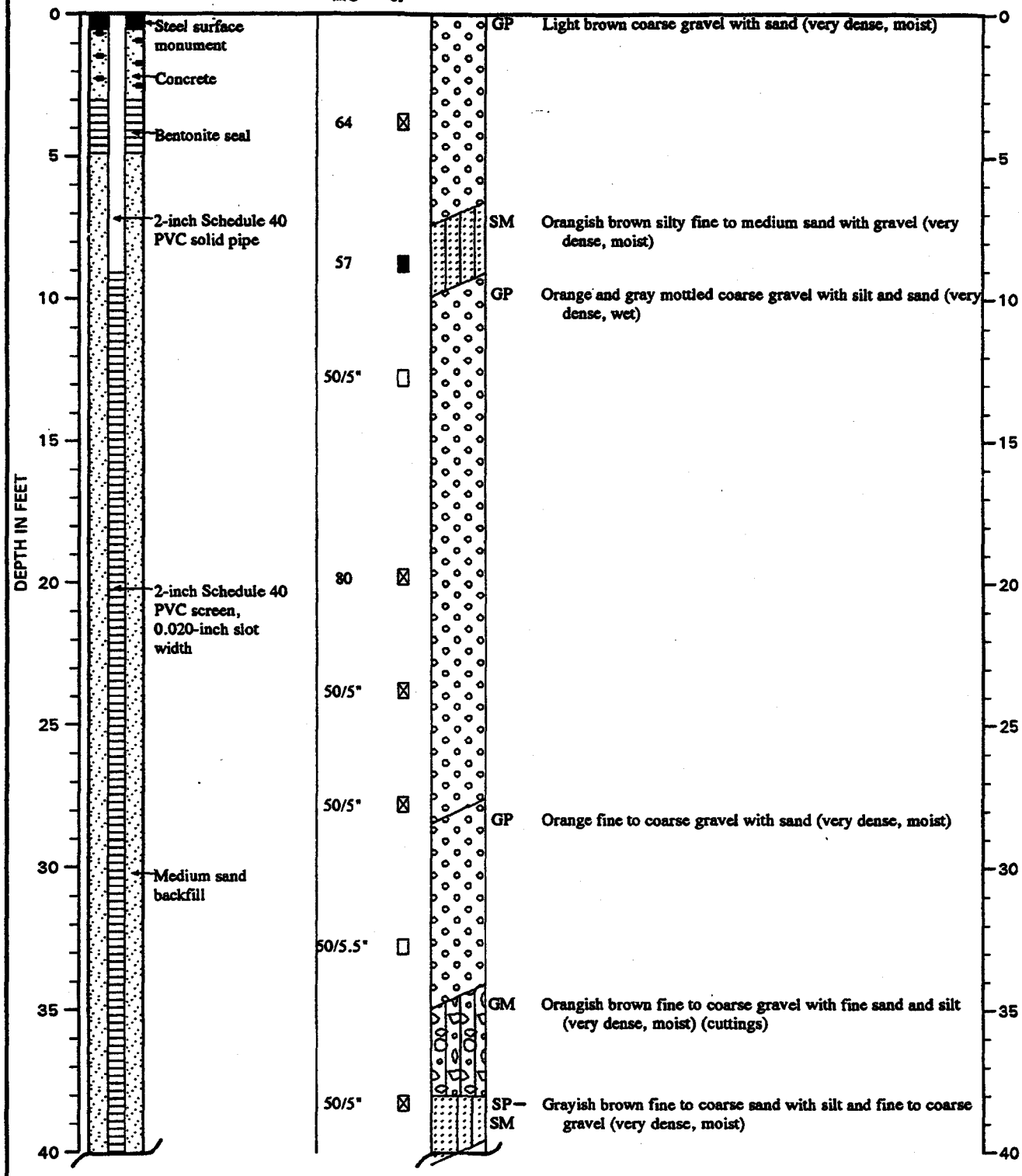
:EJN:SAK:CMS 4/12/93

2067-008-R07

MONITORING WELL NO. MW-2

WELL SCHEMATIC

Casing Elevation (ft.): 711.42
Casing Stickup (ft.):



Note: See Figure A-2 for explanation of symbols

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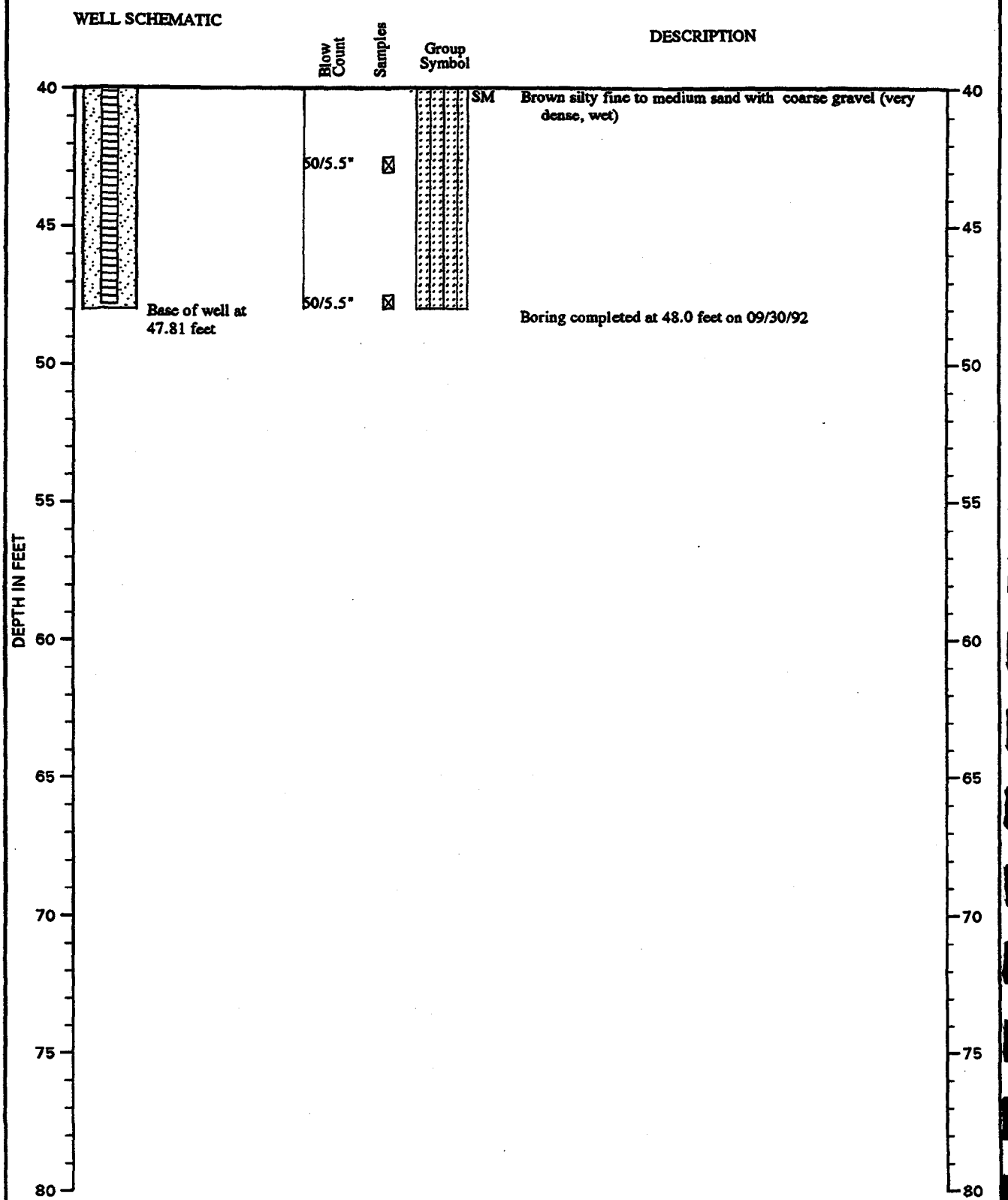
LOG OF MONITORING WELL

FIGURE A-4

2067-008-R07 :EJN:SAK:CMS 4/12/93

MONITORING WELL NO. MW-2
(Continued)



Note: See Figure A-2 for explanation of symbols

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LOG OF MONITORING WELL

FIGURE A-4

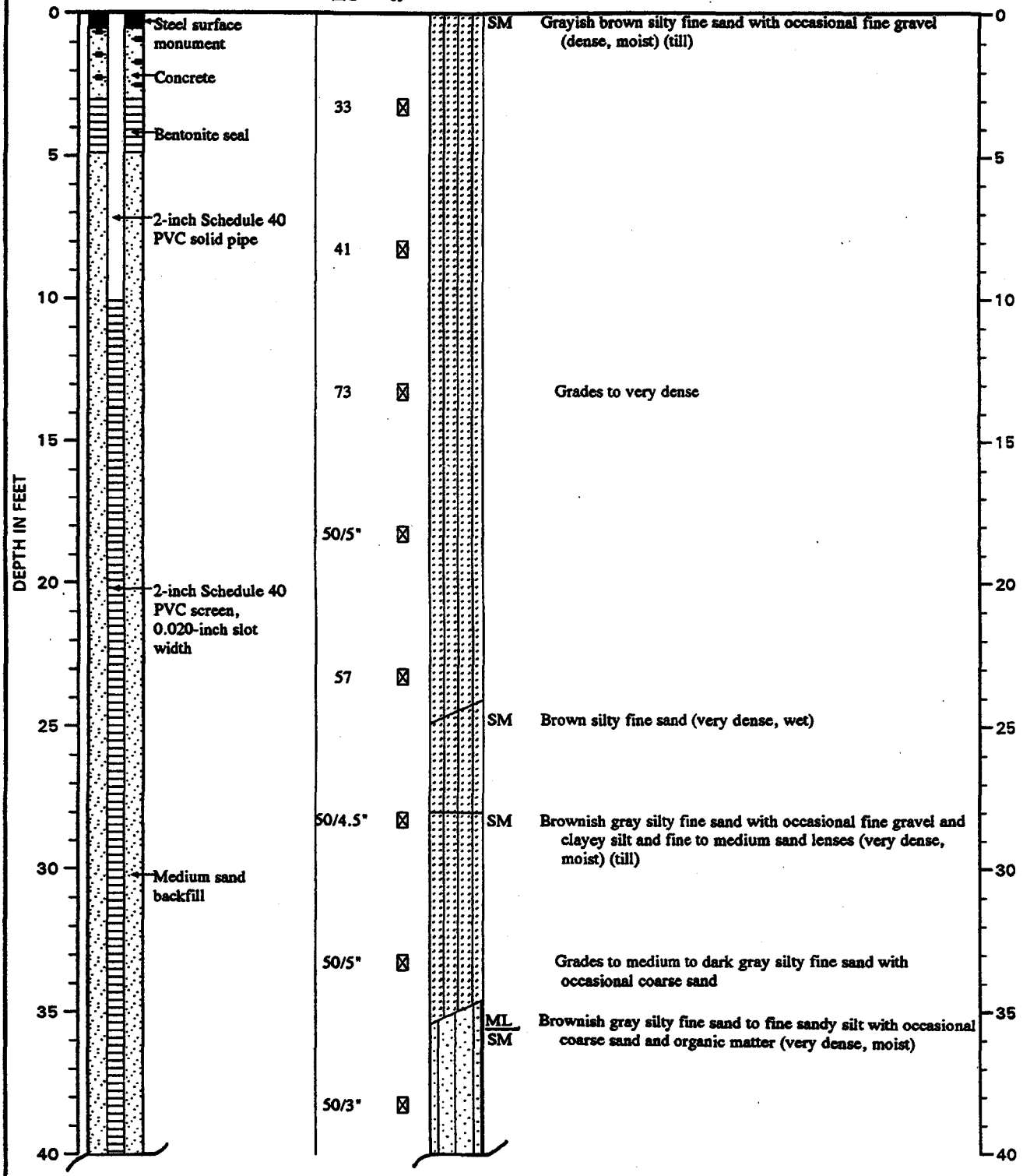
:EJN:SAK:CMS 4/12/93

2067-008-R07

MONITORING WELL NO. MW-3

WELL SCHEMATIC

Casing Elevation (ft.): 951.98
Casing Stickup (ft.):



Note: See Figure A-2 for explanation of symbols

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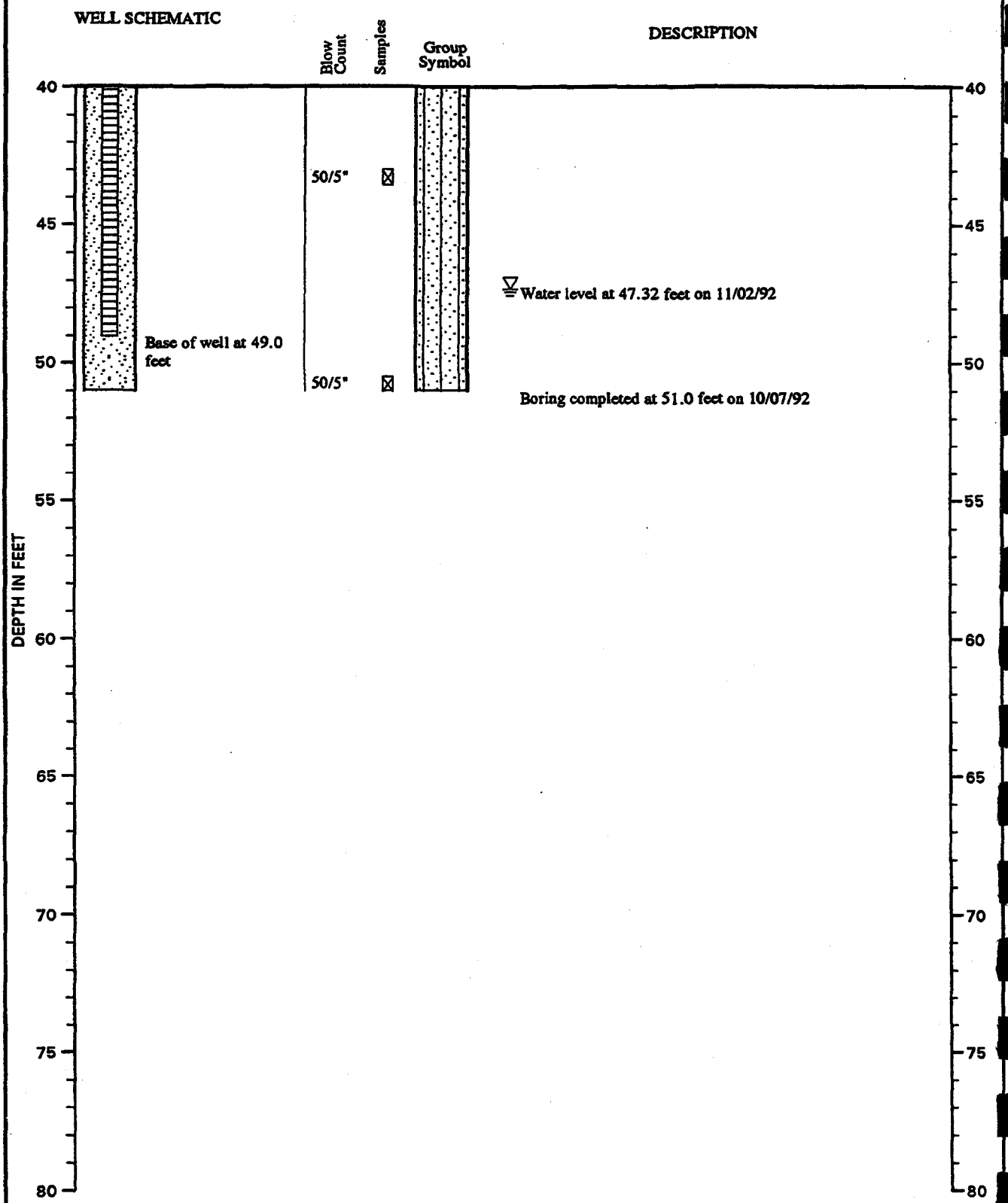
LOG OF MONITORING WELL

FIGURE A-5

:EJN:SAK:CMS 4/12/93

2067-008-R07

MONITORING WELL NO. MW-3
(Continued)



Note: See Figure A-2 for explanation of symbols

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LOG OF MONITORING WELL

FIGURE A-5

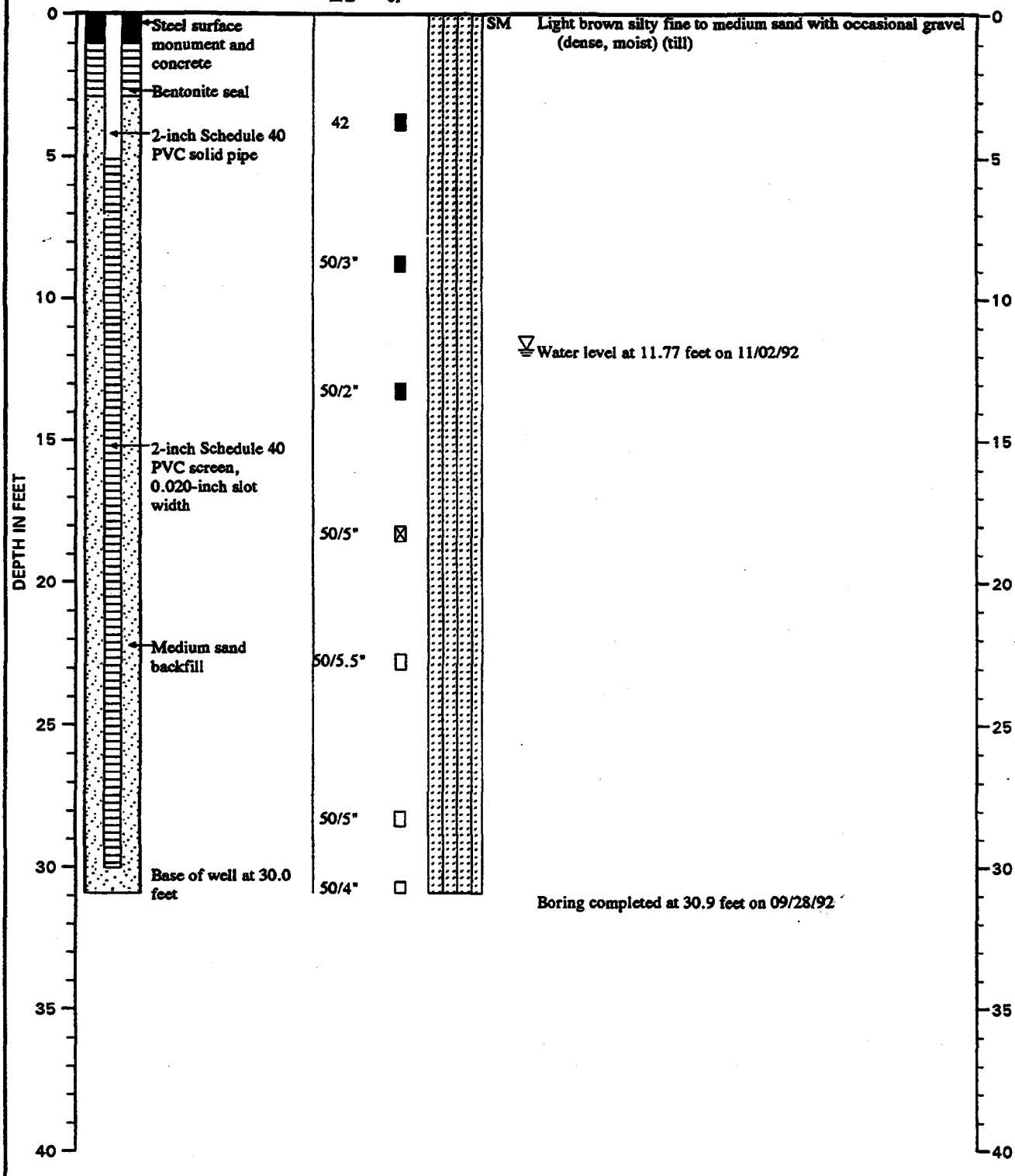
:EJN:SAK:CMS 4/12/93

2067-008-R07

MONITORING WELL NO. MW-4

WELL SCHEMATIC

Casing Elevation (ft.): 806.80
Casing Stickup (ft.):



Note: See Figure A-2 for explanation of symbols

Geo Engineers

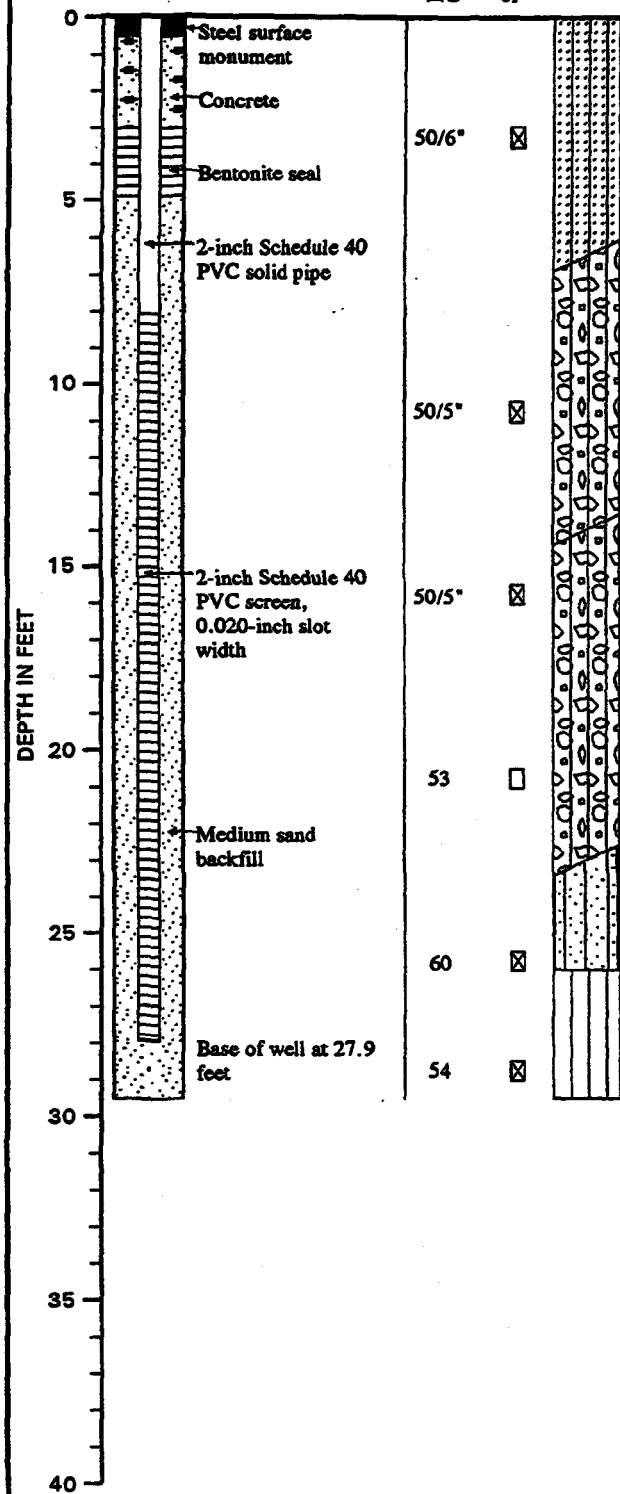
LOG OF MONITORING WELL

FIGURE A-6

MONITORING WELL NO. MW-5

WELL SCHEMATIC

Casing Elevation (ft.): 859.24
Casing Stickup (ft.):



Blow Count	Samples	Group Symbol	DESCRIPTION Surface Elevation (ft.):
50/6"	⊠	SM	Brownish gray silty fine sand with medium to coarse sand and fine to coarse gravel (very dense, moist) (till)
50/5"	⊠	GM	Brownish orange silty fine to coarse gravel with fine to coarse sand with lenses of silty medium to coarse sand (very dense, moist) (till)
			▽ Water level at 12.58 feet on 11/02/92
50/5"	⊠	GM	Becomes more gravelly (very dense, wet) (advance outwash)
53	□		
60	⊠	ML/SM	Gray silt with laminated silty fine sand and occasional fine gravel (very dense, moist)
54	⊠	ML	Dark brown silt to silt with fine sand with occasional organic matter (very dense, moist)
			Boring completed at 29.5 feet on 10/08/92

Note: See Figure A-2 for explanation of symbols

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-7

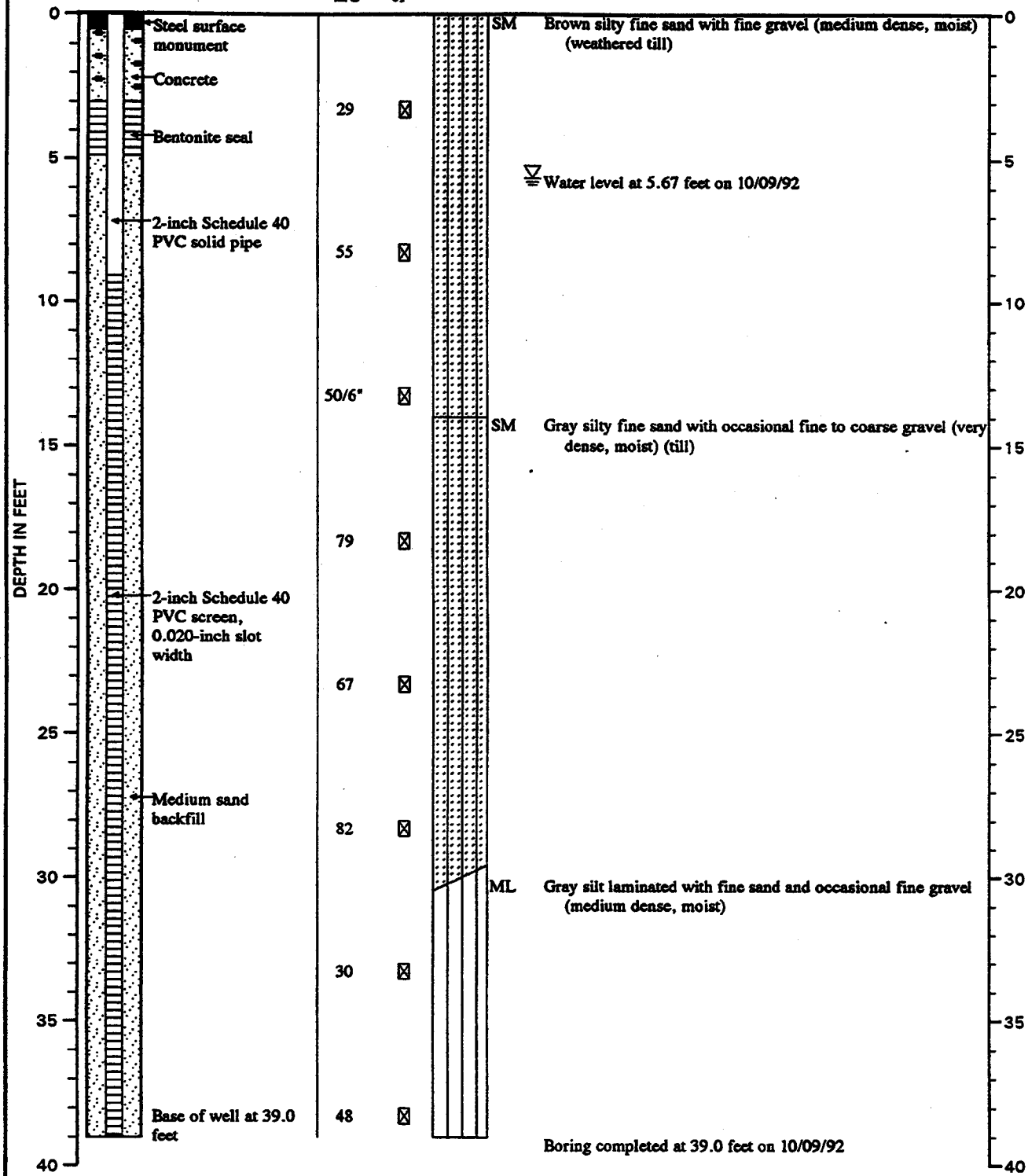
:EJN:SAK:CMS 4/12/93

2087-008-R07

MONITORING WELL NO. MW-6

WELL SCHEMATIC

Casing Elevation (ft.): 361.56
Casing Stickup (ft.):



Note: See Figure A-2 for explanation of symbols

GeoEngineers

LOG OF MONITORING WELL

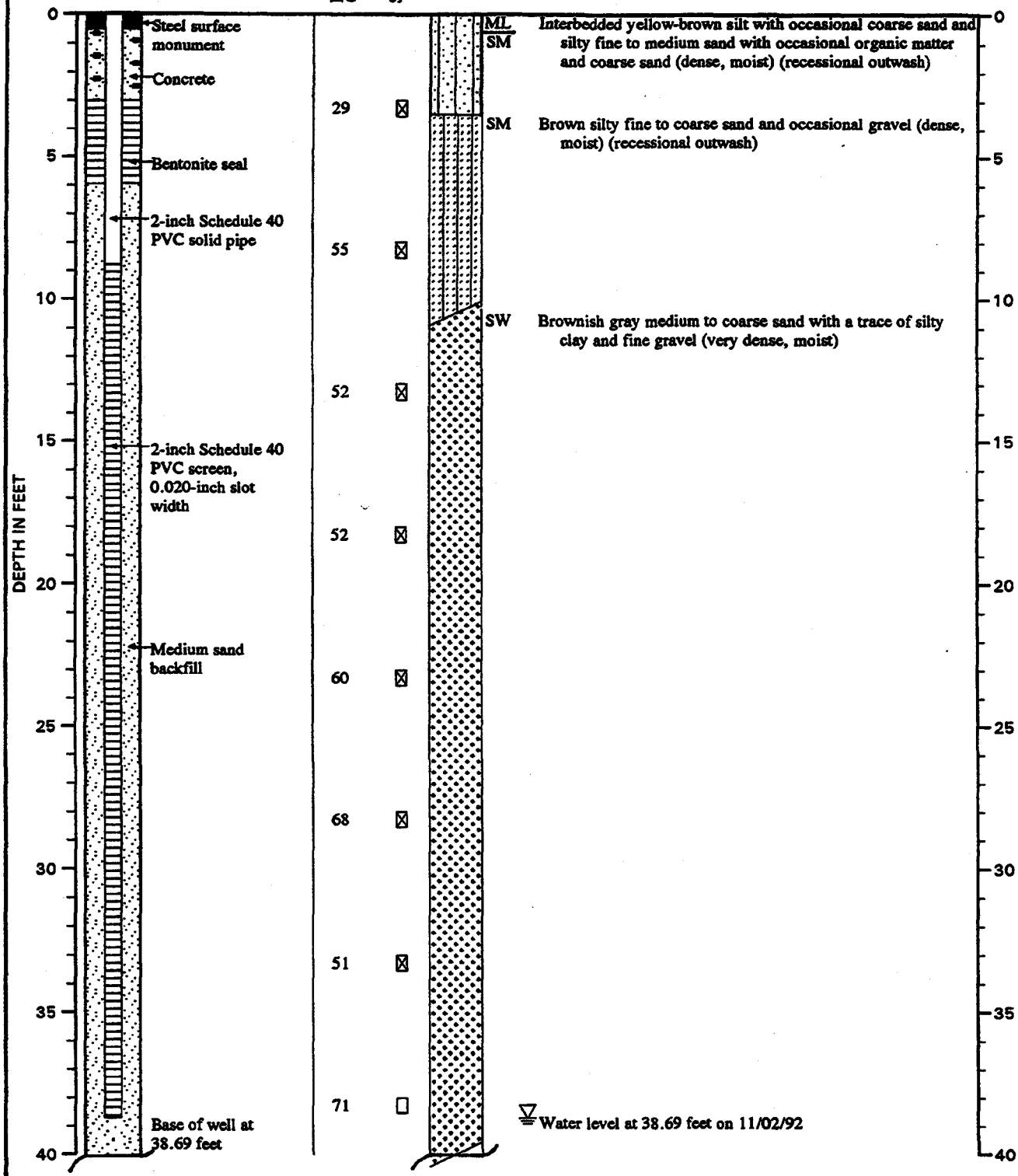
FIGURE A-8

EJN:SAK:CMS 4/12/93
2087-006-R07

MONITORING WELL NO. MW-7

WELL SCHEMATIC

Casing Elevation (ft.): 462.31
Casing Stickup (ft.):



DESCRIPTION

Surface Elevation (ft.):

ML/SM — Interbedded yellow-brown silt with occasional coarse sand and silty fine to medium sand with occasional organic matter and coarse sand (dense, moist) (recessional outwash)

SM — Brown silty fine to coarse sand and occasional gravel (dense, moist) (recessional outwash)

SW — Brownish gray medium to coarse sand with a trace of silty clay and fine gravel (very dense, moist)

Note: See Figure A-2 for explanation of symbols

GeoEngineers

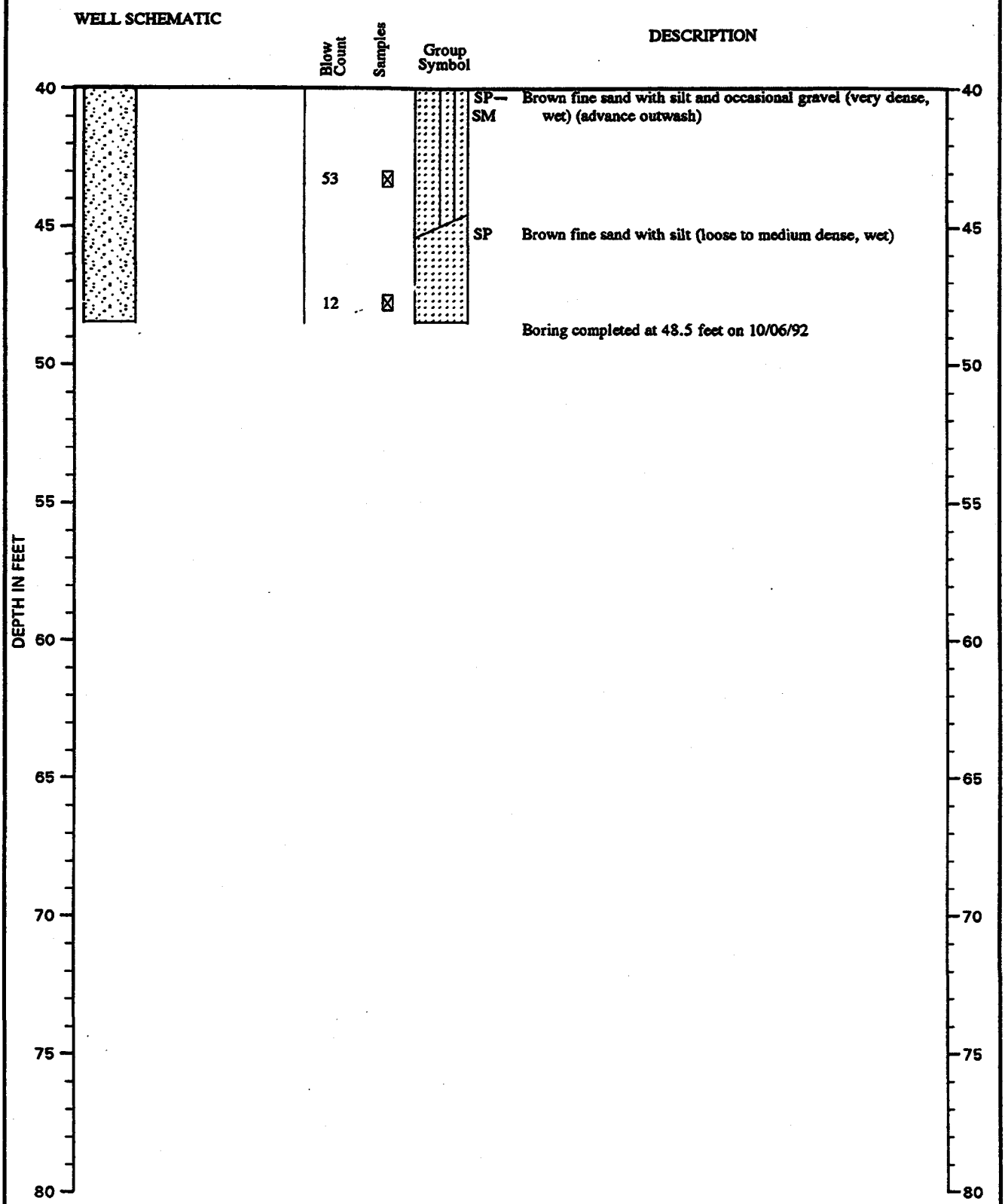
LOG OF MONITORING WELL

FIGURE A-9

:EJN:SAK:CMS 4/12/93

2067-008-R07

MONITORING WELL NO. MW-7
(Continued)



Note: See Figure A-2 for explanation of symbols

Geo Engineers

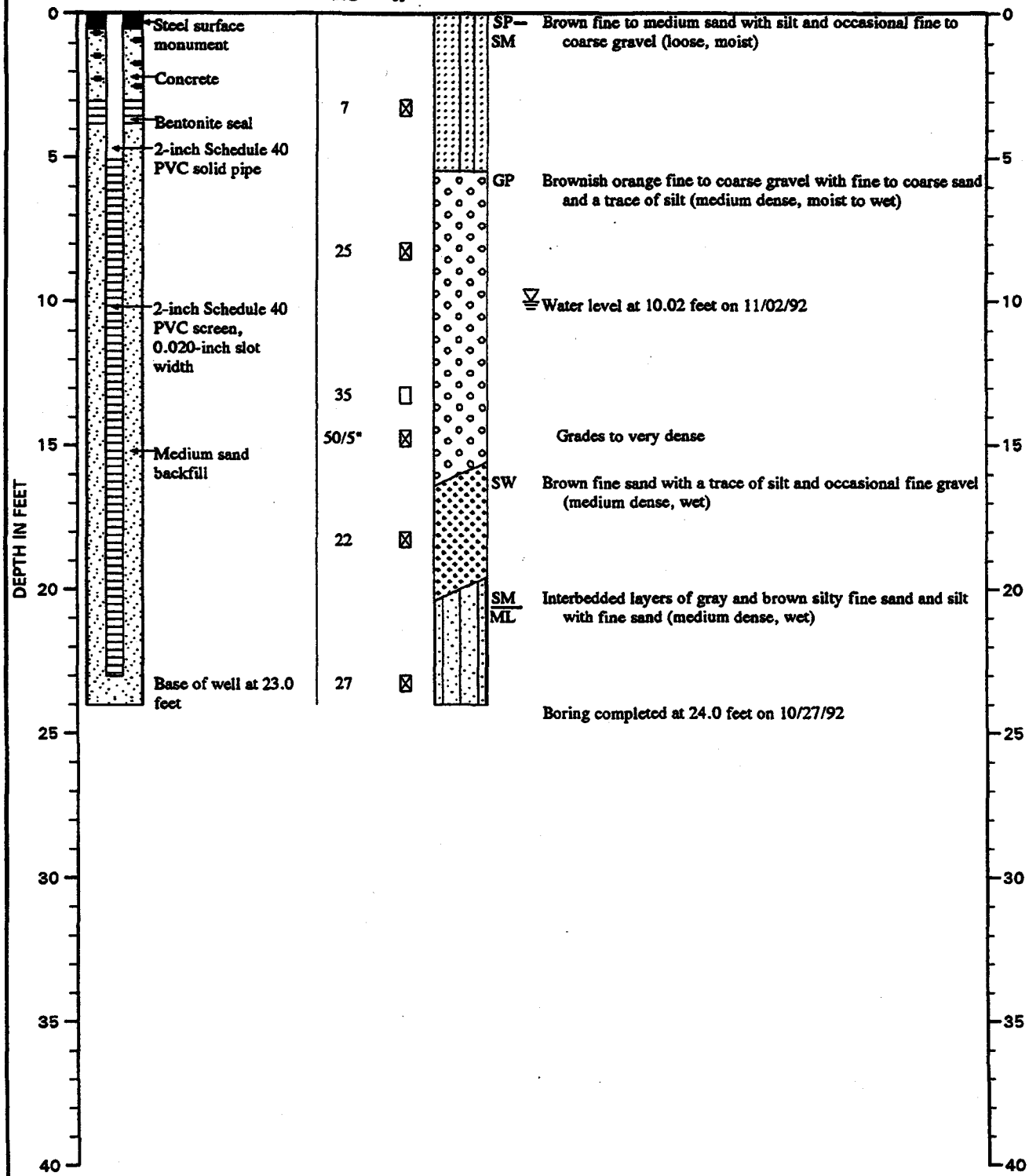
LOG OF MONITORING WELL

FIGURE A-9

MONITORING WELL NO. MW-8

WELL SCHEMATIC

Casing Elevation (ft.): 373.61
Casing Stickup (ft.):



Note: See Figure A-2 for explanation of symbols

:EJN:SAK:CMS 4/12/93

2067-008-R07

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-10

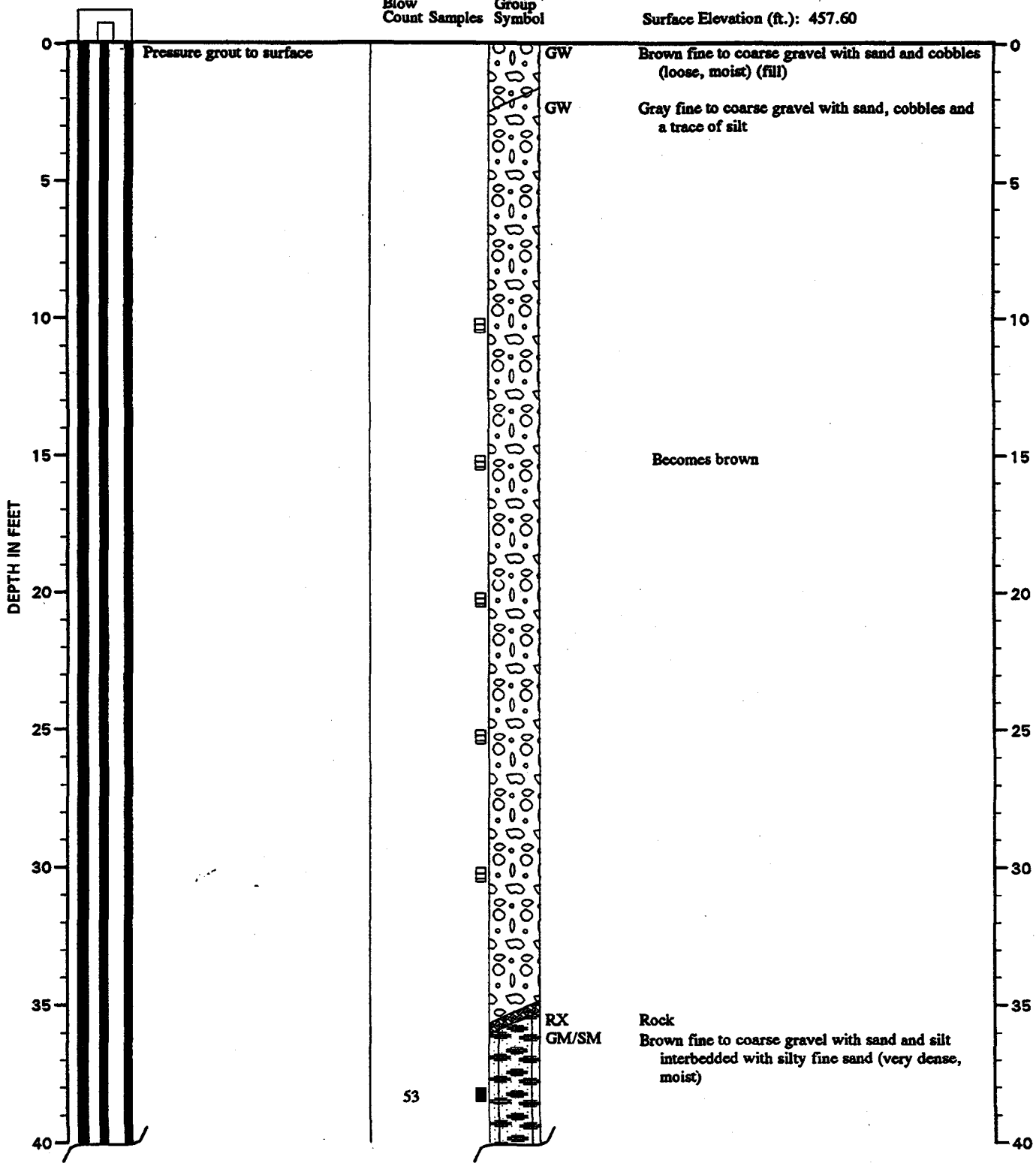
MONITORING WELL MW-9

WELL SCHEMATIC

Casing Elevation (ft.) for S:459.6
Casing Elevation (ft.) for D:459.65

Casing Stickup (ft.) for S:2.0
Casing Stickup (ft.) for D:2.05

Surface Elevation (ft.): 457.60



Note: See Figure A- 2 for explanation of symbols

Geo Engineers

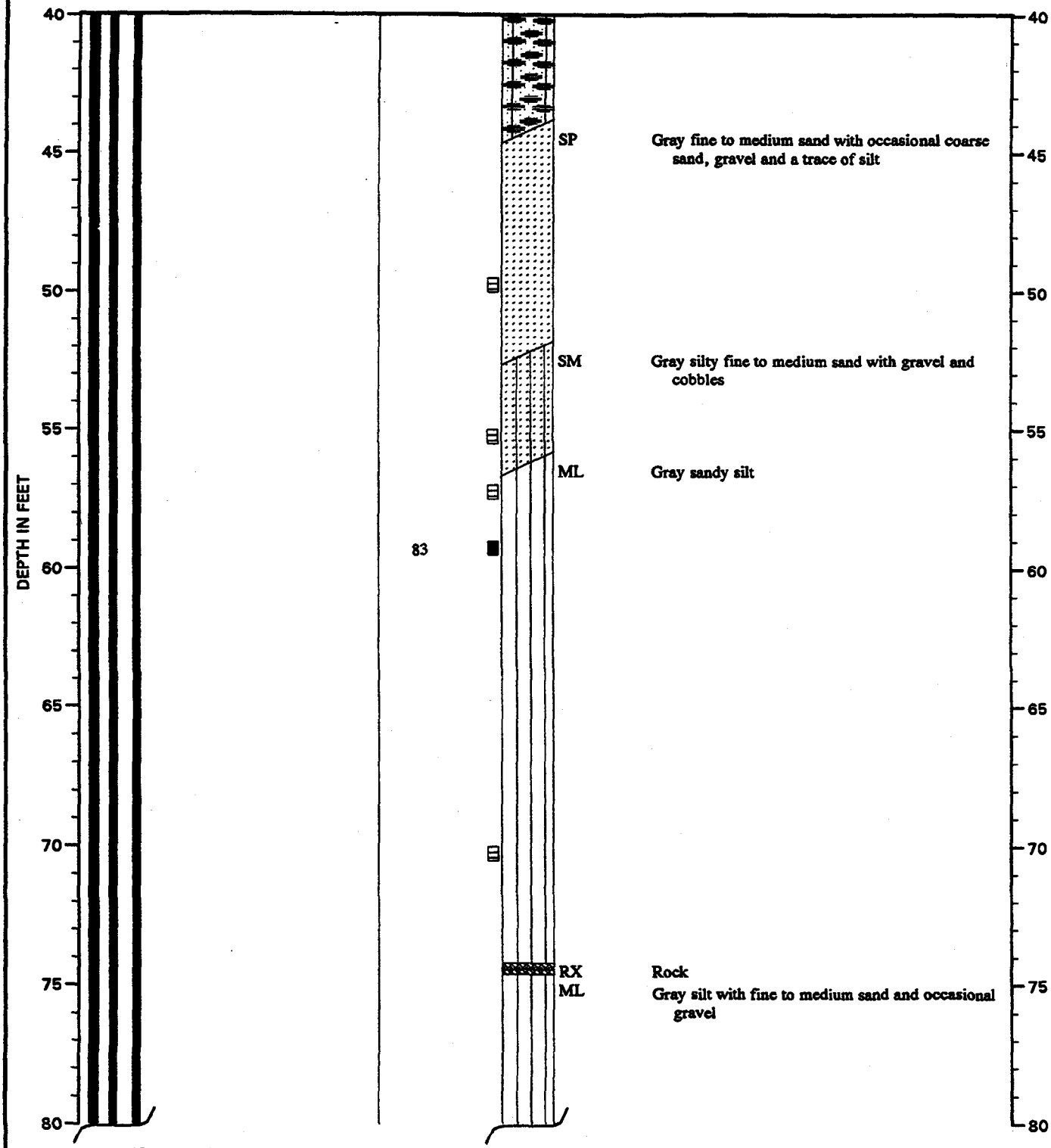
LOG OF MONITORING WELL

FIGURE A-11

2087-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

MONITORING WELL MW-9
(Continued)

WELL SCHEMATIC



Note: See Figure A- 2 for explanation of symbols

:KPB:GWM:CMS 2/24/95

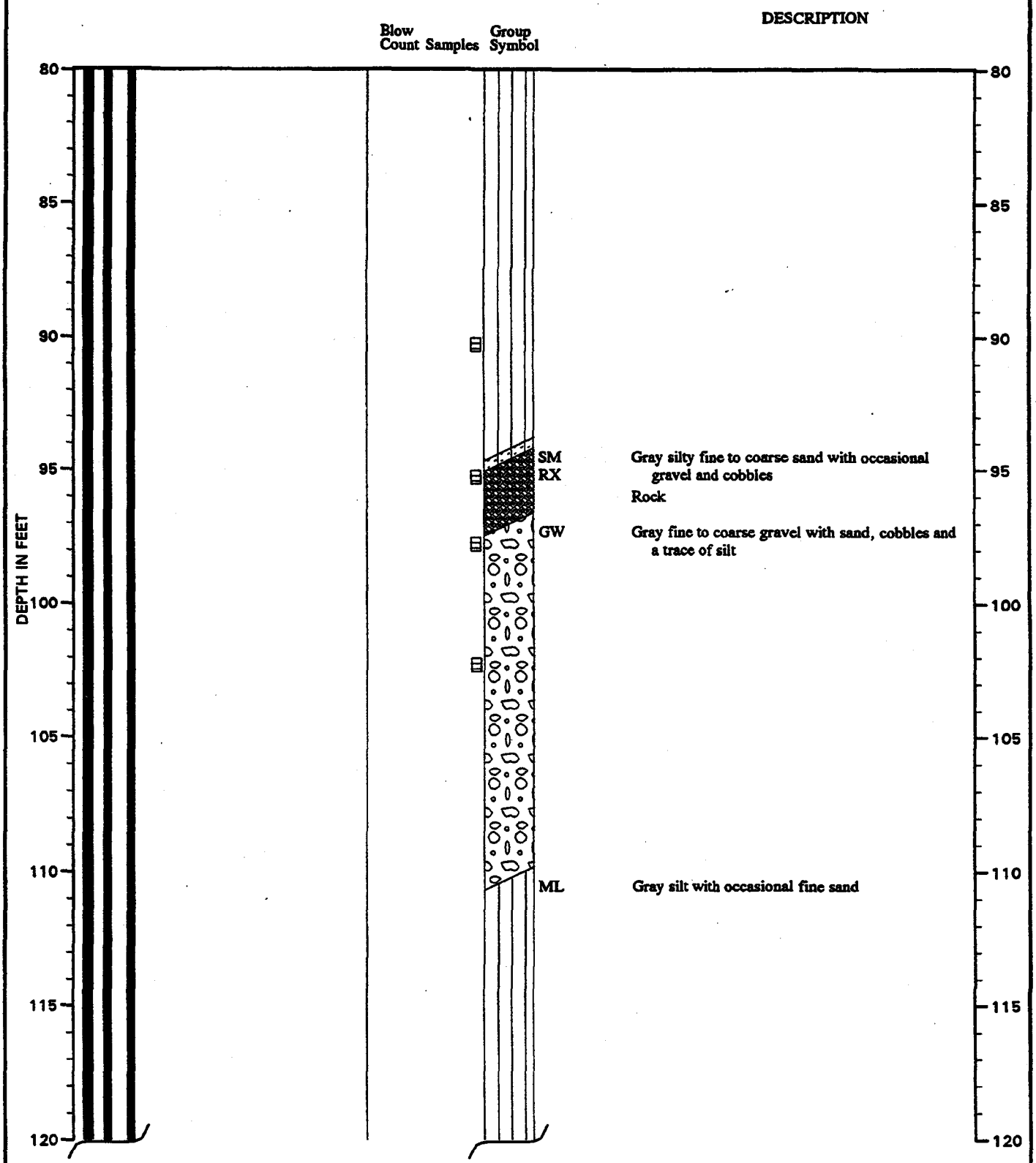
2067-010-R02 Task 3

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

MONITORING WELL MW-9
(Continued)



Note: See Figure A- 2 for explanation of symbols

Geo Engineers

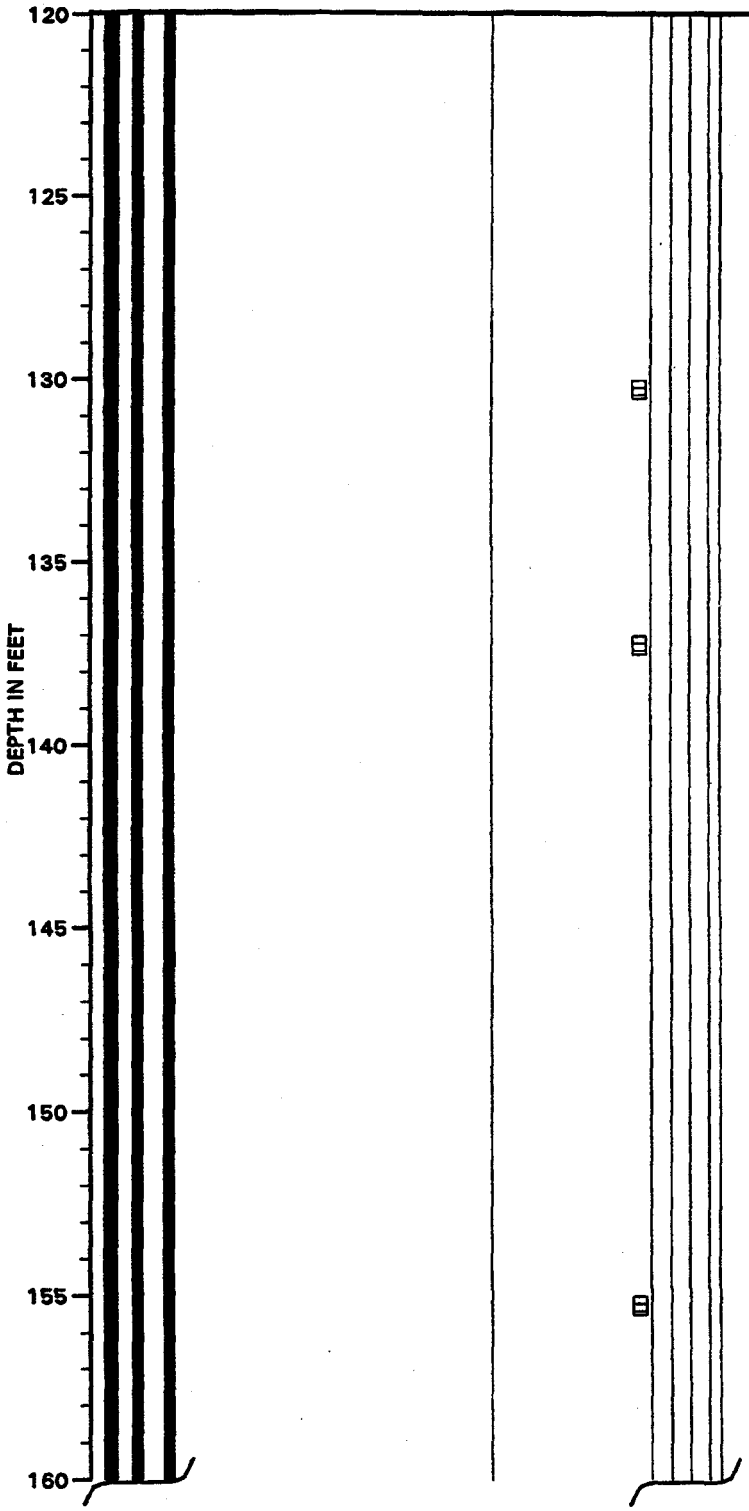
LOG OF MONITORING WELL

FIGURE A-11

2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

MONITORING WELL MW-9
(Continued)

WELL SCHEMATIC



DESCRIPTION

With occasional clay lenses

With occasional clay lenses

Note: See Figure A- 2 for explanation of symbols

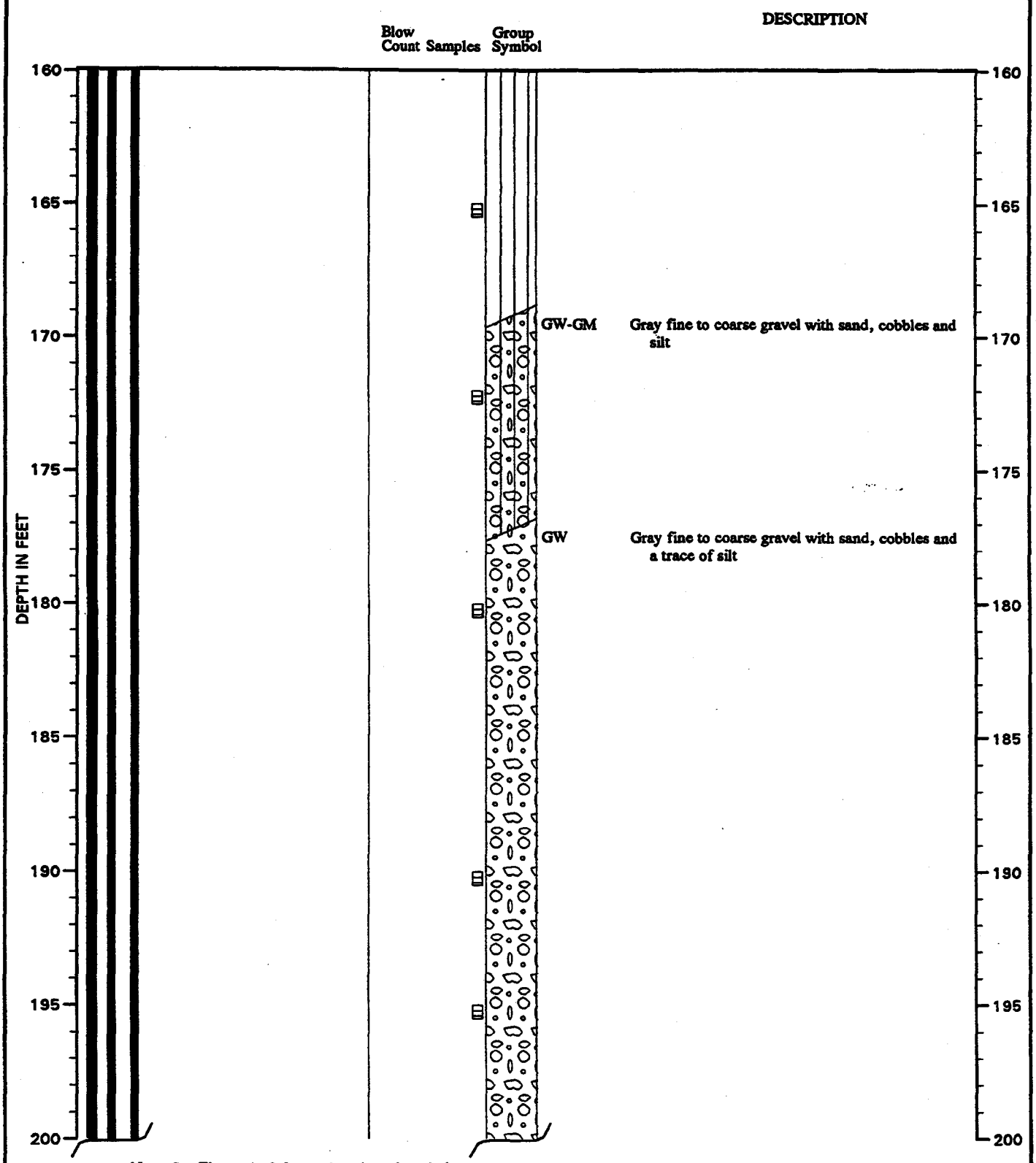
2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

MONITORING WELL MW-9
(Continued)



Note: See Figure A- 2 for explanation of symbols

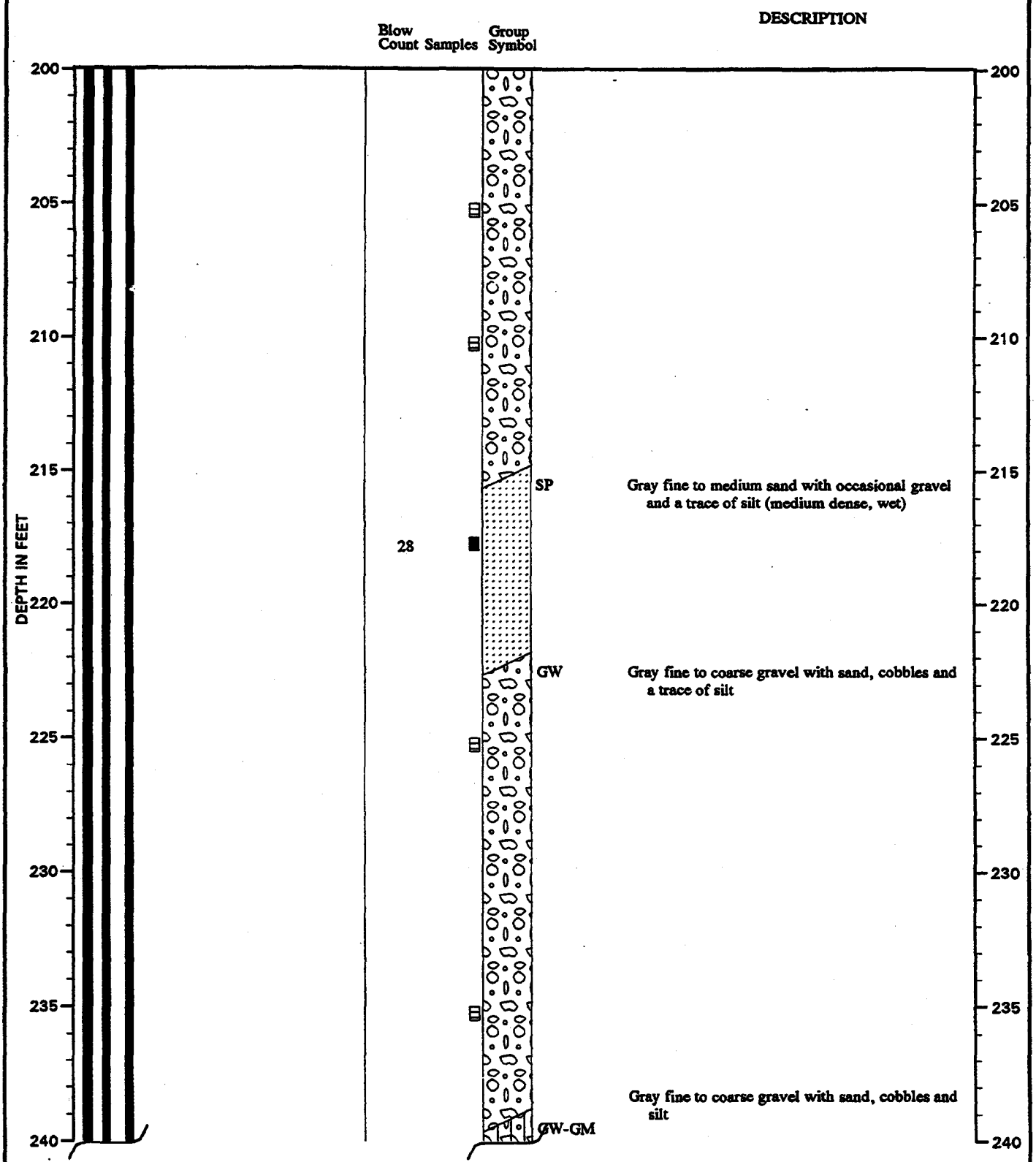
Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

2087-010-R02 Task 3 :KPB:GWM:CMS 2/24/96

MONITORING WELL MW-9
(Continued)



Note: See Figure A- 2 for explanation of symbols

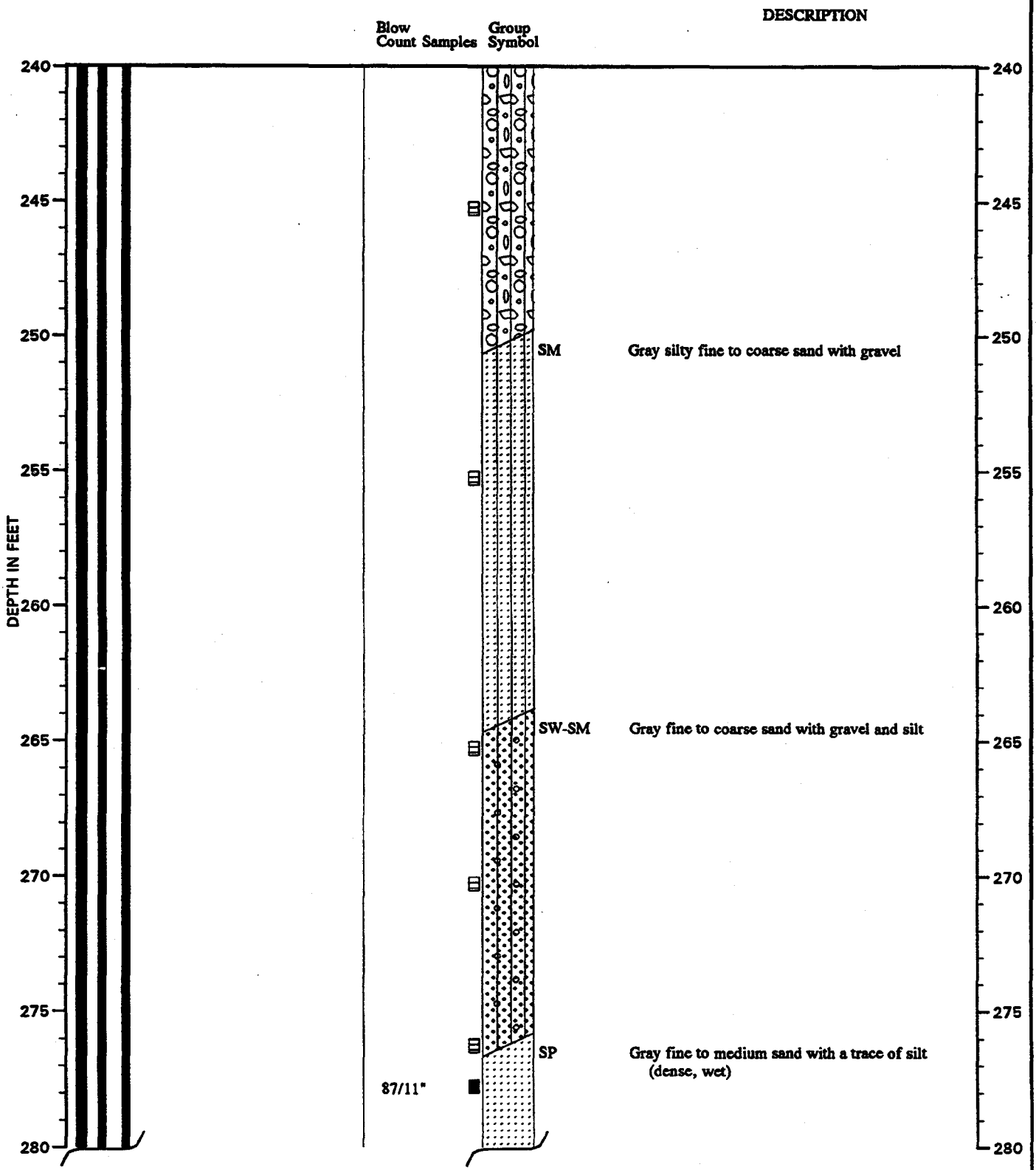
2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

MONITORING WELL MW-9
(Continued)



Note: See Figure A- 2 for explanation of symbols

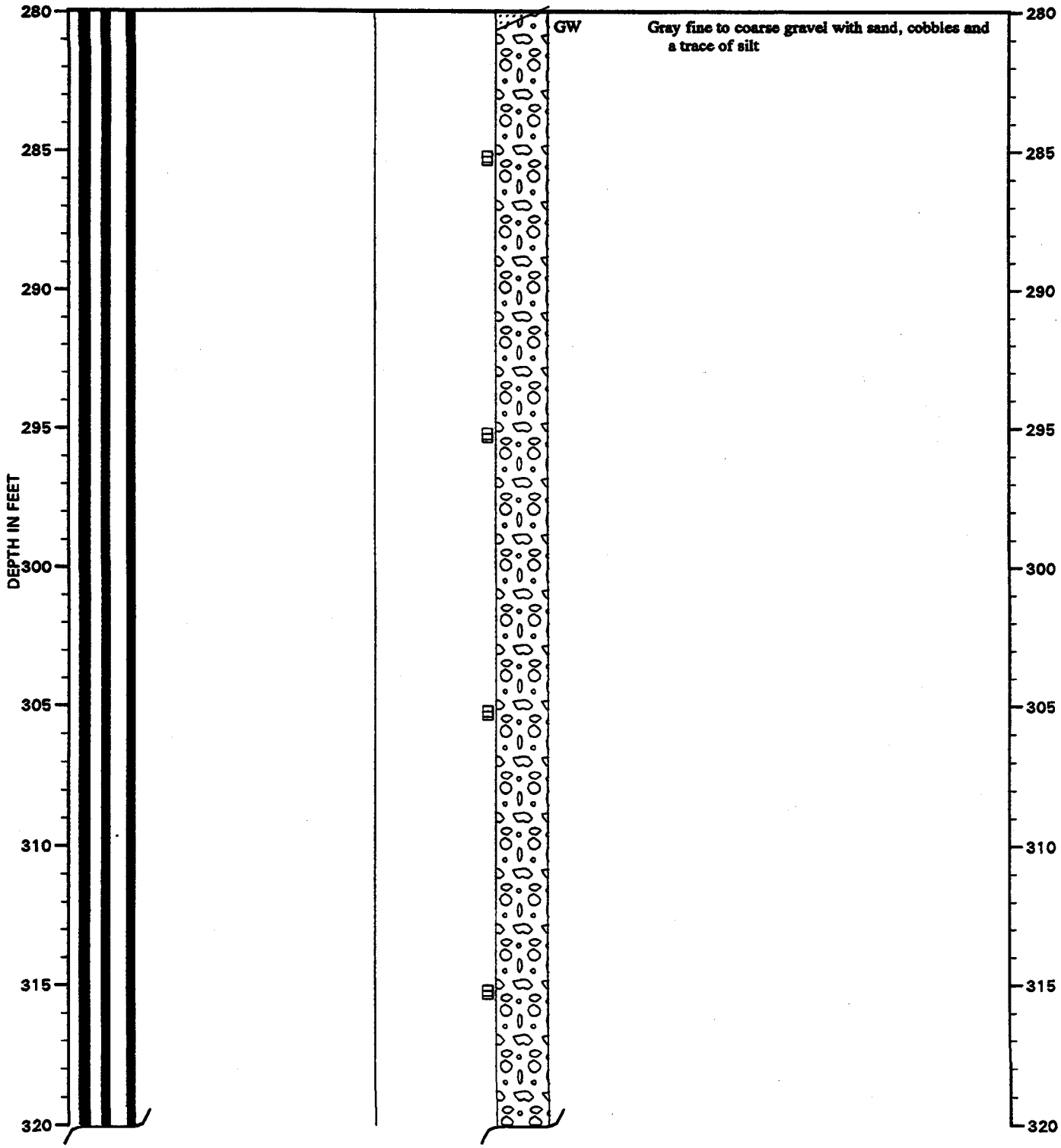
GeoEngineers

LOG OF MONITORING WELL

FIGURE A-11

MONITORING WELL MW-9
(Continued)

WELL SCHEMATIC



Note: See Figure A- 2 for explanation of symbols

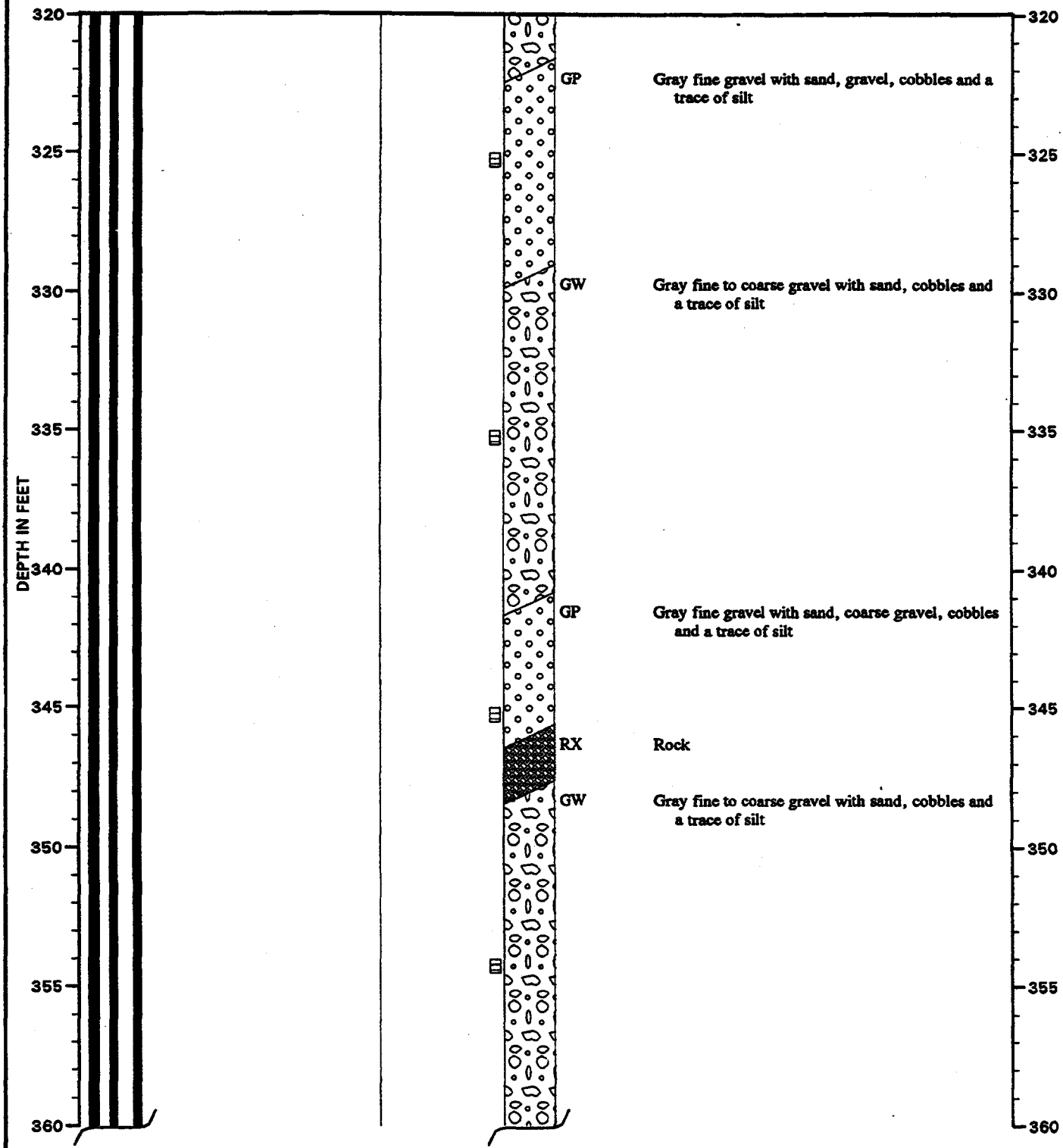
Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

MONITORING WELL MW-9
(Continued)

WELL SCHEMATIC



Note: See Figure A- 2 for explanation of symbols

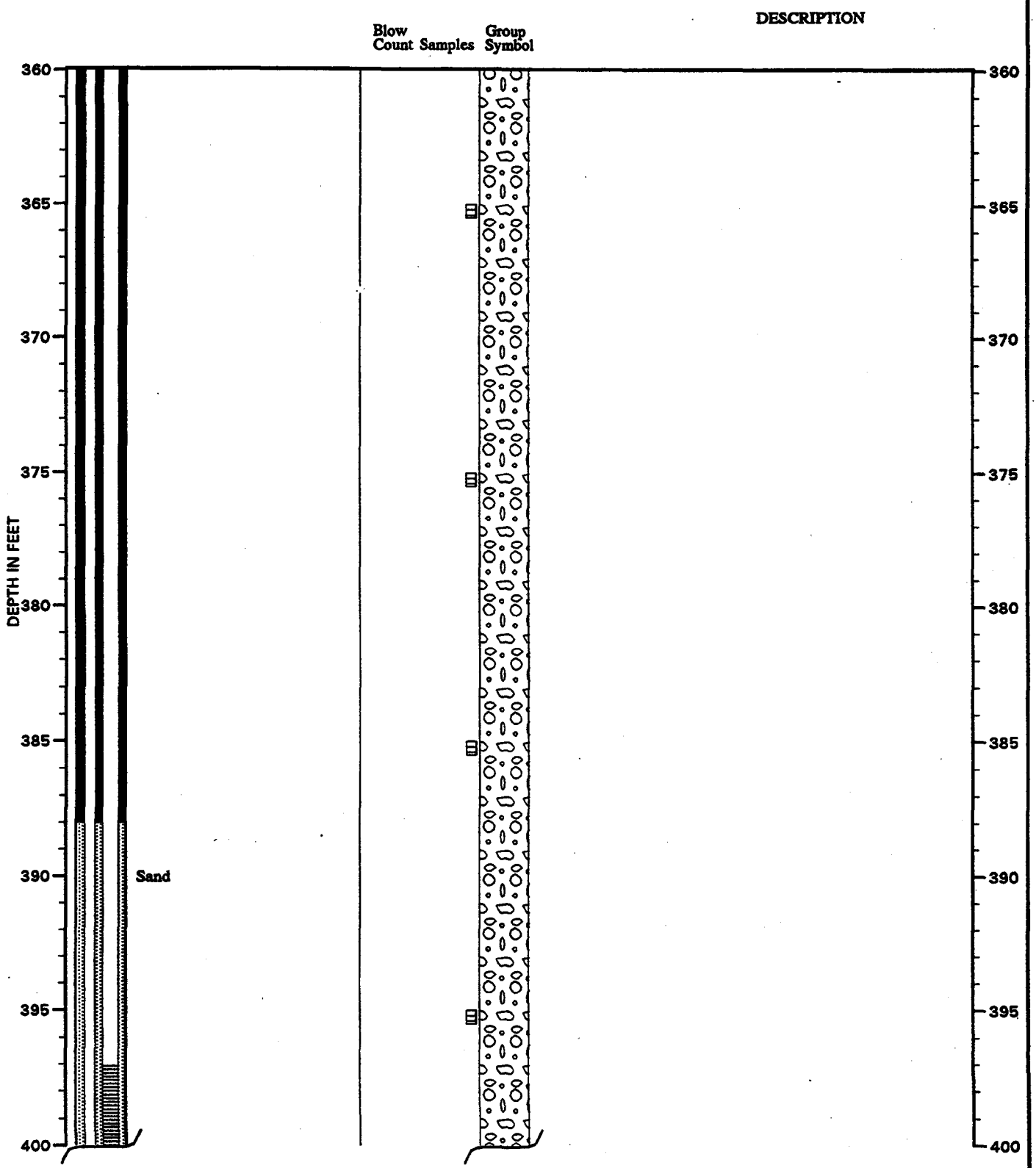
2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

MONITORING WELL MW-9
(Continued)



Note: See Figure A- 2 for explanation of symbols

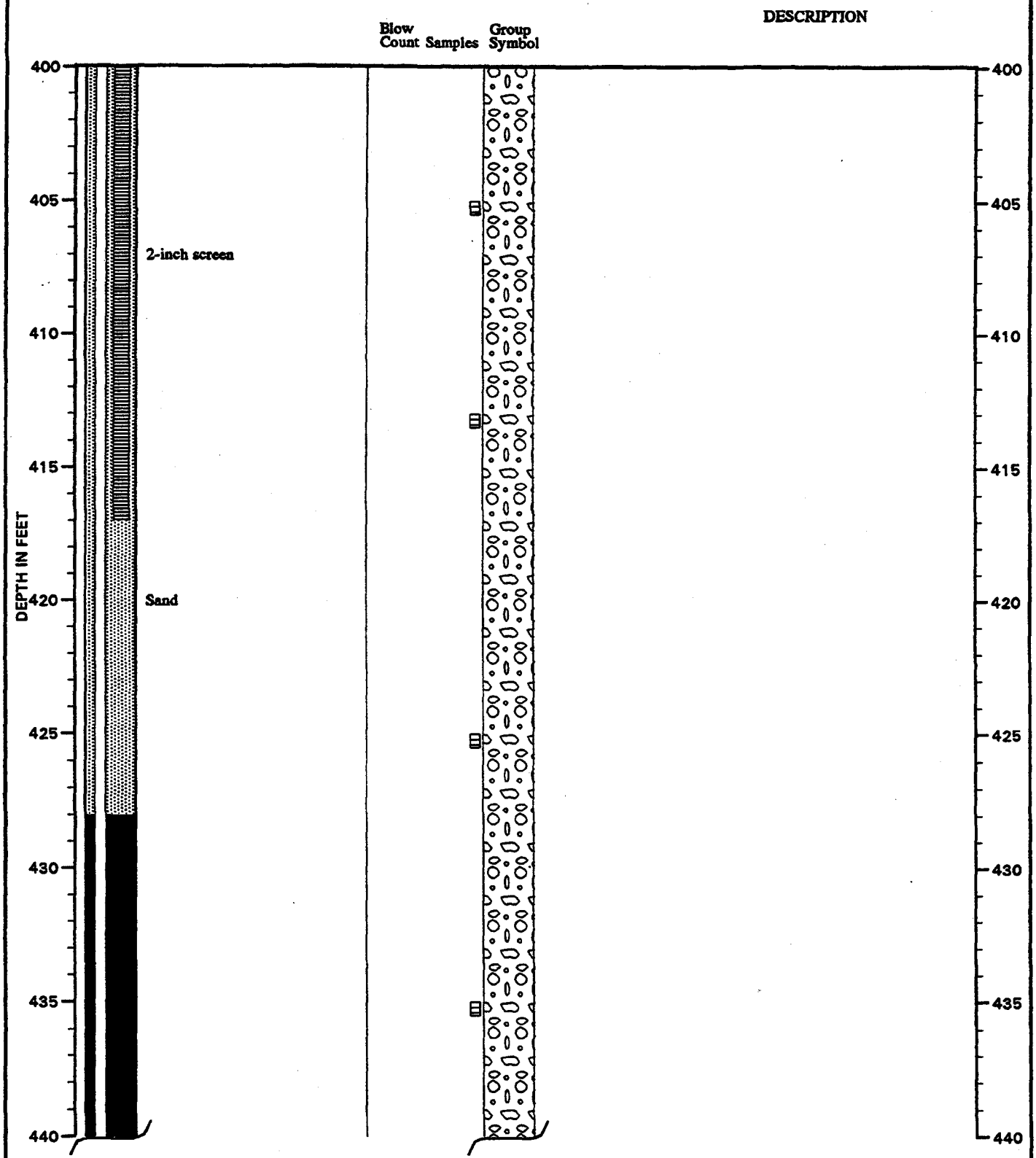
Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

MONITORING WELL MW-9
(Continued)



Note: See Figure A- 2 for explanation of symbols

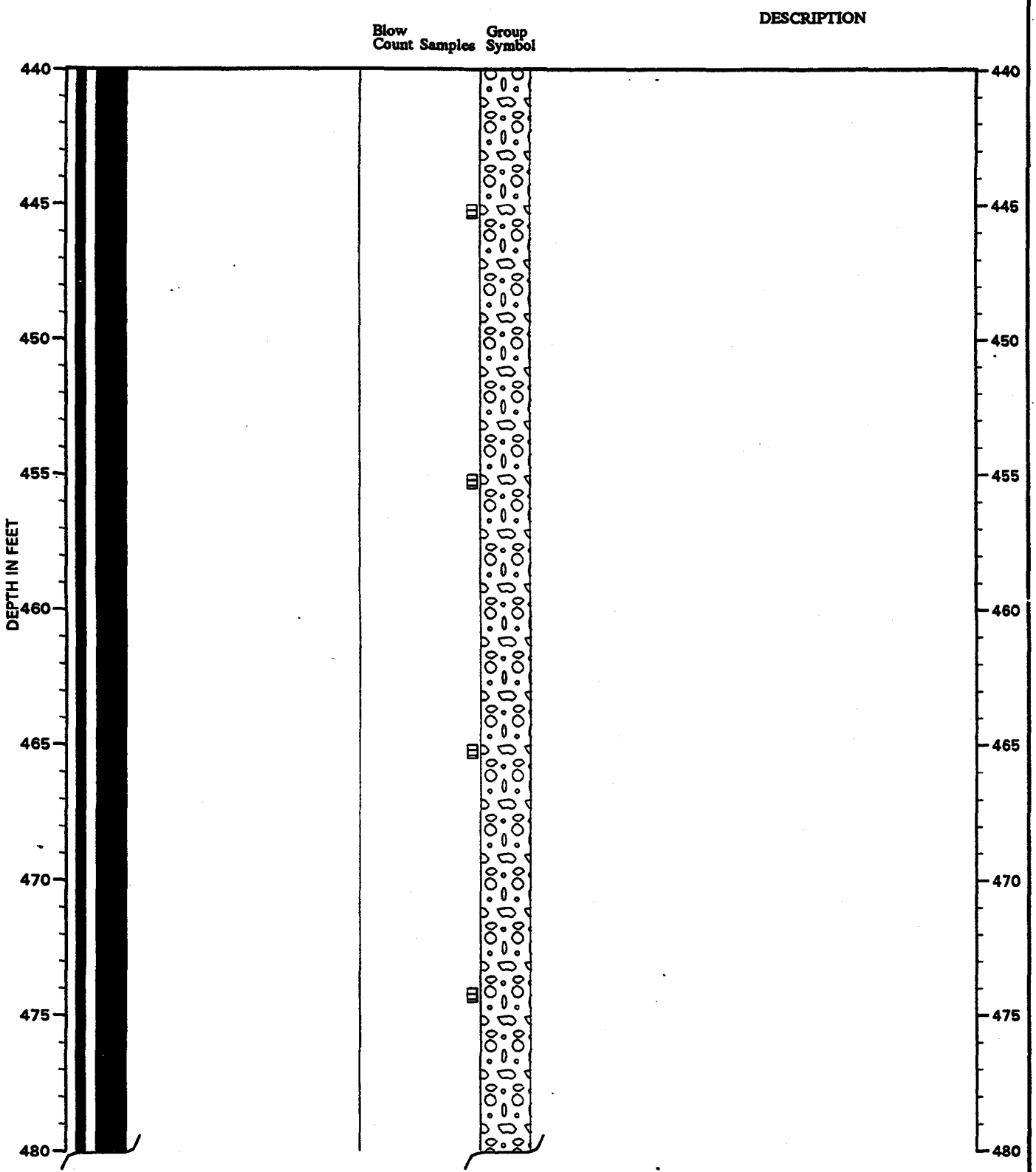
Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

MONITORING WELL MW-9
(Continued)



Note: See Figure A- 2 for explanation of symbols

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/98

MONITORING WELL MW-9
(Continued)

WELL SCHEMATIC

Blow Count Samples | Group Symbol | DESCRIPTION

DEPTH IN FEET

480 485 490 495 500 505 510 515 520

Pressure grout

Note: See Figure A- 2 for explanation of symbols

:KPB:GWM:CMS 2/24/95

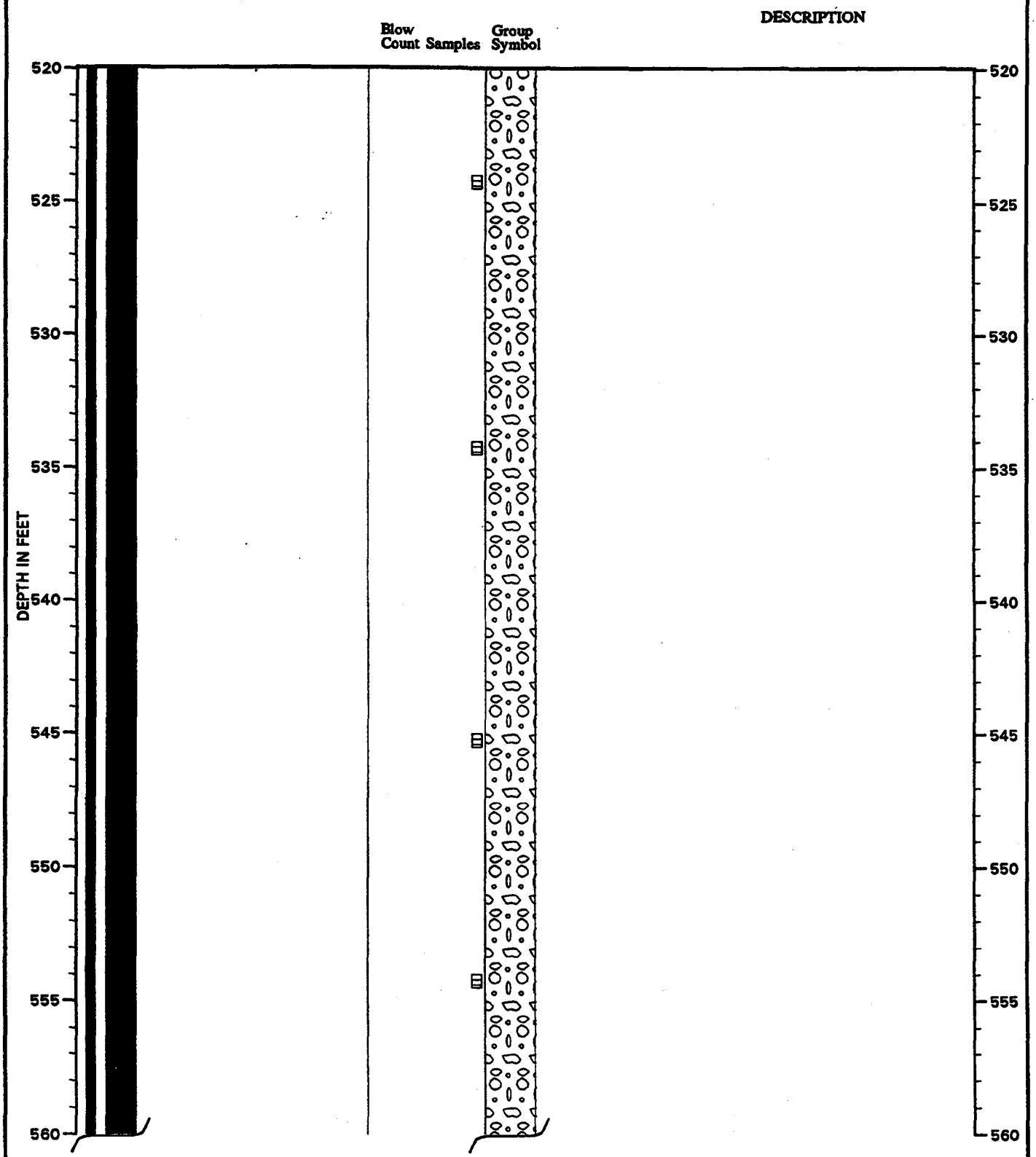
2067-010-R02 Task 3

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

MONITORING WELL MW-9
(Continued)



Note: See Figure A- 2 for explanation of symbols

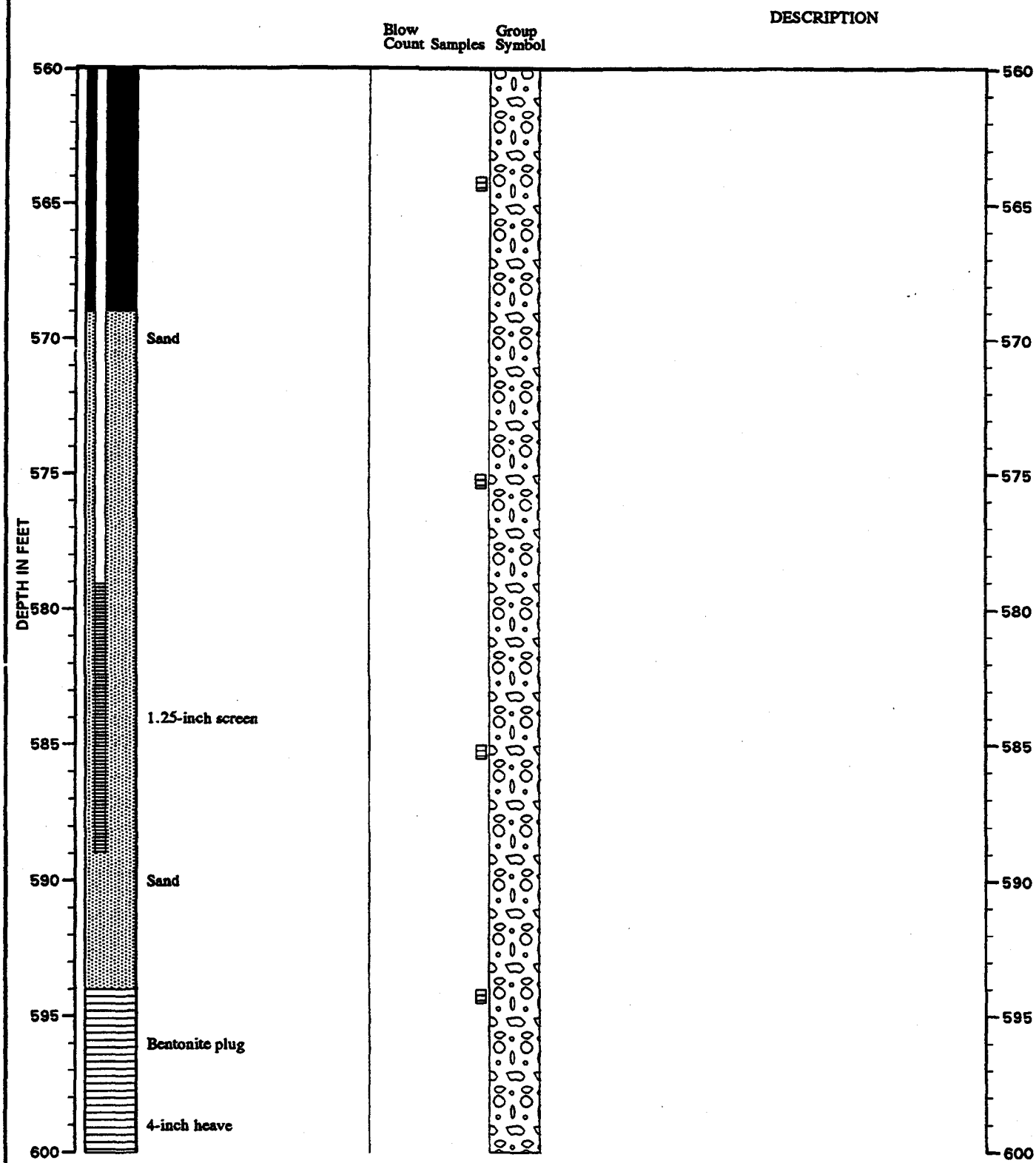
Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

20617-010-R02 Task 3 .KPB:GWM:CMS 2/24/96

MONITORING WELL MW-9
(Continued)



Note: See Figure A- 2 for explanation of symbols

:KPB:GWM:CMS 2/24/95

2067-010-R02 Task 3

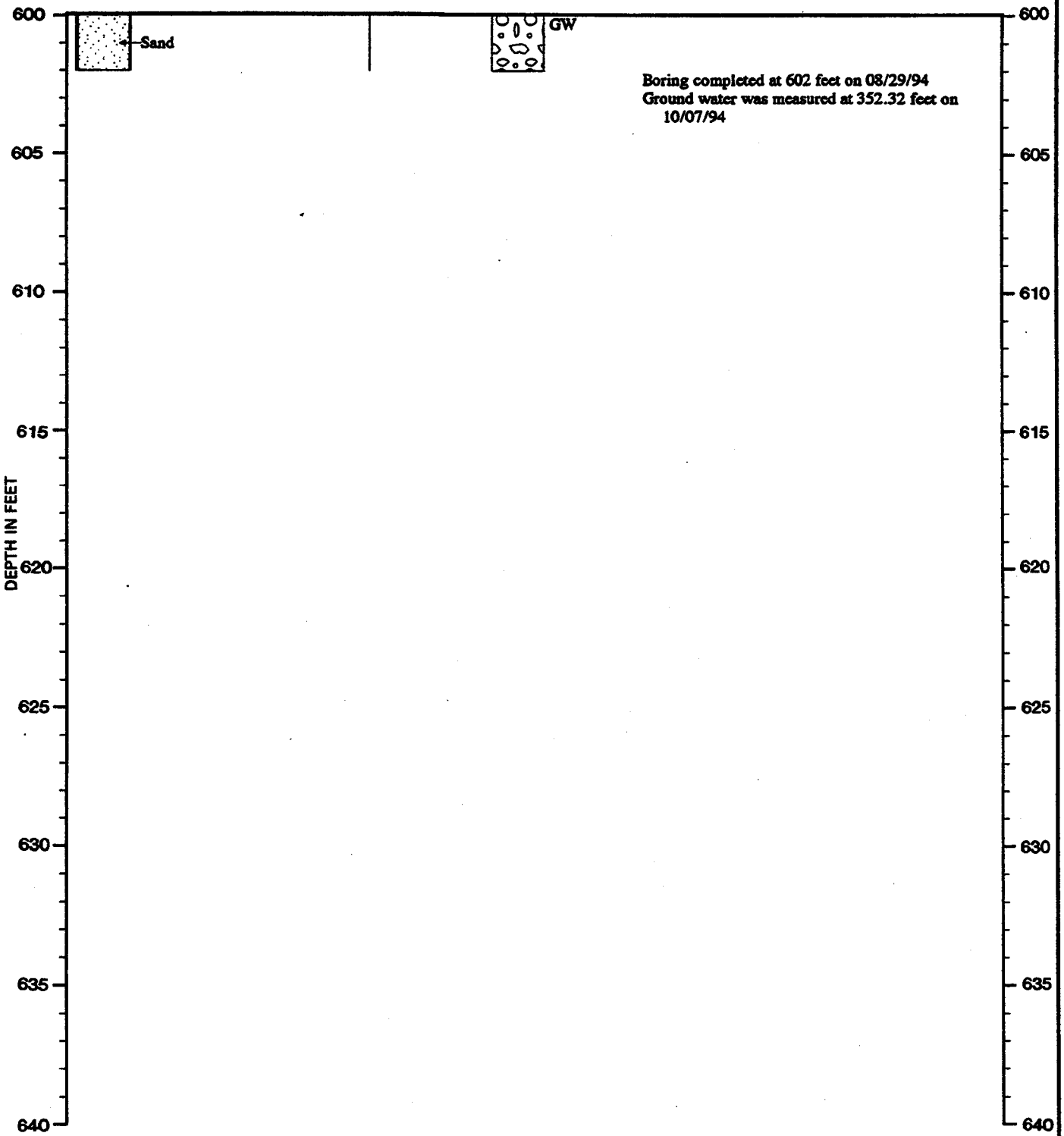
Geo Engineers

LOG OF MONITORING WELL

FIGURE A-11

MONITORING WELL MW-9

WELL SCHEMATIC



Note: See Figure A- 2 for explanation of symbols

Geo Engineers

LOG OF MONITORING WELL

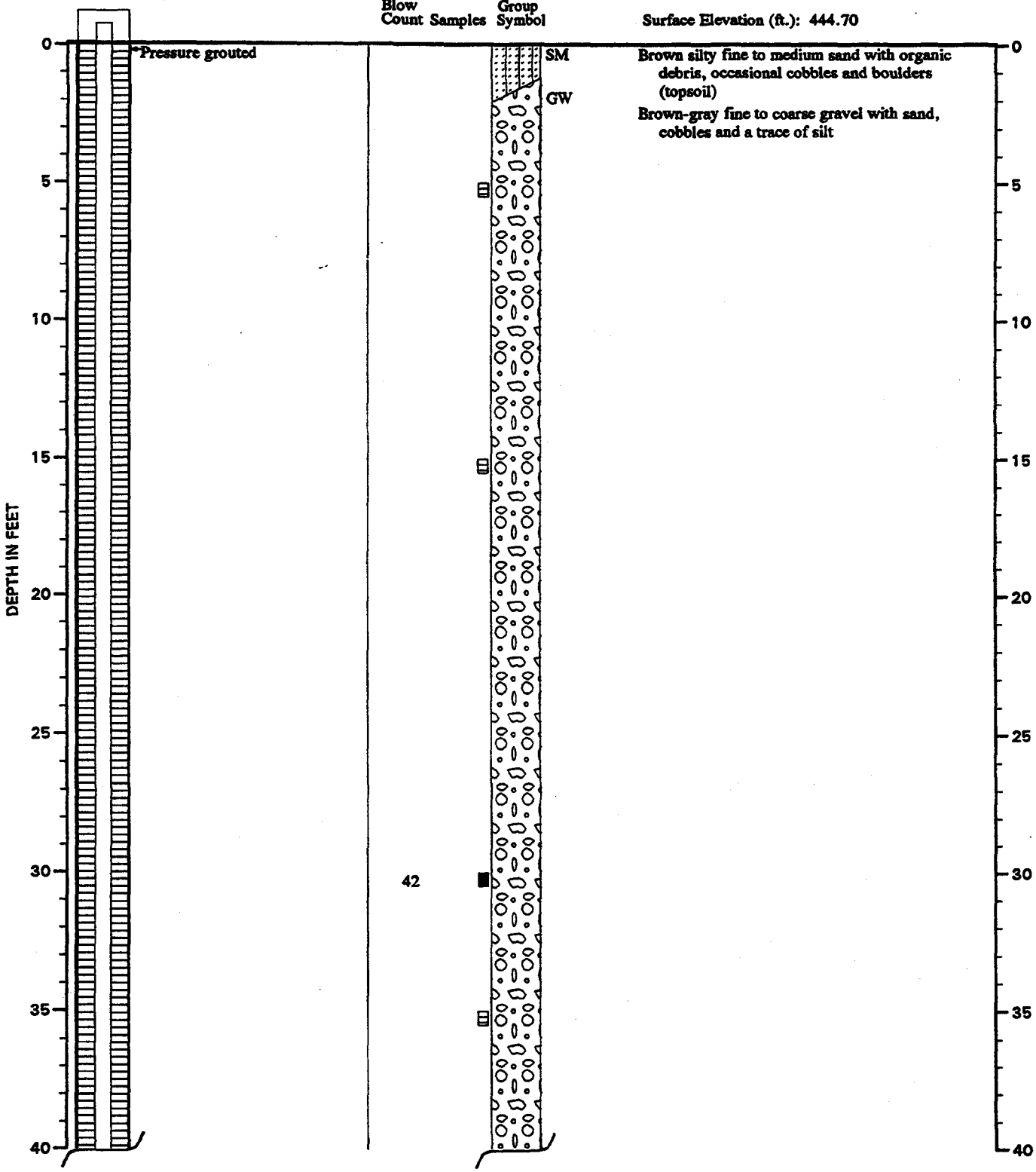
FIGURE A-11

2087-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

MONITORING WELL MW-10A

WELL SCHEMATIC

Casing Elevation (ft.): 446.99
Casing Stickup (ft.): 2.29



DESCRIPTION

Surface Elevation (ft.): 444.70

Brown silty fine to medium sand with organic debris, occasional cobbles and boulders (topsoil)

Brown-gray fine to coarse gravel with sand, cobbles and a trace of silt

Note: See Figure A- 2 for explanation of symbols

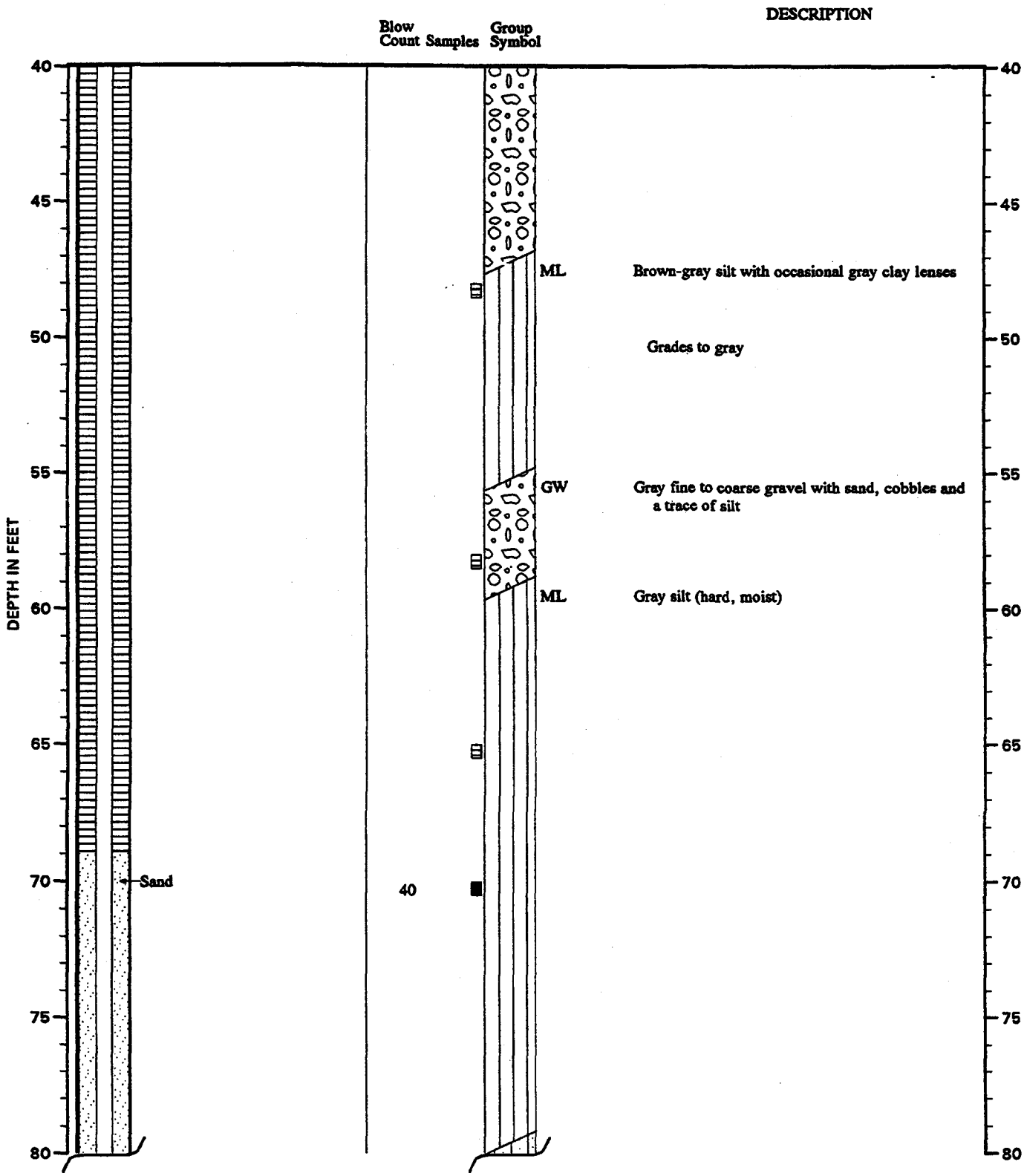
Geo Engineers

LOG OF MONITORING WELL

FIGURE A-12

2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/96

MONITORING WELL MW-10A
(Continued)



Note: See Figure A- 2 for explanation of symbols

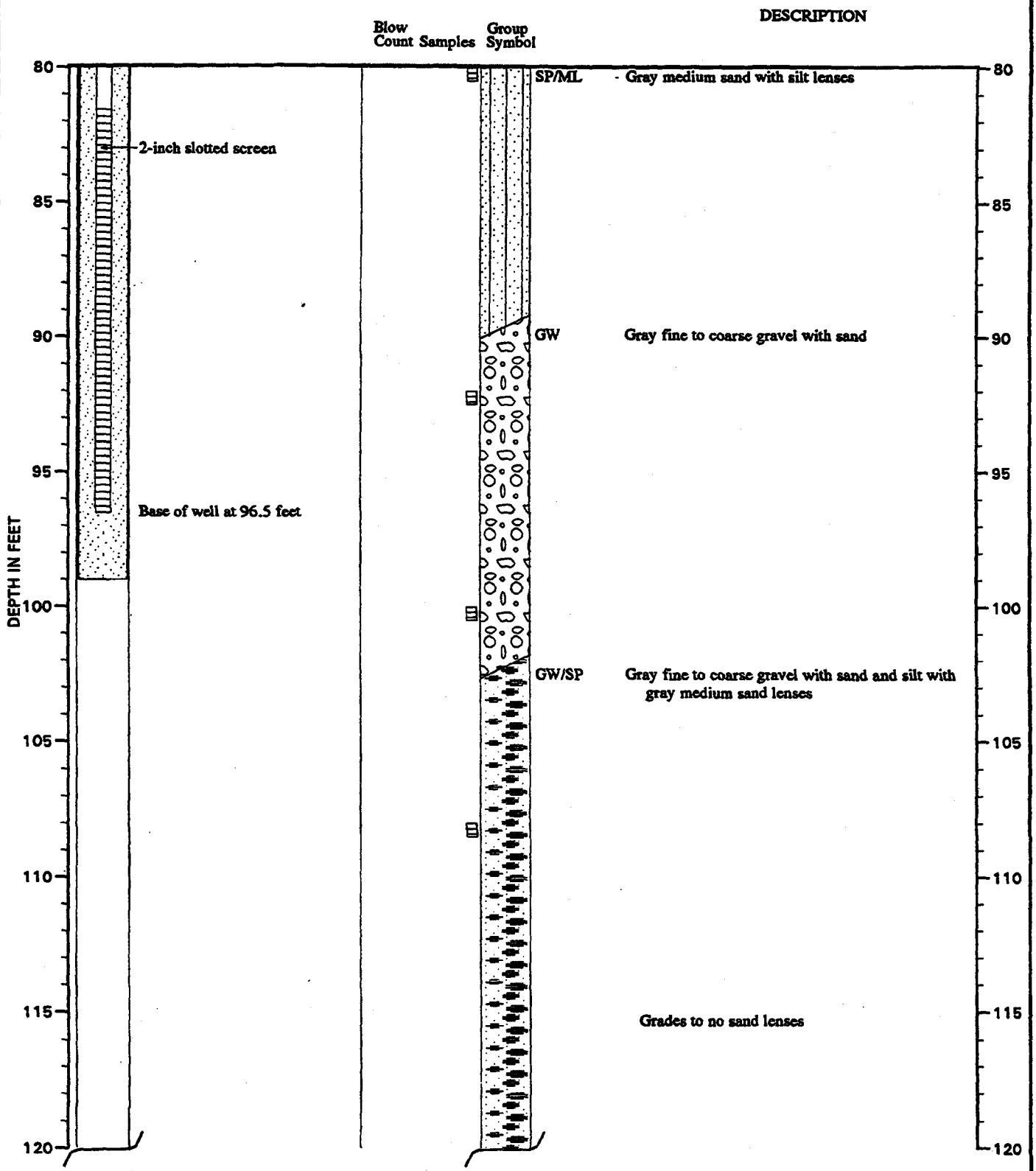
Geo Engineers

LOG OF MONITORING WELL

FIGURE A-12

2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/85

MONITORING WELL MW-10A
(Continued)



Note: See Figure A- 2 for explanation of symbols

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-12

2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

MONITORING WELL MW-10A
(Continued)

WELL SCHEMATIC

Blow Count Samples	Group Symbol	DESCRIPTION
	SM	Gray silty fine to medium sand with occasional gravel
	SP	Gray fine to medium sand with a trace of silt
	GW	Gray fine to coarse gravel with sand and a trace of silt

DEPTH IN FEET: 120, 125, 130, 135, 140, 145, 150, 155, 160

Note: See Figure A- 2 for explanation of symbols

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-12

2067-010-R02 Task 3 1KF6:GWM.CMS 2/24/98

MONITORING WELL MW-10A
(Continued)

WELL SCHEMATIC

Blow Count Samples	Group Symbol	DESCRIPTION
47	SP	Gray fine to medium sand with occasional gravel and cobbles (dense, wet)
	GW	Gray fine to coarse gravel with sand and cobbles and a trace of silt

DEPTH IN FEET: 160, 165, 170, 175, 180, 185, 190, 195, 200

Note: See Figure A- 2 for explanation of symbols

2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-12

MONITORING WELL MW-10A
(Continued)

WELL SCHEMATIC

Blow Count Samples | Group Symbol | DESCRIPTION

DEPTH IN FEET

200 205 210 215 220 225 230 235 240

Note: See Figure A- 2 for explanation of symbols

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-12

2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

MONITORING WELL MW-10A
(Continued)

WELL SCHEMATIC

Blow Count	Samples	Group Symbol	DESCRIPTION
		GM	Gray silty fine to coarse gravel with sand and cobbles
		ML	Brown-gray silt with fine to medium sand

DEPTH IN FEET: 240, 245, 250, 255, 260, 265, 270, 275, 280

Note: See Figure A- 2 for explanation of symbols

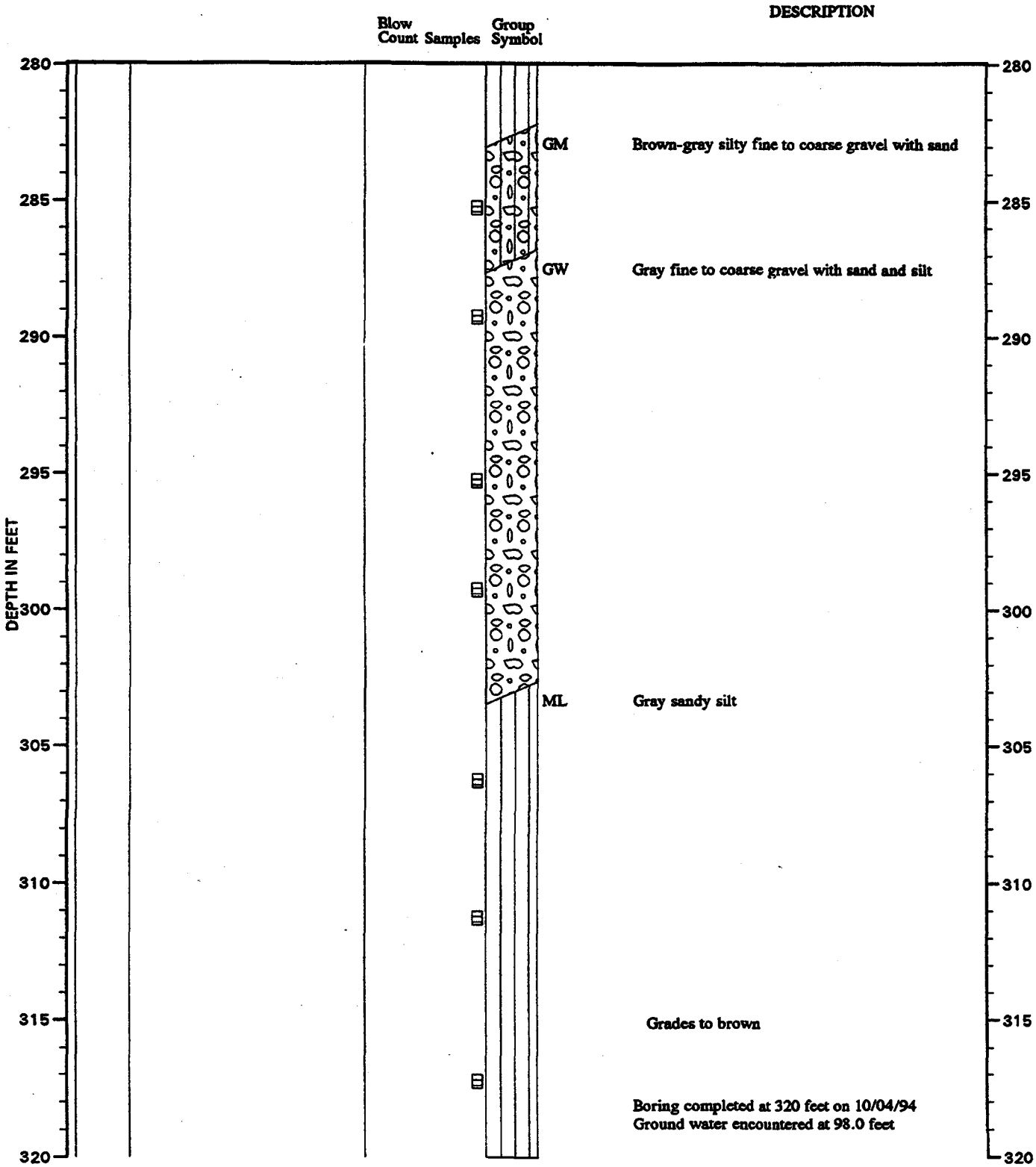
Geo Engineers

LOG OF MONITORING WELL

FIGURE A-12

2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/96

MONITORING WELL MW-10A
(Continued)



Note: See Figure A- 2 for explanation of symbols

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-12

2087-010-R02 Task 3 .RPB.GWM.CMB 2/24/00

MONITORING WELL MW-10B

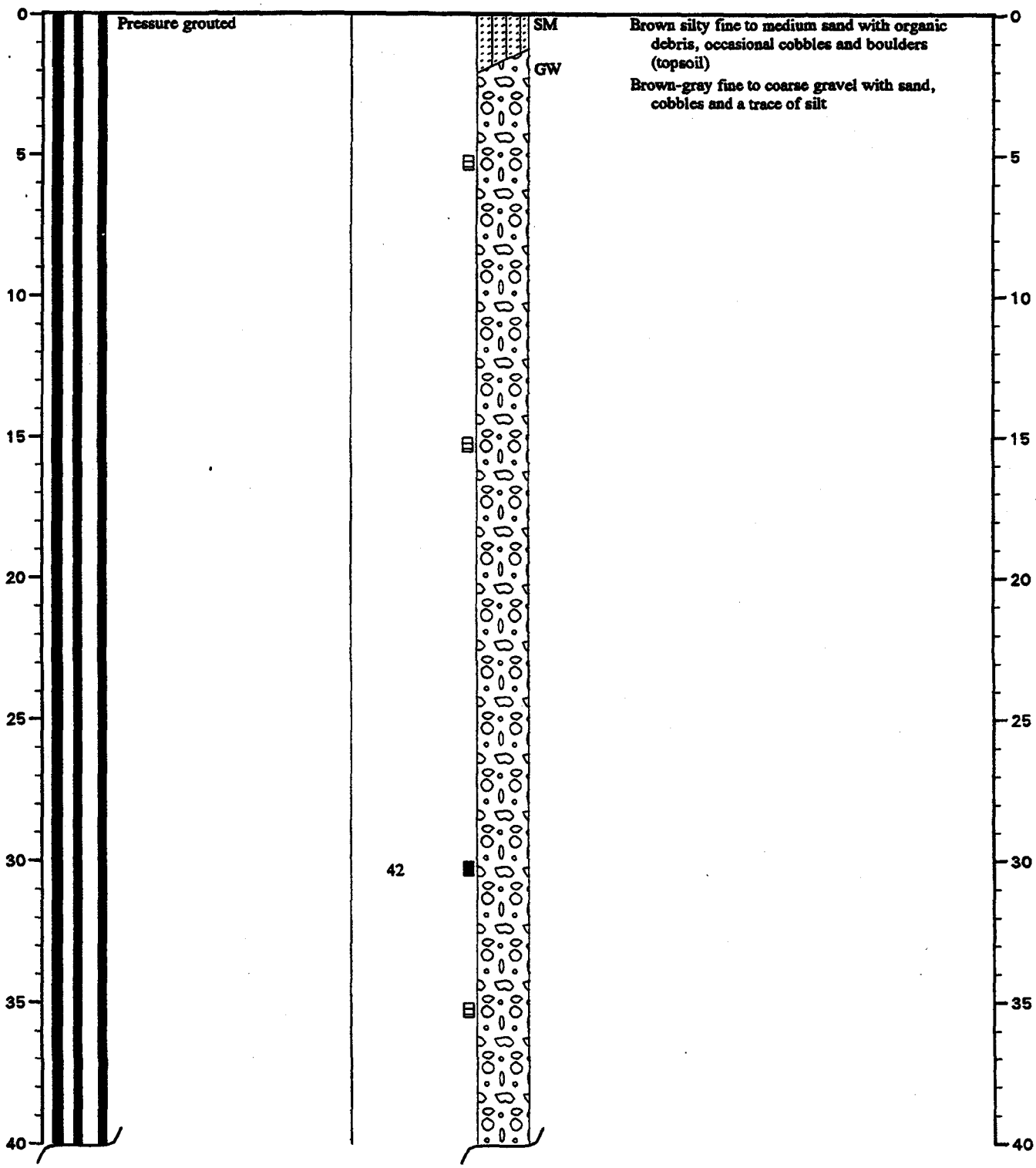
WELL SCHEMATIC

Casing Elevation (ft.) for S:447.24
Casing Elevation (ft.) for D:447.22

Casing Stickup (ft.) for S:2.54
Casing Stickup (ft.) for D:2.52

Surface Elevation (ft.): 444.70

Blow Count	Samples	Group Symbol	DESCRIPTION
		SM	Brown silty fine to medium sand with organic debris, occasional cobbles and boulders (topsoil)
		GW	Brown-gray fine to coarse gravel with sand, cobbles and a trace of silt
42			



Note: See Figure A- 2 for explanation of symbols

:KPB:GWM:CMS 2/24/95

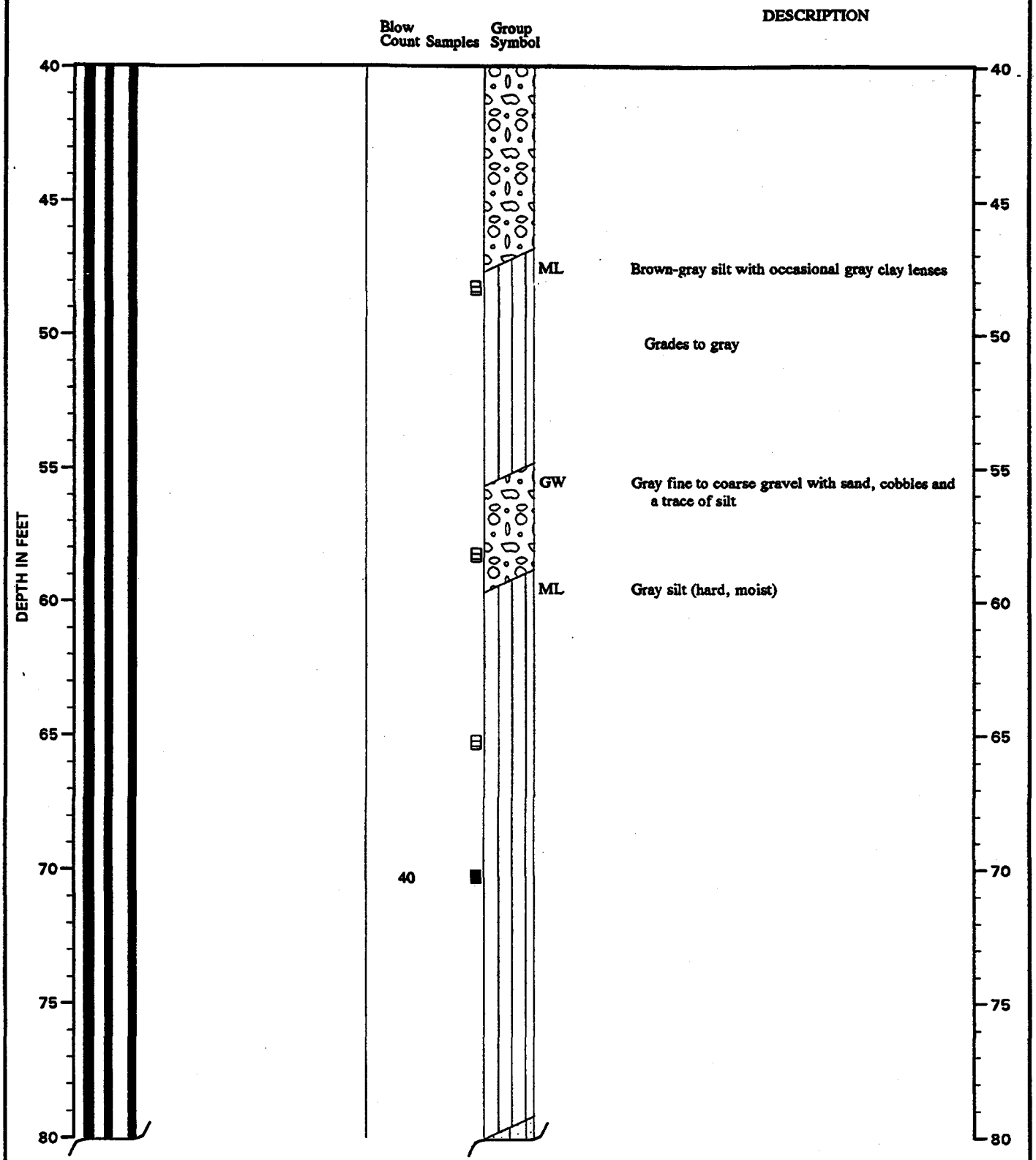
2067-010-R02 Task 3

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-13

MONITORING WELL MW-10B
(Continued)



Note: See Figure A- 2 for explanation of symbols

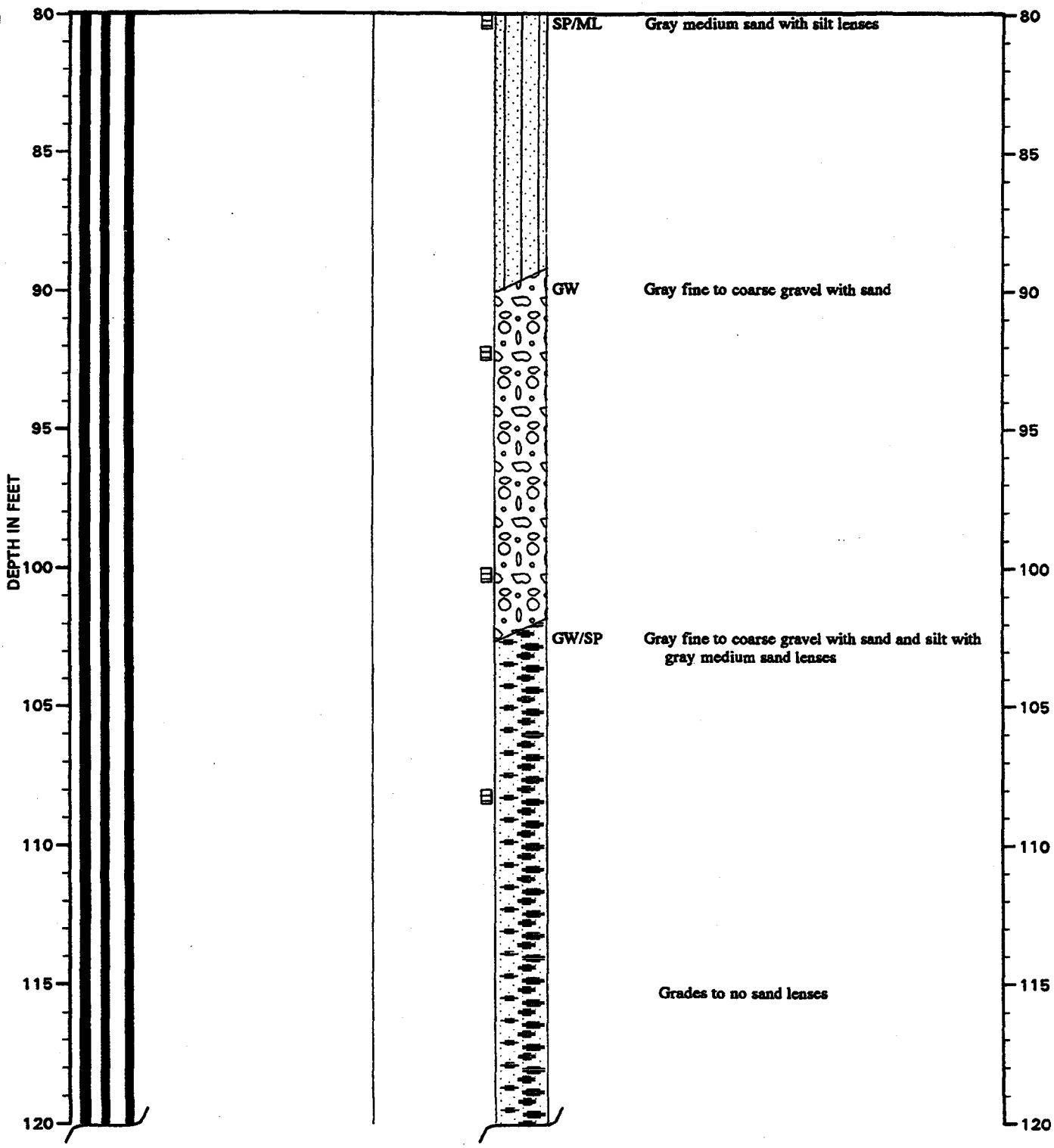
Geo Engineers

LOG OF MONITORING WELL

FIGURE A-13

2067-010-R02 Task 3 :KPB:GWM:CMB 2/24/95

MONITORING WELL MW-10B
(Continued)



Note: See Figure A- 2 for explanation of symbols

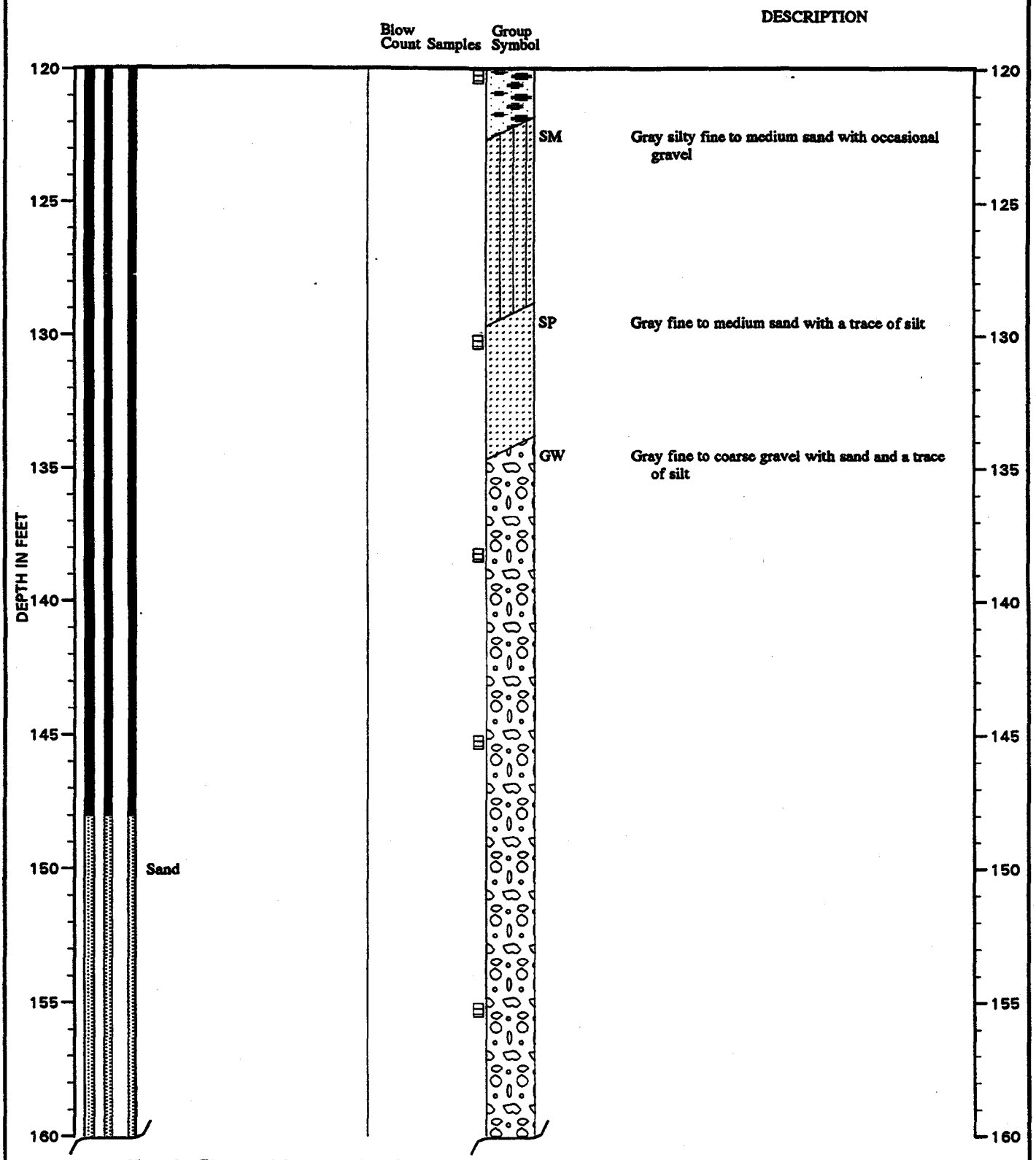
2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-13

MONITORING WELL MW-10B
(Continued)



Note: See Figure A- 2 for explanation of symbols

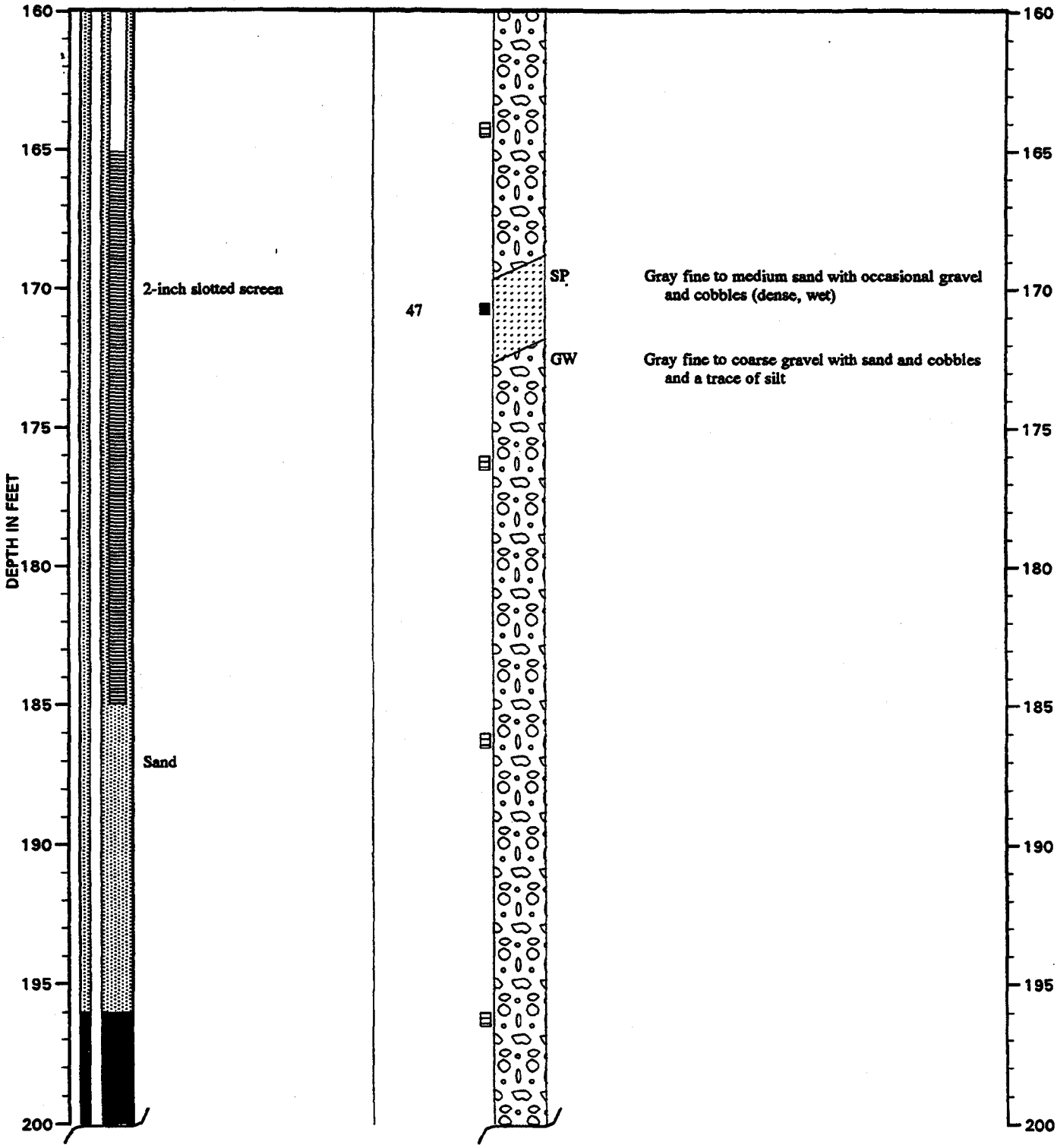
Geo Engineers

LOG OF MONITORING WELL

FIGURE A-13

2067-010-R02 Task 3 .KPB.GWM.CMS 2/24/98

MONITORING WELL MW-10B
(Continued)



Note: See Figure A- 2 for explanation of symbols

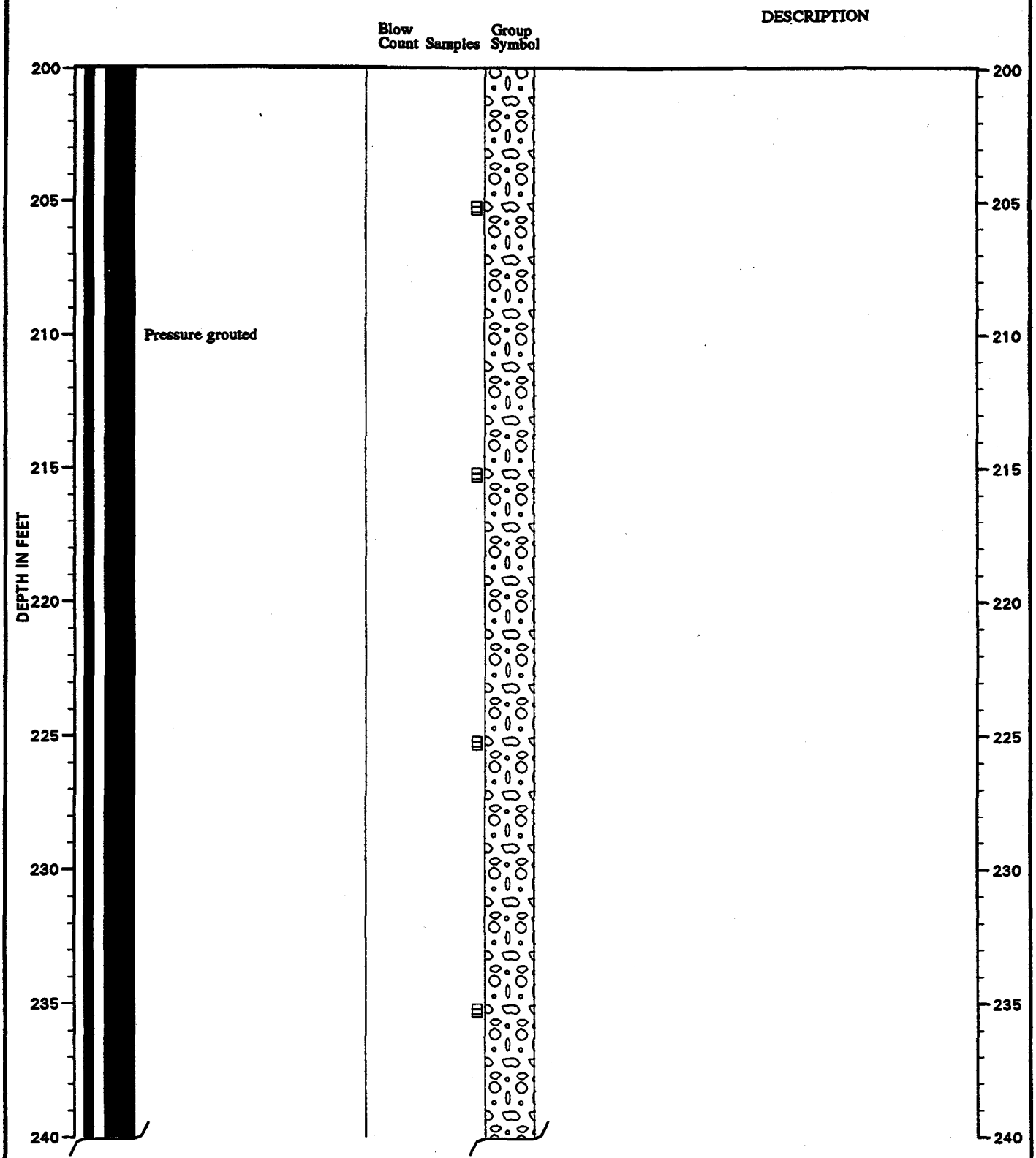
2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-13

MONITORING WELL MW-10B
(Continued)



Note: See Figure A- 2 for explanation of symbols

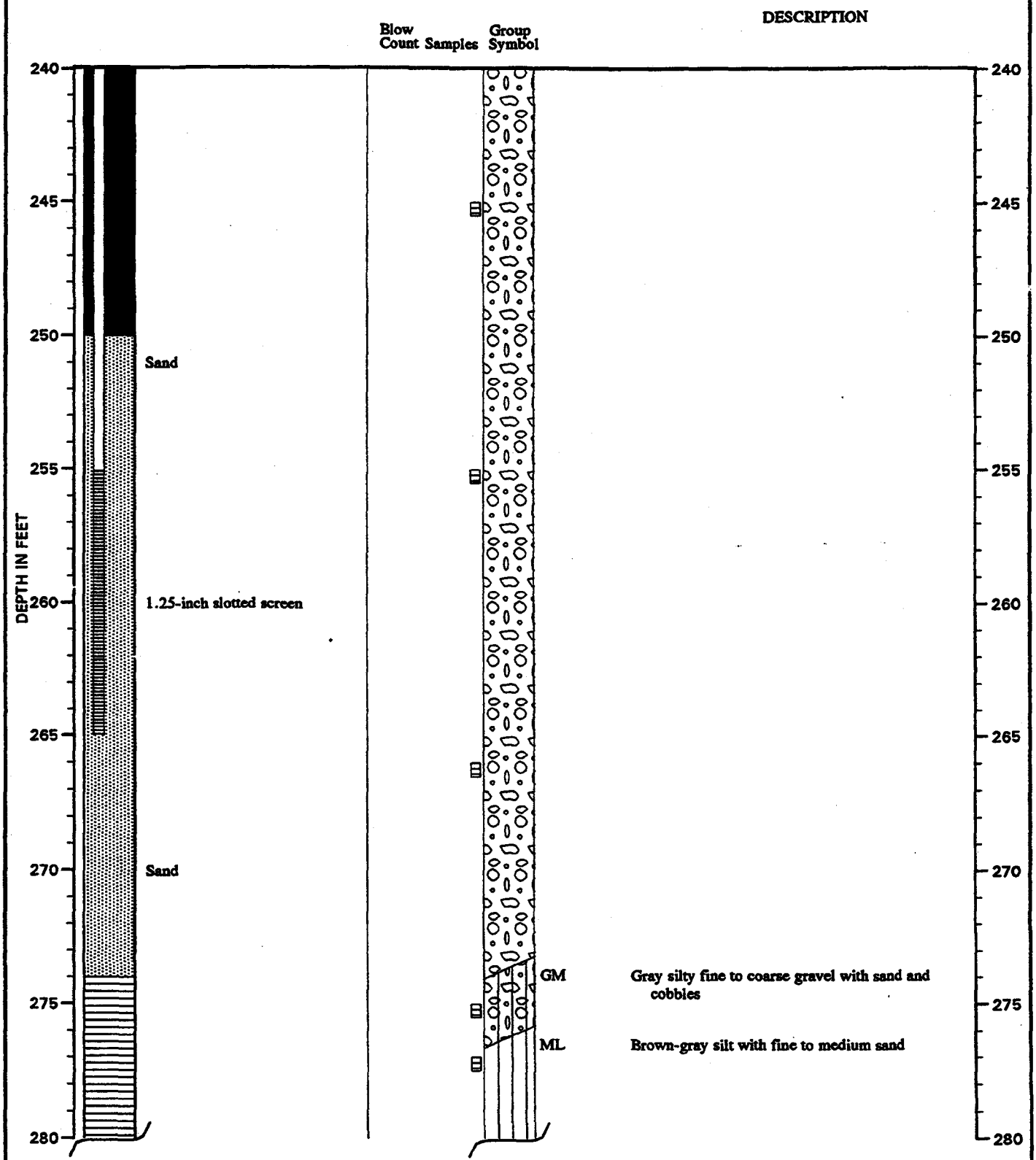
2067-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-13

MONITORING WELL MW-10B
(Continued)



Note: See Figure A- 2 for explanation of symbols

:KPB:GWM:CMS 2/24/95

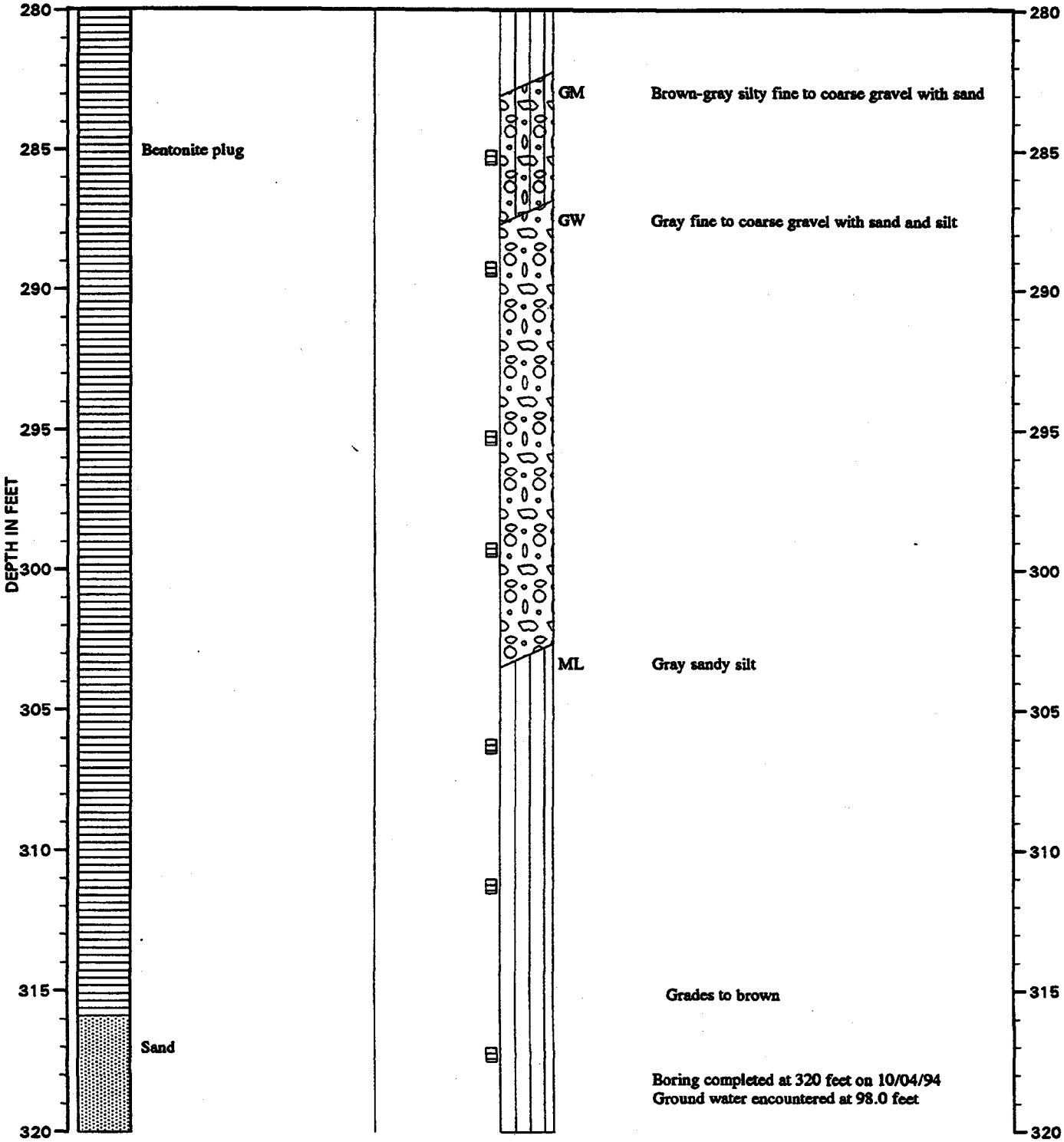
2087-010-R02 Task 3

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-13

MONITORING WELL MW-10B
(Continued)



Note: See Figure A- 2 for explanation of symbols

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-13

2087-010-R02 Task 3 :KPB:GWM:CMS 2/24/95

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 1
		Approximate ground surface elevation: 510 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	ML	Dark brown gravelly silt with medium sand and organic matter (loose, moist)
2.5 - 4.0	GM	Brown stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
4.0 - 5.0	GP-GM	Gray stratified fine gravel with silt and medium to coarse sand (loose, moist) (recessional outwash)
5.0 - 14.0	SP/GP	Interbedded gray medium sand with a trace of silt and occasional cobbles and gray fine gravel with cobbles and medium sand and silt (loose, moist)
14.0 - 15.0	GM/SM	Interbedded gray silty fine gravel with medium sand and occasional cobbles and gray silty sand with occasional cobbles (loose, wet)
		Test pit completed at 15.0 feet on 11/11/94
		Ground water seepage observed at 12.0 feet
		Severe caving from 5.0 to 15.0 feet
		Disturbed soil samples obtained at 1.5, 3.0 and 4.0 feet
		Piezometer (TPP-1) installed on 11/11/94
		TEST PIT 2
		Approximate ground surface elevation: 515 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	GM	Brown silty fine to coarse gravel with medium to coarse sand (medium dense, moist) (glacial till)
2.0 - 16.0	GM	Gray homogeneous silty fine to coarse gravel with medium to coarse sand and occasional cobbles (very dense, moist to dry) (glacial till)
		Practical refusal on till at 16.0 feet on 11/11/94
		No ground water seepage observed
		Disturbed soil sample obtained at 8.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 3
		Approximate ground surface elevation: 775 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	SM/GM	Brown silty medium to coarse sand and brown silty gravel (medium dense, moist) (glacial till)
2.0 - 8.0	SM/GM	Gray homogeneous silty medium to coarse sand with gravel, occasional cobbles and boulders (very dense, moist to dry) (glacial till)
		Practical refusal on till at 8.0 feet on 11/11/94
		No ground water seepage observed
		TEST PIT 4
		Approximate ground surface elevation: 770 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 1.5	SM	Brown silty medium to coarse sand with gravel (medium dense, moist) (glacial till)
1.5 - 6.0	SM	Gray homogeneous silty medium to coarse sand with gravel, occasional cobbles and boulders (very dense, moist) (till)
		Practical refusal on till at 6.0 feet on 11/12/94
		No ground water seepage observed
		TEST PIT 5
		Approximate ground surface elevation: 750 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	SM	Brown silty fine to coarse sand with fine to coarse gravel (medium dense, moist) (weathered glacial till)
2.0 - 6.0	SM/GM	Gray homogeneous silty fine to coarse sand and fine to coarse gravel with cobbles and occasional boulders (very dense, moist to dry) (glacial till)
		Practical refusal on till at 6.0 feet on 11/12/94
		No ground water seepage observed
		Disturbed soil sample obtained at 1.5 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PITS 6
		Approximate ground surface elevation: 640 feet*
0.0 - 3.0	SM	Forest duff, root mass and topsoil (loose, moist)
3.0 - 4.5	SM/ML	Brown silty medium to coarse sand with fine to coarse gravel and lenses of gray silt (loose, moist) (glacial till)
4.5 - 5.0	SM/ML	Gray homogeneous silty medium to coarse sand with fine to coarse gravel and cobbles, and lenses of gray silt (very dense) (glacial till)
		Practical refusal on till at 5.0 feet on 11/12/94
		No ground water seepage observed
		TEST PITS 7
		Approximate ground surface elevation: 620 feet*
0.0 - 3.0	SM	Forest duff, root mass and topsoil (loose, moist)
3.0 - 4.5	SM/ML	Brown silty medium to coarse sand with fine to coarse gravel and lenses of gray silt (loose, moist) (weathered glacial till)
4.5 - 7.5	SM/ML	Gray homogeneous silty medium to coarse sand with fine to coarse gravel and cobbles, and lenses of gray silt (very dense) (glacial till)
		Practical refusal on till at 7.5 feet on 11/12/94
		Slow ground water seepage observed at 4.5 feet
		Minor caving below 4.5 feet
		Disturbed soil samples obtained at 4.0 and 6.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 8
		Approximate ground surface elevation: 575 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 1.5	SM	Brown silty fine to medium sand with fine to coarse gravel and occasional cobbles (medium dense, moist) (weathered glacial till)
1.5 - 6.5	GM	Gray homogeneous silty fine to coarse gravel with fine to coarse sand, cobbles and occasional boulders (very dense, dry) (glacial till)
		Practical refusal on till at 6.5 feet on 11/12/94
		No ground water seepage observed
		TEST PIT 9
		Approximate ground surface elevation: 570 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	SM/GM	Brown silty medium to coarse sand and brown silty fine to coarse gravel with occasional cobbles (loose, moist) (weathered glacial till)
2.0 - 5.5	GM	Gray homogeneous silty fine to coarse gravel with medium to coarse sand, cobbles and occasional boulders (very dense, dry) (glacial till)
		Practical refusal on till at 5.5 feet on 11/12/94
		No ground water seepage observed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 10
		Approximate ground surface elevation: 670 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 1.5	GM	Tannish brown stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
1.5 - 2.5	GM	Tan stratified silty fine to coarse gravel with medium sand, slightly cemented (dense, moist) (recessional outwash)
2.5 - 7.0	GW	Brown stratified fine to coarse gravel with medium to coarse sand, cobbles and occasional boulders (medium dense, moist)
7.0 - 8.5	SM	Brown silty medium to coarse sand with occasional gravel (loose, moist)
8.5 - 20.0	GW-GM	Brown stratified fine to coarse gravel with silt, medium to coarse sand, cobbles, occasional fine sand and boulders (medium dense, moist)
		Test pit completed at 20.0 feet (maximum extent of trackhoe) on 11/14/94
		Slow ground water seepage observed at 14.0 feet
		Minor caving below 14.0 feet
		Disturbed soil samples obtained at 10.0 and 12.0 feet
		Piezometer (TPP-10) installed on 11/14/94

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 11
		Approximate ground surface elevation: 695 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 3.5	SM	Brown stratified silty medium to coarse sand with fine to coarse gravel, occasional cobbles and organic matter (loose, moist) (recessional outwash)
3.5 - 5.0	GM	Brown stratified silty fine to coarse gravel with fine to coarse sand, occasional cobbles and organic matter, slightly cemented (loose to medium dense, moist) (recessional outwash)
5.0 - 5.5	SM/GM	Interbedded gray silty medium sand and gray silty fine gravel with cobbles, cemented (dense, moist)
5.5 - 18.0	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand, cobbles and organic matter, cemented (very dense, dry)
		Practical refusal at 18.0 feet on 11/14/94
		No ground water seepage observed
		Disturbed soil samples obtained at 3.0 and 4.5 feet
		Piezometer (TPP-11) installed on 11/14/94
		TEST PIT 12
		Approximate ground surface elevation: 720 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 3.0	SM/GM	Interbedded brown silty medium to coarse sand and brown silty fine to coarse gravel with occasional cobbles (loose, moist) (recessional outwash)
3.0 - 6.0	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand and occasional boulders, cemented (dense, moist) (recessional outwash)
6.0 - 14.0	GM	Brown stratified silty fine to coarse gravel with fine to coarse sand, cobbles and occasional boulders (very dense, moist) (recessional outwash)
		Practical refusal on boulder or till at 14.0 feet on 11/14/94
		No ground water seepage observed
		Disturbed soil sample obtained at 9.0 feet
		Piezometer (TPP-12) installed on 11/14/94

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 13
		Approximate ground surface elevation: 735 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 12.0	GM	Interbedded tan and gray silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders, cemented (dense, moist) (recessional outwash)
		Practical refusal on till or cemented silt at 12.0 feet on 11/15/94
		No ground water observed
		Disturbed soil sample obtained at 3.0 feet
		TEST PIT 14
		Approximate ground surface elevation: 730 feet*
0.0 - 0.5	SM	Forest duff and topsoil (loose, moist)
0.5 - 3.0	SM	Brown stratified silty fine to medium sand with fine to coarse gravel (loose, moist) (recessional outwash)
3.0 - 10.0	SM	Gray stratified silty fine to medium sand with fine to coarse gravel, cobbles and occasional boulders (medium dense, moist to dry) (recessional outwash)
		Practical refusal on till or cemented silt 10.0 feet on 11/15/94
		No ground water observed
		Disturbed soil samples obtained at 2.0 and 5.0 feet
		Piezometer (TPP-14) installed on 11/15/94

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 15
		Approximate ground surface elevation: 725 feet
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 3.5	SM	Brown stratified silty fine to medium sand with occasional fine to coarse gravel and organic matter (loose, moist) (recessional outwash)
3.5 - 13.0	GW-GM	Interbedded oxidized tan and gray fine to coarse gravel with silt and fine to coarse sand, cobbles and occasional boulders (medium dense, moist to dry) (recessional outwash)
		Practical refusal on cemented silt at 13.0 feet on 11/15/94
		No ground water seepage observed
		Disturbed soil samples obtained at 3.0 to 5.0 and 10 feet
		Piezometer (TPP-14) installed on 11/15/94
		TEST PIT 16
		Approximate ground surface elevation: 720 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	GM	Tannish brown stratified silty fine to coarse gravel with fine to medium sand, cobbles and organic matter (loose, moist) (recessional outwash)
2.0 - 5.0	GM	Gray oxidized, stratified silty fine to coarse gravel with fine to medium sand and cobbles (medium dense, moist) (recessional outwash)
5.0 - 6.5	GM	Tan, oxidized, stratified silty fine to coarse gravel with fine to medium sand and cobbles, cemented (medium dense, dry)
6.5 - 15.0	GM	Brown oxidized, stratified silty fine to coarse gravel with fine to medium sand and cobbles (medium dense, moist)
		Practical refusal on till or cemented silt at 15.0 feet on 11/16/94
		No ground water seepage observed
		Disturbed soil samples obtained at 1.5 and 4.0 feet
		Piezometer (TPP-16) installed on 11/16/94

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 17
		Approximate ground surface elevation: 720 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 4.5	GM	Tannish brown stratified silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders and organic matter (loose, moist) (recessional outwash)
		Increase in moisture with depth
4.5 - 5.5	SM	Gray oxidized, stratified silty fine to coarse sand with fine to coarse gravel and cobbles, cemented (medium dense, moist)
5.5 - 9.0	GM	Tan oxidized, stratified silty fine to coarse gravel with fine to medium sand and cobbles, cemented (dense, moist) (recessional outwash)
9.0 - 18.0	GM	Brown mottled, stratified silty fine to coarse gravel with fine to coarse sand and cobbles (medium dense, moist)
		Practical refusal on till or cemented silt at 18.0 feet on 11/16/94
		No ground water seepage observed
		Disturbed soil samples obtained at 3.0, 5.0 and 14.0 feet
		Piezometer (TPP-17) installed on 11/16/94

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 18
		Approximate ground surface elevation: 710 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 4.0	GM	Tannish brown, oxidized, stratified silty fine to coarse gravel with fine to medium sand and cobbles and organic matter (medium dense, moist) (recessional outwash)
4.0 - 9.5	GM	Gray oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders, cemented (dense, moist) (recessional outwash)
9.5 - 13.5	GM	Brown stratified silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders, cemented (medium dense to dense, moist)
13.5 - 14.0	SM	Brown silty fine to coarse sand with fine to coarse gravel and occasional cobbles (medium dense, moist)
14.0 - 20.0	GM	Brown stratified silty fine to coarse gravel with fine to coarse sand, cobbles and occasional boulders, cemented (medium dense to dense, moist)
		Test pit completed at 20.0 feet (maximum extent of backhoe) on 11/16/94
		Slow ground water seepage observed at 4.0 feet
		Disturbed soil samples obtained at 3.0, 14.0, 16.0 to 18.0 feet
		Piezometer (TPP-18) installed on 11/16/94

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 19
		Approximate ground surface elevation: 580 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 4.0	GM	Brown stratified silty fine to coarse gravel with fine to medium sand, occasional cobbles and boulders (loose, moist) (recessional outwash)
4.0 - 8.0	GM	Gray oxidized, stratified silty fine to coarse gravel with fine to medium sand, occasional cobbles and boulders, cemented (medium dense to dense, moist) (recessional outwash)
8.0 - 9.0	GM	Tannish gray homogenous silty fine to coarse gravel with fine to medium sand, occasional cobbles and boulders (very dense, moist to dry) (glacial till)
		Practical refusal on till at 9.0 feet on 11/17/94
		No ground water seepage observed
		Disturbed soil samples obtained at 3.0, 6.0 to 7.0 and 9.0 feet
		Piezometer (TPP-19) installed on 11/17/94
		TEST PIT 20
		Approximate ground surface elevation: 580 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 1.0	GM	Brown stratified silty fine to coarse gravel with fine to medium sand and cobbles (loose, moist) (recessional outwash)
1.0 - 5.0	GM	Interbedded gray and tan silty fine to coarse gravel with fine to medium sand and cobbles, slightly cemented (medium dense, moist) (recessional outwash)
		Practical refusal on sandy till at 5.0 feet on 11/17/94
		No ground water seepage observed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 21
		Approximate ground surface elevation: 590 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 4.0	GM	Brown stratified silty fine to coarse gravel with fine to medium sand and cobbles (medium dense, moist) (recessional outwash)
4.0 - 12.0	SM	Grayish tan stratified silty fine to medium sand with fine to coarse gravel and cobbles, moderately cemented (medium dense to dense, moist) (recessional outwash)
		Practical refusal on sandy till at 12.0 feet on 11/17/94
		No ground water seepage observed
		Disturbed soil samples obtained at 3.0 and 8.0 feet
		Piezometer (TPP-21) installed on 11/17/94
		TEST PIT 22
		Approximate ground surface elevation: 565 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	SM	Dark brown silty fine to medium sand with occasional gravel and cobbles (loose, moist)
2.5 - 4.0	GM	Brown stratified silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders (medium dense, moist) (recessional outwash)
4.0 - 7.0	GM	Gray and tan mottled stratified silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders, slightly cemented (medium dense, moist) (recessional outwash)
		Practical refusal on sandy till at 7.0 feet on 11/17/94
		No ground water seepage observed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 23
		Approximate ground surface elevation: 560 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 1.5	GM	Brown stratified silty fine to coarse gravel with fine to medium sand and cobbles (loose, moist) (recessional outwash)
1.5 - 2.5	GM	Grayish tan oxidized, stratified silty fine to coarse gravel with fine to medium sand and cobbles (medium dense, moist) (recessional outwash)
2.5 - 3.0	GM	Gray homogenous silty fine to coarse gravel with fine to coarse sand, occasional cobbles and boulders (very dense, moist to dry) (glacial till)
		Practical refusal on till at 3.0 feet on 11/17/94
		No ground water seepage observed
		TEST PIT 24
		Approximate ground surface elevation: 565 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	GM	Brown stratified silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders (loose, moist) (recessional outwash)
2.0 - 6.0	GM	Gray oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders, slightly cemented (medium dense, moist) (recessional outwash)
6.0 - 7.0	GM	Gray homogenous silty fine to coarse gravel with fine to coarse sand, occasional cobbles and boulders (very dense to hard, moist to dry) (glacial till)
		Practical refusal on sandy till to 7.0 feet on 11/17/94
		No ground water seepage observed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 25
		Approximate ground surface elevation: 560 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	GM	Brown stratified silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders (loose, moist) (recessional outwash)
2.5 - 5.0	GM	Grayish tan oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders (medium dense, moist) (recessional outwash)
5.0 - 6.0	GM	Gray homogenous silty fine to coarse gravel with fine to coarse sand, occasional cobbles and boulders (very dense, moist to dry) (glacial till)
		Practical refusal on sandy till at 6.0 feet on 11/17/94
		No ground water seepage observed
		TEST PIT 26
		Approximate ground surface elevation: 530 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 4.0	GM	Brown oxidized, stratified silty fine to coarse gravel with fine to coarse sand, cobbles and occasional boulders, organic matter (roots) (medium dense, moist) (recessional outwash)
4.0 - 15.0	SM	Gray stratified silty fine to coarse sand and with fine to coarse gravel, cobbles and occasional boulders (dense, moist) (recessional outwash)
15.0 - 16.0	GM	Gray homogeneous silty fine to coarse gravel with fine to coarse sand, occasional cobbles and boulders (very dense to hard, moist to dry) (glacial till)
		Practical refusal on till at 16.0 feet on 11/18/94
		Ground water seepage observed at 4.0 feet
		Minor caving at 4.0 feet
		Disturbed soil samples obtained at 3.0, 8.0 to 12.0 feet
		Piezometer (TPP-26) installed on 11/18/94

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 27
		Approximate ground surface elevation: 580 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	GM	Brown stratified silty fine to coarse gravel with fine to coarse sand, cobbles, occasional boulders and roots (medium dense, moist) (recessional outwash)
2.5 - 5.5	GM	Gray oxidized, stratified silty fine to coarse gravel with fine to coarse sand, cobbles, occasional boulders and roots (medium dense to dense, moist) (recessional outwash)
5.5 - 6.0	GM	Gray homogenous silty fine to coarse gravel with fine to medium sand, occasional cobbles and boulders (hard, moist to dry) (glacial till)
		Practical refusal on till at 6.0 feet on 11/18/94
		No ground water seepage observed
		TEST PIT 28
		Approximate ground surface elevation: 515 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 1.5	GM	Brown stratified silty fine to coarse gravel with fine to coarse sand, cobbles and occasional boulders (medium dense, moist) (recessional outwash)
1.5 - 15.0	GW	Gray stratified fine to coarse gravel with fine to coarse sand, occasional boulders, cobbles and a trace of silt (medium dense, moist to wet) (recessional outwash)
		Test pit completed at 15.0 feet on 11/18/94
		Ground water seepage observed at 11.0 feet
		Severe caving below 11.0 feet
		Disturbed soil samples obtained at 1.0, 4.0 to 6.0 feet
		Piezometer (TPP-28) installed on 11/18/94

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 29
		Approximate ground surface elevation: 520 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 3.0	GM	Brown oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders (loose, moist) (recessional outwash)
3.0 - 12.0	GM	Gray oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders (medium dense, moist) (recessional outwash)
		Practical refusal on till at 12.0 feet on 11/18/94
		No ground water seepage observed
		Disturbed soil samples obtained at 2.0, 7.0 to 9.0 feet
		Piezometer (TPP-29) installed on 11/18/94

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 30
		Approximate ground surface elevation: 715 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, dry to moist)
1.0 - 3.5	SM	Brown stratified silty fine to coarse sand with gravel, clay, occasional cobbles and organic matter (roots) (medium dense, moist) (recessional outwash)
3.5 - 9.0	SM/GM	Interbedded gray oxidized silty fine to coarse gravel and brown silty medium to coarse sand with cobbles, clay and occasional boulders, cemented (dense, dry to moist) (recessional outwash)
		Test pit completed at 9.0 feet on 01/26/95
		No ground water seepage observed
		Disturbed soil sample obtained at 7.0 feet
		TEST PIT 31
		Approximate ground surface elevation: 715 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (soft, moist)
1.0 - 4.0	SM	Brown stratified silty fine to coarse sand with gravel, clay and occasional cobbles (medium dense, moist) (recessional outwash)
4.0 - 6.5	GM	Brownish gray stratified silty fine to coarse gravel with sand, cobbles, clay and occasional boulders, cemented (dense, moist) (recessional outwash)
		Test pit completed at 6.5 feet on 01/26/95
		No ground water seepage observed
		Disturbed soil sample obtained at 6.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 32
		Approximate ground surface elevation: 720 feet*
0.0 - 0.5		Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	SM	Brown stratified silty fine to coarse sand with gravel, clay and occasional cobbles (medium dense, moist) (recessional outwash)
2.0 - 6.0	GM	Brown stratified silty fine to coarse gravel and cobbles with sand, clay and occasional boulders, cemented (medium dense to dense, moist) (recessional outwash)
		Test pit completed at 6.0 feet on 01/26/95
		No ground water seepage observed
		TEST PIT 33
		Approximate ground surface elevation: 720 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 2.5	SM	Brown stratified silty fine to coarse sand with gravel, clay and occasional cobbles (medium dense, moist) (recessional outwash)
2.5 - 7.0	GM	Brownish gray oxidized, stratified silty fine to coarse gravel with sand, cobbles, clay and occasional boulders, cemented (dense, moist to wet) (recessional outwash)
		Test pit completed at 7.0 feet on 01/27/95
		Ground water seepage observed at 2.5 feet
		Minor caving observed at 2.5 feet
		Disturbed soil sample obtained at 6.5 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 34
		Approximate ground surface elevation: 722 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	SM	Brown stratified silty fine to coarse sand with gravel, clay and occasional cobbles (medium dense, moist) (recessional outwash)
2.5 - 6.5	GM	Brownish gray oxidized, stratified silty fine to coarse gravel with sand, cobbles, clay and occasional boulders, cemented (dense, moist) (recessional outwash)
		Test pit completed at 6.5 feet on 01/27/95
		No ground water seepage observed
		Disturbed soil sample obtained at 5.5 feet
		TEST PIT 35
		Approximate ground surface elevation: 725 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	SM/GM	Brown stratified, oxidized silty fine to coarse sand with gravel, clay and occasional cobbles (medium dense, moist) (recessional outwash)
2.5 - 7.0	GM	Brownish gray oxidized, stratified silty fine to coarse gravel with sand, cobbles, clay and occasional boulders, cemented (dense, moist) (recessional outwash)
		Test pit completed at 7.0 feet on 01/27/95
		Ground water seepage observed at 4.0 feet
		Minor caving observed at 4.0 feet
		Disturbed soil sample obtained at 6.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 36
		Approximate ground surface elevation: 730 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	SM	Brown stratified silty fine to medium sand with clay, occasional fine to coarse gravel and organic matter (roots) (loose, moist) (recessional outwash)
2.5 - 9.5	GM	Brownish gray oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles, clay and occasional boulders, cemented (dense to very dense, moist) (recessional outwash)
		Test pit completed at 9.5 feet on 01/27/95
		Ground water seepage observed at 2.5 feet
		Minor caving observed below 2.5 feet
		Disturbed soil sample obtained at 6.5 feet
		TEST PIT 37
		Approximate ground surface elevation: 725 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	SM	Brown stratified silty fine to medium sand with fine to coarse gravel, clay and organic matter (roots) (loose to medium dense, moist) (recessional outwash)
2.0 - 7.0	GM	Brownish gray oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles, clay and occasional boulders, cemented (dense to very dense, moist) (recessional outwash)
		Test pit completed at 7.0 feet on 01/27/95
		Ground water seepage observed at 2.0 feet
		Minor caving observed at 2.0 feet
		Disturbed soil sample obtained at 6.5 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 38
		Approximate ground surface elevation: 725 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	SM	Brown stratified silty fine to medium sand with fine to coarse gravel, clay and organic matter (roots) (loose to medium dense, moist) (recessional outwash)
2.0 - 6.0	GM	Brown oxidized, stratified silty fine to coarse gravel and cobbles with fine to medium sand, clay and occasional boulders, cemented (dense, moist) (recessional outwash)
		Test pit completed at 6.0 feet on 01/27/95
		Ground water seepage observed at 3.0 feet
		Minor caving observed at 3.0 feet
		Disturbed soil sample obtained at 6.0 feet
		TEST PIT 39
		Approximate ground surface elevation: 728 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 3.0	SM	Brown stratified silty fine to medium sand with occasional fine to coarse gravel, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
3.0 - 6.5	GM	Brownish gray oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles, clay and occasional boulders, cemented (dense, moist) (recessional outwash)
		Test pit completed at 6.5 feet on 01/27/95
		Ground water seepage observed at 3.5 feet
		Minor caving observed at 3.5 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 40
		Approximate ground surface elevation: 728 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	SM	Brown stratified silty fine to medium sand with clay and occasional fine to coarse gravel (loose to medium dense, moist) (recessional outwash)
2.5 - 6.5	GM	Brownish gray oxidized, stratified silty fine to coarse gravel and cobbles with fine to medium sand, clay and occasional boulders, cemented (medium dense to dense, moist) (recessional outwash)
		Test pit completed at 6.5 feet on 01/27/95
		Ground water seepage observed at 3.0 feet
		Minor caving observed at 3.0 feet
		Disturbed soil sample obtained at 6.0 feet
		TEST PIT 41
		Approximate ground surface elevation: 740 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	SM	Brown stratified silty fine to medium sand with clay and occasional fine to coarse gravel (loose to medium dense, moist) (recessional outwash)
2.0 - 7.0	GM	Brownish gray oxidized, stratified silty fine to coarse gravel and cobbles with fine to medium sand, clay and occasional boulders, cemented (dense, moist) (recessional outwash)
		Test pit completed at 7.0 feet on 01/27/95
		Ground water seepage observed at 2.0 feet
		Minor caving observed at 2.0 feet
		Disturbed soil sample obtained at 5.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 42
		Approximate ground surface elevation: 755 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 4.5	SM	Brown stratified silty fine to medium sand with fine to coarse gravel, clay, occasional cobbles and boulders (loose to medium dense, moist) (recessional outwash)
4.5 - 16.5	GM	Brown oxidized, stratified silty fine to coarse gravel and cobbles with fine to medium sand, clay and occasional boulders (dense, moist to wet) (recessional outwash)
		Test pit completed at 16.5 feet on 01/28/95
		Ground water seepage observed at 11.5 feet
		Caving observed at 12.5 feet
		Disturbed soil samples obtained at 7.0 and 16.0 feet
		Piezometer (TPP-42) installed on 01/28/95
		TEST PIT 43
		Approximate ground surface elevation: 655 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 4.0	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
4.0 - 5.0	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand, slightly cemented (dense, moist) (recessional outwash)
5.0 - 6.0	GW-GM	Brown stratified fine to coarse gravel with silt, medium to coarse sand, cobbles and occasional boulders (medium dense, moist)
6.0 - 7.0	ML	Tannish gray silt with clay (soft, moist to wet) (lacustrine deposit)
7.0 - 10.0	SM	Tan silty fine sand with gravel and cobbles (medium dense, moist to wet)
		Test pit completed at 10.0 feet on 01/31/95
		Slow ground water seepage observed at 6.0 feet
		Minor caving observed at 5.5 and 8.0 feet
		Disturbed soil samples obtained at 4.0 and 9.0 feet
		Double-ring infiltration test performed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 44
		Approximate ground surface elevation: 660 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 6.0	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
6.0 - 7.5	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand, slightly cemented (dense, moist) (recessional outwash)
7.5 - 10.0	SP	Brown stratified medium to coarse sand with gravel, cobbles, occasional boulders and a trace of silt (medium dense, moist)
10.0 - 18.0	GW-GM	Brown stratified fine to coarse gravel with silt, medium to coarse sand, cobbles and occasional boulders (medium dense, moist)
		Test pit completed at 18.0 feet (maximum extent of trackhoe) on 01/31/95
		No ground water seepage observed
		Caving observed at 10.0 feet
		Disturbed soil samples obtained at 4.0 and 8.0 feet
		Double-ring infiltration test performed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 45
		Approximate ground surface elevation: 660 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 3.5	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
3.5 - 4.5	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand, slightly cemented (dense, moist) (recessional outwash)
4.5 - 6.5	ML	Tannish gray silt with clay (soft, moist) (lacustrine deposit)
6.5 - 13.0	SM	Tan silty fine sand (medium dense, moist to wet)
13.0 - 17.0	SM	Tan silty fine sand with medium to coarse sand, occasional gravel and cobbles (medium dense, wet)
		Test pit completed at 17.0 feet (maximum extent of trackhoe) on 01/31/95
		Moderate to rapid ground water seepage observed at 13.0 feet
		Minor caving observed at 13.0 feet associated with seepage
		Disturbed soil samples obtained at 4.0, 5.0, 10.0 and 15.0 feet
		TEST PIT 46
		Approximate ground surface elevation: 715 feet*
0.0 - 1.5	SM	Forest duff, root mass and topsoil (loose, moist)
1.5 - 4.0	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
4.0 - 16.0	GM	Brown stratified silty fine to coarse gravel and cobbles with fine to medium sand, clay and occasional boulders, cemented (medium dense to dense, moist) (recessional outwash)
16.0 - 18.0	GM	Grayish brown oxidized, stratified silty fine to coarse gravel and cobbles with fine to medium sand, and occasional boulders, slightly cemented (medium dense, moist)
		Test pit completed at 18.0 feet (maximum extent of trackhoe) on 01/31/95
		Slow ground water seepage observed at 7.0 feet
		Minor caving observed at 7.0 and 17.0 feet
		Disturbed soil samples obtained at 6.0 and 17.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 47
		Approximate ground surface elevation: 655 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 4.0	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
4.0 - 5.0	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand, slightly cemented (dense, moist) (recessional outwash)
5.0 - 6.0	GW-GM	Brown stratified fine to coarse gravel with silt, medium to coarse sand, cobbles and occasional boulders (medium dense, moist)
6.0 - 7.0	ML	Tannish gray silt with clay (soft, moist) (lacustrine deposit)
7.0 - 12.0	SM	Tan silty fine sand with occasional gravel and cobbles (medium dense, moist)
12.0 - 17.0	ML	Gray silt with fine to coarse sand, clay, gravel and occasional cobbles (medium dense to dense, moist to wet) (lacustrine deposits)
		Test pit completed at 17.0 feet (maximum extent of trackhoe) on 01/31/95
		Slow ground water seepage observed at 6.0 and 12.0 feet
		Minor caving observed at 6.0 and 12.0 feet
		Disturbed soil sample obtained at 15.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 48
		Approximate ground surface elevation: 670 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 4.0	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
4.0 - 5.5	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand and clay, slightly cemented (dense, moist) (recessional outwash)
5.5 - 12.0	SP-SM	Brown stratified medium to coarse sand with silt, gravel, cobbles and occasional boulders (medium dense, moist)
12.0 - 18.0	GW-GM	Brown stratified fine to coarse gravel with silt, medium to coarse sand, cobbles and occasional boulders (medium dense, moist)
		Test pit completed at 18.0 feet (*maximum extent* of trackhoe) on 02/01/95
		Slow ground water seepage observed at 12.0 and 15.0 feet
		Minor caving observed at 12.0 and 15.0 feet
		Disturbed soil sample obtained at 12.0 feet
		Double-ring infiltration test performed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 49
		Approximate ground surface elevation: 660 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 2.5	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
2.5 - 15.0	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand and clay, cemented (medium dense, moist) (recessional outwash)
15.0 - 16.0	SM	Tan silty fine sand (medium dense, moist to wet)
16.0 - 17.0	ML	Gray silt with fine to coarse sand, gravel, silt and occasional cobbles (medium dense to dense, wet)
		Test pit completed at 17.0 feet (maximum extent of trackhoe) on 02/01/95
		Ground water seepage observed at 10.0 and 16.0 feet
		Caving observed from 10.0 to 16.0 feet
		Disturbed soil samples obtained at 10.0 and 16.0 feet
		TEST PIT 50
		Approximate ground surface elevation: 450 feet*
0.0 - 3.0	GW	Brown oxidized fine to coarse gravel with fine to medium sand, cobbles and a trace of organic matter (roots to 3 feet) (medium dense, moist)
3.0 - 4.0	SW	Gray fine to coarse sand with fine to coarse gravel and cobbles
4.0 - 5.5	SP	Brown fine sand (loose, moist)
5.5 - 10.5	GW	Grayish brown fine to coarse gravel with fine to medium sand and cobbles (medium dense, moist)
10.5 - 15.5	GW-GM	Light brown fine to coarse gravel with silt, fine to medium sand and cobbles (medium dense, wet)
		Test pit completed at 15.5 feet (maximum extent of backhoe) on 02/03/95
		No ground water seepage observed
		Minor caving observed below 5.0 feet
		Disturbed soil samples obtained at 7.0 and 13.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 51
		Approximate ground surface elevation: 450 feet*
0.0 - 5.0	GW	Brown-gray oxidized fine to coarse gravel with fine to medium sand and cobbles (medium dense, moist)
5.0 - 6.5	GW	Grayish brown fine to coarse gravel with fine to medium sand, cobbles and a trace of silt (medium dense, moist)
6.5 - 8.0	GW	Light brown fine to coarse gravel with occasional fine to medium sand (loose, moist)
8.0 - 15.0	GW-GM	Light brown fine to coarse gravel with fine to medium sand, cobbles and silt (medium dense to loose, moist to wet)
		Test pit completed at 15.0 feet (maximum extent of backhoe) on 02/03/95
		No ground water seepage observed
		Caving observed below 6.5 feet
		Disturbed soil sample obtained at 6.0 feet
		TEST PIT 52
		Approximate ground surface elevation: 450 feet*
0.0 - 0.5	SM	Black silty fine sand with organic matter (roots) (loose, moist)
0.5 - 2.5	SM	Brown oxidized silty fine to medium sand with fine to coarse gravel, cobbles and boulders (medium dense, moist)
2.5 - 6.0	GW	Gray fine to coarse gravel with fine to medium sand, cobbles and occasional boulders (medium dense, moist)
6.0 - 14.5	GW-GM	Light brown fine to coarse gravel with silt, medium to coarse sand and cobbles (medium dense, moist to wet)
		Test pit completed at 14.5 feet (maximum extent of backhoe) on 02/03/95
		No ground water seepage observed
		Disturbed soil sample obtained at 5.5 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 53
		Approximate ground surface elevation: 510 feet*
0.0 - 0.5	SM	Black-brown silty fine sand with organic matter (soft, moist) (topsoil)
0.5 - 1.5	SW	Brown fine to coarse sand with occasional fine gravel and organic matter (roots) (loose, moist) (recessional outwash)
1.5 - 2.5	SW	Grayish brown oxidized fine to coarse sand with fine to coarse gravel (medium dense, moist) (recessional outwash)
2.5 - 8.0	SW	Grayish brown fine to coarse sand with fine to coarse gravel (medium dense, moist to wet) (recessional outwash)
		Increase in cobbles and boulders with depth
		Refusal due to caving associated with ground water seepage
		Test pit completed at 8.0 feet on 02/02/95
		Rapid ground water seepage observed at 7.0 feet
		Severe caving observed below 7.0 feet
		Disturbed soil sample obtained at 6.0 feet
		TEST PIT 54
		Approximate ground surface elevation: 520 feet*
0.0 - 0.5		Forest duff
0.5 - 1.0	SM	Light brown silty fine sand with occasional gravel and organic matter (roots) (loose, moist)
1.0 - 3.0	SM	Brown oxidized silty fine to medium sand with gravel, occasional cobbles and a trace of organic matter (roots) (medium dense, moist) (recessional outwash)
3.0 - 11.0	SM	Gray silty fine to medium sand with gravel, cemented (dense, moist) (recessional outwash)
		Increases to very dense with depth
		Practical refusal in till at 11.0 feet on 02/02/95
		Ground water seepage observed from 3.0 to 5.0 feet
		Disturbed soil sample obtained at 5.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 55
		Approximate ground surface elevation: 508 feet*
0.0 - 0.5	OL	Black organic topsoil (loose, moist)
0.5 - 2.0	SM	Brown oxidized silty fine to medium sand with gravel (medium dense, moist) (recessional outwash)
2.0 - 4.5	SP	Gray fine to medium sand with fine to coarse gravel and cobbles (medium dense, moist) (recessional outwash)
		Test pit completed at 4.5 feet on 02/02/95
		Ground water seepage observed at 4.0 feet
		TEST PIT 56
		Approximate ground surface elevation: 510 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	SM	Brown oxidized silty fine to medium sand with gravel (loose, moist) (recessional outwash)
2.0 - 6.0	GW	Gray oxidized fine to coarse gravel with fine to medium sand (loose, moist to wet) (recessional outwash)
		Wet at 4.0 feet
		Test pit completed at 6.0 feet on 02/02/95
		Rapid ground water seepage observed at 4.0 feet
		Severe caving observed below 3.0 feet
		Piezometer (TPP-56) installed on 02/02/95

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 57
		Approximate ground surface elevation: 715 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 3.0	GM	Brown oxidized, stratified silty fine to coarse gravel, fine to medium sand, cobbles, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
3.0 - 15.0	GM	Grayish brown stratified silty fine to coarse gravel and cobbles with fine to medium sand, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
		Test pit completed at 15.0 feet (maximum extent of backhoe) on 02/03/95
		Ground water seepage observed at 7.0 and 10.0 feet
		Minor caving observed at 7.0 and 10.0 feet
		Disturbed soil sample obtained at 10.0 feet
		TEST PIT 58
		Approximate ground surface elevation: 712 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 3.0	GM	Brown oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
3.0 - 12.0	GM	Grayish brown stratified silty fine to coarse gravel and cobbles with fine to medium sand, clay and occasional boulders, cemented (medium dense to dense, moist) (recessional outwash)
12.0 - 15.0	GM	Grayish brown oxidized stratified silty fine to coarse gravel and cobbles with fine to medium sand and occasional boulders, slightly cemented (medium dense, moist)
		Test pit completed at 15.0 feet (maximum extent of backhoe) on 02/03/95
		Ground water seepage observed at 10.0 and 12.0 feet
		Caving observed at 10.0 and 12.0 feet
		Disturbed soil samples obtained at 8.0 and 13.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 59
		Approximate ground surface elevation: 725 feet*
0.0 - 0.5	SM	Root mass and forest duff (loose, moist)
0.5 - 2.5	SM	Brown stratified silty medium to coarse sand with gravel, cobbles and clay (loose to medium dense, moist) (recessional outwash)
2.5 - 4.0	GM	Brownish gray stratified silty fine to coarse gravel and cobbles with clay and occasional boulders, cemented (dense, moist) (recessional outwash)
4.0 - 6.0	SM	Gray homogeneous silty medium to coarse sand with gravel, clay and occasional cobbles and boulders (very dense, moist to dry) (glacial till)
		Test pit completed at 6.0 feet on 02/06/95
		Slow ground water seepage observed from 2.5 to 5.0 feet
		Minor caving observed from 2.5 to 5.0 feet
		Double-ring infiltration test performed
		TEST PIT 60
		Approximate ground surface elevation: 680 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 3.0	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with medium to coarse sand (loose to medium dense, moist) (recessional outwash)
3.0 - 4.0	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand and clay, cemented (dense, moist) (recessional outwash)
4.0 - 16.0	SM	Brown stratified medium to coarse sand with gravel, cobbles, clay and occasional boulders (medium dense, moist)
		Test pit completed at 16.0 feet (maximum extent of trackhoe) on 02/05/95
		Slow ground water seepage observed at 12.0 feet
		Caving observed at 12.0 feet
		Disturbed soil sample obtained at 5.0 feet
		Double-ring infiltration test performed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 61
		Approximate ground surface elevation: 710 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	GM	Brown oxidized, stratified silty fine to coarse gravel with fine to coarse sand and clay (loose, moist) (recessional outwash)
2.5 - 11.0	SM/GM	Interbedded tan and brownish gray silty fine to medium sand and silty fine to coarse gravel with fine to medium sand and clay, cemented (dense to medium dense, moist) (recessional outwash)
		Practical refusal on cemented silt at 11.0 feet on 02/05/95
		Ground water seepage observed at 10.0 feet
		Minor caving observed at 11.0 feet
		TEST PIT 62
		Approximate ground surface elevation: 655 feet*
0.0 - 1.0	SM	Forest duff, root mass and topsoil (loose, moist)
1.0 - 3.0	GM	Brown oxidized, stratified silty fine to coarse gravel with medium to coarse sand (loose to medium dense, moist) (recessional outwash)
3.0 - 12.0	SM	Brown stratified silty medium to coarse sand with fine to coarse gravel, cobbles, clay and occasional boulders (medium dense, moist) (recessional outwash)
12.0 - 12.5	ML	Grayish brown silt with clay and organic matter (roots) (soft, wet)
12.5 - 15.0	SM	Brown stratified silty medium to coarse sand with gravel, cobbles, clay and occasional boulders (medium dense, moist) (recessional outwash)
		Test pit completed at 15.0 feet on 02/05/95
		Slow ground water seepage observed at 12.0 feet
		Minor caving observed below 12.0 feet
		Disturbed soil sample obtained at 13.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 63
		Approximate ground surface elevation: 715 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	GM	Brown oxidized silty fine to coarse gravel with fine to coarse sand and clay (loose to medium dense, moist) (recessional outwash)
2.0 - 11.0	GM	Grayish brown stratified silty fine to coarse gravel with medium to coarse sand, cobbles, clay and occasional boulders, cemented (medium dense to dense, moist) (recessional outwash)
		Refusal on cemented soils at 11.0 feet on 02/07/95
		Ground water seepage observed at 10.0 feet
		Minor caving observed at 10.0 feet
		TEST PIT 64
		Approximate ground surface elevation: 715 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	GM	Brown oxidized silty fine to coarse gravel with fine to coarse sand and clay (loose to medium dense, moist) (recessional outwash)
2.0 - 6.0	GM	Grayish brown stratified silty fine to coarse gravel with medium to coarse sand, cobbles, clay and occasional boulders, cemented (medium dense to dense, moist) (recessional outwash)
		Test pit completed at 6.0 feet on 02/07/95
		No ground water seepage observed
		Double-ring infiltration test performed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 65
		Approximate ground surface elevation: 700 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 1.5	SM	Brown oxidized stratified silty medium to coarse sand with fine to coarse gravel, clay, occasional cobbles and organic matter (roots) (loose, moist) (recessional outwash)
1.5 - 8.0	SM	Grayish brown stratified silty medium to coarse sand with gravel, clay and occasional cobbles, cemented (dense, moist) (recessional outwash)
8.0 - 17.0	GM	Brown stratified silty fine to coarse gravel with medium to coarse sand, cobbles, and clay, cemented (very dense, moist to dry)
		Test pit completed at 17.0 feet on 02/06/95
		No ground water seepage observed
		Minor caving observed
		TEST PIT 66
		Approximate ground surface elevation: 707 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	SM	Brown oxidized stratified silty medium to coarse sand with fine to coarse gravel, clay, occasional cobbles and organic matter (roots) (loose, moist) (recessional outwash)
2.0 - 7.0	GM	Brown stratified silty fine to coarse gravel with medium to coarse sand, cobbles, and clay, cemented (dense, moist) (recessional outwash)
		Test pit completed at 7.0 feet on 02/06/95
		No ground water seepage observed
		Double-ring infiltration test performed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 67
		Approximate ground surface elevation: 705 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 1.0	GM	Tan oxidized silty fine to coarse gravel with fine to medium sand, cobbles, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
1.0 - 2.5	GM	Gray stratified silty fine to coarse gravel and cobbles with fine to medium sand, clay and occasional boulders, cemented (medium dense, moist) (recessional outwash)
2.5 - 15.0	ML	Tan mottled silt with fine sand and occasional medium to coarse sand, gravel and cobbles (medium dense to dense, moist) (lacustrine deposit)
15.0 - 17.0	GM	Brown oxidized stratified silty fine to coarse gravel and cobbles with fine to medium sand and occasional boulders, slightly cemented (medium dense, moist)
		Test pit completed at 17.0 feet on 02/08/95
		No ground water seepage observed
		Disturbed soil samples obtained at 6.0 and 16.0 feet
		TEST PIT 68
		Approximate ground surface elevation: 705 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	GM	Tan oxidized silty fine to coarse gravel with fine to medium sand, cobbles, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
2.0 - 4.5	CL	Gray mottled clay with fine to medium sand, silt, occasional gravel and organic matter (roots) (soft, moist) (lacustrine deposit)
4.5 - 7.0	GM	Tannish brown stratified silty fine to coarse gravel and cobbles with fine to medium sand and occasional boulders, slightly cemented (medium dense, moist) (recessional outwash)
		Refusal due to ground water seepage
		Test pit completed at 7.0 feet on 02/08/95
		Slow to moderate ground water seepage observed at 4.0 feet
		Minor caving observed at 4.0 feet
		Disturbed soil sample obtained at 3.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 69
		Approximate ground surface elevation: 705 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 5.0	GM	Tan oxidized silty fine to coarse gravel with fine to medium sand, cobbles, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
5.0 - 9.0	GM	Tannish brown stratified silty fine to coarse gravel and cobbles with fine to medium sand and occasional boulders, slightly cemented (medium dense, moist) (recessional outwash)
9.0 - 15.0	GM	Brown stratified silty fine to coarse gravel and cobbles with fine to medium sand and occasional boulders, slightly cemented (medium dense, moist)
		Test pit completed at 15.0 feet on 02/08/95
		Slow ground water seepage observed at 9.0 feet
		Minor caving observed from 9.0 to 15.0 feet
		Disturbed soil sample obtained at 12.0 feet
		TEST PIT 70
		Approximate ground surface elevation: 705 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 6.0	GM	Tan oxidized silty fine to coarse gravel with fine to medium sand, cobbles, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
6.0 - 8.0	GM	Tannish brown stratified silty fine to coarse gravel and cobbles with fine to medium sand and occasional boulders, slightly cemented (medium dense, moist) (recessional outwash)
		Test pit completed at 8.0 feet on 02/08/95
		No ground water seepage observed
		Double-ring infiltration test performed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 71
		Approximate ground surface elevation: 703 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 1.5	GM	Tan oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
1.5 - 14.0	GM	Tannish brown oxidized, stratified silty fine to coarse gravel and cobbles with fine to medium sand, clay and occasional boulders, cemented (medium dense to dense, moist) (recessional outwash)
14.0 - 17.0	GM	Brown stratified silty fine to coarse gravel and cobbles with fine to medium sand and occasional boulders, slightly cemented (medium dense, moist)
		Test pit completed at 17.0 feet (maximum extent of trackhoe) on 02/08/95
		Moderate ground water seepage observed at 7.0 and 14.0 feet
		Minor caving observed at 7.0 and 14.0 feet
		Disturbed soil sample obtained at 15.0 feet
		TEST PIT 72
		Approximate ground surface elevation: 703 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.0	GM	Tan oxidized, stratified silty fine to coarse gravel with fine to medium sand, cobbles, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
2.0 - 5.0	GM	Tannish brown oxidized, stratified silty fine to coarse gravel and cobbles with fine to medium sand, clay and occasional boulders, cemented (medium dense to dense, moist) (recessional outwash)
		Test pit completed at 5.0 feet on 02/08/95
		No ground water seepage observed
		Double-ring infiltration test performed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 73
		Approximate ground surface elevation: 705 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	GM	Tan oxidized silty fine to coarse gravel with fine to medium sand, cobbles, clay and organic matter (roots) (medium dense, moist) (recessional outwash)
2.5 - 3.5	GM	Tannish gray stratified silty fine to coarse gravel and cobbles with fine to medium sand, clay and occasional boulders, cemented (medium dense, moist) (recessional outwash)
3.5 - 15.0	ML	Tan mottled silt with fine sand and occasional medium to coarse sand, gravel and cobbles (medium dense to dense, moist) (lacustrine deposit)
		Soil color changes to gray at 13.0 feet
		Test pit completed at 15.0 feet (maximum extent of trackhoe) on 02/08/95
		No ground water seepage observed
		TEST PIT 74
		Approximate ground surface elevation: 725 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 3.0	GM	Tan stratified silty fine to coarse gravel with fine to medium sand, cobbles, clay and occasional boulders (loose, moist) (recessional outwash)
3.0 - 4.5	GM	Gray oxidized, stratified fine to coarse gravel and cobbles with fine to medium sand and clay, cemented (medium dense, moist) (recessional outwash)
4.5 - 17.0	GM	Brown oxidized stratified silty fine to coarse gravel and cobbles with fine to medium sand and clay, cemented (medium dense, moist)
		Test pit completed at 17.0 feet (maximum extent of trackhoe) on 02/08/95
		Slow ground water seepage observed at 9.0 and 13.0 feet
		Minor caving observed from 9.0 to 13.0 feet
		Disturbed soil sample obtained at 10.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 75
		Approximate ground surface elevation: 515 feet*
0.0 - 0.5	SM	Root mass and topsoil (loose, moist)
0.5 - 4.0	GM	Brown silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
4.0 - 5.0	GM	Gray homogeneous silty fine to coarse gravel with medium to coarse sand, clay and occasional cobbles (very dense, moist) (till)
		Practical refusal on till at 5.0 feet on 02/09/95
		Ground water seepage observed at 4.0 feet
		Caving observed from 0.5 to 4.0 feet
		TEST PIT 76
		Approximate ground surface elevation: 512 feet*
0.0 - 0.5	SM	Root mass and topsoil (loose, moist)
0.5 - 6.0	GM	Brown silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
6.0 - 7.0	GM	Gray homogeneous silty fine to coarse gravel with medium to coarse sand, clay and occasional cobbles (very dense, moist) (glacial till)
		Practical refusal on till at 7.0 feet on 02/09/95
		Ground water seepage observed at 6.0 feet
		Caving observed from 0.5 to 6.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 77
		Approximate ground surface elevation: 510 feet*
0.0 - 0.5	SM	Root mass and topsoil (loose, moist)
0.5 - 8.0	GM	Brown silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
8.0 - 9.0	GM	Gray homogeneous silty fine to coarse gravel with medium to coarse sand, clay and occasional cobbles (very dense, moist) (glacial till)
		Practical refusal on till at 9.0 feet on 02/09/95
		Slow ground water seepage observed at 8.0 feet
		Caving observed from 3.0 to 8.0 feet
		TEST PIT 78
		Approximate ground surface elevation: 510 feet*
0.0 - 0.5	SM	Root mass and topsoil (loose, moist)
0.5 - 3.0	GM	Brown silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
		Test pit completed at 3.0 feet on 02/09/95
		No ground water seepage observed
		EPA Falling-head percolation test performed
		TEST PIT 79
		Approximate ground surface elevation: 507 feet*
0.0 - 0.5	SM	Root mass and topsoil (loose, moist)
0.5 - 1.5	GM	Brown stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
1.5 - 6.0	GW-GM	Gray stratified fine to coarse gravel with silt and fine to coarse sand (loose, moist) (recessional outwash)
		Test pit completed at 6.0 feet on 02/09/95
		Rapid ground water seepage observed at 6.0 feet
		Caving observed from 1.5 to 6.0 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 80
		Approximate ground surface elevation: 740 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 3.5	SM	Brown stratified silty fine to medium sand with occasional fine to coarse gravel and organic matter (roots) (loose, moist) (recessional outwash)
3.5 - 6.0	GM	Gray and brown oxidized, stratified silty fine to coarse gravel and cobbles with fine to coarse sand (medium dense to dense, moist) (recessional outwash)
6.0 - 7.0	GM	Gray and brown stratified silty fine to coarse gravel with sand, cemented (very dense, moist)
		Test pit completed at 7.0 feet on 02/02/95
		Moderate ground water seepage observed at 3.5 feet
		Minor caving observed at 3.5 feet
		Double-ring infiltration test performed
		TEST PIT 81
		Approximate ground surface elevation: 740 feet*
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	SM	Brown stratified silty fine to medium sand with occasional fine to coarse gravel and organic matter (roots) (loose, moist) (recessional outwash)
2.5 - 12.0	GM	Gray and brown oxidized, stratified silty fine to coarse gravel with sand and occasional cobbles, cemented (dense, moist) (recessional outwash)
		Grades to very dense with depth
		Test pit completed at 12.0 feet on 02/02/95
		Moderate ground water seepage observed at 2.5 feet
		Minor caving observed below 2.5 feet

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 82
		Approximate ground surface elevation: 505 feet*
0.0 - 0.5	SM	Root mass and topsoil (loose, moist)
0.5 - 2.5	GM	Brown stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
		Test pit completed at 2.5 feet on 02/09/95
		No ground water seepage observed
		EPA Falling-head percolation test performed
		TEST PIT 83
		Approximate ground surface elevation: 510 feet*
0.0 - 0.5	SM	Root mass and topsoil (loose, moist)
0.5 - 3.5	GM	Brown stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
		Practical refusal on till at 3.5 feet on 02/10/95
		No ground water seepage observed
		Falling-head infiltration test performed
		TEST PIT 84
		Approximate ground surface elevation: 500 feet*
0.0 - 1.0	OL	Root mass and topsoil with organic matter (loose, wet)
1.0 - 2.5	ML/OL	Brown silt with clay and organic matter (loose, wet)
2.5 - 5.0	GM	Brown stratified silty fine to coarse gravel with medium to coarse sand (loose, wet) (recessional outwash)
5.0 - 6.0	GW	Gray stratified fine to coarse gravel with fine to coarse sand (loose, wet) (recessional outwash)
		Test pit completed at 6.0 feet on 02/02/95
		Ground water seepage observed at 1.0 foot
		Severe caving observed below 1.0 foot

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 85
		Approximate ground surface elevation: 510 feet*
0.0 - 0.5	SM	Root mass and topsoil (loose, moist)
0.5 - 4.0	GM	Brown stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
		Practical refusal on till at 4.0 feet on 02/10/95
		Ground water seepage observed at 4.0 feet
		Caving observed at 4.0 feet
		TEST PIT 86
		Approximate ground surface elevation: 505 feet*
0.0 - 0.5	SM	Root mass and topsoil (loose, moist)
0.5 - 2.5	GM	Brown stratified silty fine to coarse gravel with medium to coarse sand (loose, moist) (recessional outwash)
		Test pit completed at 2.5 feet on 02/10/95
		No ground water seepage observed
		TEST PIT 87
		Approximate ground surface elevation: 465 feet*
0.0 - 5.0	GW	Brown oxidized fine to coarse gravel with fine to medium sand, cobbles, occasional boulders and a trace of silt (loose, moist)
		Grades to gray and medium dense at 3.0 feet
		Test pit completed at 5.0 feet on 02/13/95
		No ground water seepage observed
		Minor caving observed along sidewalls
		EPA Falling-head percolation test performed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 88
		Approximate ground surface elevation: 465 feet*
0.0 - 0.5	SM	Wood debris, root mass and topsoil (loose, moist) (fill)
0.5 - 2.0	SM	Brown oxidized silty fine to medium sand with fine to coarse gravel, cobbles and boulders (medium dense, moist)
2.0 - 5.0	GW	Gray fine to coarse gravel with fine to medium sand, cobbles, occasional boulders and a trace of silt (medium dense, moist)
		Test pit completed at 5.0 feet on 02/13/95
		No ground water seepage observed
		Minor caving observed
		EPA Falling-head percolation test performed
		TEST PIT 89
		Approximate ground surface elevation: 465 feet*
0.0 - 2.5	SM	Brown oxidized silty fine to medium sand with fine to coarse gravel, cobbles and boulders (medium dense, moist)
2.5 - 5.0	GM	Gray silty fine to coarse gravel with fine to medium sand, cobbles and occasional boulders (medium dense, moist)
		Test pit completed at 5.0 feet on 02/13/95
		No ground water seepage observed
		Minor caving observed
		EPA Falling-head percolation test performed

*Ground surface elevation estimated from topographic map of site by David Evans & Associates, Inc. dated August 8, 1994.

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 90
		Approximate ground surface elevation: 663 feet
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 3.5	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with fine to coarse sand and occasional cobbles and boulders and organic matter (roots, top 2 feet) (loose to medium dense, moist) (recessional outwash)
3.5 - 5.0	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand, clay and occasional cobbles, slightly cemented (dense, moist)
5.0 - 7.0	SP	Brown stratified medium to coarse sand with fine to coarse gravel, occasional cobbles and boulders and a trace of silt (medium dense, moist)
		Gravel and cobbles increase with depth
7.0 - 13.5	GW-GM	Brown stratified fine to coarse gravel with silt, medium to coarse sand, cobbles and occasional boulders (medium dense, moist to wet)
		Test pit completed at 13.5 feet on 03/15/95
		Moderate ground water seepage observed at 8.0 feet
		Minor caving observed at 5.5 feet
		Disturbed soil sample obtained at 7.0 feet
		TEST PIT 91
		Approximate ground surface elevation: 670 feet
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 6.0	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with medium to coarse sand and organic matter (roots) (loose, moist) (recessional outwash)
6.0 - 8.0	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand and clay, slightly cemented (medium dense, moist to wet)
		Test pit completed at 8.0 feet on 03/15/95
		Rapid ground water seepage observed at 7.0 feet
		Minor caving observed at 4.0 feet
		Disturbed soil sample obtained at 5.0 feet

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 92
		Approximate ground surface elevation: 675 feet
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 4.0	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with fine to coarse sand, occasional cobbles and organic matter (roots) (loose to medium dense, moist) (recessional outwash)
4.0 - 11.75	GM	Tan stratified silty fine to coarse gravel with medium to coarse sand and clay, cemented (dense, moist) (recessional outwash)
		Cobbles increase with depth
11.75 - 12.5	ML	Lenses of gray mottled silt with clay and occasional fine to coarse sand (stiff to hard, moist)
12.5 - 16.5	SP-SM	Brown stratified medium to coarse sand with silt, fine sand and occasional fine to coarse gravel (medium dense, moist)
		Test pit completed at 16.5 feet (maximum extent of trackhoe) on 03/15/95
		Moderate ground water seepage observed at 11.5 feet
		Moderate caving observed below 11.5 feet
		Disturbed soil samples obtained at 10.0 and 15.0 feet

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 93
		Approximate ground surface elevation: 680 feet
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 2.5	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with fine to coarse sand, cobbles and organic matter (roots) (medium dense, moist) (recessional outwash)
2.5 - 3.25	SP-SM	Brown fine to medium sand with silt, occasional coarse sand, fine gravel and cobbles (loose, moist)
3.25 - 11.5	GM	Tan stratified silty fine to coarse gravel with fine to coarse sand, clay, cobbles, occasional boulders and organic matter (roots to 9.0 feet) cemented (medium dense to dense, moist)
		Grades to brown color
11.5 - 12.5	ML	Lenses of gray mottled silt with fine to coarse sand and clay (hard, moist)
12.5 - 17.5	GM	Boulder and cobbles layer
		Test pit completed at 17.5 feet on 03/15/95 due to ground water seepage
		Moderate to rapid ground water seepage observed at 14.0 feet
		Minor caving observed at 14.0 feet
		Disturbed soil samples obtained at 13.0 feet

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		TEST PIT 94
		Approximate ground surface elevation: 665 feet
0.0 - 0.5	SM	Forest duff, root mass and topsoil (loose, moist)
0.5 - 1.5	GM	Tannish brown oxidized, stratified silty fine to coarse gravel with fine to coarse sand, occasional cobbles and organic matter (roots) (loose, moist) (recessional outwash)
1.5 - 15.0	GM	Tan stratified silty fine to coarse gravel with fine to coarse sand, clay, cobbles, occasional boulders and organic matter (roots to 5.0 feet) cemented (medium dense to dense, moist)
		Cobbles and boulders increase with depth
		Test pit completed at 15.0 feet on 03/15/95
		No ground water seepage observed
		Minor caving observed at 11.0 feet
		Disturbed soil sample obtained at 6.0 feet

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

GRAND RIDGE

PLATE 1: SUBSURFACE EXPLORATIONS

C
1380'
600'

Site Boundary
MW6
475
500
630'
440'

A —— A′ GENERALIZED GEOLOGIC CROSS SECTION LOCAT

MW1 MONITORING WELL BY GEOENGINEERS, INC., 199

GPC PIEZOMETER STATION BY GEOENGINEERS, INC., 1

GB1 BORING BY GEOENGINEERS, INC., 1988

GB2 BORING BY GEOENGINEERS, INC., 1989

GT1 TEST PIT BY GEOENGINEERS, INC., 1989

TP-5 TEST PIT WITH PIEZOMETER BY GEOENGINEERS,

TP-1 TEST PIT BY GEOENGINEERS, INC., 1994, 1995

M1 BORING BY MERIDIAN, 1984

L1 BORING BY LAKESIDE, 1984

C2 BORING BY CASCADE, 1978

P1 PERCOLATION TEST BY D.R. STRONG, 1986

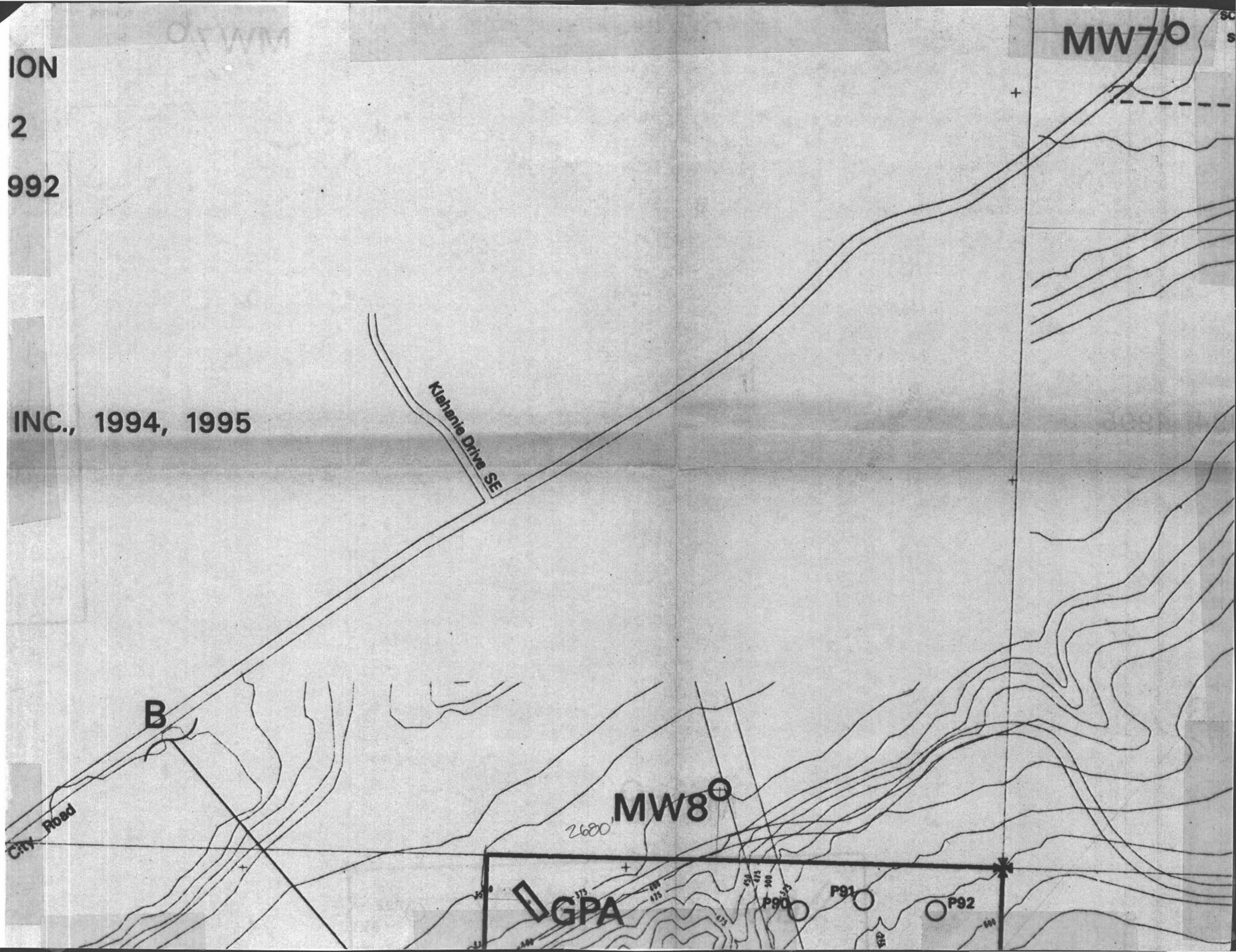
Issaquah Fall

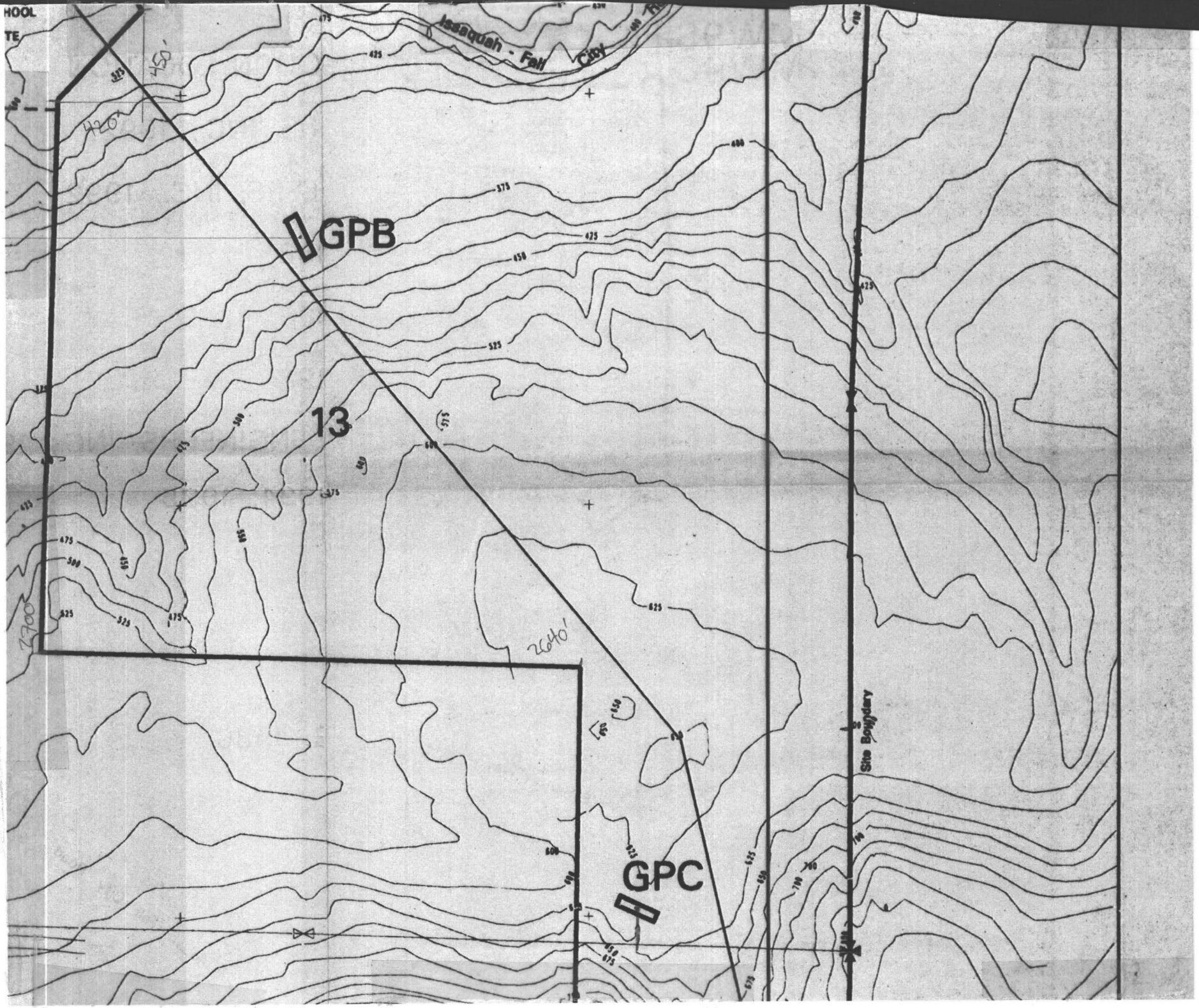
ION

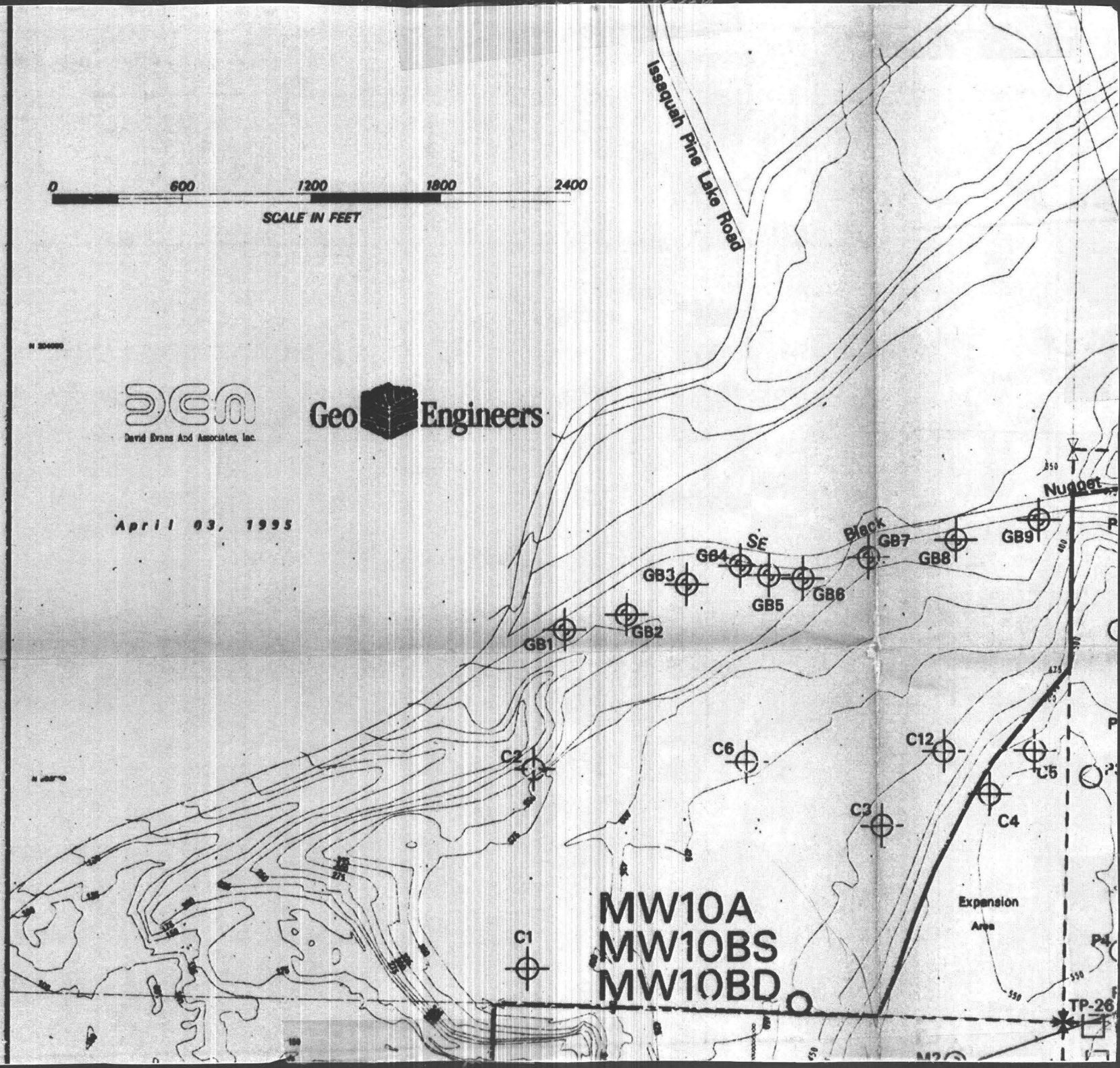
2

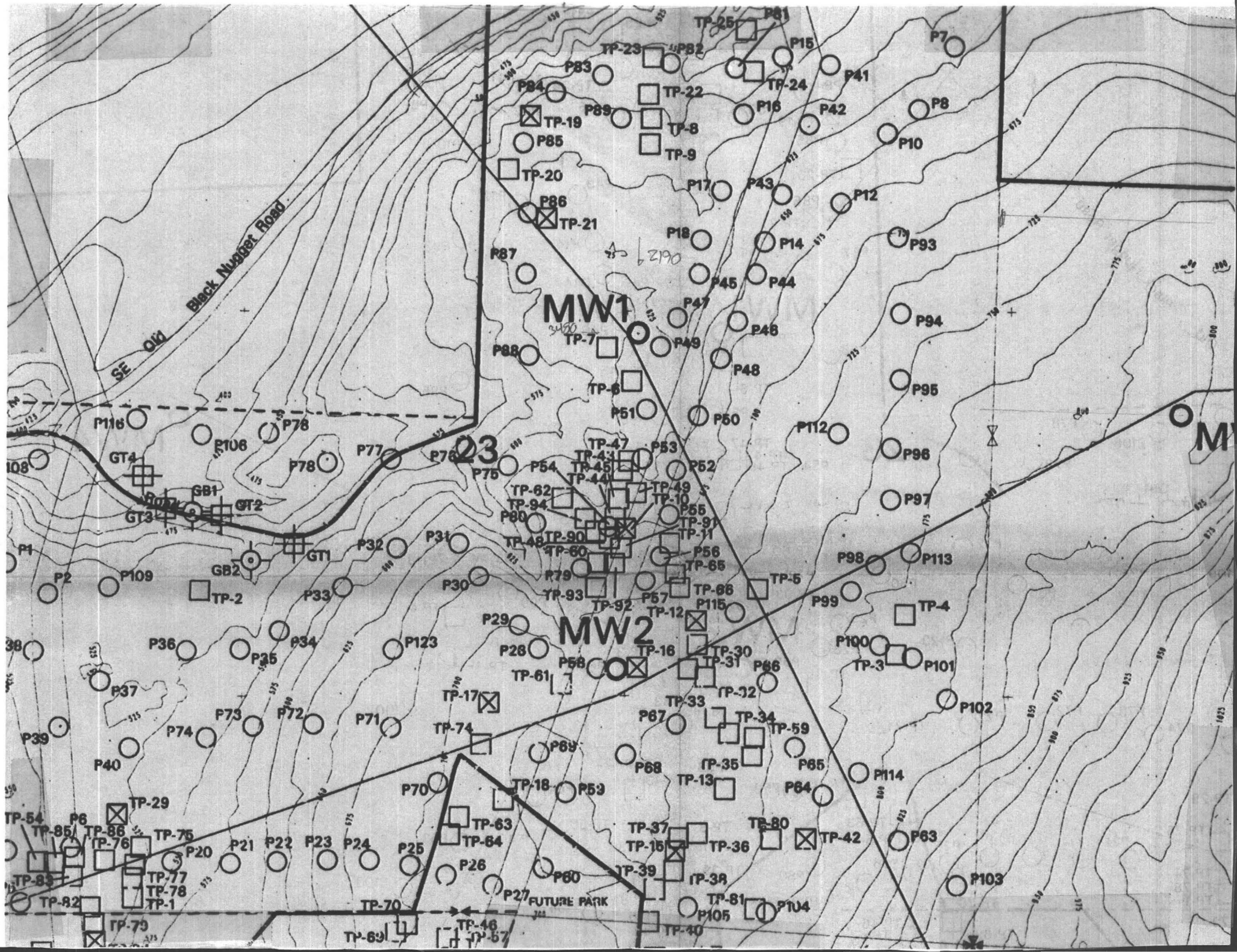
992

INC., 1994, 1995




Issaquah - Fall City
GPB
13
GPC
Site Boundary
450'
420'
2640'
2700'


0
600
1200
1800
2400
SCALE IN FEET
Issaquah Pine Lake Road
David Evans And Associates, Inc.
Geo Engineers
April 03, 1995
Nugget
Black
SE
GB1
GB2
GB3
GB4
GB5
GB6
GB7
GB8
GB9
C1
C2
C3
C4
C5
C6
C12
MW10A
MW10BS
MW10BD
Expansion
Area
TP-26


SE Old Black Nugget Road
MW1
MW2
FUTURE PARK
GT1
GT2
GT3
GT4
GB1
GB2
TP-1
TP-2
TP-3
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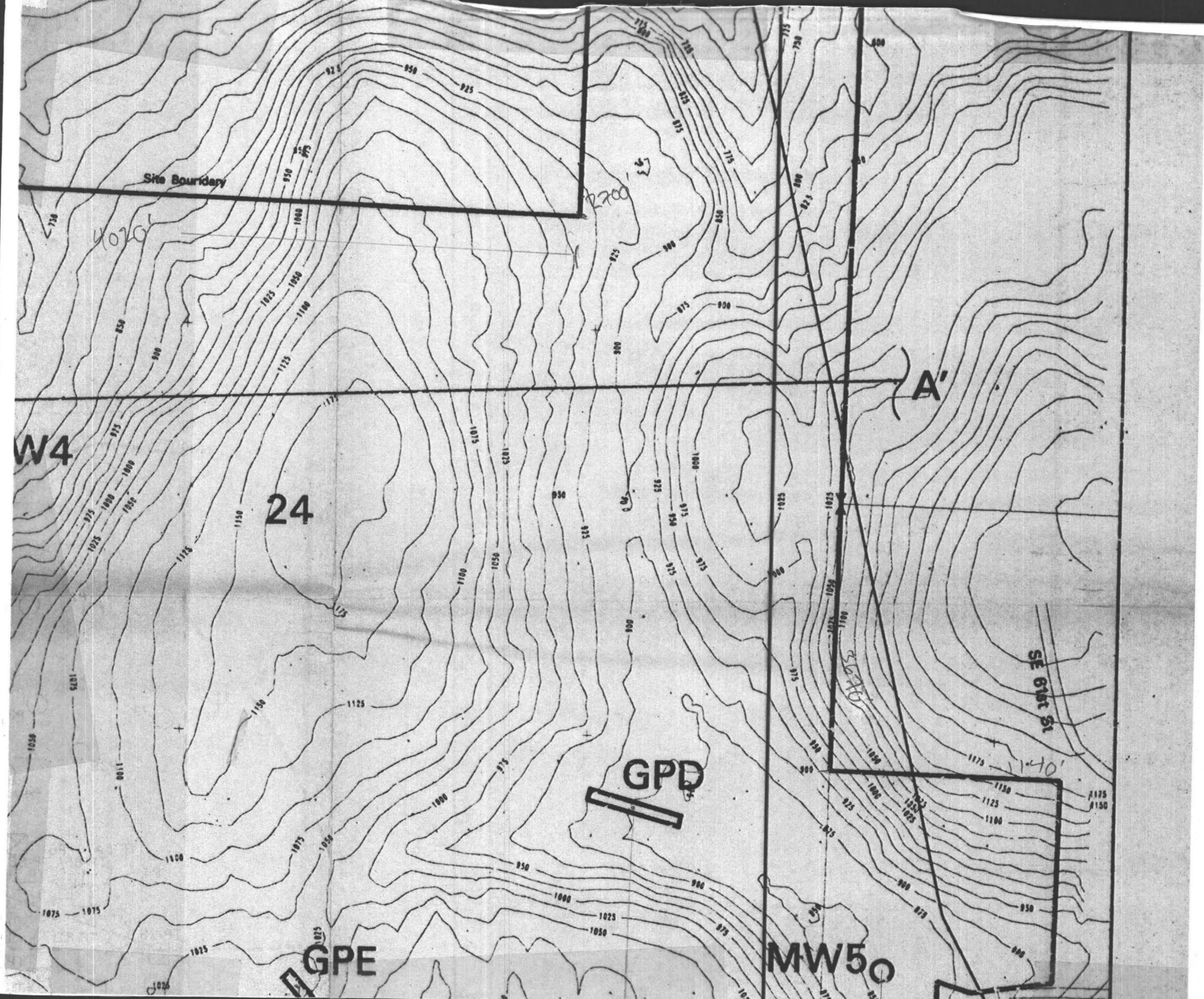
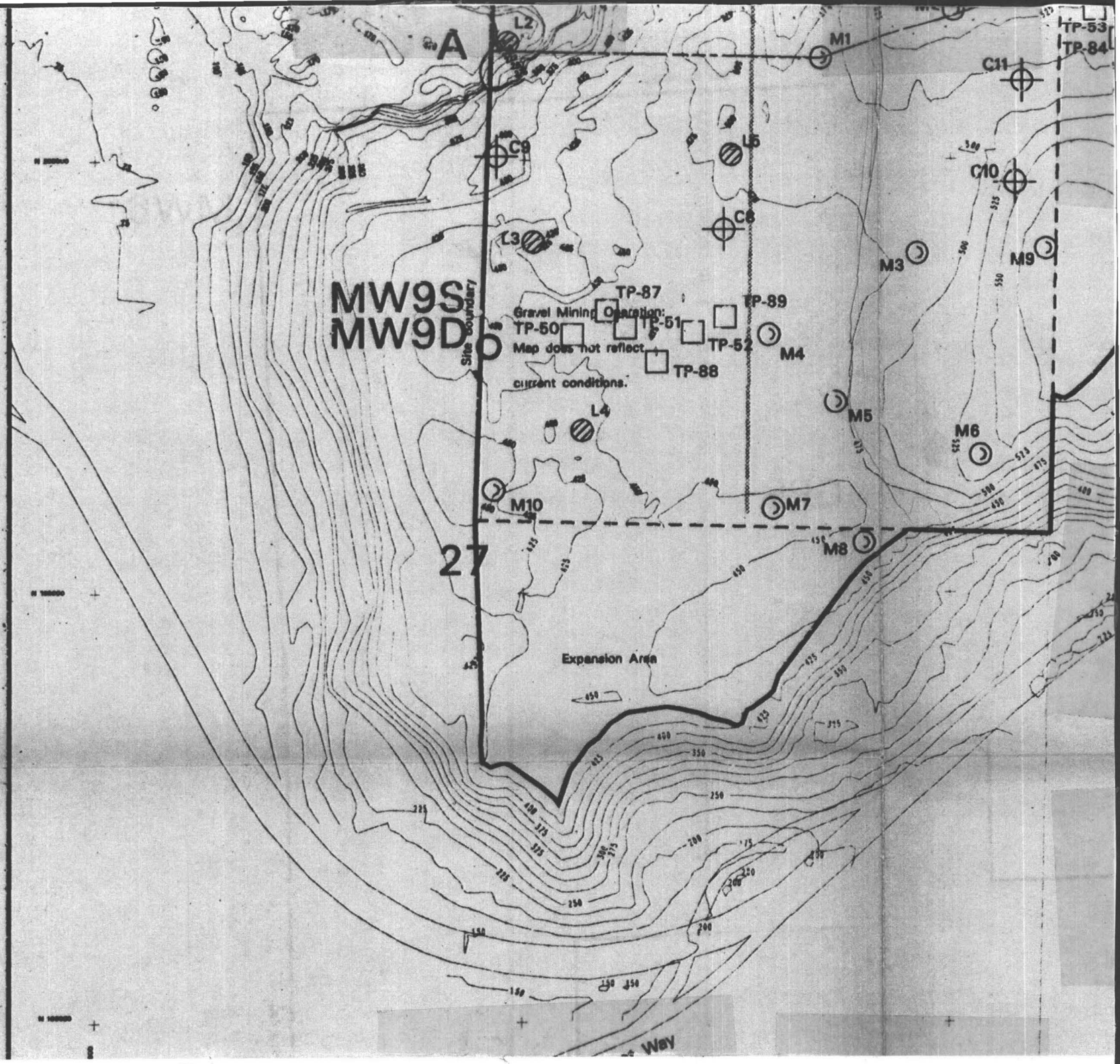
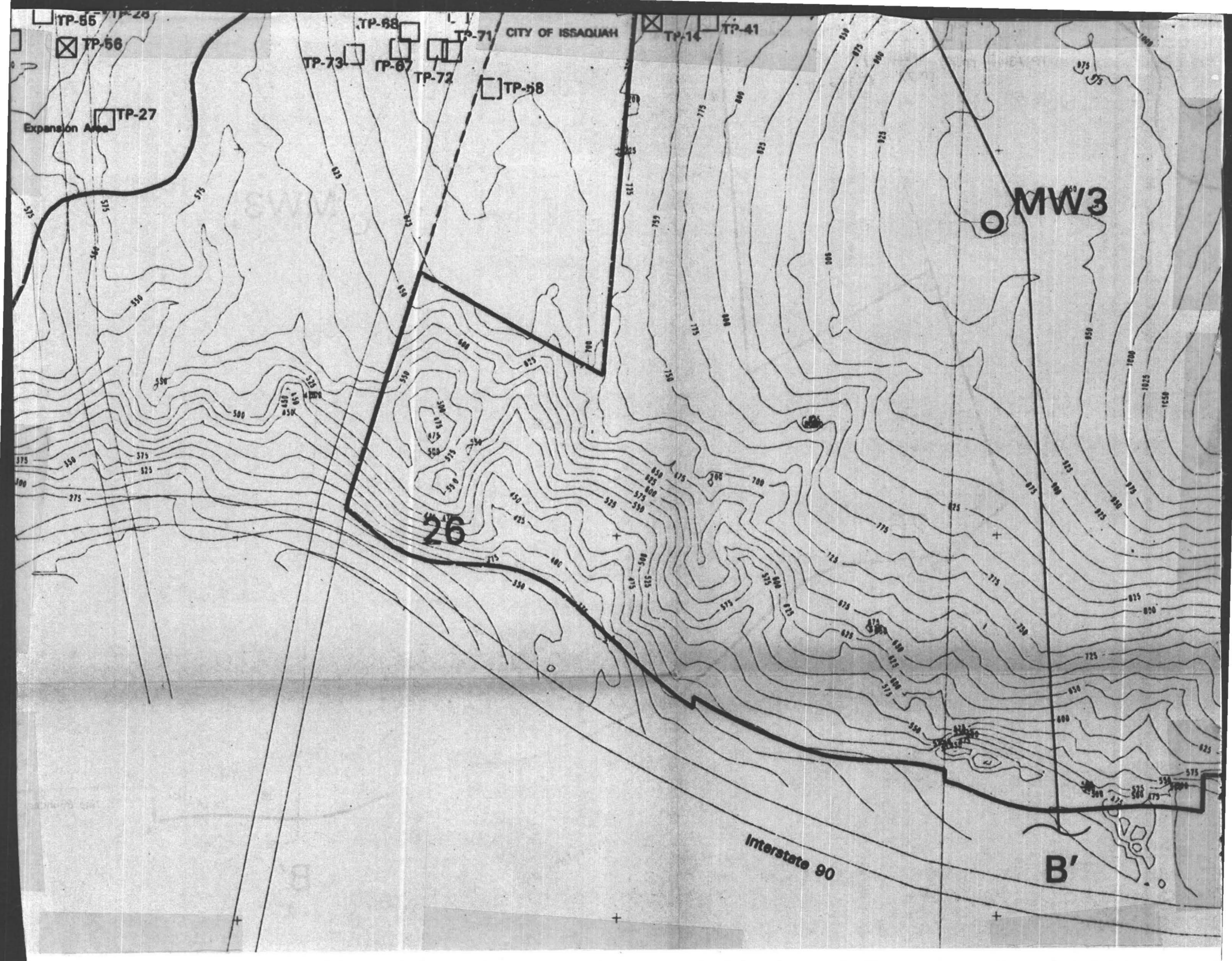
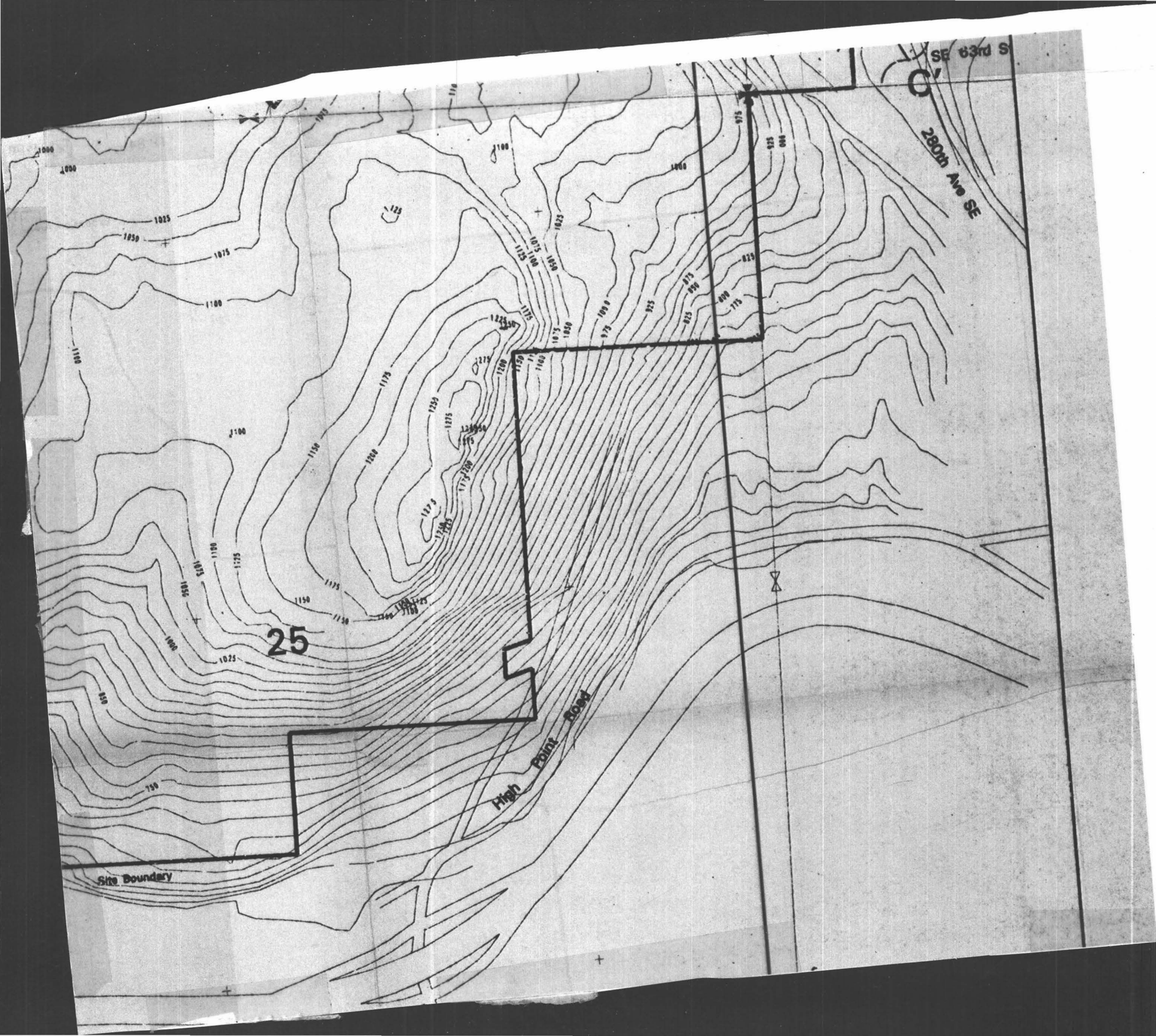
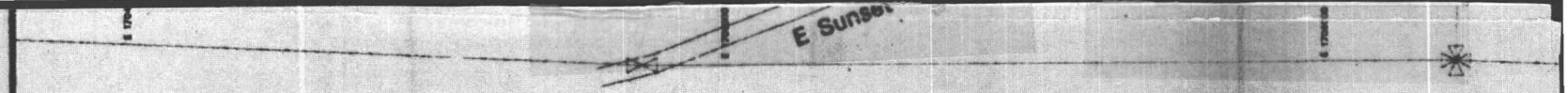
P123
2190
3480


Site Boundary
A'
W4
24
GPD
GPE
MW5
SE 61st St
4020'
2700'
3270'
1040'


A
L2
M1
TP-53
TP-84
C11
C9
L5
C10
C8
L3
M3
M9
MW9S
MW9D
Site Boundary
TP-87
TP-89
Gravel Mining Operation:
TP-50
TP-51
TP-52
M4
Map does not reflect
current conditions.
TP-88
L4
M5
M6
M10
M7
M8
27
Expansion Area
Way


TP-55
TP-56
TP-68
TP-71
CITY OF ISSAQUAH
TP-14
TP-41
TP-73
TP-67
TP-72
TP-58
TP-27
Expansion Area
MW3
26
Interstate 90
B'

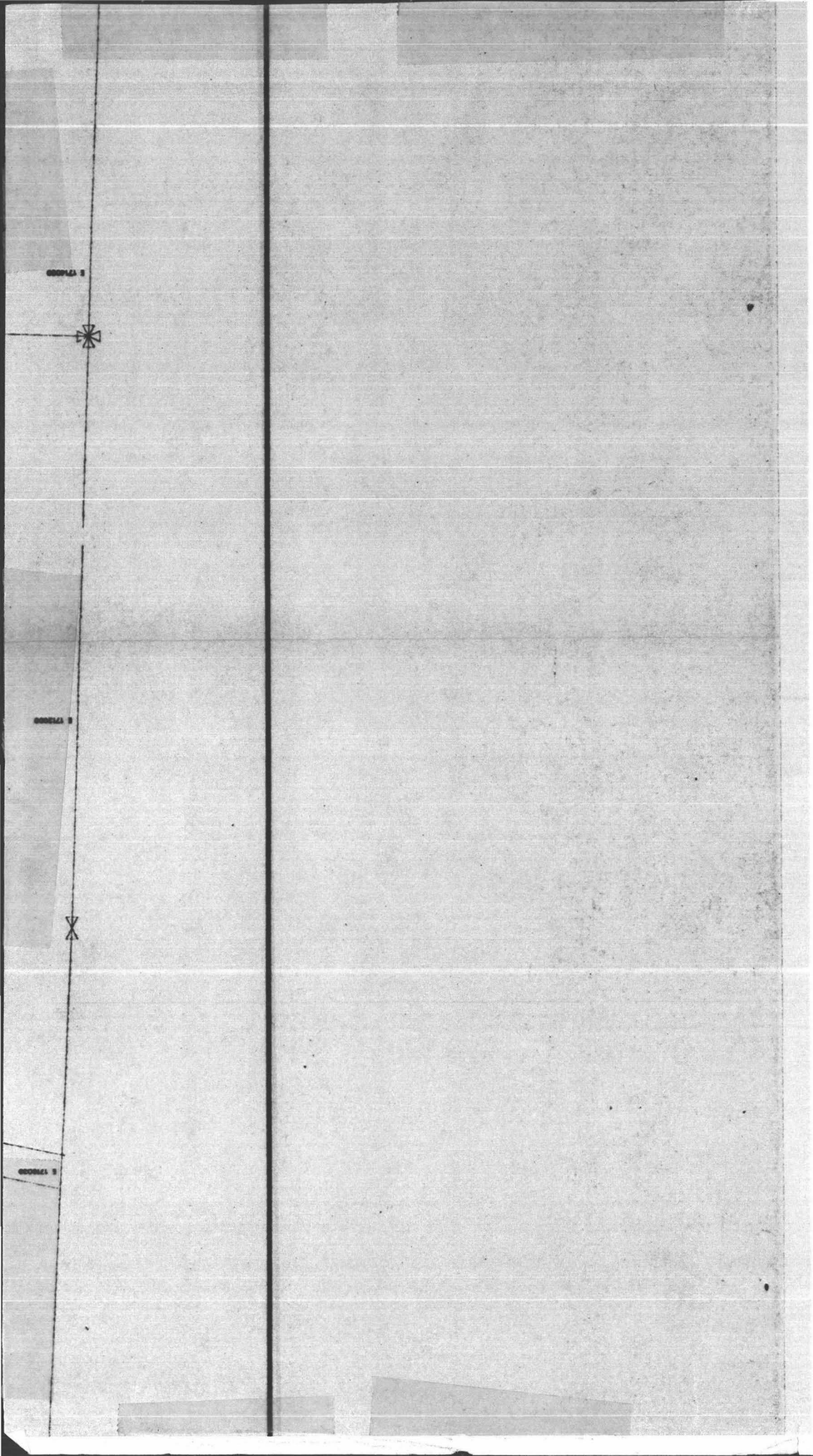

SE 63rd S
280th Ave SE
High Point Road
Site Boundary
25



NOTE:

The parcel boundaries represent a best fit of available recorded evidence and does not purport to be a boundary survey. Significant conflicts were discovered between the recorded evidence and as such a boundary survey is recommended prior to any specific development of the subject property.

Environmental analysis conducted within the subject boundary has been prepared from known resource documents and field verified using appropriate scientific methodologies. Analysis conducted in the surrounding vicinity is based only on known resource information and is not to be construed as site-specific conditions.



E 170000
E 175000
Range 6 East
Range 7 East
Township 24 North