BORING #:	A-1
DATE:	5/19/01
START TIME:	07:55
LOGGED BY:	Doug Errett (ENVIRON)
DRILLING CO:	VIRONEX
DRILLER:	Bruce Ashmore
RIG:	Geoprobe 66 DT
SAMPLING METHOD:	2-foot continuous stainless steel soil core
BORING DIA:	2-inch internal diameter
BORING DEPTH	18'
ORGANIC VAPOR EQUIPMENT	MiniRAE 2000 Photoionization Detector

ENVIRON
BORING LOG

PROJECT: Henderson, NV

CASE # 01-2131F

COMMENTS:

Alpha Ditch, sample location 1.

DEPTH (feet)	BLOW COUNTS	RECOVERY (inches)	ORGANIC VAPORS (ppm)	SAMPLE(S) DESIGNATION	DESCRIPTION
0-2	N/A	24	0.4	A-1 (0-1)	Tan to light brown very fine-grained sandy silt, well sorted (ML).
2-4		22	0.4		Light tan to light brown and reddish brown medium- to fine-grained silty sand with occasional gravel to ¼-inch diameter, poorly sorted and sub-angular (SP-SM).
4-6		24	0.4		Same as above.
6-8		18	0.3		Same as above, slightly more gravel.
8-10		20	0.4		Reddish brown mottled fine sand, well sorted and sub-angular, calcified (caliche) in the 9-11' interval (SW).
10-12		16	0.7	A-1 (10-12)	Same as above.
12-14		10	0.5		Same as above, with occasional gravel, no caliche.
14-16		20	0.2		Light brown to reddish brown mottled sand and gravel, moderately rounded and poorly sorted (SP).
16-18		22	0.2	A-1 (16-18)	Same as above to 17'; dark grey moist silty clay interface at 17' (CL-ML). WET at 18'.

COMMENTS:
Borehole A-1 plugged on 5/22/01 using dry bentonite pellets, filled to grade.

BORING #:	A-2
DATE:	5/20/01
START TIME:	14:55
LOGGED BY:	Doug Errett (ENVIRON)
DRILLING CO:	VIRONEX
DRILLER:	Bruce Ashmore
RIG:	Geoprobe 66 DT
SAMPLING METHOD:	2-foot continuous stainless steel soil core
BORING DIA:	2-inch internal diameter
BORING DEPTH	22'
ORGANIC VAPOR EQUIPMENT	MiniRAE 2000 Photoionization Detector

ENVIRON
BORING LOG

PROJECT: Henderson, NV

CASE # 01-2131F

COMMENTS:

Alpha Ditch, sample location 2.

DEPTH (feet)	BLOW COUNTS	RECOVERY (inches)	ORGANIC VAPORS (ppm)	SAMPLE(S) DESIGNATION	DESCRIPTION
0-2	N/A	24	0.5	A-2 (0-1)	Tan to light brown very fine-grained silty sand (SM).
2-4		20	0.5		Light tan to light brown medium- and fine-grained silty sand with occasional gravel to ¼-inch diameter, poorly sorted and sub-angular (SP-SM).
4-6		20	0.7		Same as above.
6-8		20	0.7		Same as above.
8-10		18	0.5		Same as above.
10-12		16	0.7	A-2 (10-12)	Same as above.
12-14		20	0.7		Sandy gravel, sub-rounded and poorly sorted, light brown, tan, and reddish brown (GP).
14-16		18	0.7		Fine- to medium-grained sub-angular sand with gravel, brown to reddish brown. Hard caliche at 16' (SW).
16-18		14	0.3		Same as above; hard caliche from 16' to 16.8'.
18-20		24	0.5		Light greyish green silty clay, moist and plastic (CL-ML).
20-22		24	0.5	A-2 (19-21)	Same as above, WET at 21'.

COMMENTS:
Borehole A-2 plugged on 5/22/01 using dry bentonite pellets, filled to grade.

BORING #:	B-1
DATE:	5/19/01
START TIME:	15:25
LOGGED BY:	Doug Errett (ENVIRON)
DRILLING CO:	VIRONEX
DRILLER:	Bruce Ashmore
RIG:	Geoprobe 66 DT
SAMPLING METHOD:	2-foot continuous stainless steel soil core
BORING DIA:	2-inch internal diameter
BORING DEPTH	21'
ORGANIC VAPOR EQUIPMENT	MiniRAE 2000 Photoionization Detector

ENVIRON
BORING LOG

PROJECT: Henderson, NV

CASE # 01-2131F

COMMENTS:

Beta Ditch, sampling location 1.

DEPTH (feet)	BLOW COUNTS	RECOVERY (inches)	ORGANIC VAPORS (ppm)	SAMPLE(S) DESIGNATION	DESCRIPTION
0-1	N/A	12	1.6	B-1 (0-1)	Tan to light brown very fine-grained silty sand (SM).
1-3		24	0.5		Light tan to light brown medium- and fine-grained sand with occasional gravel to ¼-inch diameter, poorly sorted and sub-angular (SP-SM).
3-5		24	0.5		Same as above.
					Same as above.
5-7		20	0.5		Dark brownish-red medium sand, well sorted and sub-angular (SW).
7-9		18	0.5		Same as above.
9-11		20	0.8	B-1 (10-12)	Medium-grained poorly sorted silty sand with gravel (SP-SM).
11-13		18	0.5		Same as above; hard white caliche at 12'-13'.
13-15		14	0.5		Same as above, caliche not present.
15-17		24	0.7		Same as above.
17-19		24	0.5		Fine- to medium-grained sub-angular sand with gravel, brown to reddish-brown (SW).
19-21		22	0.5	B-1 (19-21)	Same as above, WET at approximately 20.8'.

COMMENTS:
Borehole B-1 plugged on 5/22/01 using dry bentonite pellets, filled to grade.

BORING #:	B-2
DATE:	5/18/01
START TIME:	13:20
LOGGED BY:	Doug Errett (ENVIRON)
DRILLING CO:	VIRONEX
DRILLER:	Bruce Ashmore
RIG:	Geoprobe 66 DT
SAMPLING METHOD:	2-foot continuous stainless steel soil core
BORING DIA:	2-inch internal diameter
BORING DEPTH	5'
ORGANIC VAPOR EQUIPMENT	MiniRAE 2000 Photoionization Detector

ENVIRON
BORING LOG

PROJECT: Henderson, NV

CASE # 01-2131F

COMMENTS:

Beta Ditch, sampling location 2.

DEPTH (feet)	BLOW COUNTS	RECOVERY (inches)	ORGANIC VAPORS (ppm)	SAMPLE(S) DESIGNATION	DESCRIPTION
0-1	N/A	12	0.5	B-2 (0-1)	Tan to light brown very fine-grained sandy silt, well sorted (ML).
1-3		24	0.3		Light tan to light brown medium- to fine-grained silty sand with occasional gravel to ¼-inch diameter, poorly sorted and sub-angular (SP-SM).
3-5		24	0.3	B-2 (4-5)	Same as above.

COMMENTS:
Borehole B-2 plugged on 5/22/01 using dry bentonite pellets, filled to grade.

BORING #:	B-3
DATE:	5/18/01
START TIME:	17:50
LOGGED BY:	Doug Errett (ENVIRON)
DRILLING CO:	VIRONEX
DRILLER:	Bruce Ashmore
RIG:	Geoprobe 66 DT
SAMPLING METHOD:	2-foot continuous stainless steel soil core
BORING DIA:	2-inch internal diameter
BORING DEPTH	5'
ORGANIC VAPOR EQUIPMENT	MiniRAE 2000 Photoionization Detector

ENVIRON
BORING LOG

PROJECT: Henderson, NV

CASE # 01-2131F

COMMENTS:

Beta Ditch, sampling location 3.

DEPTH (feet)	BLOW COUNTS	RECOVERY (inches)	ORGANIC VAPORS (ppm)	SAMPLE(S) DESIGNATION	DESCRIPTION
0-1	N/A	12	0.7	B-3 (0-1)	Tan to light brown very fine-grained sandy silt, well sorted (ML).
1-3		22	0.4		Light tan to light brown and reddish brown medium- to fine-grained silty sand with occasional gravel to ¼-inch diameter, poorly sorted and sub-angular (SP-SM).
3-5		24	0.4	B-3 (4-5)	Same as above, WET at base of probe.

COMMENTS:
Borehole B-3 plugged on 5/22/01 using dry bentonite pellets, filled to grade.

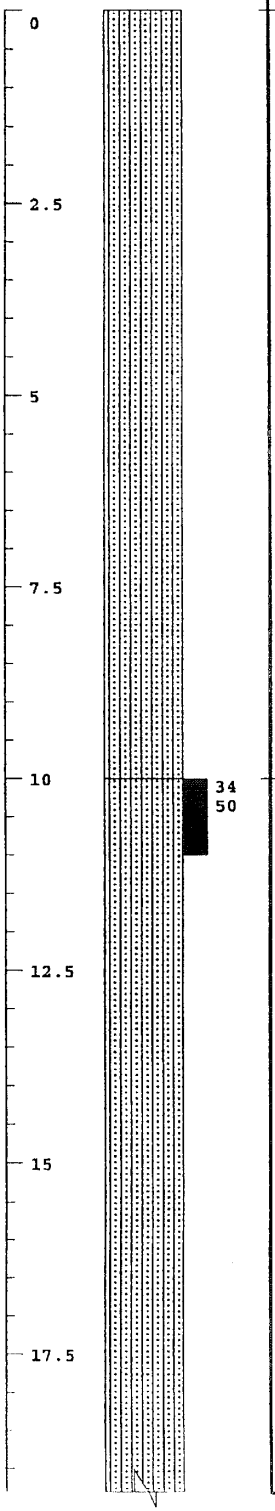
APPENDIX A

Boring Logs
and
Well Construction Diagrams

EXPLORATION LOG
BEC 1

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 914/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/MARTIN

INITIAL DEPTH TO WATER: 31.0
DATE MEASURED: 9/14/01
FINAL DEPTH TO WATER: 30.35
DATE MEASURED: SEPT 17, 2001

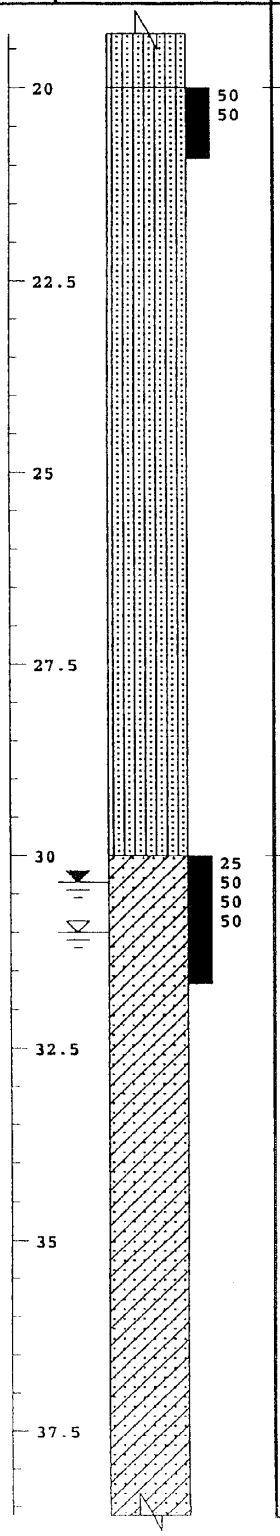


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		SM						
		SM	reddish brown (5YR 4/4) silty sand with gravel, slightly moist. PID 60 ppmV					

EXPLORATION LOG
BEC 1

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 914/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/MARTIN

INITIAL DEPTH TO WATER: 31.0
DATE MEASURED: 9/14/01
FINAL DEPTH TO WATER: 30.35
DATE MEASURED: SEPT 17, 2001



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWEL (%)
20	50 50	SM	Brown (7.5YR 4/4) silty sand with gravel, slightly moist and very dense. PID > 2000 ppmV.					
22.5								
25								
27.5								
30	25 50 50 50	SC	Reddish brown (5YR 4/3) clayey sand, slightly moist, wet at 31 feet. PID 60 ppmV.					
32.5								
35								
37.5								

EXPLORATION LOG
BEC 1

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 914/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/MARTIN

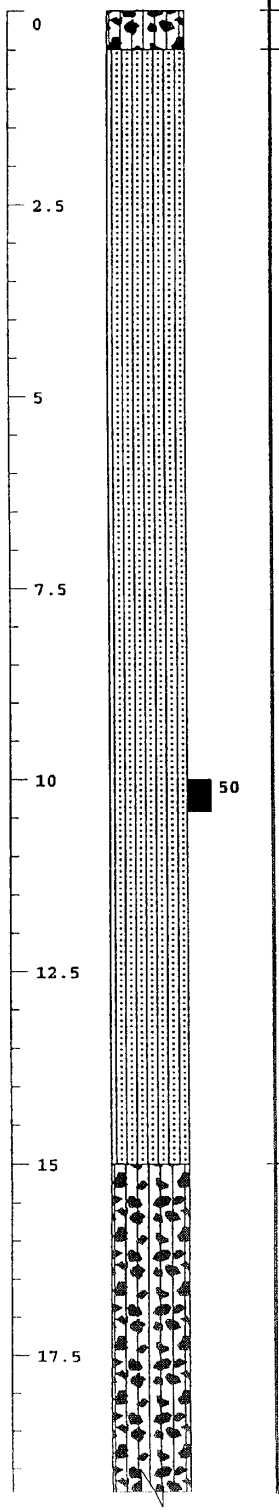
INITIAL DEPTH TO WATER: 31.0
DATE MEASURED: 9/14/01
FINAL DEPTH TO WATER: 30.35
DATE MEASURED: SEPT 17, 2001

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
40			**END OF BORING AT 40 FEET** GROUNDWATER ENCOUNTERED AT 31.0 FEET BELOW GROUND SURFACE					
42.5								
45								
47.5								
50								
52.5								
55								
57.5								

EXPLORATION LOG
BEC 4

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/27/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/COOKE

INITIAL DEPTH TO WATER: 28.00
DATE MEASURED: 9/27/01
FINAL DEPTH TO WATER: 27.45
DATE MEASURED: 10/01/01

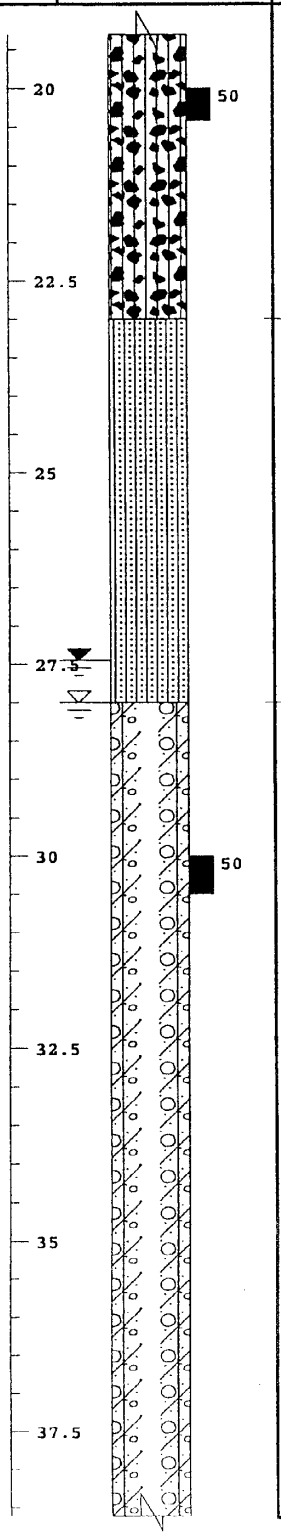


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		GM	FILL: Very pale brown (10 YR 7/3) silty gravel with sand, dry and dense. No stains or odors. PID = 0.0 ppmV.					
		SM	Light yellowish brown (10 YR 6/4) silty sand with gravel, dry and dense.					
			...strong brown (7.5 YR 5/6)					
			...light brown (7.5 YR 6/3), no stains or odors, PID = 0.0 ppmV					
		GM	Strong brown (7.5 YR 5/6) silty gravel with sand, dry and very dense.					

EXPLORATION LOG
BEC 4

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/27/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/COOKE

INITIAL DEPTH TO WATER: 28.00
DATE MEASURED: 9/27/01
FINAL DEPTH TO WATER: 27.45
DATE MEASURED: 10/01/01



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
			...brown (7.5 YR 5/4), no stains or odors, PID = 0.0 ppmV					
		SM	Brown (7.5 YR 4/4) silty sand with gravel, dry and very dense.					
		GC-GM	Dark yellowish brown (10 YR 4/4) silty, clayey gravel with sand, wet and very dense. ...no stains or odors, PID = 0.0 ppmV					

EXPLORATION LOG
BEC 4

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/27/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/COOKE

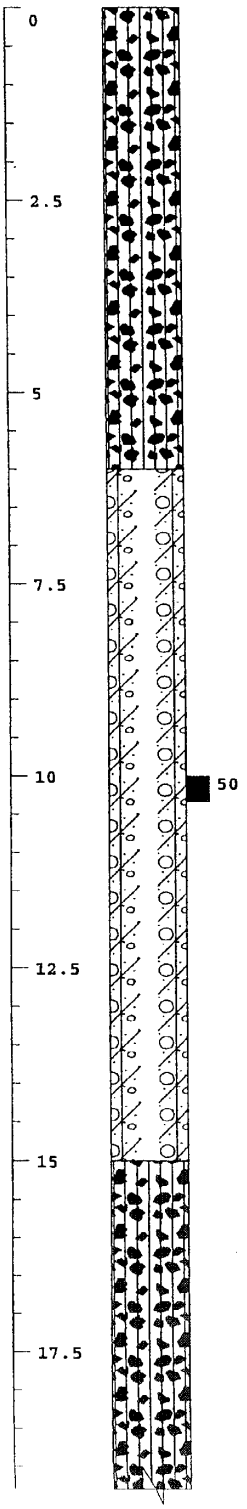
INITIAL DEPTH TO WATER: 28.00
DATE MEASURED: 9/27/01
FINAL DEPTH TO WATER: 27.45
DATE MEASURED: 10/01/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
40	13 14 14	CL	Strong brown (7.5 YR 4/6) sandy lean clay, wet and very stiff. ...no stains or odors, PID = 0.0 ppmV					
		CH	Light gray (5 Y 7/2) fat clay with sand, moist and very stiff.					
42.5			**END OF BORING AT 41.5 FEET** GROUNDWATER ENCOUNTERED AT 28.0 FEET					
45								
47.5								
50								
52.5								
55								
57.5								

EXPLORATION LOG
BEC 5

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 09/27/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/COOKE

INITIAL DEPTH TO WATER: 55.00
DATE MEASURED: 09/27/01
FINAL DEPTH TO WATER: 56.87
DATE MEASURED: 10/28/01



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		GM	Very pale brown (10 YR 7/3) silty gravel with sand, dry and dense.					
			...pale brown (10 YR 6/3)					
		GC-GM	Brown (7.5 YR 4/4) silty, clayey gravel with sand, slightly moist and dense to very dense.					
			...no stains or odors, PID = 0.0 ppmV					
		GM	Strong brown (7.5 YR 4/6) silty gravel with sand, slightly moist and very dense.					

EXPLORATION LOG
BEC 5

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 09/27/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/COOKE

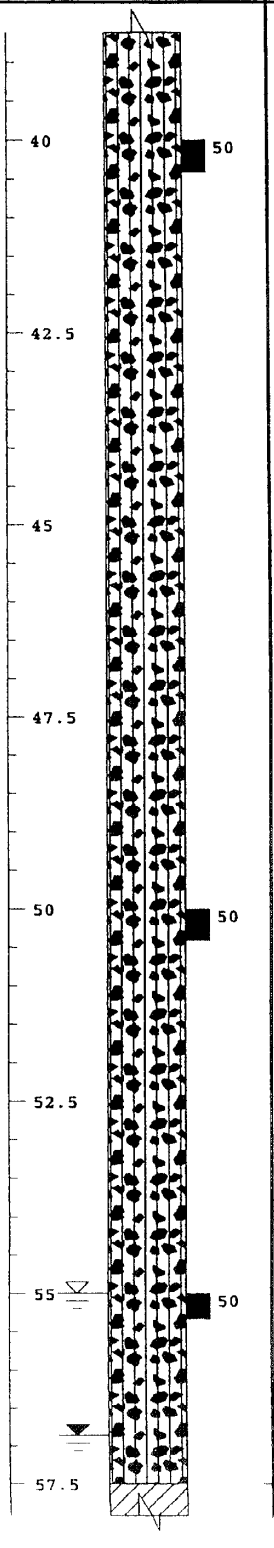
INITIAL DEPTH TO WATER: 55.00
DATE MEASURED: 09/27/01
FINAL DEPTH TO WATER: 56.87
DATE MEASURED: 10/28/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20	50		...no stains or odors, PID = 0,0 ppmV					
22.5								
25								
27.5								
30	50		...no stains or odors, PID = 0.0 ppmV					
32.5								
35								
37.5								

EXPLORATION LOG
BEC 5

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 09/27/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/COOKE

INITIAL DEPTH TO WATER: 55.00
DATE MEASURED: 09/27/01
FINAL DEPTH TO WATER: 56.87
DATE MEASURED: 10/28/01

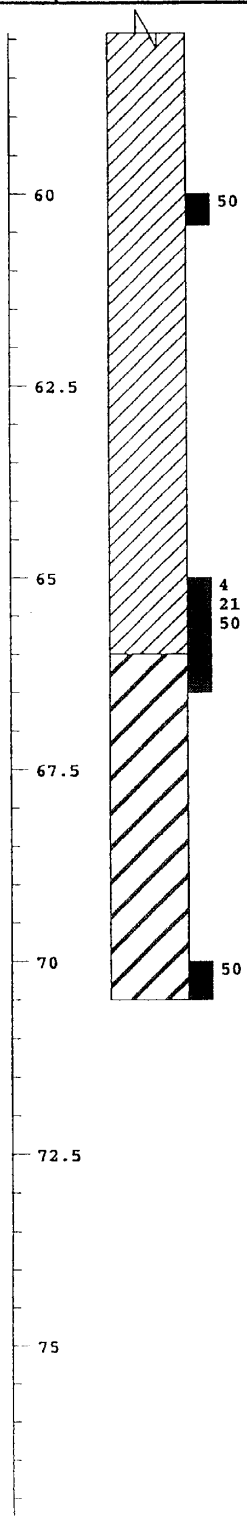


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
			...no stains or odors, PID = 0.0 ppmV					
			...no stains or odors, PID = 0.0 ppmV					
			...no stains or odors, PID = 0.0 ppmV					
		CL	Strong brown (7.5 YR 4/6) sandy lean					

EXPLORATION LOG
BEC 5

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 09/27/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/COOKE

INITIAL DEPTH TO WATER: 55.00
DATE MEASURED: 09/27/01
FINAL DEPTH TO WATER: 56.87
DATE MEASURED: 10/28/01

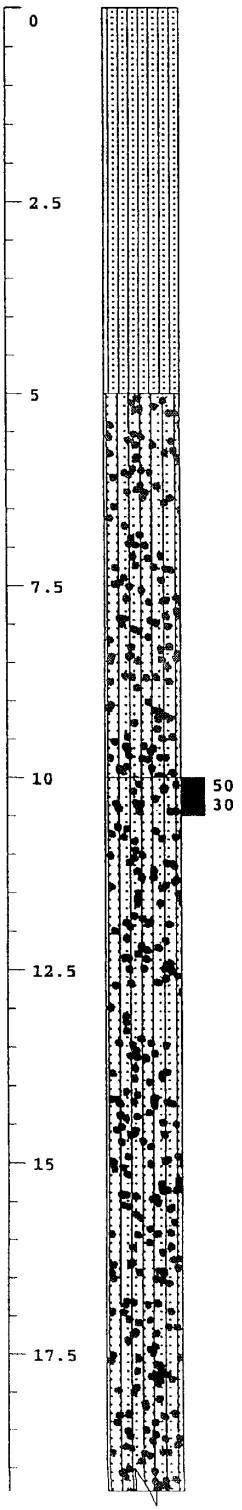


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
			clay with gravel, wet and very stiff.					
			...no stains or odors, PID = 0.0 ppmV					
			...no stains or odors, PID = 0.0 ppmV					
		CH	Light olive gray (5Y 6/2) sandy fat clay, moist and very stiff.					
			...no stains or odors, PID = 0.0 ppmV					
			END OF BORING AT 70.5 FEET GROUNDWATER ENCOUNTERED AT 57.5 FEET					

EXPLORATION LOG
BEC 6

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/17/01 & 9/5/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA-CLINE/MARTIN

INITIAL DEPTH TO WATER: 69.00
DATE MEASURED: 9/25/01
FINAL DEPTH TO WATER: 66.14
DATE MEASURED: 9/27/01

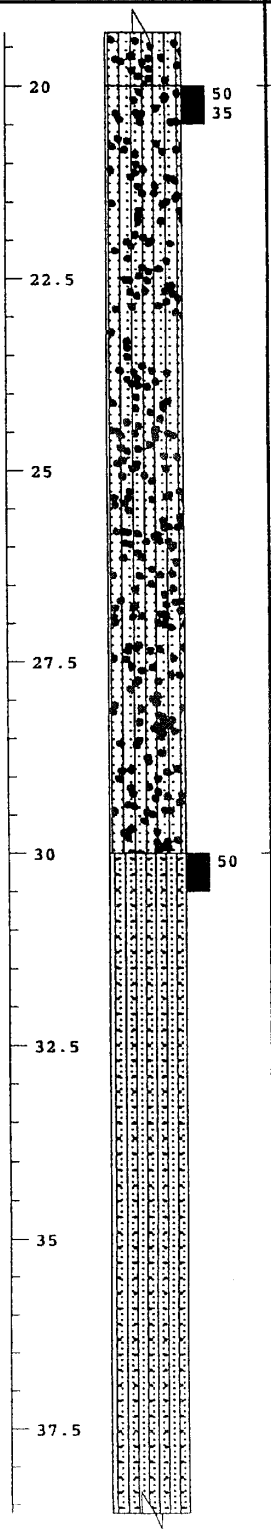


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWEL (%)
0		SM	Dark gray (5YR 4/1) silty sand, slightly moist. Old tailings					
5		GP-GM	Dark gray(5YR 4/1) poorly graded gravel with sand and silt, slightly moist and very dense.					
10	50/30	GP-GM	Dark gray (5YR 4/1) poorly graded gravel with sand and silt, slightly moist and very dense. PID 9.0 ppmV. ... with cobbles					

EXPLORATION LOG
BEC 6

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/17/01 & 9/5/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA-CLINE/MARTIN

INITIAL DEPTH TO WATER: 69.00
DATE MEASURED: 9/25/01
FINAL DEPTH TO WATER: 66.14
DATE MEASURED: 9/27/01

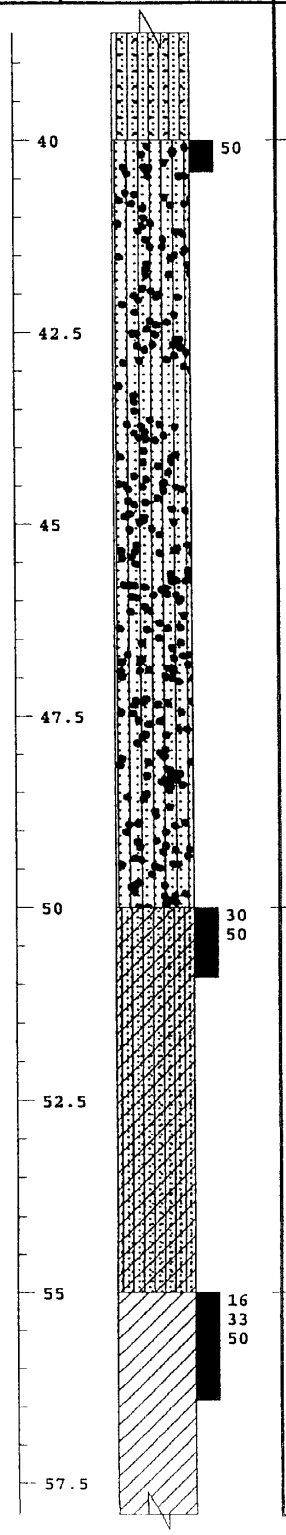


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20	50 35	GP-GM	Dark gray (5YR 4/1) poorly graded gravel with sand and silt, slightly moist and very dense. PID 1 ppmV.					
30	50	SP-SM	Reddish brown (5YR 4/3) poorly graded sand with silt and gravel, slightly moist and very dense. PID 0 ppm					

EXPLORATION LOG
BEC 6

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/17/01 & 9/5/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA-CLINE/MARTIN

INITIAL DEPTH TO WATER: 69.00
DATE MEASURED: 9/25/01
FINAL DEPTH TO WATER: 66.14
DATE MEASURED: 9/27/01



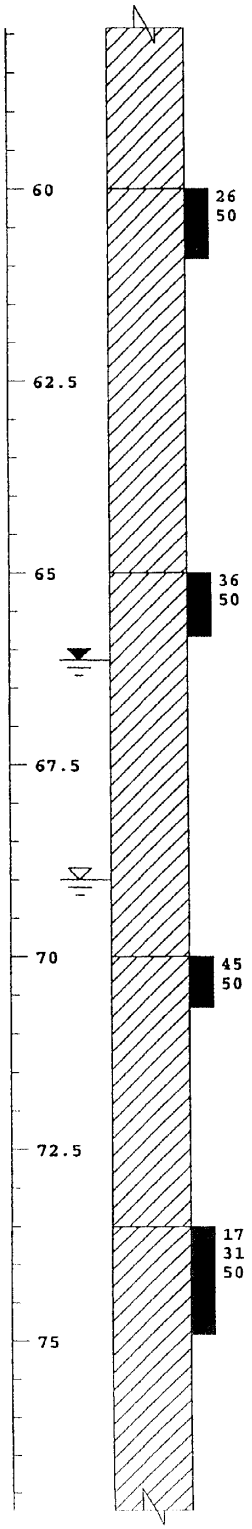
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
40 – 42.5	50	GP-GM	Reddish brown (5YR 4/3) poorly graded gravel with sand, slightly moist and very dense.					
50 – 52.5	30 50	SC-SM	Brown (7.5YR 5/3) silty clayey sand, slightly moist and very dense. Cannot roll threads.					
55 – 57.5	16 33 50	CL	Light greenish gray (GLEY 1 7/1) to brown (7.5YR 4/3) silty clay with sand, slightly moist and very stiff.					

EXPLORATION LOG
BEC 6

PROJECT: UPPER PONDS
HOLE LOCATION: SEE FIGURE 1
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
ELEVATION: EGS

PROJECT NO.: 20011259V1
EXPLORATION DATE: 9/17/01 & 9/5/01
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
DRILLER/LOGGER: HUERTA-CLINE/MARTIN

INITIAL DEPTH TO WATER: 69.00
DATE MEASURED: 9/25/01
FINAL DEPTH TO WATER: 66.14
DATE MEASURED: 9/27/01



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
60	26 50	CL	Light greenish gray (GLEY 1 7/1) to brown (7.5YR 4/3) silty clay with sand, slightly moist and very stiff.					
62.5								
65	36 50	CL	Light greenish gray (GLEY 1 7/1) to brown (7.5YR 4/3) silty clay with sand, slightly moist and very stiff.					
67.5								
70	45 50	CL	Brown (7.5YR 4/3) to pink (7.5YR 7/3) silty clay with sand, slightly moist and very stiff. Gypsum veinlets.					
72.5								
	17 31 50	CL	Brown (7.5YR 4/3) silty clay with sand, slightly moist and very stiff. Disseminated gypsum.					
75								

EXPLORATION LOG
BEC 6

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/17/01 & 9/5/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA-CLINE/MARTIN

INITIAL DEPTH TO WATER: 69.00
DATE MEASURED: 9/25/01
FINAL DEPTH TO WATER: 66.14
DATE MEASURED: 9/27/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWEL (%)
77.5	21 50		...strong brown (7.5 YR 4/6), moist, no stains or odors, PID = 0.0 ppmV					
80			**END OF BORING AT 80 FEET** GROUNDWATER ENCOUNTERED AT 69.0 FEET					
82.5								
85								
87.5								
90								
92.5								
95								

EXPLORATION LOG
BEC 7

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/27/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/MARTIN

INITIAL DEPTH TO WATER: 47.6
DATE MEASURED: 9/27/01
FINAL DEPTH TO WATER: 48.95
DATE MEASURED: 9/28/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
0		SM	FILL: Reddish brown (5YR 4/4) to gray (7.5YR 5/1) to light gray (7.5YR 7/1) silty sand with gravel, dry and loose.					
2.5			... slightly moist to 48.5					
5		SM	Native soil.					
7.5	32 50		Dark reddish brown (5YR 3/3) silty sand with gravel, very dense. Gravel is basalt.					
10								
12.5								
15								
17.5								
	48 50	SP	Reddish brown (5YR 4/3) poorly graded sand with gravel, slightly moist and					

EXPLORATION LOG
BEC 7

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/27/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/MARTIN

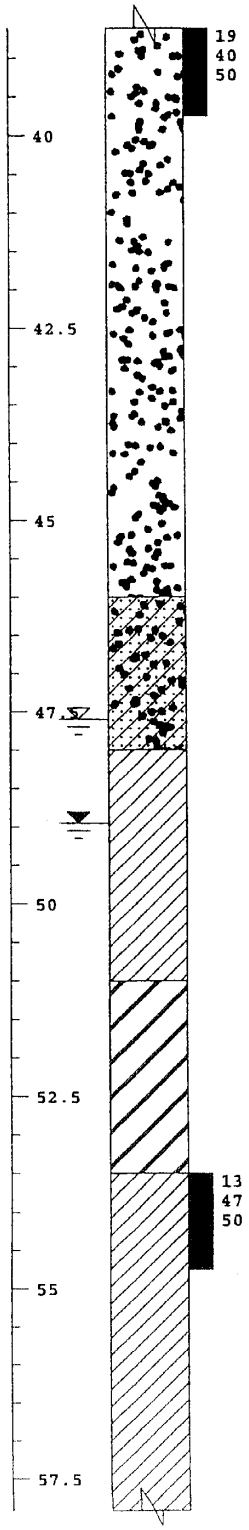
INITIAL DEPTH TO WATER: 47.6
DATE MEASURED: 9/27/01
FINAL DEPTH TO WATER: 48.95
DATE MEASURED: 9/28/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20			very dense. Gravel is dark gray (GLEY 1 4/). PID = 0.0 ppmV.					
22.5			... gravelly layers to 30 feet					
25		GP						
27.5								
	50		Reddish brown (5YR 5/3) poorly graded gravel with sand, dry and very dense. PID = 0.0 ppmV.					
30								
32.5								
35								
37.5								

EXPLORATION LOG
BEC 7

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/27/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/MARTIN

INITIAL DEPTH TO WATER: 47.6
DATE MEASURED: 9/27/01
FINAL DEPTH TO WATER: 48.95
DATE MEASURED: 9/28/01



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
			...reddish gray (5YR 5/2) with abundant gypsum. PID = 0.0 ppmV					
		GP-GC	Reddish gray (5YR 5/2) poorly sorted gravel with sand and clay.					
		CL	Reddish gray (5YR 5/2) to light greenish gray (GLEY I 7/1) lean clay with sand. 48.5 is wet, 49-50 is slightly moist, gypsiferous and very stiff.					
		CH	Light brownish gray (10YR 6/2) fat clay with sand, slightly moist.					
		CL	Grayish brown (10YR 5/2) lean clay with sand, slightly moist to moist and very stiff. PID = 0.0 ppmV.					

EXPLORATION LOG
BEC 7

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/27/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/MARTIN

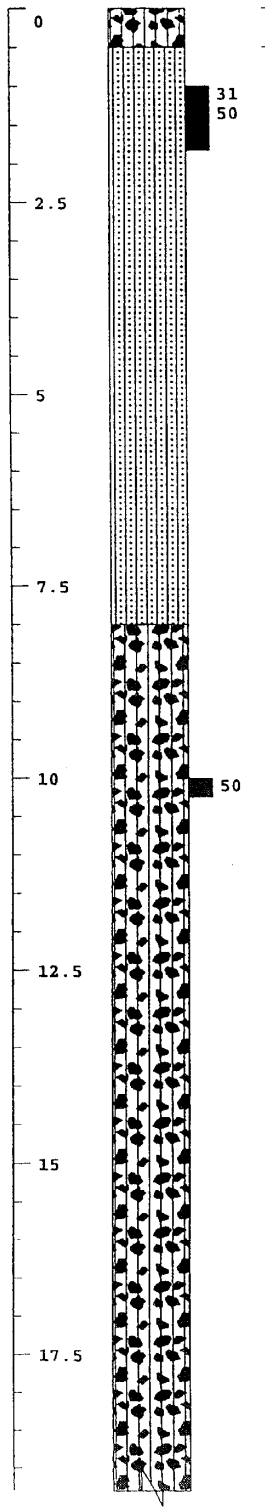
INITIAL DEPTH TO WATER: 47.6
DATE MEASURED: 9/27/01
FINAL DEPTH TO WATER: 48.95
DATE MEASURED: 9/28/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
60	7 6 13		Very pale brown (10YR 8/2) to white (10YR 8/1) lean clay with sand, slightly moist and stiff. PID = 0.0 ppmV.					
62.5			END OF BORING AT 61 FEET END OF BOREHOLE					
65								
67.5								
70								
72.5								
75								

EXPLORATION LOG
BEC 9

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: SEPT 24,2001
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 48.5
DATE MEASURED: 9/24/01
FINAL DEPTH TO WATER: 46.20
DATE MEASURED: 9/25/01

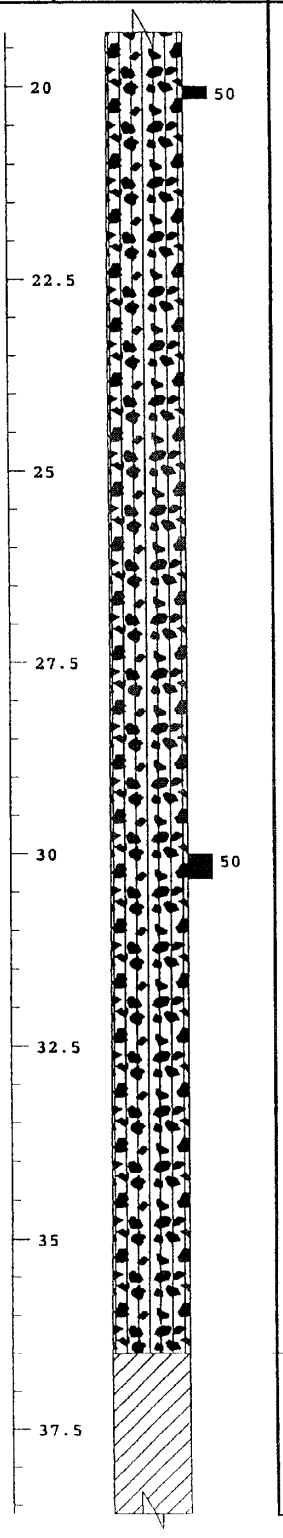


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWEL (%)
		GM	Very pale brown (10YR 7/3) silty gravel with sand,dry and dense.					
		SM	Very pale brown (10YR 7/3) silty sand with gravel, dry and very dense. No stain or odor. PID=0.0 ppm V. ... pale brown (10YR 6/3)					
		GM	Pale brown (10YR 6/3) silty gravel with sand, dry and very dense. No recovery, use drill cuttings. Brown (7.5YR 5/4). No stain or odor. PID= 0.0 ppmV.					

EXPLORATION LOG
BEC 9

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: SEPT 24,2001
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 48.5
DATE MEASURED: 9/24/01
FINAL DEPTH TO WATER: 46.20
DATE MEASURED: 9/25/01

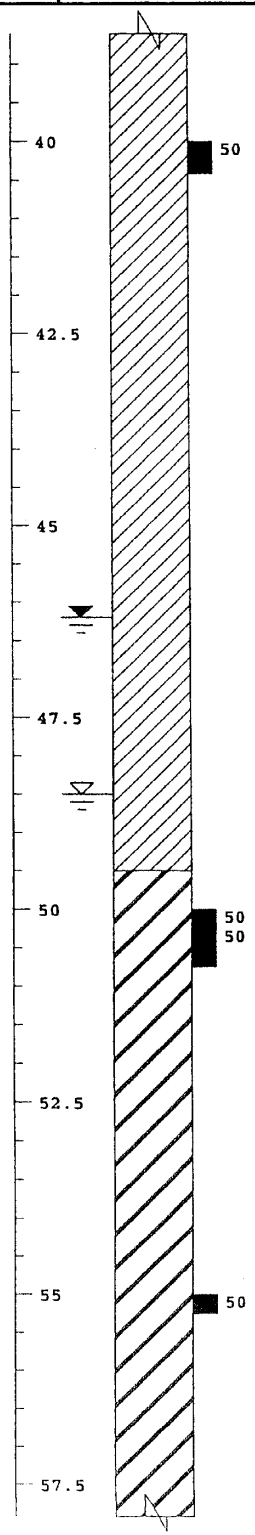


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
			...slightly moist. Cuttings show continued GM. No stain or odor. PID = 0.0 ppmV.					
			... brown (7.5YR 4/4), trace of gypsum					
			... gypsiferous, no stain or odor. PID = 0.0 ppm V					
			... slightly moist to moist					
		CL	Light brown (7.5YR6/3) sandy lean clay, slightly moist and very stiff.					

EXPLORATION LOG
BEC 9

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: SEPT 24,2001
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 48.5
DATE MEASURED: 9/24/01
FINAL DEPTH TO WATER: 46.20
DATE MEASURED: 9/25/01



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
			... moist					
			... wet					
		CH	Light greenish gray gypsiferous fat clay, wet and very stiff. Gypsum crystals to 1 1/2", platey to prismatic. ... decreasing moisture to moist, decreasing gypsum (<5%)					
			... wet					

EXPLORATION LOG
BEC 9

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: SEPT 24,2001
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 48.5
DATE MEASURED: 9/24/01
FINAL DEPTH TO WATER: 46.20
DATE MEASURED: 9/25/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
60	50							
			END OF BORING AT 60.3 FEET END OF BORING					
62.5								
65								
67.5								
70								
72.5								
75								

EXPLORATION LOG
BEC 10

PROJECT: UPPER PONDS
HOLE LOCATION: SEE FIGURE 1
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
ELEVATION: EGS

PROJECT NO.: 20011259V1
EXPLORATION DATE: 9/19-21/01
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 78.00
FINAL DEPTH TO WATER: 56.86

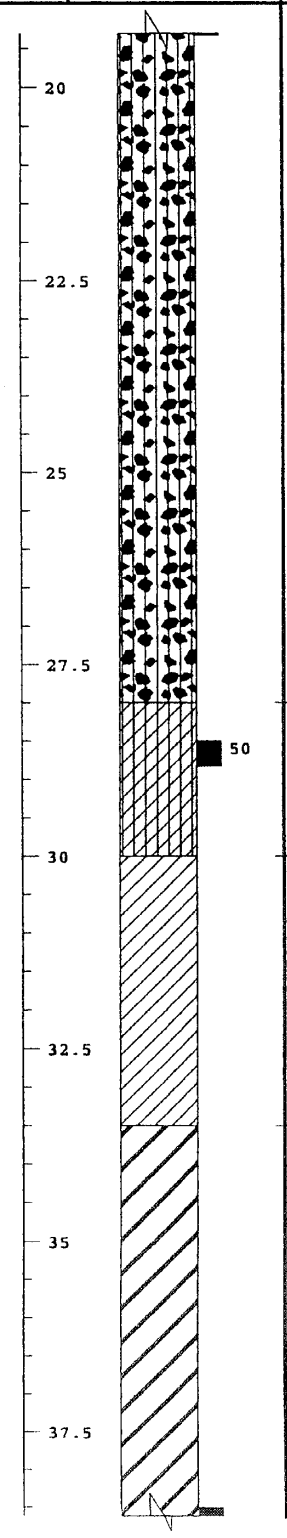
DATE MEASURED: 9/20/01
DATE MEASURED: 9/25/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
0	20 50	GM	Pale brown (10YR 6/3) silty gravel with sand, dry and dense. No stains or odors. PID = 0.0 ppmV.					
2.5								
5								
7.5	50		... no stains or odors. PID = 0.0 ppmV.					
10								
12.5								
15								
17.5	42 50		... no stains or odors. PID = 0.0 ppmV.					

EXPLORATION LOG
BEC 10

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/19-21/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 78.00
DATE MEASURED: 9/20/01
FINAL DEPTH TO WATER: 56.86
DATE MEASURED: 9/25/01



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
			... yellowish brown (10YR 5/4)					
		CL-ML	Brown (7.5YR 5/3) silty clay with sand, slightly moist to moist and very stiff. No odor or stain. PID = 0.0 ppmV.					
		CL	Light brownish gray (2.5Y 6/2) to white Light brownish gray (2.5Y 6/2) to white (5Y 8/1) gypsiferous sandy lean clay, slightly moist and very stiff. Gypsum crystals 1/4" long, light gray (2.5y 7 1), prismatic to platy. No stain or odor. PID = 0.0 ppmV.					
		CH	Pale olive (5Y 6/3) gypsiferous fat clay with sand, slightly moist and very stiff.No stain or odor. PID = 0.0 ppmV. Gypsum crystals to 1"-50-60% of sample.					

EXPLORATION LOG
BEC 10

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/19-21/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 78.00
DATE MEASURED: 9/20/01
FINAL DEPTH TO WATER: 56.86
DATE MEASURED: 9/25/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
40	50		... no stain or odor. PID = 0.0 ppmV.					
42.5								
45								
47.5			... easier drilling					
	50		... very pale brown (10YR 8/2) with increasing sand content. Decreasing gypsum crystal size.					
50								
			... harder drilling					
52.5								
	50		No stains or odors. PID = 0.0ppmV.					
55			... pale olive (5Y 6/3) with gypsum crystals to 3/4", prismatic to platy crystals, 50-60% of sample.					
57.5								

EXPLORATION LOG
BEC 10

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/19-21/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/COOKE

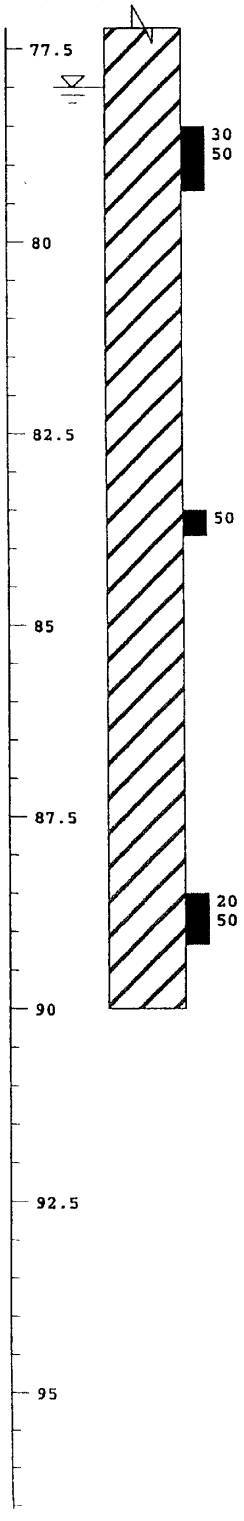
INITIAL DEPTH TO WATER: 78.00
DATE MEASURED: 9/20/01
FINAL DEPTH TO WATER: 56.86
DATE MEASURED: 9/25/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
	30 50		Strong brown gypsiferous lean clay with sand, slightly moist and very stiff. No stains or odors. PID= 0.0 ppmV. Decreasing gypsum crystal size and % AT 59.5 feet.					
60								
62.5		CH	Pale olive (5Y 6/3) fat clay with trace of gypsum, slightly moist and very stiff.					
	50							
65			... light greenish gray (GLEY 8 7/1). No stain or odor. PID=0.0 ppmV.					
67.5								
	50							
70			...pale brown (10YR 6/3), gypsiferous with sand.					
72.5								
	50		... white (5Y 8/1). No stain or odor. PID=0.0 ppmV.					
75								

EXPLORATION LOG
BEC 10

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/19-21/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: DIEDRICH D-50 TRACK DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 78.00
DATE MEASURED: 9/20/01
FINAL DEPTH TO WATER: 56.86
DATE MEASURED: 9/25/01



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
			... pale brown (10YR 6/3)- maybe CL ... wet ... moist ... slightly moist ... brown (10YR 5/3) ... increasing gypsum size and % ... decreasing gypsum size and %(very fine) ... increasing gypsum (20%) and size(to 1/4")					
			END OF BORING AT 90 FEET OVERDRILL BOREHOLE TO 90 FEET; SET MONITOR WELL AT 88. FEET					

EXPLORATION LOG
BEC 12

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/26/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/COOKE

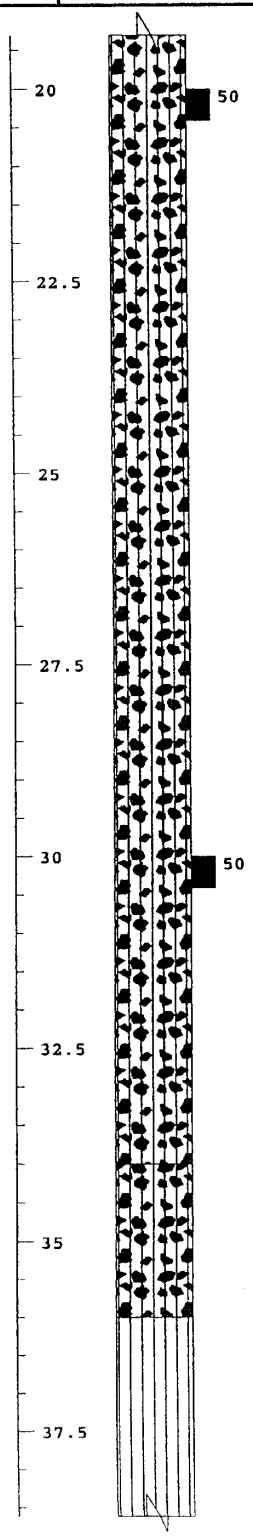
INITIAL DEPTH TO WATER: 50.00
DATE MEASURED: 9/26/01
FINAL DEPTH TO WATER: 53.55
DATE MEASURED: 9/27/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
0		GM	Very pale brown silty gravel with sand, cobbles, and boulders, dry and dense. No stains or odor. PID = 0.0ppmV.					
	20		... hammering a rock					
2.5								
5								
7.5								
10	50		... no stains or odor. PID = 0.0 ppmV.					
12.5								
15								
17.5								

EXPLORATION LOG
BEC 12

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/26/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/COOKE

INITIAL DEPTH TO WATER: 50.00
DATE MEASURED: 9/26/01
FINAL DEPTH TO WATER: 53.55
DATE MEASURED: 9/27/01

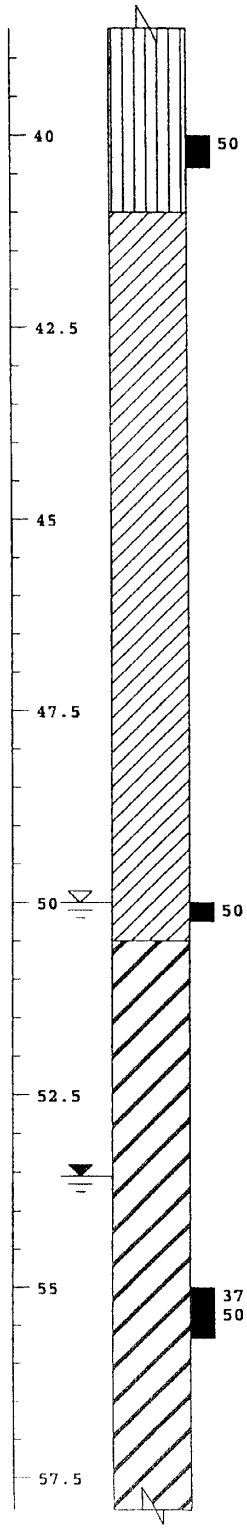


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
			... no stain or odor. PID = 0.0 ppmV.					
			... white (10YR 8/1) and gypsiferous					
			White (10YR 8/1) gypsiferous silty sand with gravel, dry and very dense. No stain or odor. PID = 0.0 ppmV.					
		GM	Very pale brown (10YR 7/3) silty gravel with sand, dry and very dense. No visible gypsum.					
		ML	Light yellowish brown (2.5Y 6/3) gravelly silt with sand, slightly moist and very stiff. Trace of gypsum.					
			Yellowish brown (10YR 5/4) gravelly					

EXPLORATION LOG
BEC 12

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/26/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/COOKE

INITIAL DEPTH TO WATER: 50.00
DATE MEASURED: 9/26/01
FINAL DEPTH TO WATER: 53.55
DATE MEASURED: 9/27/01



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
			silty clay with sand, moist and very stiff. Light gray (2.5Y 7/2) to pale yellow (2.5Y 7/3) sandy silt with gravel, slightly moist and very stiff. PID = 0.0 ppmV. ... pale yellow (2.5Y 8/2)					
		CL	Light yellowish brown (2.5Y 8/2) sandy lean clay with gravel, moist and very stiff. Clasts have cement coatings. ... very moist					
		CH	Pale yellow (5Y 7/3) fat clay with sand, wet and very stiff. No stains or odors. PID=0.0 ppmV. Driller says this may be sluff. ... olive (5Y 5/3)					

EXPLORATION LOG
BEC 12

PROJECT: UPPER PONDS
PROJECT NO.: 20011259V1
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 9/26/01
EXPLORATION SIZE: 6 5/8" I.D. H.S. AUGER
EQUIPMENT: MOBILE B-90 DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: HUERTA/COOKE

INITIAL DEPTH TO WATER: 50.00
DATE MEASURED: 9/26/01
FINAL DEPTH TO WATER: 53.55
DATE MEASURED: 9/27/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
60	21 50		Driller says this may be sluff.					
			END OF BORING AT 60.65 FEET					
62.5								
65								
67.5								
70								
72.5								
75								

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Silty sand
	Clayey sand
	Silty gravel
	Silty, clayey gravel
	Low plasticity clay
	High plasticity clay
	Poorly graded gravel with silt
	Poorly graded sand with silt
	Silty, clayey sand

Symbol	Description
	Poorly graded sand
	Poorly graded gravel
	Poorly graded gravel with clay
	Silty low plasticity clay
	Silt
Misc. Symbols	
	Boring continues
	Water table at date indicated
	Water table at date indicated

Notes:

1. Exploratory borings were drilled on date shown on the logs with a Mobile B-90 drill rig and a Diedrich D-50 drill rig using 6 5/8 inch inside diameter hollow stem augers.

2. California sampler driven with a 140 pound hammer falling 30 inches.

3. Ambient air PID readings for all boring locations was 0.0 ppmV.

4. All monitor wells were installed with 4.0 inch inside diameter schedule 40 PVC screens and casing. Screen length in all monitor wells is 15.0 feet.

5. Results of tests conducted on samples recovered are reported on the logs and attached plates/figures.

FIGURE NO. 10

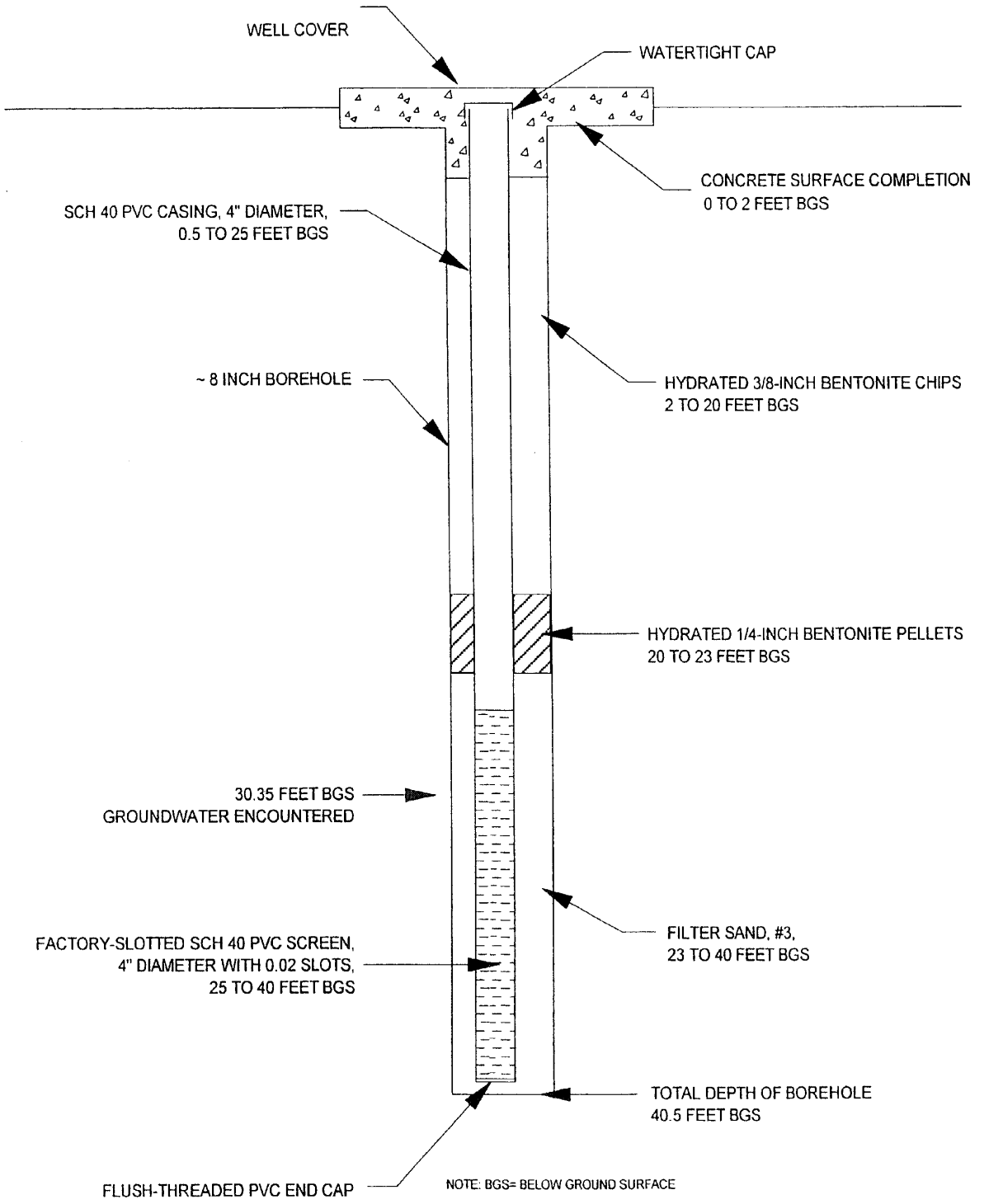
KEY TO SYMBOLS

Symbol Description

Soil Samplers

 California sampler

MW-BEC1



GES
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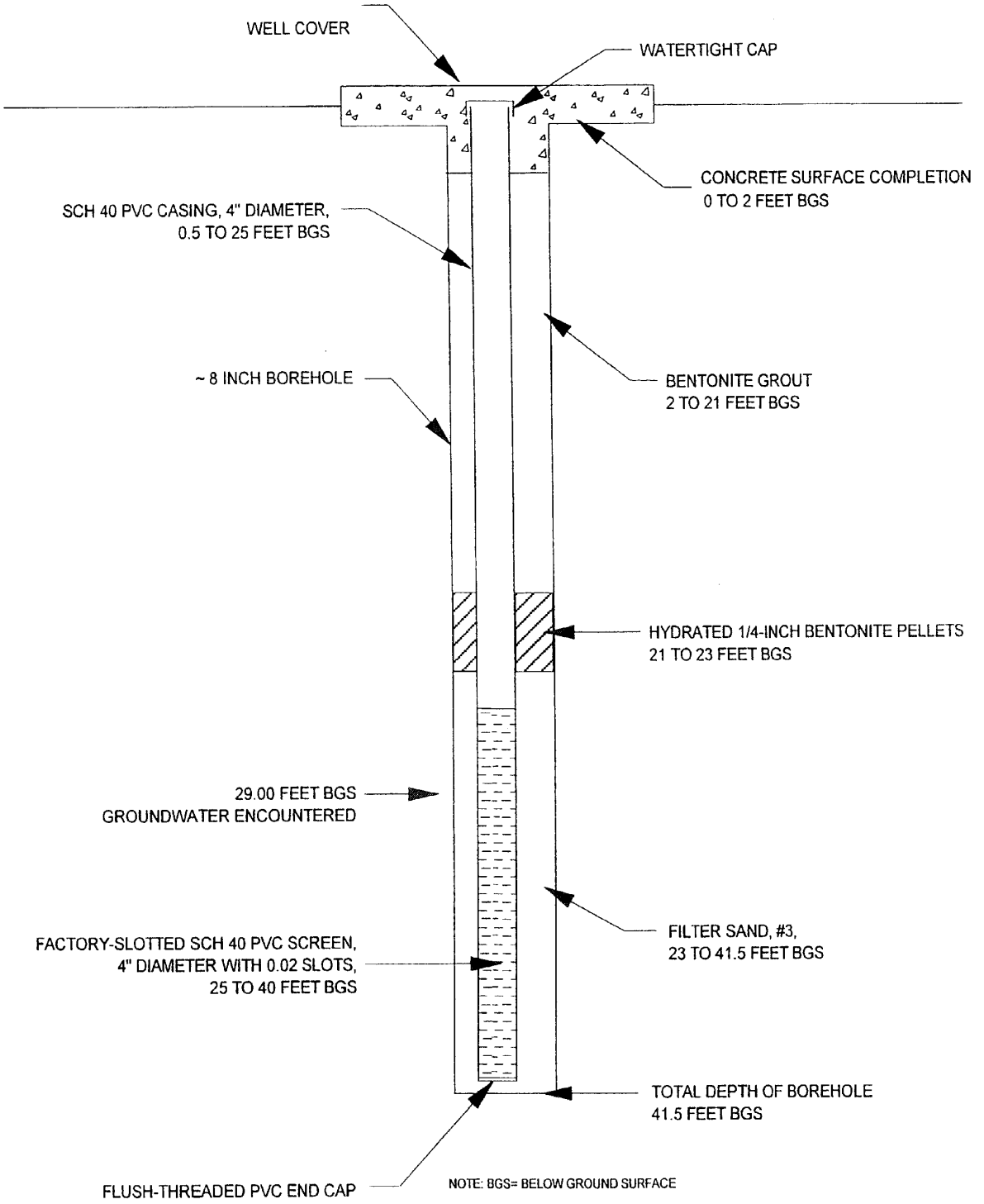
Las Vegas, NV 89119

MW-BEC1 WELL CONSTRUCTION DIAGRAM

JOB NO. 20011259V1

FIG. 11

MW-BEC4



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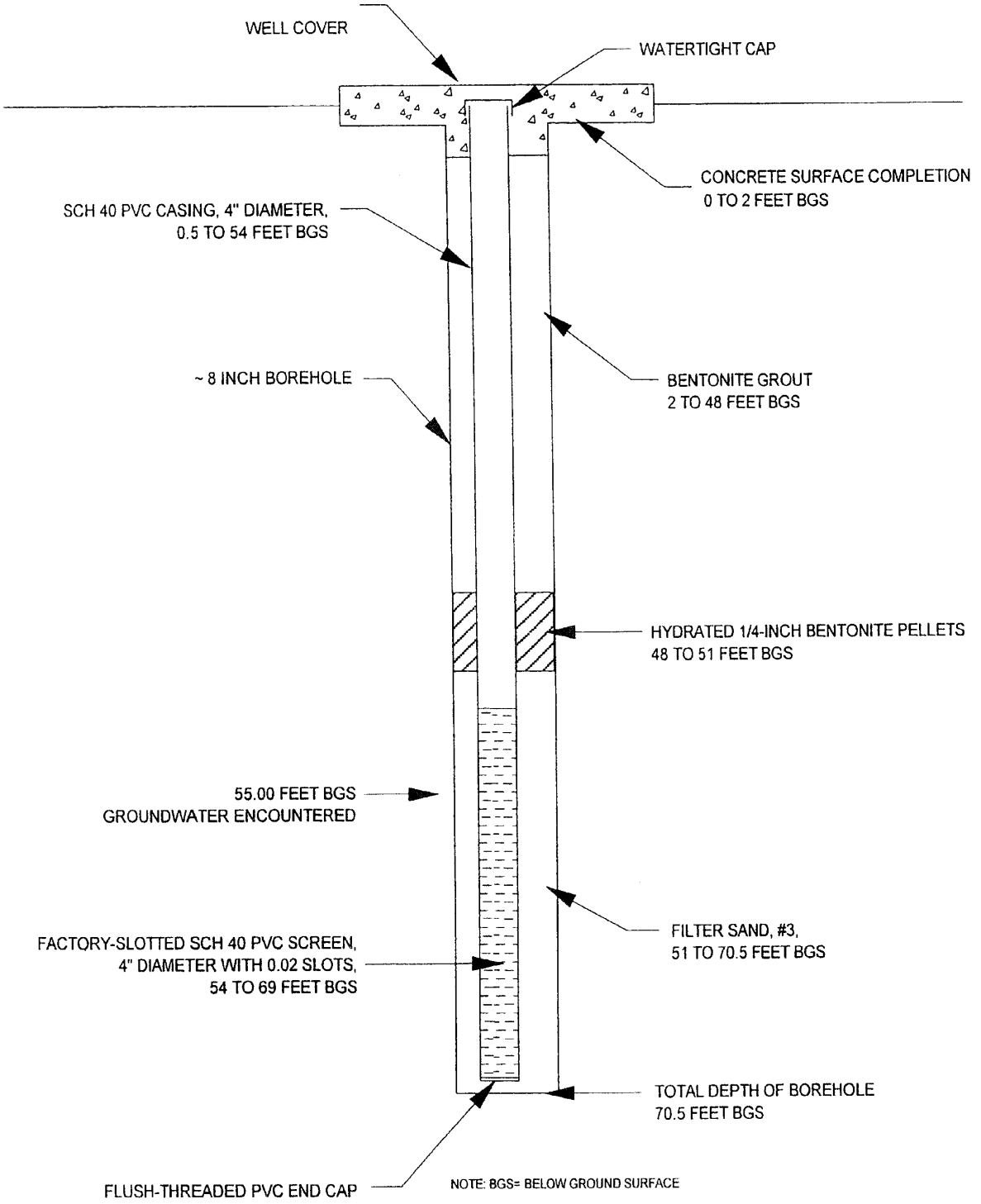
Las Vegas, NV 89119

MW-BEC4 WELL CONSTRUCTION DIAGRAM

JOB NO. 20011259V1

FIG. 12

MW-BEC5



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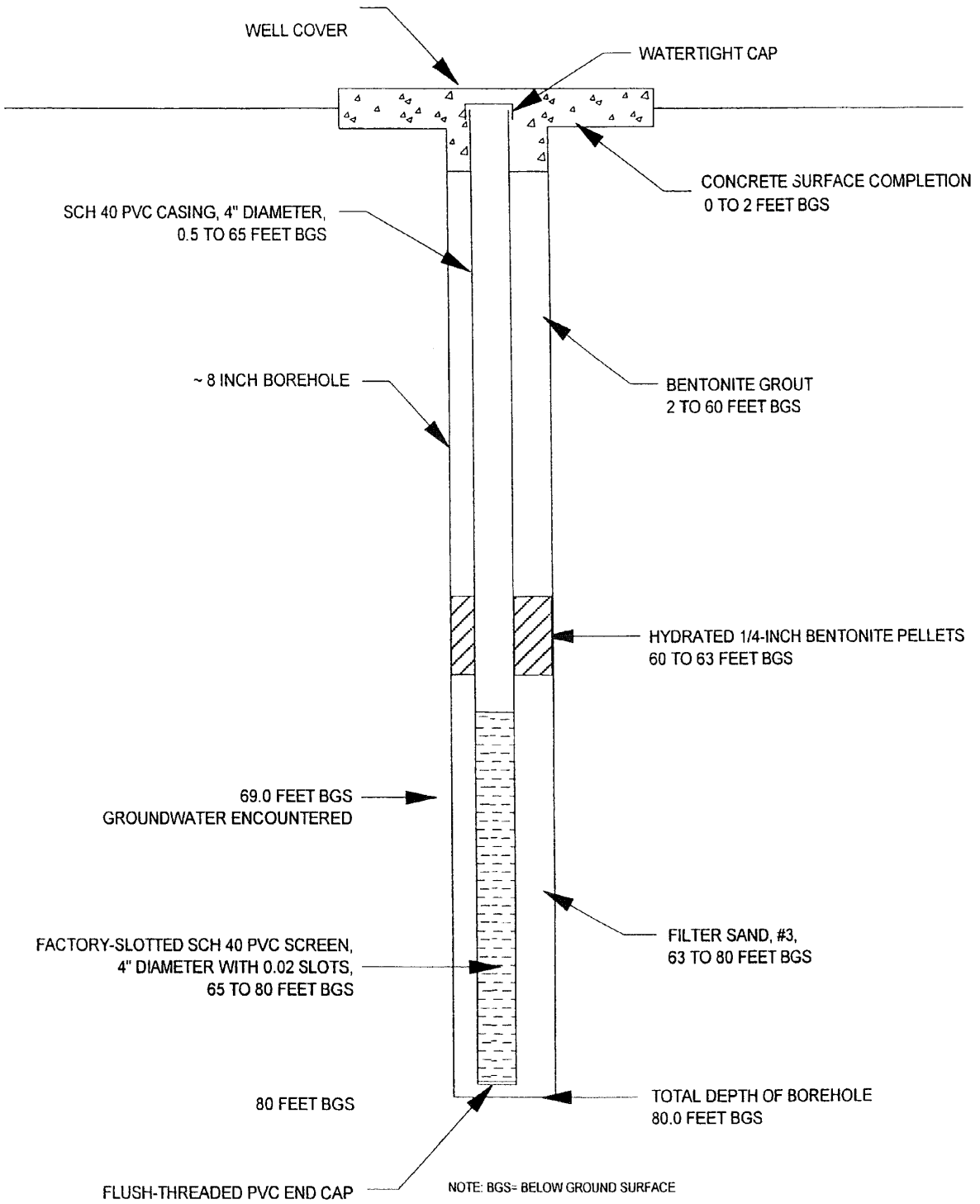
Las Vegas, NV 89119

MW-BEC5 WELL CONSTRUCTION DIAGRAM

JOB NO. 20011259V1

FIG. 13

MW-BEC6



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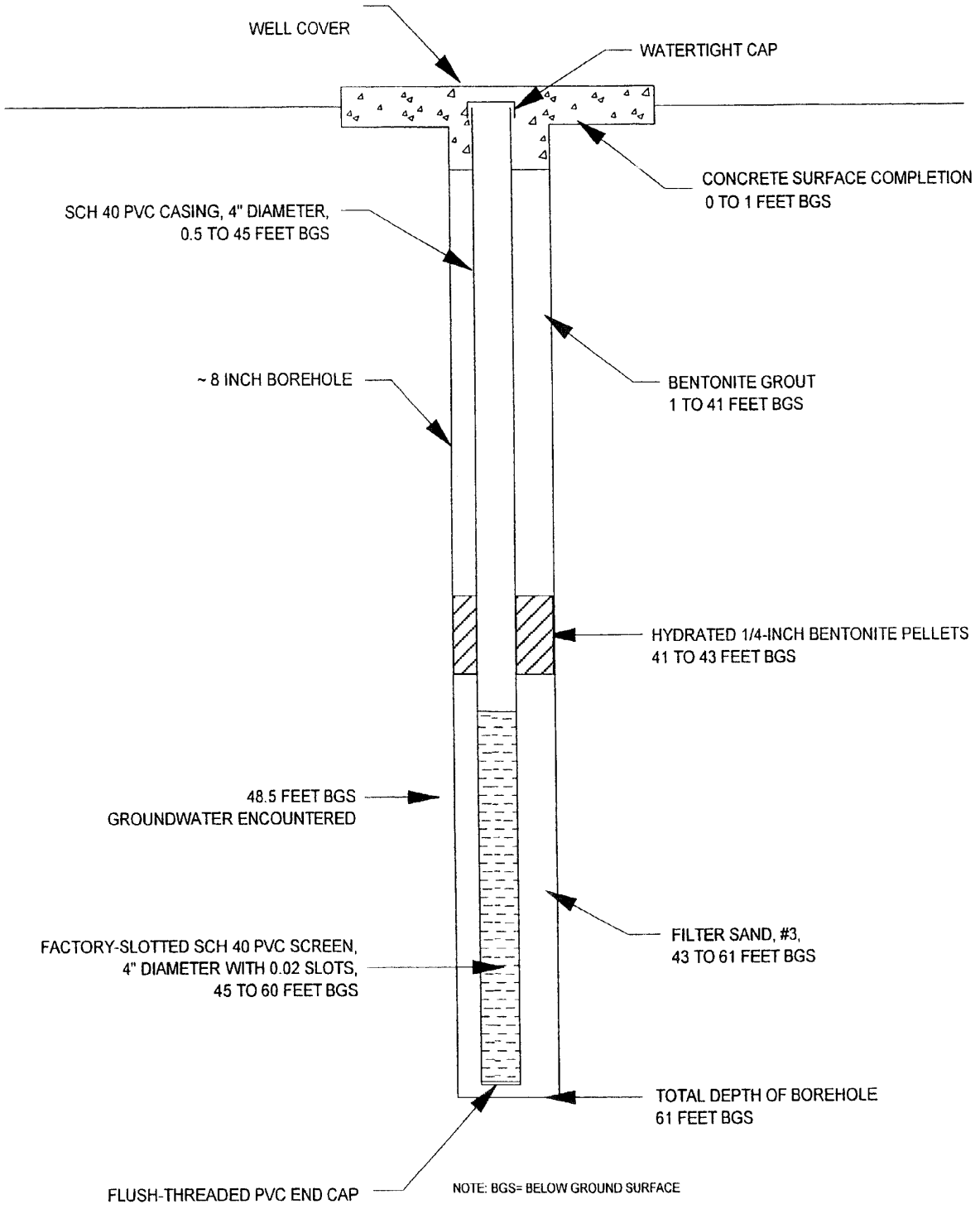
MW-BEC6 WELL CONSTRUCTION DIAGRAM

JOB NO. 20011259V1

FIG. 14

MW-BEC7



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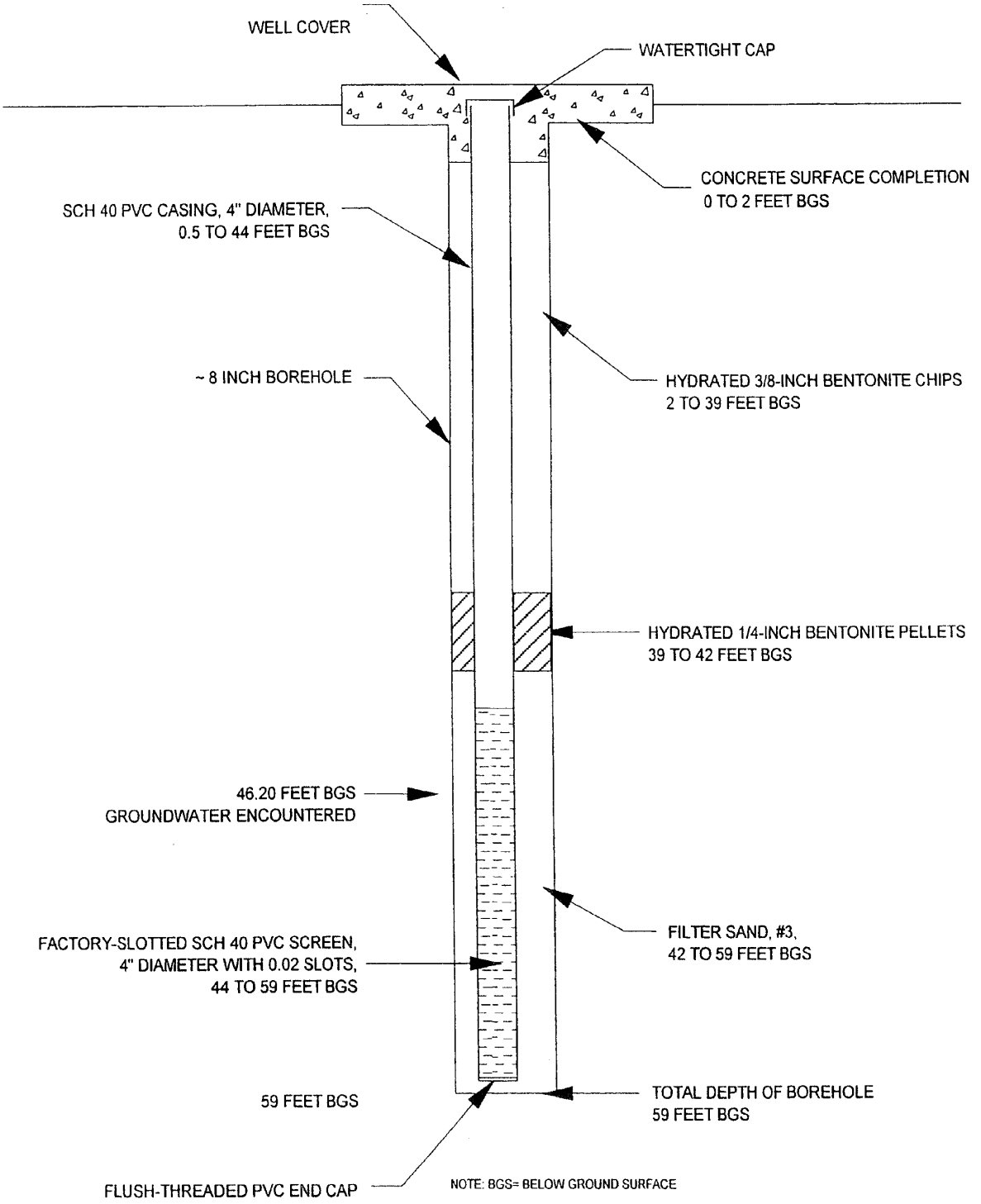
MW-BEC7 WELL CONSTRUCTION DIAGRAM

JOB NO. 20011259V1

FIG. 15

MW-BEC9



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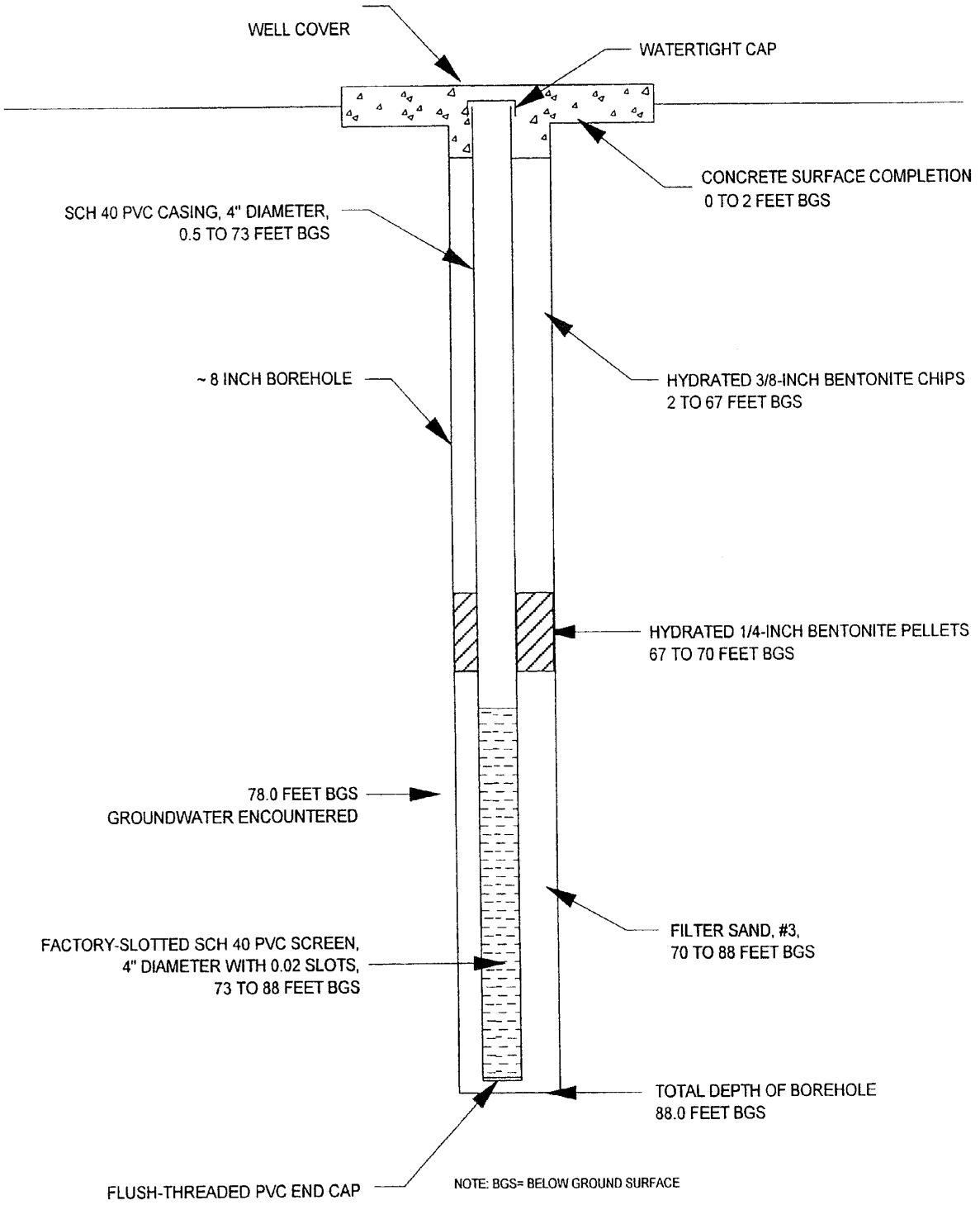
MW-BEC9 WELL CONSTRUCTION DIAGRAM

JOB NO. 20011259V1

FIG. 16

MW-BEC10



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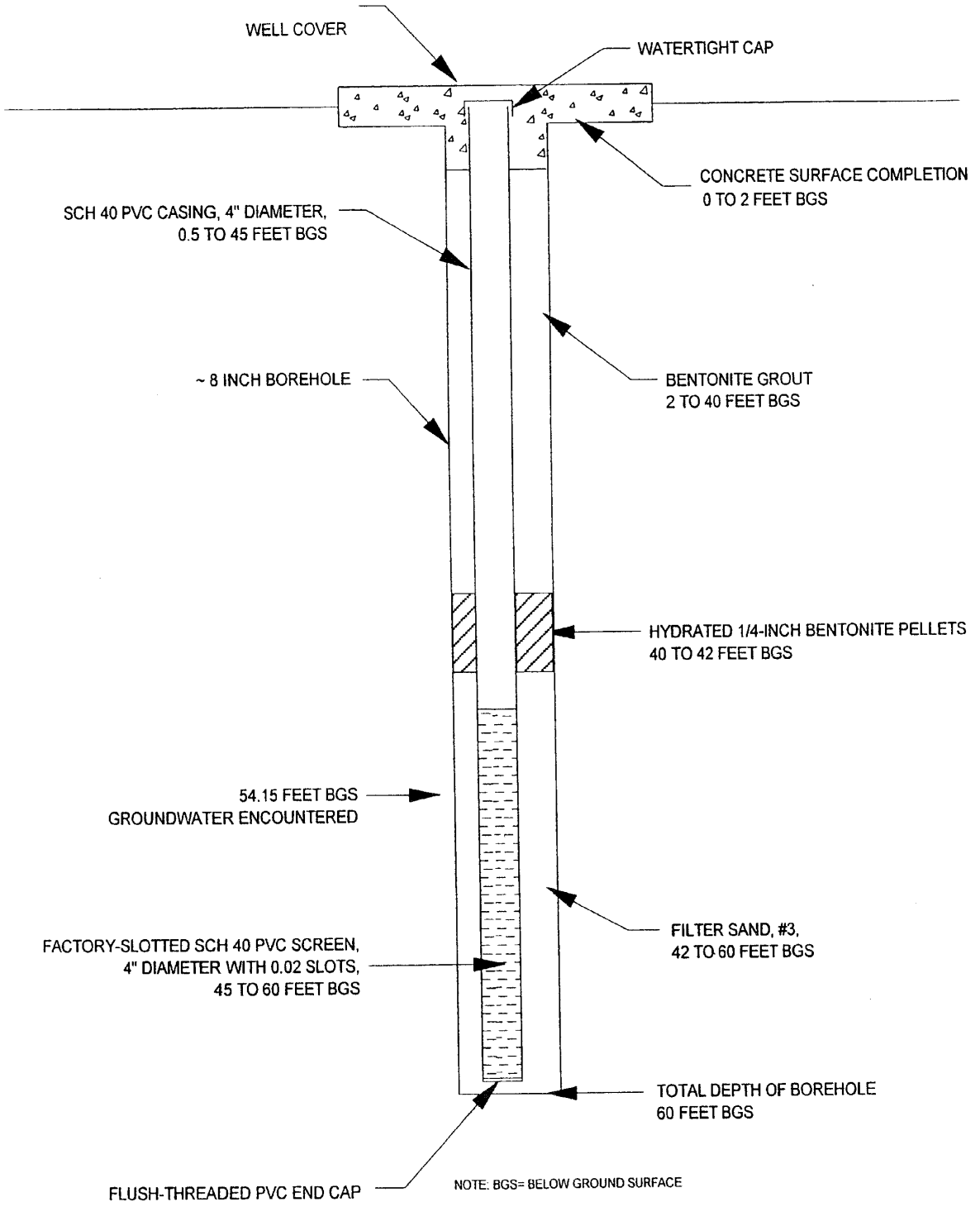
MW-BEC10 WELL CONSTRUCTION DIAGRAM

JOB NO. 20011259V1

FIG. 17

MW-BEC12



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7150 Placid Street
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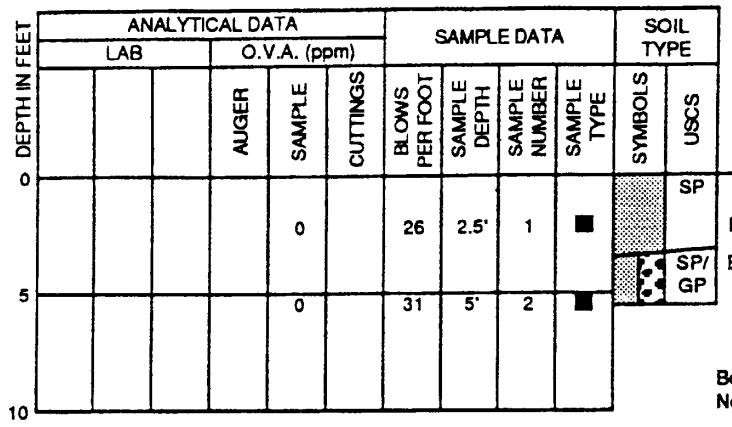
MW-BEC12 WELL CONSTRUCTION DIAGRAM

JOB NO. 20011259V1

FIG. 18



BORING B-1

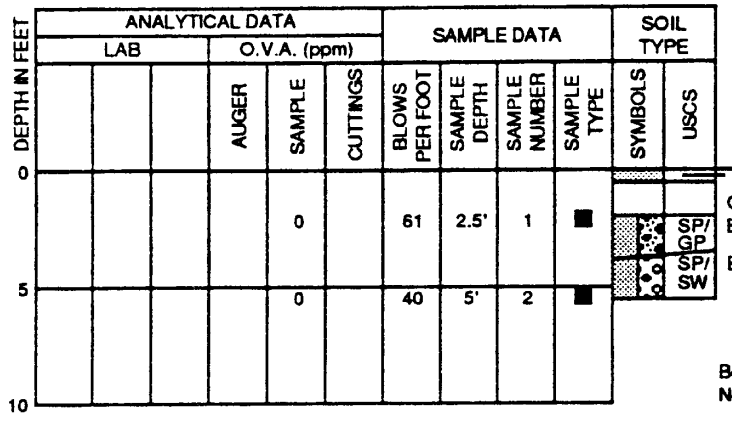
SAMPLING METHOD: Sprague & Henwood
DRILLING METHOD: 5-1/4 Inch Diameter Air Rotary

DESCRIPTION

Reddish brown fine to coarse SAND with some fine Gravel, damp, medium dense

Brown medium SAND to fine GRAVEL with some fine Sand and coarse Gravel, dry, medium dense

Boring completed at a depth of 5-1/2 feet on February 6, 1990.
No ground water encountered.



BORING B-2

SAMPLING METHOD: Sprague & Henwood
DRILLING METHOD: 5-1/4 Inch Diameter Air Rotary

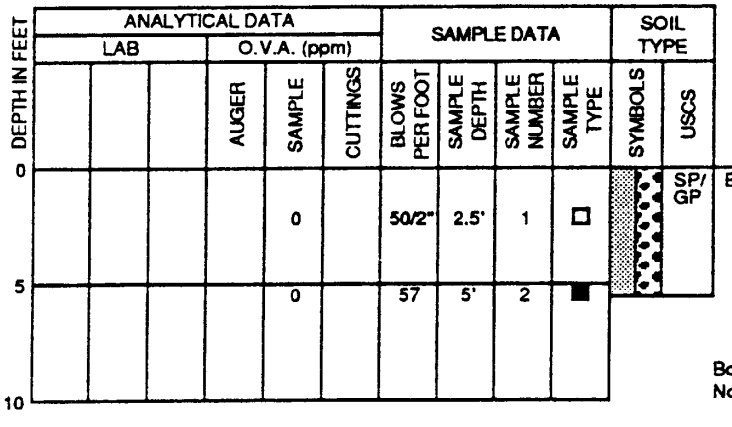
DESCRIPTION

SP Brown fine SAND with fine GRAVEL, dry
Concrete

Brown medium SAND and fine GRAVEL with some coarse Gravel and fine Sand, dry, very dense

Brown fine to coarse SAND with some fine Gravel, dry, dense

Boring terminated at a depth of 5-1/2 feet on February 6, 1990 due to caving.
No ground water encountered.



BORING B-3

SAMPLING METHOD: Sprague & Henwood
DRILLING METHOD: 5-1/4 Inch Diameter Air Rotary

DESCRIPTION

Brown medium SAND and fine GRAVEL with some coarse Gravel and Cobbles dry, very dense
Unable to obtain sample

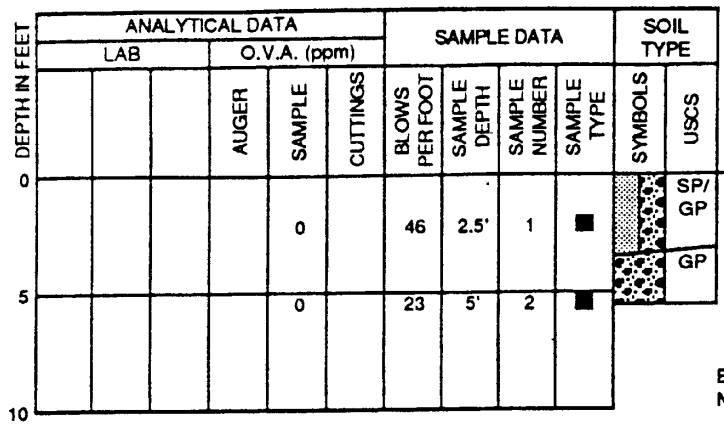
As above

Boring completed at a depth of 5-1/2 feet on February 6, 1990.
No ground water encountered.

LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

Dames & Moore
FIGURE A-2



BORING B-4

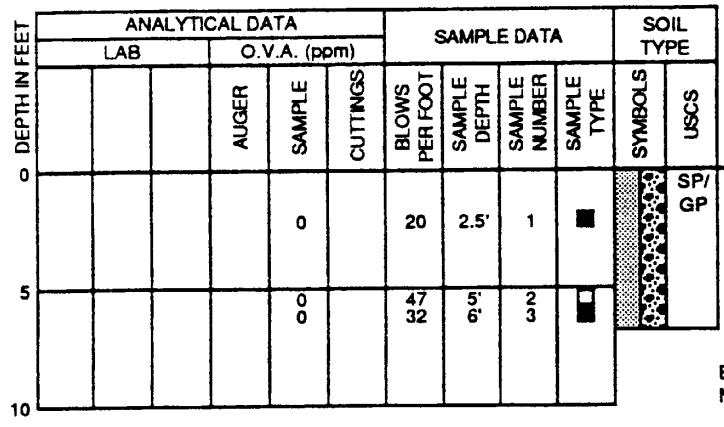
SAMPLING METHOD: Sprague & Henwood
DRILLING METHOD: 5-1/4 Inch Diameter Air Rotary

DESCRIPTION

Brown medium SAND and coarse GRAVEL, dry, dense

Gray brown fine to coarse GRAVEL with some medium to coarse Sand, dry, medium dense

Boring completed at a depth of 5-1/2 feet on February 6, 1990.
No ground water encountered.



BORING B-5

SAMPLING METHOD: Sprague & Henwood
DRILLING METHOD: 5-1/4 Inch Diameter Air Rotary

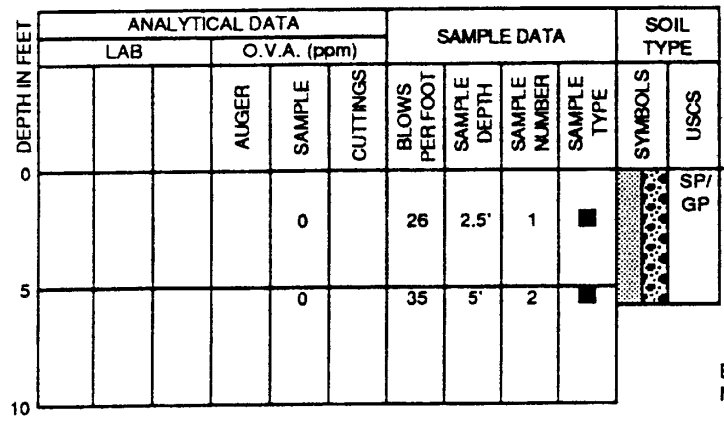
DESCRIPTION

Brown medium SAND and fine GRAVEL with some coarse Sand and Cobbles, dry

As above, medium dense

Cobbles in shoe, no recovery
As above

Boring completed at a depth of 6-1/2 feet on February 6, 1990.
No ground water encountered.



BORING B-6

SAMPLING METHOD: Sprague & Henwood
DRILLING METHOD: 5-1/4 Inch Diameter Air Rotary

DESCRIPTION

Brown medium SAND and fine GRAVEL, with some fine Sand and coarse Gravel and cobbles, dry, dense

As above

Boring completed at a depth of 5-1/2 feet on February 6, 1990.
No ground water encountered.

LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

Dames & Moore
FIGURE A-3

BORING B-7

SAMPLING METHOD: Sprague & Henwood
DRILLING METHOD: 5-1/4 Inch Diameter Air Rotary

DEPTH IN FEET	ANALYTICAL DATA: LAB	ANALYTICAL DATA: LAB	ANALYTICAL DATA: LAB	O.V.A. (ppm): AUGER	O.V.A. (ppm): SAMPLE	O.V.A. (ppm): CUTTINGS	SAMPLE DATA: BLOWS PER FOOT	SAMPLE DATA: SAMPLE DEPTH	SAMPLE DATA: SAMPLE NUMBER	SAMPLE DATA: SAMPLE TYPE	SOIL TYPE: SYMBOLS	SOIL TYPE: USCS	DESCRIPTION
0					0		32	2.5'	1	■		SP/ GP	Brown medium SAND and coarse GRAVEL with some fine Sand, dry, dense
													As above
												GP	Brown fine to coarse GRAVEL with some Sand and Cobbles, dry, medium dense
5					0		21	5'	2	■			
10													

Boring completed at a depth of 5-1/2 feet on February 6, 1990.
No ground water encountered.

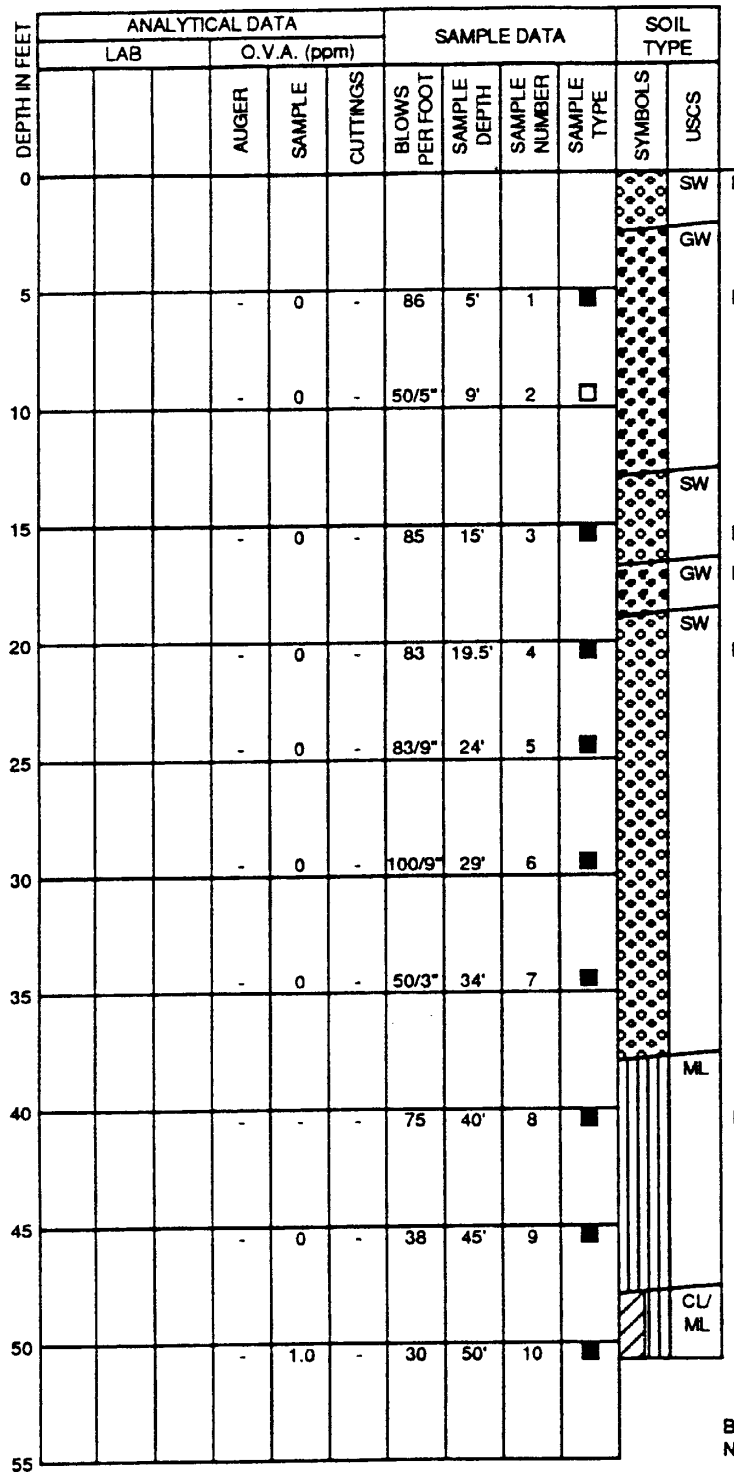
LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

Dames & Moore
FIGURE A-4

BORING B-8

SAMPLING METHOD: Dames & Moore "U"-Type
DRILLING METHOD: 8-Inch Diameter Hollow Stem Auger



DESCRIPTION

Brown fine to coarse SAND with some fine to coarse Gravel, trace Cobbles, dry

Brown fine to coarse Sandy GRAVEL with some Cobbles, dry, very dense

As above, no sample recovery

Brown fine to coarse SAND with some fine Gravel, trace coarse Gravel and Silt, dry, very dense

Brown Gravelly lense

Brown Gravelly fine to coarse SAND, dry, very dense

As above

As above

As above, grading to some fine to coarse GRAVEL

Light brown Clayey SILT with some fine Sand, very stiff, damp

As above, very moist

Brown Silty CLAY with some fine Sand, moist, stiff

Boring completed at a depth of 50-1/2 feet on February 13, 1990.
No ground water encountered.

LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

Dames & Moore
FIGURE A-5

BORING B-9

SAMPLING METHOD: Dames & Moore "U"-Type
DRILLING METHOD: 8-Inch Diameter Hollow Stem Auger

DEPTH IN FEET	ANALYTICAL DATA: LAB	ANALYTICAL DATA: O.V.A. (ppm) AUGER	O.V.A. (ppm) SAMPLE	O.V.A. (ppm) CUTTINGS	SAMPLE DATA: BLOWS PER FOOT	SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SOIL TYPE: SYMBOLS	SOIL TYPE: USCS	DESCRIPTION
0		-	0	-	58	3'	1	■		SW/ SP	Brown fine to coarse SAND with some fine Gravel, trace coarse Gravel, dry, very dense
5		-	0	-	50	5'	2	□			As above, no sample recovery
10		-	0	-	40	10'	3	■			As above
15		-	0	-	73	15'	4	■		SW	Brown fine to coarse Gravelly fine to coarse SAND, dry, very dense
20		-	0	-	85	19.5'	5	■			As above
25		-	0	-	70	24.5'	6	■			As above
30		-	0	-	50/5"	29'	7	□		GW	Brown Sandy fine to coarse GRAVEL with some Cobbles, dry, very dense, No sample recovery
35		-	0	-	85	34.5'	8	■		SW	Brown fine to coarse SAND with some fine to coarse Gravel and Silt, trace Cobbles, dry, very dense
40		-	0.5	-	67	40'	9	■		SM	Light brown Silty fine SAND with some Clay, dry, very dense to hard
45		-	1.0	-	66	45'	10	■		GM/ ML	Brown Silty fine to coarse GRAVEL with some fine to coarse SAND, dry, very dense
50		-	1.0	-	34	50'	11	■		CL/ SC	Brown CLAY to Clayey fine SAND, moist, very stiff
55											Boring completed at a depth of 50-1/2 feet on February 14, 1990. No ground water encountered.

LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

Dames & Moore
FIGURE A-6

BORING B-10

SAMPLING METHOD: Dames & Moore "U"-Type
DRILLING METHOD: 8-Inch Diameter Hollow Stem Auger

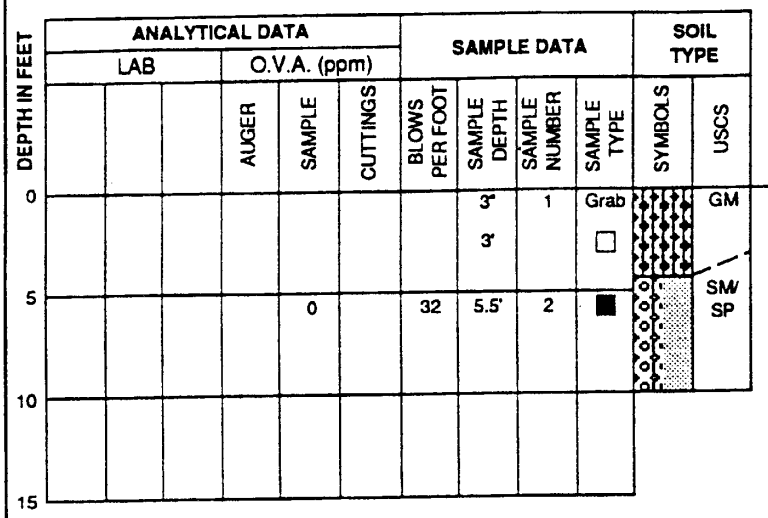
DEPTH IN FEET	ANALYTICAL DATA: LAB	ANALYTICAL DATA: O.V.A. (ppm) AUGER	O.V.A. (ppm) SAMPLE	O.V.A. (ppm) CUTTINGS	SAMPLE DATA: BLOWS PER FOOT	SAMPLE DATA: SAMPLE DEPTH	SAMPLE DATA: SAMPLE NUMBER	SAMPLE DATA: SAMPLE TYPE	SOIL TYPE: SYMBOLS	SOIL TYPE: USCS	DESCRIPTION
0		-	0	-	83	3'	1	■		SW	Brown fine to coarse Gravelly fine to coarse SAND with some Silt, dry, very dense
5		-	0	-	54	5'	2	□		GW	Brown fine to coarse Sandy GRAVEL with some Cobbles, dry No sample recovery
10		-	0	-	81	10'	3	■		SW	Brown fine to coarse SAND with some fine to coarse Gravel and Silt, trace Cobbles, dry, very dense
15		-	0	-	50/5"	14'	4	□			As above, no sample recovery
20		-	0	-	70	19.5	5	■			As above
25		-	0.5	-	73	24.5'	6	■			As above
30		-	0	-	46	29'	7	□			As above, no sample recovery
35		-	0	-	75	35'	8	■			Grades to less Gravelly
40		-	0	-	80	40'	9	▩			As above, disturbed sample
45		-	-	-	50/3"	44'	10	□			No recovery
50		-	0	-	50/2"	49'	11	□			As above, gradings to increased Silt, no sample recovery
55											

Boring completed at a depth of 49-1/2 feet on February 14, 1990.
No ground water encountered.

LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

Dames & Moore
FIGURE A-7



BORING B-11

SAMPLING METHOD: Dames & Moore "U"-Type, 150lb Hammer, 30" Drop
DRILLING METHOD: Mobile B-61, 8" Hollow Stem Auger

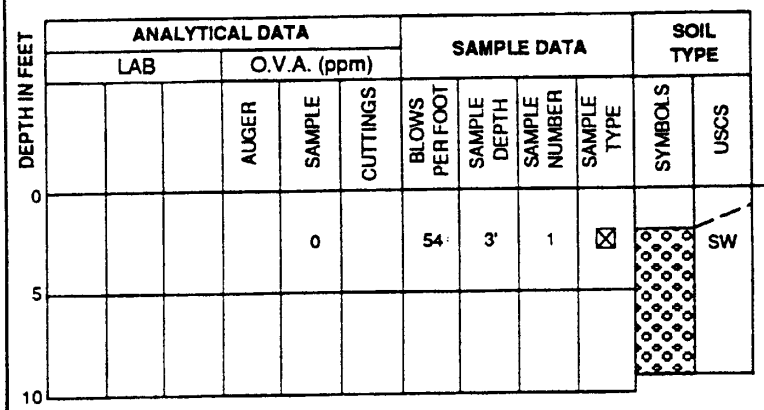
DESCRIPTION

Brown Silty and Sandy GRAVEL, damp, loose to hard packed

No sample recovery

Brown Silty and Gravelly fine SAND, damp to moist, dense

Boring B-11 terminated at a depth of 10 feet on July 18, 1990 due to refusal.
No ground water encountered.



BORING B-12

SAMPLING METHOD: Dames & Moore "U"-Type, 150lb Hammer, 30" Drop
DRILLING METHOD: Mobile B-61, 8" Hollow Stem Auger

DESCRIPTION

Light brown Gravelly and Silty SAND to Sandy and Gravelly SILT, dry to damp
Brown Gravelly SAND and SILT, damp, very dense

As above, increase SILT, SAND becomes fine

Boring B-12 terminated at a depth of 9 feet on July 18, 1990 due to refusal.
No ground water encountered.

LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

DAMES & MOORE

BORING B-13

SAMPLING METHOD: Sprague & Henwood, 200lb Hammer, 30" Drop
DRILLING METHOD: Mobile B-61, 8" Hollow Stem Auger

DEPTH IN FEET	ANALYTICAL DATA: LAB	ANALYTICAL DATA: O.V.A. (ppm) AUGER	O.V.A. (ppm) SAMPLE	O.V.A. (ppm) CUTTINGS	SAMPLE DATA: BLOWS PER FOOT	SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SOIL TYPE: SYMBOLS	SOIL TYPE: USCS	DESCRIPTION
0					55	3'	1	■		SW	Brown Gravelly fine to coarse SAND, trace Silt, moist
											⊤ As above, very dense, slightly disturbed
5					61	9.5'	2	■		SM/SP	Brown Silty and Gravelly SAND, moist, very dense, slightly disturbed
10											Boring B-13 completed at a depth of 10 feet on July 19, 1990. No ground water encountered.
15											

BORING B-14

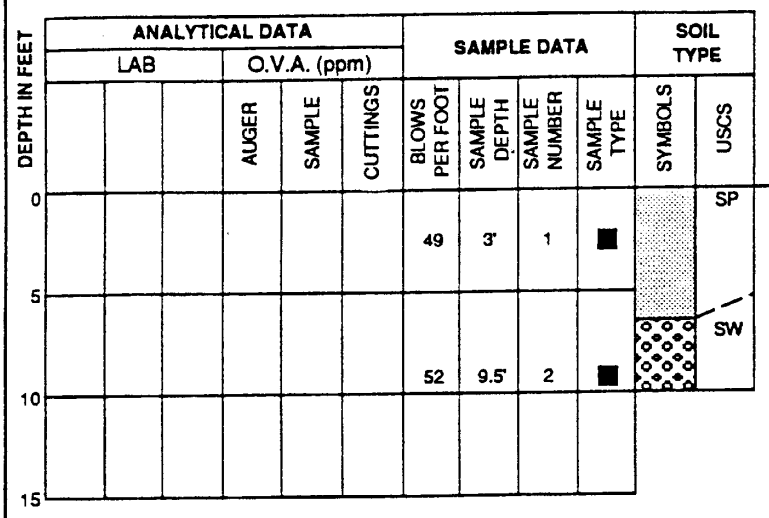
SAMPLING METHOD: Sprague & Henwood, 200lb Hammer, 30" Drop
DRILLING METHOD: Mobile B-61, 8" Hollow Stem Auger

DEPTH IN FEET	ANALYTICAL DATA: LAB	ANALYTICAL DATA: O.V.A. (ppm) AUGER	O.V.A. (ppm) SAMPLE	O.V.A. (ppm) CUTTINGS	SAMPLE DATA: BLOWS PER FOOT	SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SOIL TYPE: SYMBOLS	SOIL TYPE: USCS	DESCRIPTION
0					11	3'	1	■		SP	Brown Gravelly fine to medium SAND, some Silt, medium dense, slightly disturbed
											⊤ As above, coarse Gravel, very dense
5					78	9.5'	2	⊠			Boring B-14 completed at a depth of 10 feet on July 19, 1990. No ground water encountered.
10											
15											

LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

DAMES & MOORE



BORING B-15

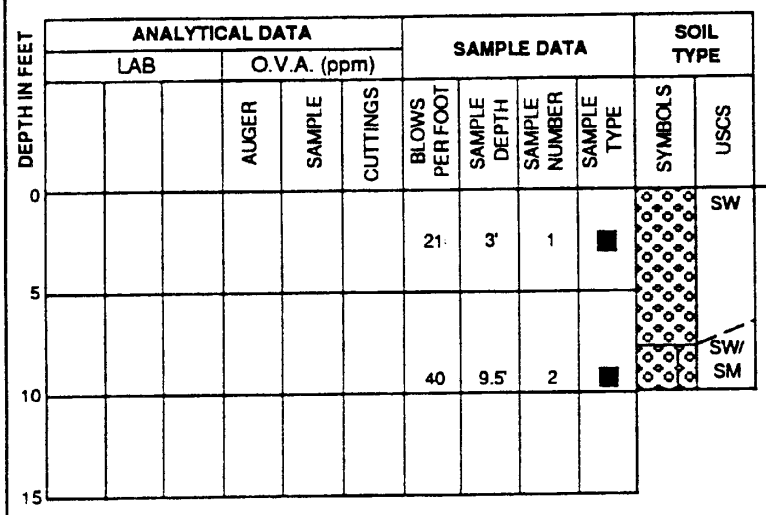
SAMPLING METHOD: Sprague & Henwood, ~200lb Hammer, 30" Drop
DRILLING METHOD: Mobile B-61, 8" Hollow Stem Auger

DESCRIPTION

Brown Gravelly fine SAND, some coarse to medium Sand and Silt, damp, dense, slightly disturbed

Brown Gravelly fine to coarse SAND, trace Silt, damp, very dense

Boring B-15 completed at a depth of 10 feet on July 19, 1990.
No ground water encountered.



BORING B-16

SAMPLING METHOD: Sprague & Henwood, 200lb Hammer, 30" Drop
DRILLING METHOD: Mobile B-61, 8" Hollow Stem Auger

DESCRIPTION

Brown Gravelly fine to coarse SAND, trace Silt, occasional coarse Gravel and cobbles, damp, medium dense

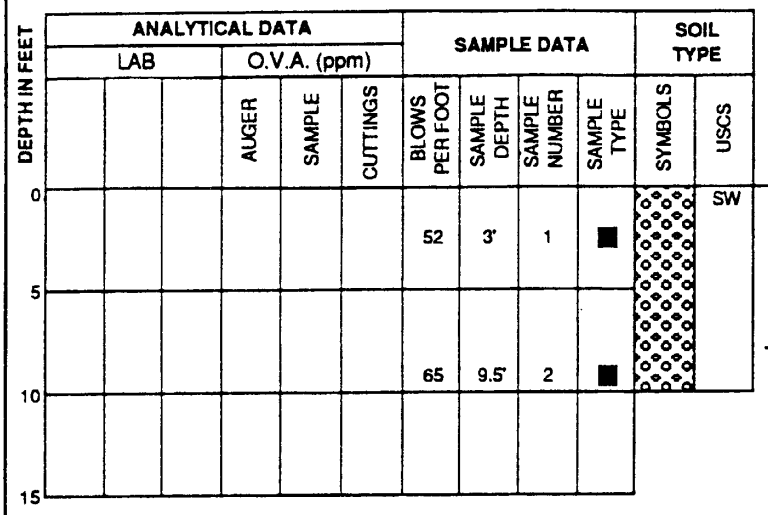
Brown and orange-brown Gravelly fine to coarse SAND with Silt, damp, dense

Boring B-16 completed at a depth of 10 feet on July 19, 1990.
No ground water encountered.

LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

DAMES & MOORE



BORING B-18

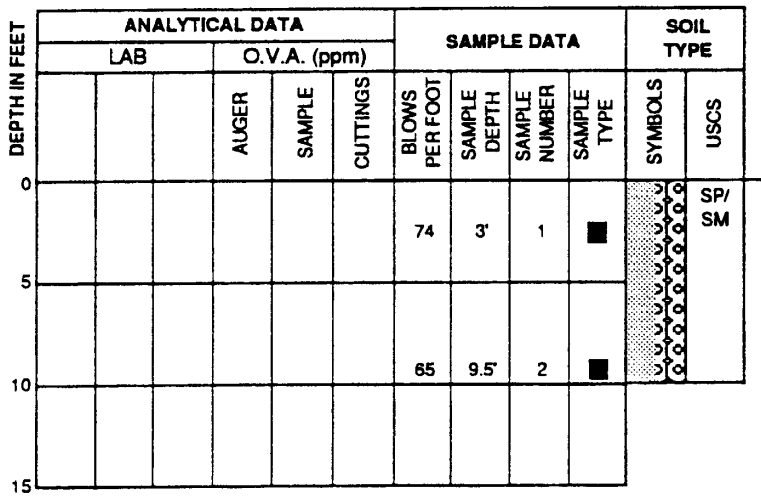
SAMPLING METHOD: Sprague & Henwood, ~200lb Hammer, 30" Drop
DRILLING METHOD: Mobile B-61, 8" Hollow Stem Auger

DESCRIPTION

Brown Gravelly fine to coarse SAND, trace Silt, very dense

▼ As above

Boring B-18 completed at a depth of 10 feet on July 19, 1990.
No ground water encountered.



BORING B-20

SAMPLING METHOD: Sprague & Henwood, 200lb Hammer, 30" Drop
DRILLING METHOD: Mobile B-61, 8" Hollow Stem Auger

DESCRIPTION

Light brown Gravelly, Silty fine SAND to Sandy SILT with Cobbles, dry to damp, very dense, slightly disturbed

Brown Gravelly fine to coarse SAND, some Silt and Cobbles, damp, very dense

Boring B-20 completed at a depth of 10 feet on July 19, 1990.
No ground water encountered.

LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

DAMES & MOORE

BORING B-21

SAMPLING METHOD: Sprague & Henwood, ~200lb Hammer, 30" Drop
DRILLING METHOD: Mobile B-61, 8" Hollow Stem Auger

DEPTH IN FEET	ANALYTICAL DATA: LAB	ANALYTICAL DATA: LAB	ANALYTICAL DATA: LAB	ANALYTICAL DATA: O.V.A. (ppm) AUGER	ANALYTICAL DATA: O.V.A. (ppm) SAMPLE	ANALYTICAL DATA: O.V.A. (ppm) CUTTINGS	SAMPLE DATA: BLOWS PER FOOT	SAMPLE DATA: SAMPLE DEPTH	SAMPLE DATA: SAMPLE NUMBER	SAMPLE DATA: SAMPLE TYPE	SOIL TYPE: SYMBOLS	SOIL TYPE: USCS	DESCRIPTION
0							27	3'	1	■		SW	Brown Gravelly fine to coarse SAND, damp to moist, medium dense
5							70	9.5'	2	■		SP	Brown Gravelly fine SAND, some coarse Sand and Silt, damp, very dense
10													Boring B-21 completed at a depth of 10 feet on July 19, 1990. No ground water encountered.
15													

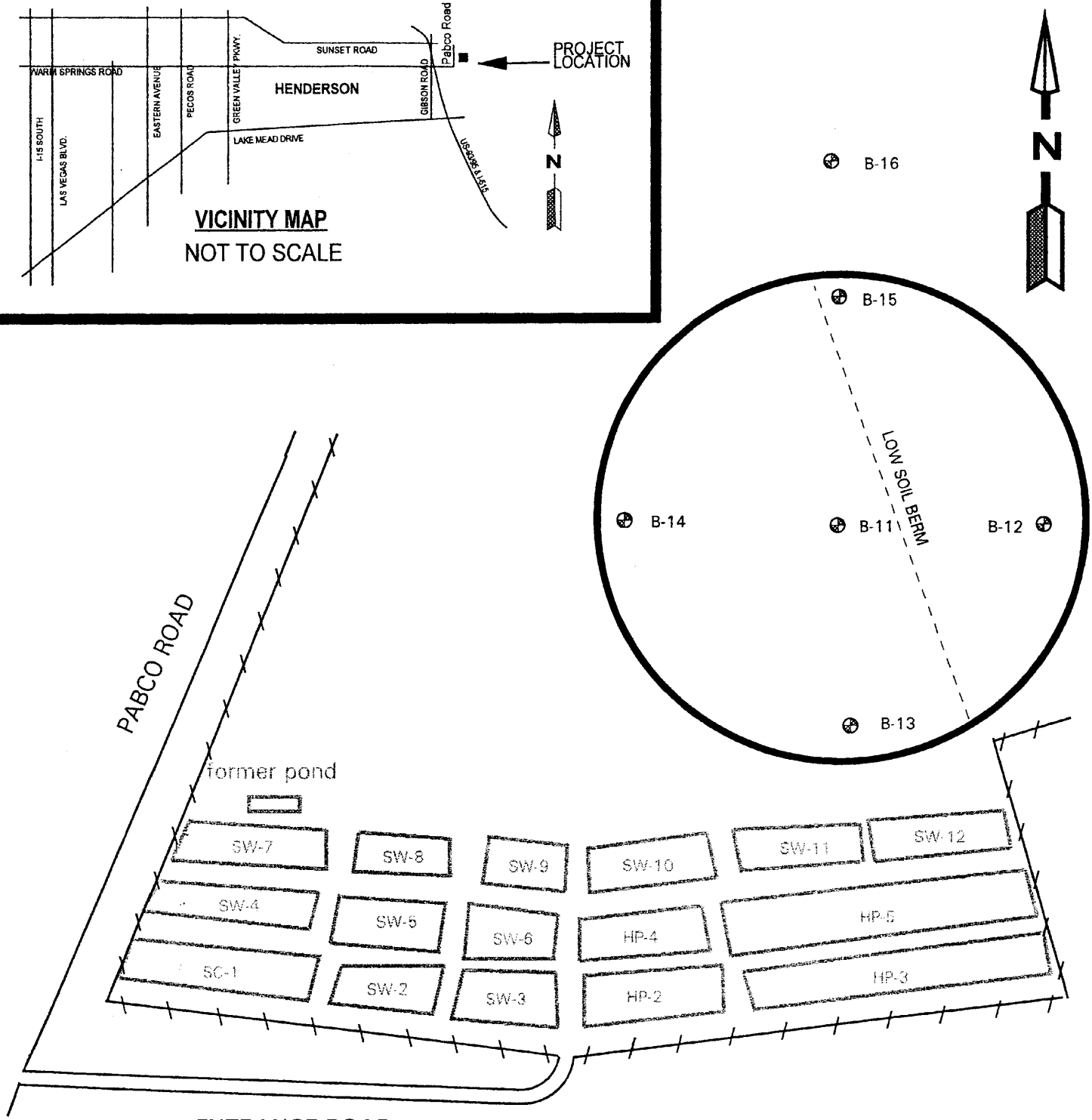
LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

DAMES & MOORE

VICINITY MAP

NOT TO SCALE



SITE MAP

APPROXIMATE SCALE: 1 INCH = 1600 FEET

LEGEND

- SW-2 — POND LOCATION AND DESIGNATION
- FENCE
- BOREHOLE LOCATION
- SPRAY WHEEL SYSTEM BOUNDARY LOCATION

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.
(702) 365-1001
7560 W. Sahara Ave., Suite 101

SITE AND VICINITY MAP
SALT SPRAY RECOVERY AREA
LAS VEGAS, NEVADA

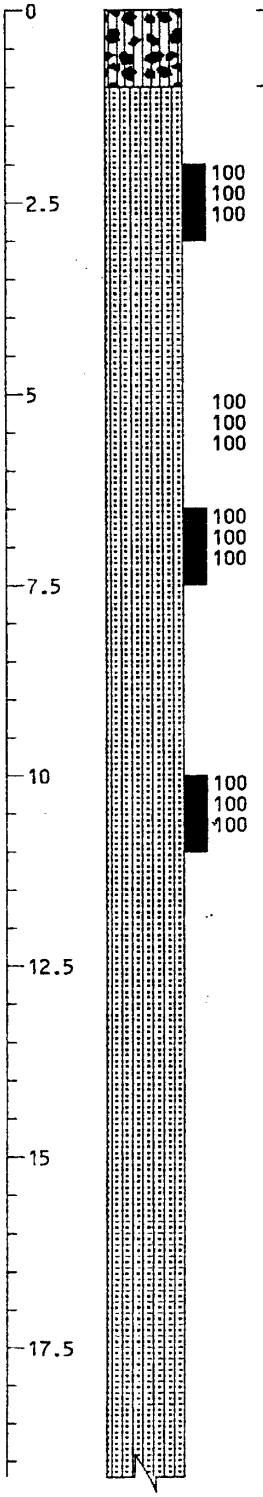
JOB NO. 99949V5

FIG. 1

EXPLORATION LOG
B11

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/18/00
PLORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA



EVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		GM	Brown (7.5 YR 5/3) silty gravel with sand, dry and dense. PID=0.0 ppmV. No odors or stains.					
		SM	Brown (7.5 YR 6/3) silty sand with gravel, dry and very dense. PID=0.0 ppmV. No odors or stains.					
			...no recovery at 5.0-6.5 feet					
			...rapidly alternating 3.0 to 6.0 inch thick layers of sand with gravel and gravel with sand to approximately 15.0					

EXPLORATION LOG
B11

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/18/00
(PLORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

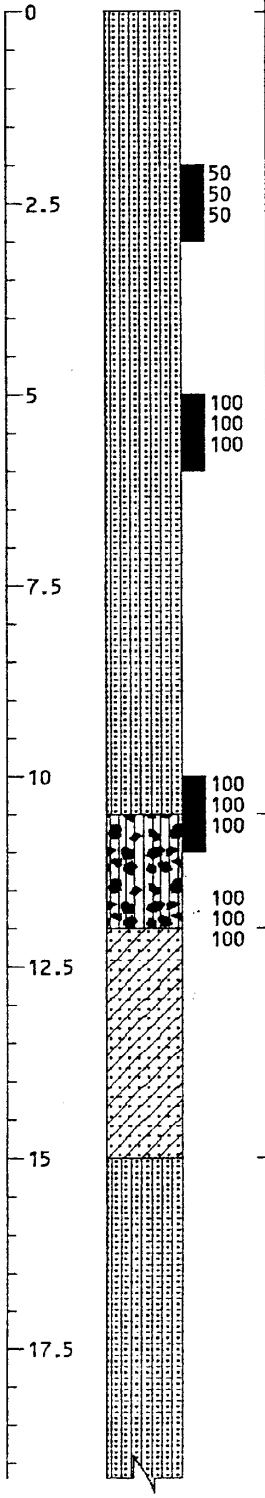
INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20	100 100 100							
	100 100		...Geotechnical samples collected using 2.5 inch diameter brass sleeves					
22.5			**END OF BORING AT 22.5 FEET**					
25								
27.5								
30								
32.5								
35								
37.5								

EXPLORATION LOG
B12

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/19/00
XPLORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		SM	Very dark gray (7.5 YR N3) silty sand with gravel, dry and dense. PID=0.0 ppmV. Slight odor and no stains.					
			..brown (7.5 YR 6/3) and slightly moist. PID=0.0 ppmV. No odors or stains.					
			...no recovery at 5.0-6.5 feet					
		GM	...rapidly alternating 3.0 to 6.0 inch thick layers of sand with gravel and gravel with sand to approximately 15.0					
			Brown (7.5 YR 6/4) silty gravel with sand, slightly moist and very dense. PID=0.0 ppmV. No odors or stains. ...Geotechnical samples collected at 11.5 feet using 2.5 inch brass sleeves					
		SC	Dark brown (7.5 YR 4/3) clayey sand with gravel, slightly moist and very dense.					
		SM	Dark brown (7.5 YR 4/3) silty sand, slightly moist and very dense. PID= 0.0 ppmV. No odor or stains.					

EXPLORATION LOG
B12

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/19/00
EXPLORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

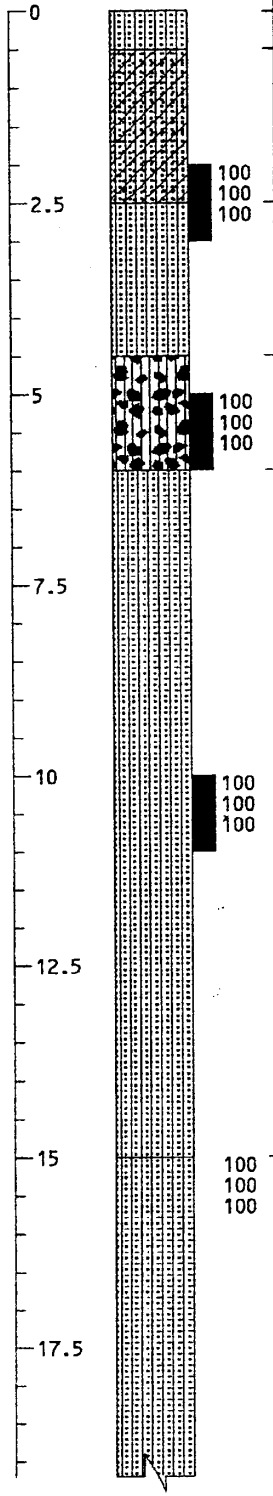
INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA

LEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20	100 100 100		...PID = 0.0ppmV. No odor or stains.					
			END OF BORING AT 21 FEET					
22.5								
25								
27.5								
30								
32.5								
35								
37.5								

EXPLORATION LOG
B13

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/19/00
PLORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA



EVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		SM	Pale brown (7.5 YR 6/3) silty sand with gravel, dry and dense. PID = 0.0 ppmV. Slight odor and no stains.					
		SC-SM	Dark gray (7.5 YR 4/1) silty, clayey sand, dry and dense.					
		SM	Brown (7.5 YR 5/2) silty sand with gravel, dry and slightly moist. PID = 0.0 ppmV. No odors or stains. ...dark grayish brown (10 YR 4/2)					
		GM	Brown (7.5 YR 5/4) silty gravel with sand, slightly moist and very dense. PID = 0.0 ppmV. No odor or stain. ...no recovery at 5.0-6.5 feet					
		SM	Brown (7.5 YR 5/3) silty sand with gravel, slightly moist and very dense. ...PID = 0.0 ppmV. No odor or stains.					
		SM	...Geotechnical samples collected using 2.5 inch brass sleeves.					

EXPLORATION LOG
B13

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/19/00
EXPLORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20	100 100 100		...PID = 0.0ppmV. No odor or stains.					
			END OF BORING AT 21 FEET					
22.5								
25								
27.5								
30								
32.5								
35								
37.5								

EXPLORATION LOG
B14

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/19/00
PLORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
0	100 100 100	SM	Pale brown (10 YR 6/3) silty sand with gravel, dry and dense. PID = 0.0 ppmV. No odor and no stains.					
2.5			...brown (7.5 YR 5/3)					
5	100 100 100							
7.5								
10	100 100 100		...PID = 0.0 ppmV. No odor or stains.					
12.5	100 100 100							
15								
17.5	100 100 100	GM	Brown (7.5 YR 5/3) silty gravel with sand, slightly moistand dense. Geotechnical samples collected using 2.5 inch brass sleeves. ...PID = 0.0 ppmV. No odor or stains.					
	100 100							

EXPLORATION LOG
B14

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/19/00
EXPLORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

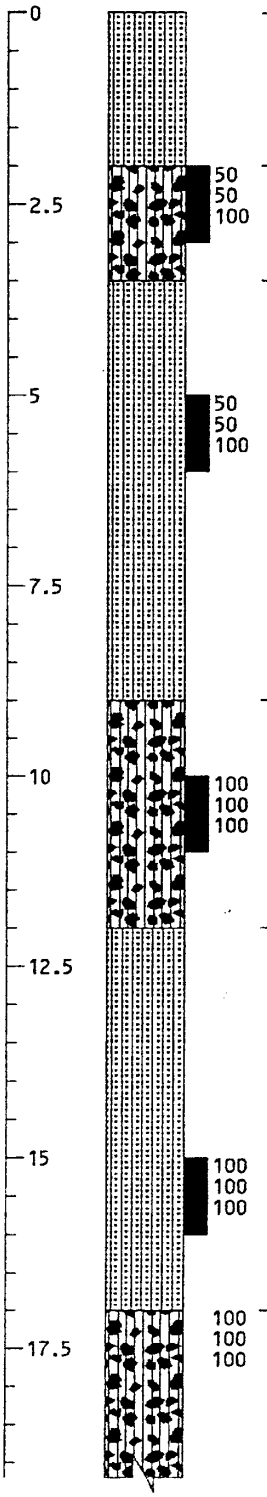
INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
	100							
20			END OF BORING AT 20 FEET					
22.5								
25								
27.5								
30								
32.5								
35								
37.5								

EXPLORATION LOG
B15

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/19/00
'LORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA

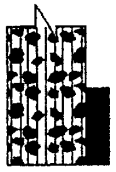


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		SM	Light brown (7.5 YR 6/4) silty sand with gravel, dry and dense. PID = 0.0 ppmV. No odor and no stains.					
		GM	Brown (7.5 YR 5/3) silty gravel with sand, dry and dense. PID = 0.0 ppmV. No odor or stains.					
		SM	Brown (7.5 YR 5/3) silty sand with gravel, dry and very dense.					
		GM	Brown (7.5 YR 5/4) silty gravel with sand, slightly moist and very dense. PID = 0.0 ppmV. No odor or stains. ...PID = 0.0 ppmV. No odor or stains.					
		SM	Brown (7.5 YR 5/3) silty sand with gravel, slightly moist and very dense. PID = 0.0 ppmV. No odor or stains. ...Geotechnical samples collected using 2.5 inch brass sleeves					
		GM	Brown (7.5 YR 5/3) silty gravel with sand, slightly moist and very dense.					

EXPLORATION LOG
B15

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/19/00
PLORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

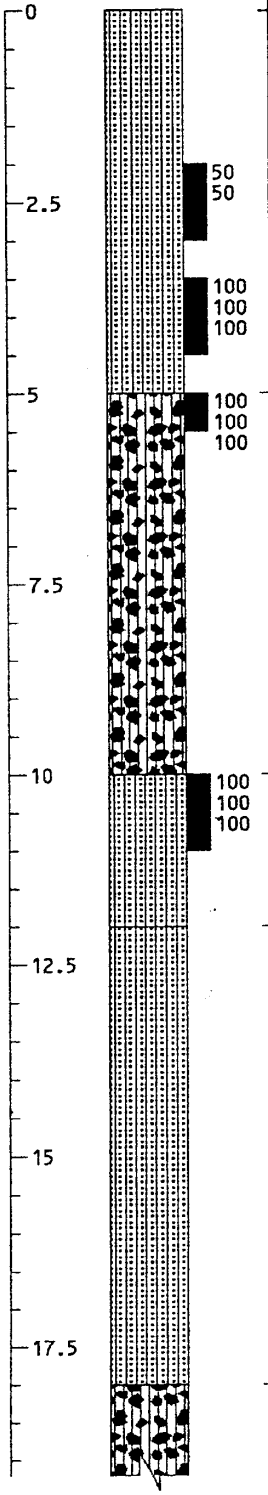
INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA

EVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20	 100 100 100							
			END OF BORING AT 21 FEET					
22.5								
25								
27.5								
30								
32.5								
35								
37.5								

EXPLORATION LOG
B16

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/19/00
PLORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA

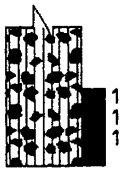


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		SM	Brown (7.5 YR 6/4) silty sand with gravel, dry and dense. PID = 0.0 ppmV. No odor and no stains.					
			Brown (7.5 YR 5/3) silty gravel with sand, dry and dense. PID = 0.0 ppmV. No odor or stains.					
			...Geotechnical samples collected using 2.5 inch brass sleeves					
		GM	Brown (7.5 YR 5/3) silty gravel with sand, dry and very dense.					
		SM	Brown (7.5 YR 5/3) silty sand with gravel, slightly moist and very dense. PID = 0.0 ppmV. No odor or stains.					
		SM	Brown (7.5 YR 5/3) silty sand with gravel, slightly moist and very dense. PID = 0.0 ppmV. No odor or stains.					
		GM	Brown (7.5 YR 5/3) silty gravel with sand, slightly moist and very dense.					

EXPLORATION LOG
B16

PROJECT: 99949V5 **PROJECT NO.:** SALT RECOVERY SPRAY AREA
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 05/19/00
EXPLORATION SIZE: 4 1/4" I.D. H.S. AUGER **EQUIPMENT:** CME 75 TRACK RIG
ELEVATION: EGS **DRILLER/LOGGER:** W. HAZMAT/COOKE

INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA

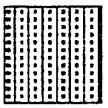
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20	 100 100 100		...PID = 0.0 ppmV. No odor or stains					
			END OF BORING AT 21 FEET					
22.5								
25								
27.5								
30								
32.5								
35								
37.5								

KEY TO SYMBOLS

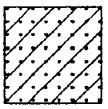
Symbol Description

Strata symbols

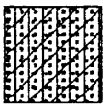
Silty gravel



Silty sand



Clayey sand



Silty clayey sand

Misc. Symbols

Boring continues

Soil Samplers

California sampler

Notes:

1. Exploratory borings were drilled on date shown using a CME 75 Track Rig with 4 1/4 inch hollow stem augers.
2. California sampler driven with 140 pound hammer falling 30 inches.
3. Boring locations shown on site plan estimated by pacing from existing features.
4. These logs are subject to the limitations, conclusions, and recommendations in this report.
5. Results of tests conducted on samples recovered are reported on the logs and attached plates/figures.
6. Soil color designation based on the Munsell Soil Color Charts, 1990.

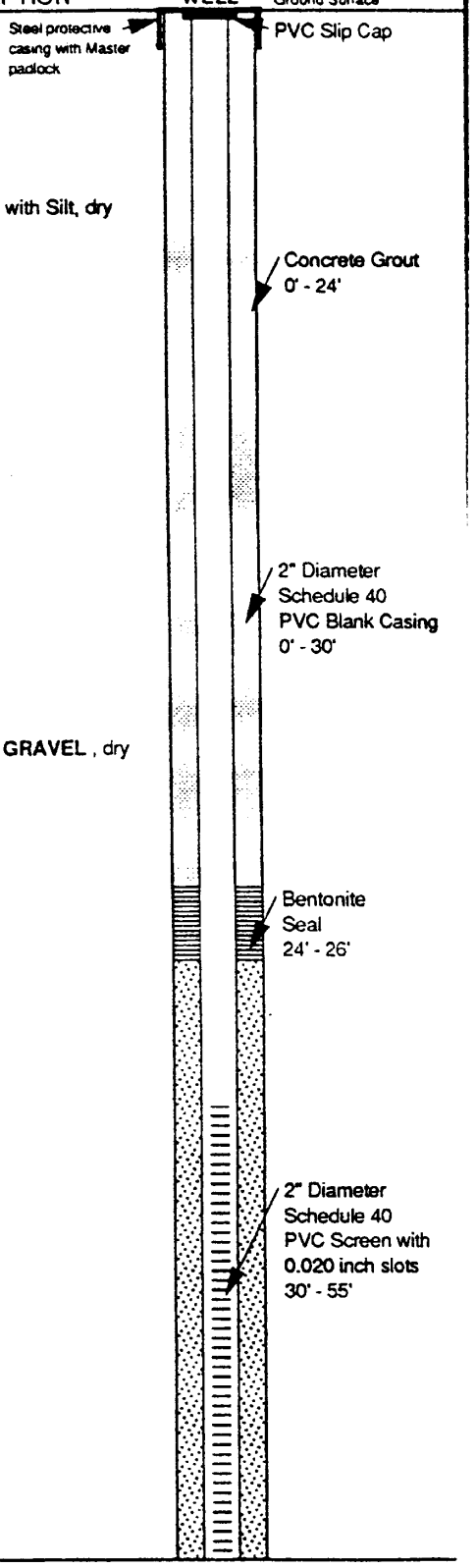
FIGURE No. 8

LOG OF BORING DM-1

RIB MONITORING WELLS
BMI UPPER PONDS AREA
Basic Management, Inc.
Henderson, Nevada

Surface Elevation: 1,727'
Surface Conditions:
Dry Gravel, Sand & Silt

Depth In Feet	BLOWS PER FOOT	SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION
0'						GW/ SW/ GM	
5'	70	5'	1				Brown well graded Sandy **GRAVEL** with Silt, dry
10'	85	10'	2				
15'	85	15'	3				
20'							Brown well graded Silty and Sandy **GRAVEL** , dry
25'							
30'							
35'							
40'							



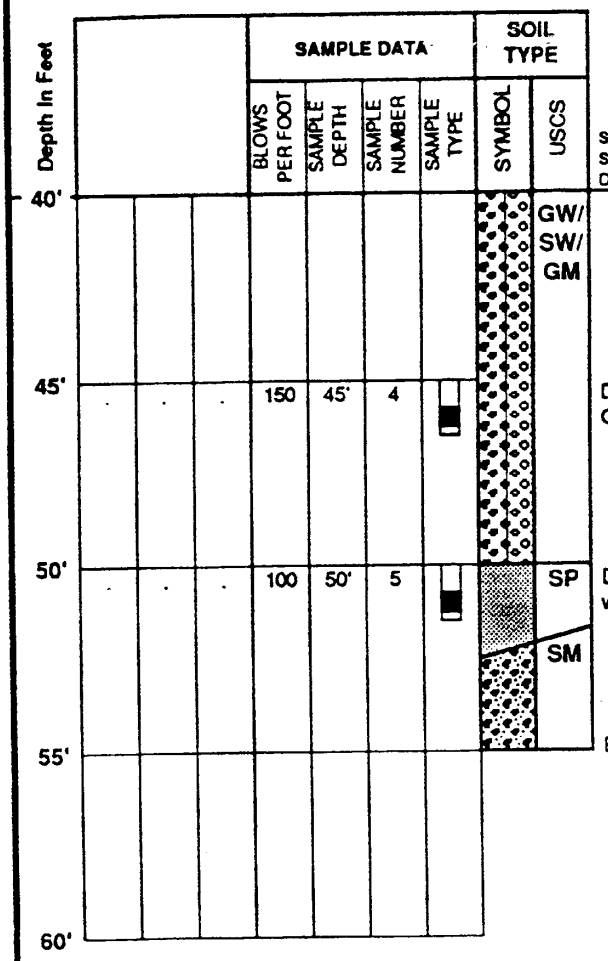
SAMPLING METHOD: Dames & Moore Modified Split-Spoon
140lb Hammer with 30-inch drop
DRILLING METHOD: 8 Inch Dia. Hollow Stem Auger
DATE STARTED: 11/19/92
DATE COMPLETED: 11/19/92

Boring completed at a depth of 55 feet below ground surface on November 19, 1992.
Ground water measured at 46.7.
Logged by: MCT; Reviewed by: MCH

Dames & Moo

LOG OF BORING DM-1

RIB MONITORING WELLS
BMI UPPER PONDS AREA
Basic Management, Inc.
Henderson, Nevada



Surface Elevation: 1,727'
Surface Conditions:
Dry Gravel, Sand & Silt

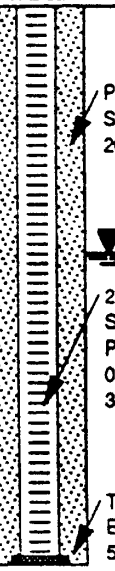
DESCRIPTION

Dark brown medium to coarse grained Sandy GRAVEL with Silt, moist

Dark brown very coarse **SAND** and fine **GRAVEL** with some Silt and few cobbles, wet

Brown Silty **SAND**, wet

WELL



Prewashed Sand 26' - 55'

2" Diameter Schedule 40 PVC Screen with 0.020 inch slots 30' - 55'

Threaded PVC End Cap 55'

Bottom Of Borehole 55'

SAMPLING METHOD: Dames & Moore Modified Split-Spoon 130lb Hammer with 30-inch drop
DRILLING METHOD: 8 Inch Dia. Hollow Stem Auger
DATE STARTED: 11/19/92
DATE COMPLETED: 11/19/92

Boring completed at a depth of 55 feet below ground surface on November 19, 1992.
Ground water measured at 46.7.
Logged by: MCT; Reviewed by: MCH

Dames & Moo

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66785
Permit No.
Basin 212

NOTICE OF INTENT NO. 10462

1. OWNER BMI Hole DM-1
MAILING ADDRESS P.O Box 2065
Henderson NV. 89105

ADDRESS AT WELL LOCATION BME Ponds

2. LOCATION NE ¼ NW ¼ Sec. 7 T. 22S N/S R. 63E E. County

PERMIT NO. MO-2216 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED: ☒ New Well ☐ Replace ☐ Recondition ☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE: ☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal/Industrial ☒ Monitor ☐ Stock

5. WELL TYPE: ☐ Cable ☐ Rotary ☐ RVC ☐ Air ☒ Other Auger

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
Clay w/ occ Gravels		0	55	

RECEIVED
DEC 22 1992
Div. of Water Resources
Branch Office - Las Vegas, NV

Date started November 19, 1992
Date completed November 19, 1992

7. WELL TEST DATA

TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)

8. WELL CONSTRUCTION
Depth Drilled 57 Feet Depth Cased 55 Feet

HOLE DIAMETER (BIT SIZE)

	From	To
8 Inches	0 Feet	57 Feet
Inches	Feet	Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2.5		Sch 40	0	30

Perforations:
Type perforation Slotted Screen
Size perforation .020 slot
From 30 feet to 55 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 25
Placement Method: ☐ Pumped ☒ Poured
Seal Type: ☐ Neat Cement ☒ Cement Grout ☐ Concrete Grout

Gravel Packed: ☒ Yes ☐ No
From 55 feet to 28 feet

9. WATER LEVEL
Static water level 50 feet below land surface
Artesian flow G.P.M. P.S.I.
Water temperature °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name Kevin Webb (Contractor)
Address 16825 S. Webb Dr. (Contractor)
Chandler AZ 85226
Nevada contractor's license number issued by the State Contractor's Board
Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1847
Signed (By driller performing actual drilling on site or contractor)
Date 12-15-92

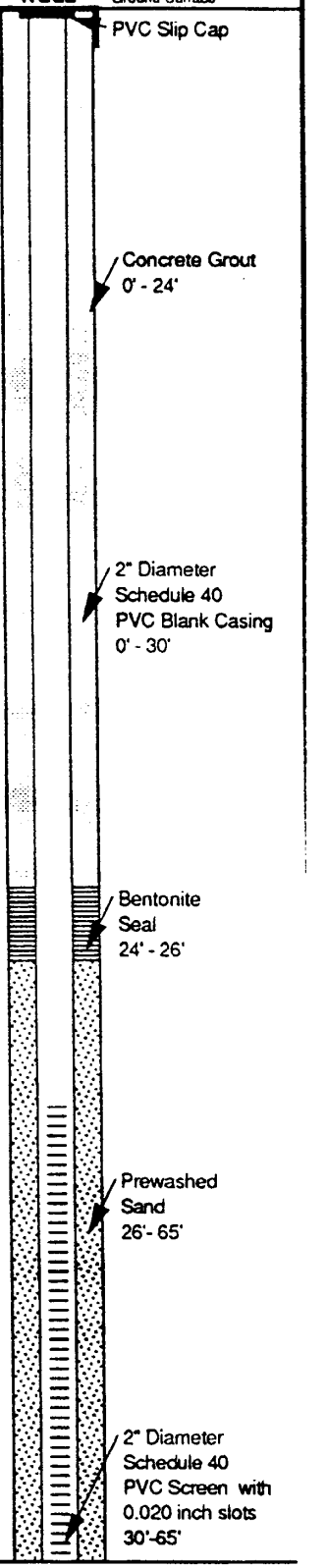
(Rev. 3-91) USE ADDITIONAL SHEETS IF NECESSARY (O)-627

LOG OF BORING DM-2

RIB MONITORING WELLS
BMI UPPER PONDS AREA
Basic Management, Inc.
Henderson, Nevada

Surface Elevation: 1,726'
Surface Conditions:
Dry Gravel, Sand & Silt

Depth In Feet	BLOWS PER FOOT	SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION
0'						GW/ SW	
5'	65	5'	1				Brown well graded Sandy **GRAVEL** with some Silt, dry
10'	100	10'	-				No recovery
15'	98	15'	2				
20'	100	20'	3				
25'							
30'							
35'							
40'							



SAMPLING METHOD: Dames & Moore Modified Split-Spoon
130lb Hammer with 30-inch drop
DRILLING METHOD: 8 Inch Dia. Hollow Stem Auger
DATE STARTED: 11/20/92
DATE COMPLETED: 11/20/92

Boring completed at a depth of 65 feet below ground surface on November 20, 1992.
Ground water measured at 46.9.
Logged by: MCT; Reviewed by: MCH

Dames & Moor

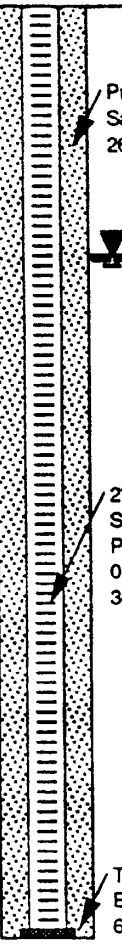
LOG OF BORING DM-2

RIB MONITORING WELLS
BMI UPPER PONDS AREA
Basic Management, Inc.
Henderson, Nevada

Surface Elevation: 1,726'
Surface Conditions:
Dry Gravel, Sand & Silt

Depth In Feet	BLOWS PER FOOT	SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION
40'						GW/ SW	
45'	100	45'	4				Same as above, slightly moist
50'	30	50'	5			CL	Reddish brown **CLAY** with minor Sand and some Claystone fragments, moist (Muddy Creek Formation)
55'	-	55'	-				Reddish brown **CLAY**, dry
60'	-	60'	-				Reddish brown **CLAY**, dry
65'	-	65'	-				Greenish white Clayey **SAND** and brown Sandy Clay with some Claystone fragments, wet
70'							

WELL



SAMPLING METHOD: Dames & Moore Modified Split-Spoon 130lb Hammer with 30-inch drop
DRILLING METHOD: 8 Inch Dia. Hollow Stem Auger
DATE STARTED: 11/20/92
DATE COMPLETED: 11/20/92

Boring completed at a depth of 65 feet below ground surface on November 20, 1992.
Ground water measured at 46.9.
Logged by: MCT; Reviewed by: MCH

Dames & Moor

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66786
Permit No.
Basin 212

NOTICE OF INTENT NO. 10461

1. OWNER BMI Hole DM-2
MAILING ADDRESS P.O. Box 2065
Henderson NV. 89105

ADDRESS AT WELL LOCATION
BMI Ponds

2. LOCATION NW ¼ NE ¼ Sec. 7 T. 22S N/S R. 63E E. County

PERMIT NO. MO-2216 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☑ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test
☐ Municipal/Industrial ☑ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☑ Other Auger

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
Clay w/ occ gravels,		0	55	
Clay w/ Sand		53	65	

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DEC 22 1992
Div. of Water Resources
Branch Office - Las Vegas, NV

Date started November 20, 1992
Date completed November 20, 1992

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)

8. WELL CONSTRUCTION
Depth Drilled 65 Feet Depth Cased 65 Feet

HOLE DIAMETER (BIT SIZE)

	From	To
8 Inches	0 Feet	65 Feet
Inches	Feet	Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2.5		Sch 40	0	40

Perforations:
Type perforation S/6 Hed Screen
Size perforation .020
From 40 feet to 65 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☑ Yes ☐ No
Depth of Seal
Placement Method: ☐ Pumped ☑ Poured
Seal Type: ☐ Neat Cement ☑ Cement Grout ☐ Concrete Grout

Gravel Packed: ☑ Yes ☐ No
From 65 feet to 37 feet

9. WATER LEVEL
Static water level 56 feet below land surface
Artesian flow G.P.M. P.S.I.
Water temperature °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name Kevin Weber (Contractor)
Address 16825 S. Weber Dr. (Contractor)
Chandler Az 85226
Nevada contractor's license number issued by the State Contractor's Board
Nevada driller's license number issued by the Division of Water Resources, the on-site driller M-1847
Signed (By driller performing actual drilling on site or contractor)
Date 12-15-92

(Rev. 3-91) USE ADDITIONAL SHEETS IF NECESSARY (O)-627

LOG OF BORING DM-3

RIB MONITORING WELLS
BMI UPPER PONDS AREA
Basic Management, Inc.
Henderson, Nevada

Surface Elevation: 1,692'
Surface Conditions:
Dry Gravel, Sand & Silt

Depth In Feet	BLOWS PER FOOT	SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION
0'						GW/ SW	
5'	55	5'	1				Brown well graded **SAND** and **GRAVEL**, dry
10'	75	10'	2				
15'	60	15'	3				
20'							
25'							
30'							
35'						GP	Brown poorly graded fine **GRAVEL** with some Sand and Silt, dry
40'						GW/ SW/ GM	Brown well graded **SAND** and **GRAVEL** with Silt, dry

WELL

Ground Surface

Steel protective casing with Master padlock

PVC Slip Cap

Concrete Grout
0' - 26'

2" Diameter
Schedule 40
PVC Blank Casing
0' - 29'

Bentonite
Seal
26' - 28'

Prewashed
Sand
28'- 64'

2" Schedule 40
PVC Screen with
0.020 Inch slots
29' - 64'

SAMPLING METHOD: Dames & Moore Modified Split-Spoon
130lb Hammer with 30-inch drop
DRILLING METHOD: 8 Inch Dia. Hollow Stem Auger
DATE STARTED: 11/19/92
DATE COMPLETED: 11/19/92

Boring completed at a depth of 64 feet below ground surface on November 19, 1992.
Ground water measured at 54.4.
Logged by: MCT; Reviewed by: MCH

Dames & Moor

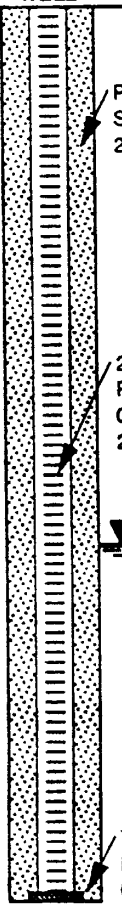
LOG OF BORING DM-3

RIB MONITORING WELLS
BMI UPPER PONDS AREA
Basic Management, Inc.
Henderson, Nevada

Surface Elevation: 1,692'
Surface Conditions:
Dry Gravel, Sand & Silt

Depth in Feet	BLOWS PER FOOT	SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION
40'						GW/ SW/ GM	
45'	80	45'	4				
50'	100	50'	5				
55'	-	55'	-			CL	Dark brown Sandy **CLAY** and greenish white **CLAY**, some Claystone fragments present, moist (Muddy Creek Formation)
60'	-	60'	-				Sand grading.out
65'	-	64'	-				Drill center rod comes out wet for a length of about five feet

WELL



SAMPLING METHOD: Dames & Moore Modified Split-Spoon 130lb Hammer with 30-inch drop
DRILLING METHOD: 8 Inch Dia. Hollow Stem Auger
DATE STARTED: 11/19/92
DATE COMPLETED: 11/19/92

Boring completed at a depth of 64 feet below ground surface on November 19, 1992.
Ground water measured at 54.4.
Logged by: MCT; Reviewed by: MCH

Dames & Moo

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PINK—WELL DRILLER'S COPY

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STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66756
Permit No.
Basin 212

NOTICE OF INTENT NO. 10463

1. OWNER BMI Hole DM-3
MAILING ADDRESS P.O. Box 2065
Henderson, NV. 89105

ADDRESS AT WELL LOCATION
BMI Ponds

2. LOCATION NW ¼ SE ¼ Sec. 6 T. 22S N/S R. 63E E. County

PERMIT NO. MO-2216 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test
☐ Municipal/Industrial ☒ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Auger

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
Clay w/				
occ. Gravels		0	55	
Clay w/				
Sand Lenses		55	65	

RECEIVED
DEC 22 1992
Div. of Water Resources
Branch Office - Las Vegas, NV

Date started November 19, 1992
Date completed November 19, 1992

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)

8. WELL CONSTRUCTION
Depth Drilled 65 Feet Depth Cased 65 Feet

HOLE DIAMETER (BIT SIZE)

	From	To
8 Inches	0 Feet	65 Feet
Inches	Feet	Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2.5		Sch 40	0	40

Perforations:
Type perforation Slotted Screen
Size perforation .020
From 40 feet to 65 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 25
Placement Method: ☐ Pumped ☒ Poured
Seal Type: ☐ Neat Cement ☒ Cement Grout ☐ Concrete Grout

Gravel Packed: ☒ Yes ☐ No
From 65 feet to 33 feet

9. WATER LEVEL
Static water level 57 feet below land surface
Artesian flow G.P.M. P.S.I.
Water temperature °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name Kevin Weber (Contractor)
Address 16825 S. Weber Dr. (Contractor)
Chandler AZ 85226
Nevada contractor's license number issued by the State Contractor's Board
Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1847
Signed (By driller performing actual drilling on site or contractor)
Date 12-15-92

(Rev. 3-91) USE ADDITIONAL SHEETS IF NECESSARY (O)-627

JOB NO. 25716-012-169 SITE DM1 HOLE NO. DM-4

TIME a	SYM b	DEPTH c	DESCRIPTION OF MATERIALS d	PID e	TNT (ppm) f	TPH + - g	GEOTECH SAMPLE h	ANALYTICAL SAMPLE NO. i	BLOW COUNT PER 6 INCHES j	REMARKS k
0730	SM	5	Brown to dark brown silty sand with occasional gravel, slightly moist, soft.	0					12 10 16	

JOB NO. [illegible]-012 HOLE NO. DM-4

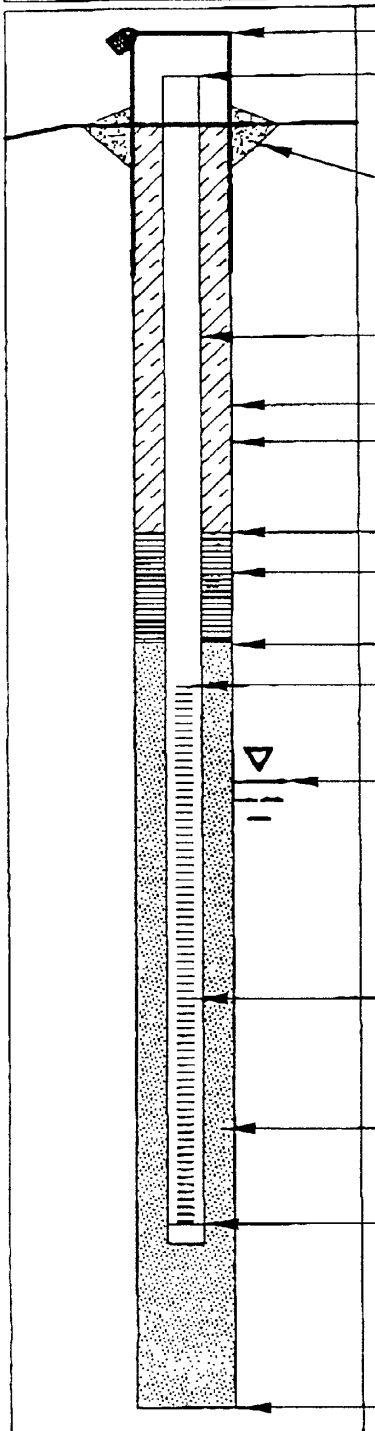
TIME a	SYM b	DEPTH c	DESCRIPTION OF MATERIALS d	PID e	TNT (ppm) f	TPH + − g	GEOTECH SAMPLE h	ANALYTICAL SAMPLE NO. i	BLOW COUNT PER 6 INCHES j	REMARKS k
0740	SM	10	As above.	0					12	
		11							22	
									20	
		12								▽ Water encountered at ~12 feet.
		13								
		14								
0755	SM	15	Brown to dark brown silty sand with gravel, very moist, soft.	0					6	
		16							50/4"	
		17								
		18								
		19								
	SP									

JOB NO. 25716-012-109 HOLE NO. DM-4

TIME a	SYM b	DEPTH c	DESCRIPTION OF MATERIALS d	PID e	TNT (ppm) f	TPH + - g	GEOTECH SAMPLE h	ANALYTICAL SAMPLE NO. i	BLOW COUNT PER 6 INCHES j	REMARKS k
0800	SP	20	Brown to dark brown gravelly sand with trace silt, very moist.	0					4 50/5"	Used cathcer
		21								
		22								
		23								
			—23.5 ng c							
		24								
0825	CL	25	Mottled light brown and brown to dark brown sandy clay with gravel, very moist.	0					7 12 17	
		26								
		27	Total depth: 26½ feet.							
		28								
		29								

WELL NO.: DM-4

PROJECT: BMI	LOCATION: Henderson, Nevada	DRILLER: WEBER ENVIRONMENTAL	
PROJECT NO.: 25716-012-169	See 31	DRILLING METHOD: 8" Hollow Stem Auger	
GROUND ELEVATION: 1621.02 FEET	INSTALLATION DATE: 10/20/95	NDWR WAIVER NUMBER: MO-2648	
FIELD GEOLOGIST: Thomas Balogh			



ELEVATION OF TOP OF SURFACE CASING:	1623.72
ELEVATION OF TOP OF RISER PIPE:	1622.59
TYPE OF SURFACE SEAL: CONCRETE	
RISER PIPE DIAMETER AND TYPE: 2-INCH PVC, SCHEDULE 40	
BOREHOLE DIAMETER:	8"
TYPE OF BACKFILL: CEMENT GROUT	
DEPTH TO TOP OF SEAL:	3'9"
TYPE OF SEAL: HOLE PLUG® COARSE GRADE WYOMING BENTONITE 3/8" PELLETS, 1 BAG	
DEPTH TO TOP OF SAND PACK:	6'1"
DEPTH TO TOP OF SCREEN:	8'1"
DEPTH TO WATER FROM TOP OF RISER (MEASURED 10/20/95):	13'1"
SCREEN DIAMETER AND TYPE: 2-INCH PVC, SLOTTED, SCHEDULE 40	
SCREEN SLOT SIZE: 0.020-INCH	
TYPE OF SAND PACK: MONTERREY #3 SAND (8-20 MESH) 7⅓ BAGS	
DEPTH TO BOTTOM OF SCREEN:	23'1"
DEPTH OF HOLE:	24'11"

WELL CONSTRUCTION DIAGRAM

NOT TO SCALE

Dames & Moore

HTW DRILLING LOG

HOLE NO. DM-4

1. COMPANY: Dames & Moore	2. PROJECT NO.: 25716-012-169
	SHEET: 1 OF 4
3. DRILLING SUBCONTRACTOR: WEBER ENVIRONMENTAL INC.	4. SITE NAME AND LOCATION: BMI, HENDERSON, NEVADA
5. NAME OF DRILLER(S): LEE ROBERTSON, CLINT HATCHELL	6. HOLE LOCATION
7. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE DRILL B-61 HDX	8. SURFACE ELEVATION: 1621.02 FEET; KNOWN (HOW): SURVEYED; ESTIMATED
9. SIZE AND TYPE OF DRILLING AND SAMPLING EQUIPMENT: 8-inch O.D. hollow-stem auger; 140-lb hammer, 30-inch drop.	10. DATE AND TIME STARTED: 10/20/95 0725
	11. DATE AND TIME COMPLETED: 10/20/95 0825
	12. DEPTH GROUNDWATER ENCOUNTERED: -12 FEET
	13. DEPTH OF WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 13 FEET 1 INCH
FIELD SCREENING INSTRUMENT: MINIRAE	
14. DEPTH ROCK WAS ENCOUNTERED: NOT ENCOUNTERED	15. TOTAL DEPTH OF HOLE: 26 1/2 FEET

16. GEOTECHNICAL SAMPLES		17. SAMPLES SUBMITTED TO LAB FOR CHEMICAL ANALYSIS					18. MRD
NONE		NONE					NONE
DISTURBED	UNDISTURBED	VOC	SVOC	METALS	TPH 8015M	PESTICIDES	OTHER

19. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER(SPECIFY)	20. NAME OF GEOLOGIST
		X		THOMAS BALOGH

21. SPECIAL NOTES:

JOB

HOLE NO. DM-5

TIME a	SYM b	DEPTH c	DESCRIPTION OF MATERIALS d	PID e	TNT (ppm) f	TPH + − g	GEOTECH SAMPLE h	ANALYTICAL SAMPLE NO. i	BLOWS PER 6 INCHES j	REMARKS k
1015	SM	5	Brown to dark brown silty sand with occasional gravel, mostly dry.						50/3"	No recovery. Described from cuttings.

JOB NO. 25716-012-160 | SITE BMI | HOLE NO. DM-6 | Sheet 3 of 4

TIME a	SYM b	DEPTH c	DESCRIPTION OF MATERIALS d	PID e	TNT (ppm) f	TPH + − g	GEOTECH SAMPLE h	ANALYTICAL SAMPLE NO. i	BLOW COUNT PER 6 INCHES j	REMARKS k
1025	SM	10	Brown to dark brown gravelly sand with silt, slightly moist.	0					20	
		11							44	
									42	▽ Water encountered at 11 feet, 9 inches.
		12								
		13								
		14								
1040	SM	15	Brown to dark brown silty sand with occasional gravel, slightly moist, soft.						12	
				0					17	
		16							17	
		17								
		18								
		19								

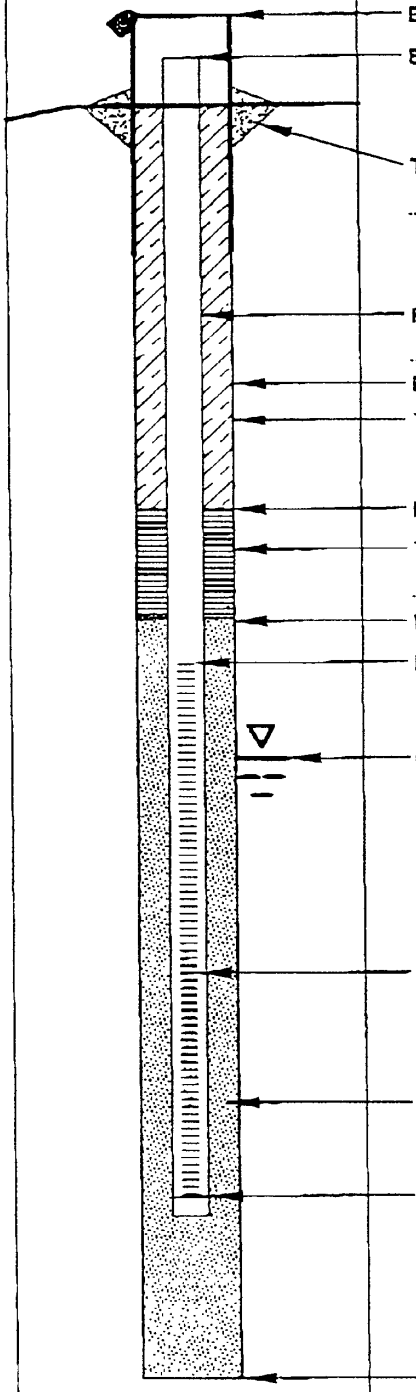
JOB NO. 25716-012-169 | SITE BMI | HOLE NO. DM-5 | SHEET 1 OF 1

TIME a	SYM b	DEPTH c	DESCRIPTION OF MATERIALS d	PID e	INT (ppm) f	TPH + − g	GEOTECH SAMPLE h	ANALYTICAL SAMPLE NO. i	BLOW COUNT PER 6 INCHES j	REMARKS k
1050	SM	20	Brown to dark brown gravelly sand with trace silt, very moist.	0					22 50/2"	Water level measured at 12'6" at 1110 by drillers.
		21								
		22								
		23	23' MC							
		24								
1125	CL	25	Light brown silty clay with gypsum crystals and trace sand, very moist.							
		26								
			Total depth: 26½ feet.							
		27								
		28								
		29								

WELL NO.: DM-5

PROJECT: BMI
LOCATION: Henderson, Nevada
See 31
PROJECT NO.: 25716-012-169
GROUND ELEVATION: 1623.90 FEET
INSTALLATION DATE: 10/20/95
FIELD GEOLOGIST: Thomas Balogh

DRILLER: WEBER ENVIRONMENTAL
DRILLING METHOD: 8" Hollow Stem Auger
NDWR WAIVER NUMBER: MO-2648



ELEVATION OF TOP OF SURFACE CASING:	1626.69
ELEVATION OF TOP OF RISER PIPE:	1625.53
TYPE OF SURFACE SEAL: CONCRETE	
RISER PIPE DIAMETER AND TYPE: 2-INCH PVC, SCHEDULE 40	
BOREHOLE DIAMETER:	8"
TYPE OF BACKFILL: CEMENT GROUT	
DEPTH TO TOP OF SEAL:	2'0"
TYPE OF SEAL: HOLE PLUG® COARSE GRADE WYOMING BENTONITE 3/8" PELLETS, 1 BAG	
DEPTH TO TOP OF SAND PACK:	4'9"
DEPTH TO TOP OF SCREEN:	6'9"
DEPTH TO WATER FROM TOP OF RISER (MEASURED 10/20/95):	11'9"
SCREEN DIAMETER AND TYPE: 2-INCH PVC, SLOTTED, SCHEDULE 40	
SCREEN SLOT SIZE: 0.020-INCH	
TYPE OF SAND PACK: MONTERREY #3 SAND (8-20 MESH) 5 BAGS	
DEPTH TO BOTTOM OF SCREEN:	21'9"
DEPTH OF HOLE:	23'6"

WELL CONSTRUCTION DIAGRAM

NOT TO SCALE

Dames & Moore

HTW DRILLING LOG

HOLE NO. DM-5

SHEET: 1 OF 4

1. COMPANY: Dames & Moore

2. PROJECT NO.: 25716-012-169

3. DRILLING SUBCONTRACTOR: WEBER ENVIRONMENTAL INC.

4. SITE NAME AND LOCATION: BMI, HENDERSON, NEVADA

5. NAME OF DRILLER(S): LEE ROBERTSON, CLINT HATCHELL

6. HOLE LOCATION:

7. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE DRILL B-61 HDX

8. SURFACE ELEVATION: 1623.90 FEET — KNOWN (HOW): SURVEYED — ESTIMATED:

9. SIZE AND TYPE OF DRILLING AND SAMPLING EQUIPMENT: 8-inch O.D. hollow-stem auger; 140-lb hammer, 30-inch drop.

10. DATE AND TIME STARTED: 10/20/95 1005

11. DATE AND TIME COMPLETED: 10/20/95 1125

12. DEPTH GROUNDWATER ENCOUNTERED: MEASURED AT 12 FEET 8 INCHES DURING DRILLING.

13. DEPTH OF WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 11 FEET 9 INCHES

FIELD SCREENING INSTRUMENT: MINIRAE

14. DEPTH ROCK WAS ENCOUNTERED: NOT ENCOUNTERED

15. TOTAL DEPTH OF HOLE: 26 1/2 FEET

16. GEOTECHNICAL SAMPLES: NONE

17. SAMPLES SUBMITTED TO LAB FOR CHEMICAL ANALYSIS: NONE

18. MRD: NONE

DISTURBED	UNDISTURBED	VOC	SVOC	METALS	TPH 8015M	PESTICIDES	OTHER

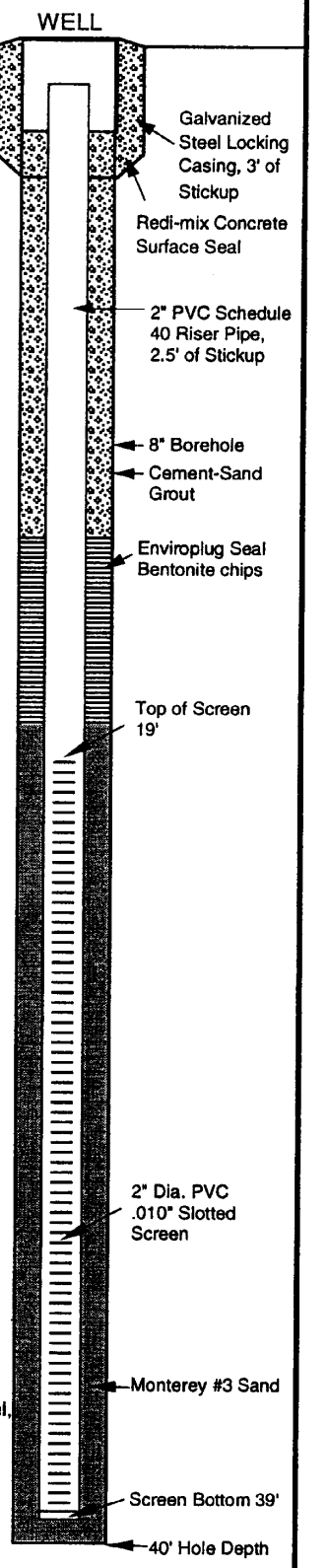
19. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER(SPECIFY)	20. NAME OF GEOLOGIST
		X		THOMAS BALOGH

21. SPECIAL NOTES:

LOG OF BORING DM-6

BMI UPPER PONDS
HENDERSON, NEVADA
For Basic Management, Inc.

Depth In Feet	ANALYTICAL DATA PID (ppm) AUGER	ANALYTICAL DATA PID (ppm) SAMPLE	ANALYTICAL DATA PID (ppm) CUTTINGS	SAMPLE DATA BLOWS/FT. SAMPLER	SAMPLE DATA SAMPLE DEPTH	SAMPLE DATA SAMPLE NUMBER	SAMPLE DATA SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION
0'									SM	Brown Silty **SAND** with Gravel, clasts up to 2", alluvium
5'	.	0	.	24	5'	.				Brown to tan Silty **SAND** with Gravel, clasts up to 2", loose, dry
10'	.	.	.	64/6"	10'	.			GM	No recovery, hit a cobble Sandy **GRAVEL** with minor Silt
15'	.	3	.	60/6"	15'	.			SM	Tan to brown Silty **SAND** with Gravel, loose, dry
									GM	Very Gravelly, broken cobbles in auger
20'	0	.	.	50/3"	20'	.				Cobble stuck in sampler, no recovery Grayish brown Sandy **GRAVEL**, loose, dry
25'	.	60	.	104/10"	25'	.			SM	Tan to brown Silty **SAND** with Gravel, loose, slightly moist
30'	0	10	.	96	30'	.				Same as above, grading to reddish brown
35'	.	9	.	44	35'	.			ML	Mottled green and brown Sandy **SILT** with minor Gravel, loose, moist, Muddy Creek Formation
									CL	Whitish tan Silty **CLAY**, minor fine Sand with gypsum crystals, very stiff, moist, partially cemented
40'	.	1	.	60/4"	40'	.				



SAMPLING METHOD: 2" Split Spoon, 140 lb Hammer, 30" Drop
DRILLING METHOD: Mobile Drill B-59 8" HSA
DATE STARTED: 10/15/98
DATE COMPLETED: 10/15/98

Boring completed at a depth of 40 feet below ground surface.
Groundwater not encountered.
Logged by: DMC; Reviewed by: MCH

Dames & Moore

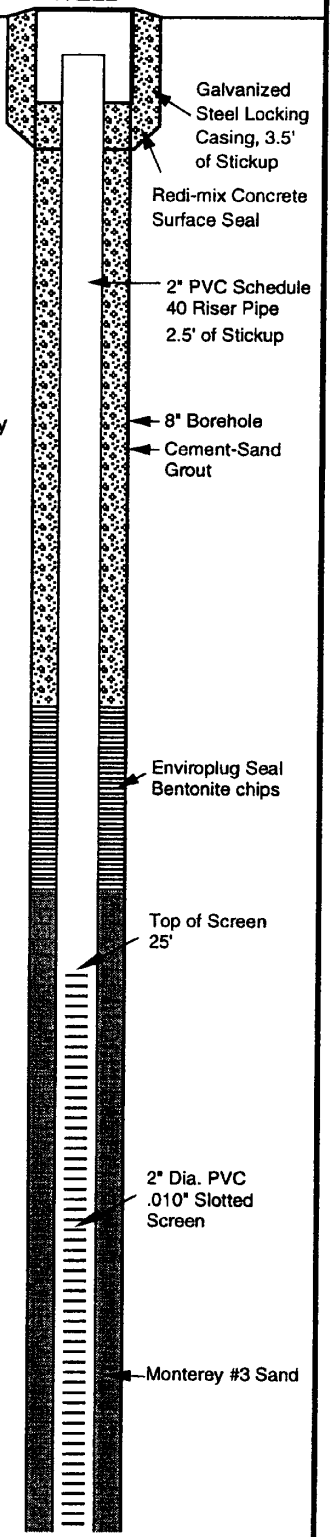
LOG OF BORING DM-7

BMI UPPER PONDS
HENDERSON, NEVADA
For Basic Management, Inc.

Depth in Feet	ANALYTICAL DATA PID (ppm) AUGER	ANALYTICAL DATA PID (ppm) SAMPLE	ANALYTICAL DATA PID (ppm) CUTTINGS	SAMPLE DATA BLOWS/FT. SAMPLER	SAMPLE DATA SAMPLE DEPTH	SAMPLE DATA SAMPLE NUMBER	SAMPLE DATA SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION
0'									SM	Brown Silty **SAND** with Gravel, alluvium
5'	.	.	.	50/0"	5'	.	□			No recovery, hit a cobble
									GM	Brown to reddish brown Silty **GRAVEL** with Sand, loose, dry
10'	.	4	.	45	10'	.	■		SM	Reddish brown Silty **SAND** with Gravel, loose, slightly moist
15'	.	3	.	68/9"	15'	.	■			Same as above
									GM	Grading to more Gravel and coarser Gravel up to 3"
20'	.	5	.	71/9"	20'	.	■		SM	Brown Silty **SAND**, loose, slightly moist
25'	.	5	.	50/6"	25'	.	■			Grading with Gravel
30'	0	5	.	90/8"	30'	.	■			Same as above
35'	.	3	.	83/ 10"	35'	.	■			Same as above, some cobbles
40'										

Continue on next page

WELL



Continue on next page

SAMPLING METHOD: 2" Split Spoon, 140 lb Hammer, 30" Drop
DRILLING METHOD: Mobile Drill B-59 8" HSA
DATE STARTED: 10/15/98
DATE COMPLETED: 10/15/98

Boring completed at a depth of 46 feet below ground surface.
Groundwater not encountered.
Logged by: DMC; Reviewed by: MCH

Dames & Moore

LOG OF BORING DM-7

BMI UPPER PONDS
HENDERSON, NEVADA
For Basic Management, Inc.

Depth In Feet	ANALYTICAL DATA PID (ppm) AUGER	ANALYTICAL DATA PID (ppm) SAMPLE	ANALYTICAL DATA PID (ppm) CUTTINGS	SAMPLE DATA BLOWS/FT. SAMPLER	SAMPLE DATA SAMPLE DEPTH	SAMPLE DATA SAMPLE NUMBER	SAMPLE DATA SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION	WELL (Continued)
40'	.	3	.	87/9"	40'	.			SM		
									CL	Mottled white, brown and green Sandy **CLAY** with Silt and minor Gravel, slightly stiff, slightly moist, Muddy Creek Formation	
45'	.	23	.	47	45'	.				Red Silty **CLAY** with gypsum crystals, stiff, medium plasticity, slightly moist	Screen Bottom 45'
50'											46' Hole Depth

SAMPLING METHOD: 2" Split Spoon, 140 lb Hammer, 30" Drop
DRILLING METHOD: Mobile Drill B-59 8" HSA
DATE STARTED: 10/15/98
DATE COMPLETED: 10/15/98

Boring completed at a depth of 46 feet below ground surface.
Groundwater not encountered.
Logged by: DMC; Reviewed by: MCH

Dames & Moore

BORING NO.: DM-7X

PROJECT BMI LOCATION Upper Ponds

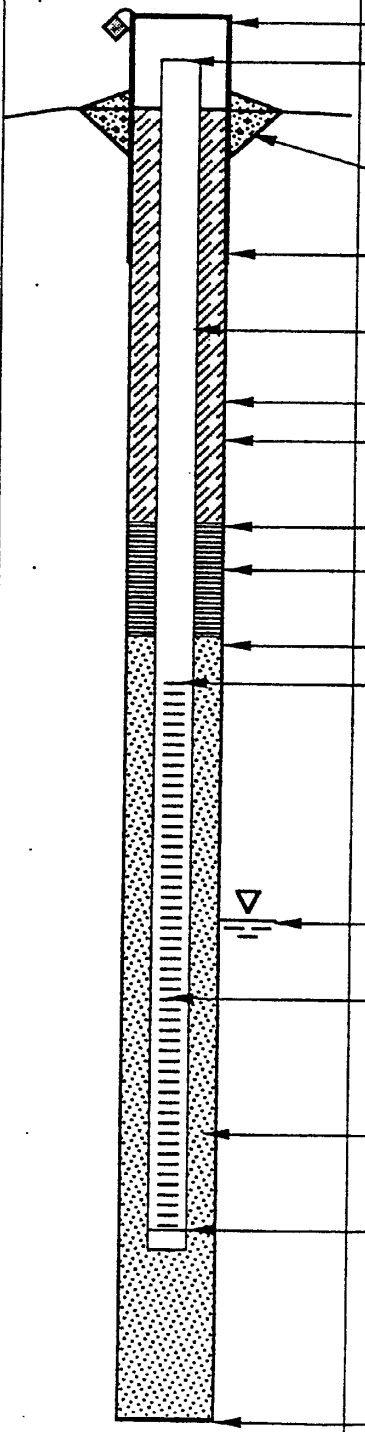
PROJECT NO. 25716-019-169

GROUND ELEVATION _____ DATE 3 SEPT 98

FIELD GEOLOGIST Chris Garey

DRILLER Lee Robertson Compliance Drilling

DRILLING METHOD 8" augers



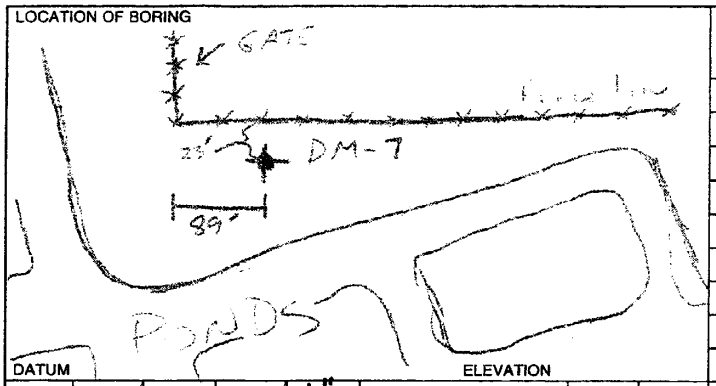
ELEVATION OF TOP OF SURFACE CASING:		
ELEVATION OF TOP OF RISER PIPE: (± 1.5' above grade)		
	grade	0'
TYPE OF SURFACE SEAL:	cement-sand grout	
DIAMETER OF SURFACE CASING:	~~Steel~~ 5" square	
TYPE OF SURFACE CASING:	Steel w/ hinged lid	
RISER PIPE DIAMETER AND TYPE:	2" PVC Sch. 40	
BOREHOLE DIAMETER:		8"
TYPE OF BACKFILL:	cement-sand grout	
DEPTH TO TOP OF SEAL:		45.5'
TYPE OF SEAL:	Enviroplug Medium Bentonite chips	
DEPTH TO TOP OF SAND PACK:	below grade	50'
DEPTH TO TOP OF SCREEN:	below grade	54.9'
DEPTH TO WATER	below grade (5 Sept 98)	60.10
SCREEN DIAMETER AND TYPE:	2" PVC Sch 40	
SCREEN SLOT SIZE:	0.010"	
TYPE AND VOLUME OF SAND PACK:	Lapis Lustre #3, 6 100 lb bags	
DEPTH TO BOTTOM OF SCREEN:	below grade	69.9
DEPTH OF HOLE:	below grade	70'

WELL CONSTRUCTION DIAGRAM

NOT TO SCALE

Dames & Moore

LOCATION OF BORING



JOB NUMBER	CLIENT	LOCATION
25716-169	BMI	Upper Ponds

DRILLING METHOD: See DM-9 Log

BORING NUMBER: DM 7X

SHEET: 1 OF 4

SAMPLING METHOD: See DM 9 Log

DRILLING: START TIME 1110 — FINISH TIME 1648

SURFACE CONDITIONS: Sandy gravel at surface at base of pond berm mix of cobbles and small boulders

DATE: 2 Sept 98 — DATE: 2 Sept 98

DATUM — ELEVATION

DRILLING CONTRACTOR — LOGGED BY — CHECKED BY — DATE

55756

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/6" SAMPLER	OVA/PID AUGER	OVA/PID SAMPLE	OVA/PID CUTTINGS	DEPTH IN FEET	SOIL GRAPH	
SS		1110					0	0		GRAVELLY SAND, brown, 40% fine to coarse subrounded to rounded gravel, 20% fine to coarse sand, trace cobbles, dry, loose
								1		
								2		
								3	SW	
								4		
	18/15	1118		11/23/35		0	0	5		Same as above
								6		
								7		
								8	GW	SANDY GRAVEL, brown, 70% fine to coarse gravel, 30% sand to coarse sand, dry, loose
								9		
	18/16	1137		22/24/19		0	0	10		GRAVELLY SAND, brown, same as above w/ trace of cobbles, dense, dry
								1		
								2		
								3	SW	
								4		
	8/5	1149		31/50/2		0	0	5		SAME AS ABOVE
								6		
								7		
								8		
								9	SW	
	12/12	1212		56/1.5"		0	0	20		SAME AS ABOVE
								1		

Dames & Moore

LOCATION OF BORING	JOB NUMBER	CLIENT	LOCATION
	25716-019	BMI	UP

DRILLING METHOD:

SAMPLING METHOD:

BORING NUMBER: DM-7X

SHEET 2 OF 4

DRILLING	
START TIME	FINISH TIME
DATE	DATE

DATUM

ELEVATION

SURFACE CONDITIONS:

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/6" SAMPLER	~~OVA~~ PID AUGER	PID SAMPLE	PID CUTTINGS	DEPTH IN FEET	SOIL GRAPH	DESCRIPTION
		1212		44/48		0	0	20	SW	GRAVELLY SAND; brown; 40% fine to coarse subrounded gravel; 60% med to coarse sand; trace of cobbles; dry; dense
								2	GW	SANDY GRAVEL; brown; 25% fine to coarse sand; 75% fine ~~to medium~~ subangular to subrounded gravel, ~~[illegible]~~ dry, loose
	11 / 11	1221		15/50/5		0	0	5		
								9	GW	
	9 / 9	1239		41/50/5"		0	0	30	ML	SANDY SILT; grey green; 40% v.f. sand; 60% silt (w/ clay?); dry; dense. No plasticity when wet. MUDDY CREEK FRM. (Hit contact w/ sampler)
	6 / 6	1255		65/6		0	0	5		Massive gypsum (with many selenite crystals) DRY
	14 / 10	1311		32/24/50/2		0	0	40	ML	SAME AS ABOVE; w/ brown clay seams and some grey green sandy silt

55757

DRILLING CONTRACTOR

BY ___ DATE 12/6/[illegible] CHECKED BY [illegible]

Dames & Moore

LOCATION OF BORING	JOB NUMBER	CLIENT	LOCATION
	25716-019	BMI	UP

BORING NUMBER: DM-7X

SHEET 3 OF 4

DRILLING METHOD:

SAMPLING METHOD:

DRILLING — START TIME: / FINISH TIME: / DATE: / DATE:

SURFACE CONDITIONS:

DATUM

ELEVATION

DRILLING CONTRACTOR

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/6" SAMPLER	AUGER (OVA PID)	SAMPLE	CUTTINGS	DEPTH IN FEET	SOIL GRAPH	DESCRIPTION
	14/15	1316		~~27/...~~ 32/37/50/2		0	0	40	ML	Massive gypsum with many selenite crystals; w/ brown clay seams and some grey green sandy silt v dense; v. slight damp.
	18/18	1402		27/28/34		0	0	45	ML	SANDY SILT; grey green; 30% v fine sand; 70% silt; damp (v. slight); w/ gypsum crystals common; v dense
	18/16	~~1429~~ 1544		48/49/48		0	0	50	ML	Same as above. Took 1 hr break to wait for water, move camera
	18/18	1601		37/39/46		0	0	55		Same as above
	18/18	1617		9/17/25		0	0	60	ML	SANDY SILT, brown; 30% v fine sand; 65% silt; trace clay [illegible]

BY ____ CLC

DATE 9/1/92 CHECKED BY MCH

55758

LOCATION OF BORING	JOB NUMBER	CLIENT	LOCATION
	25716-019	BMI	UP

BORING NUMBER: DM-7X

SHEET 4 **OF** 4

DRILLING METHOD:

SAMPLING METHOD:

SURFACE CONDITIONS:

DATUM **ELEVATION**

DRILLING	START	FINISH
TIME		1648
DATE		2 Sept 98

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/6" ON SAMPLER	~~OVA~~ PID AUGER	PID SAMPLE	PID CUTTINGS	DEPTH IN FEET	SOIL GRAPH	DESCRIPTION
	13/18	1617		8/17/25		0	0	60		SANDY SILT; brown; 30% v.f. sand 65% silt; trace clay, v. low plasticity; damp; loose
								1	ML	
								2		
								3		
								4		
	17/18	1635		15/27/30		0	0	5		Same as above but ~~[illegible]~~ greyish green
								6		
								7	ML	
								8		Water at 68.1' at 1700, rising slowly
								9		
	18/18	1648		22/29/42		0	3	70		Same as above but w/ 8" layers of brown & greyish green silt. Sand [illegible]
							↑ [illegible] to moisture	1		
								2		TD at 71½' below grade Will install a well
								3		
								4		
								5		
								6		
								7		
								8		
								9		
								0		
								1		

DRILLING CONTRACTOR

55759

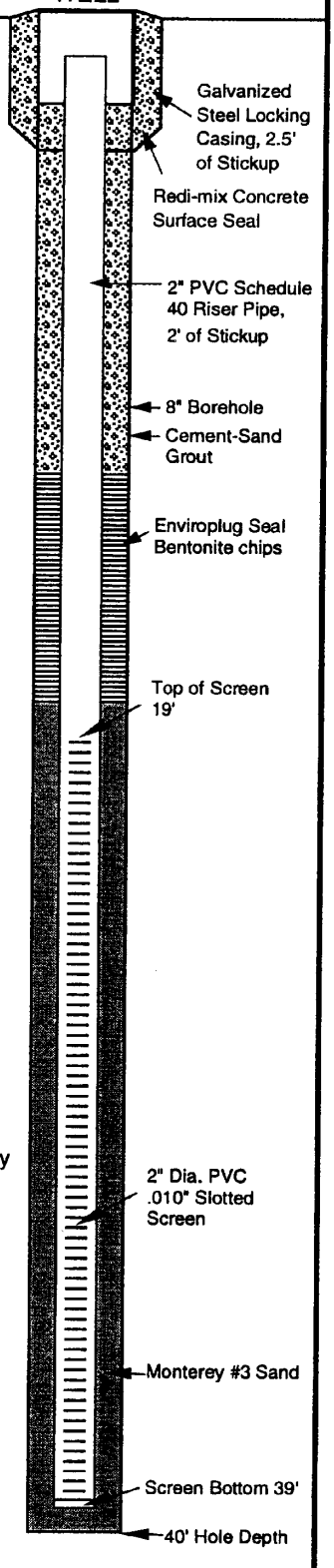
BY CLG DATE 4/10/98 CHECKED BY HCH

LOG OF BORING DM-8

BMI UPPER PONDS
HENDERSON, NEVADA
For Basic Management, Inc.

Depth In Feet	ANALYTICAL DATA PID (ppm) AUGER	ANALYTICAL DATA PID (ppm) SAMPLE	ANALYTICAL DATA PID (ppm) CUTTINGS	SAMPLE DATA BLOWS/FT. SAMPLER	SAMPLE DATA SAMPLE DEPTH	SAMPLE DATA SAMPLE NUMBER	SAMPLE DATA SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION
0'									SM	Tan to brown Silty **SAND** with Gravel, alluvium
5'	.	5	.	30	5'	.				Tan Silty **SAND**, minor Gravel, loose, dry
10'	.	8	.	102/8"	10'	.			SM/ GM	Same as above with coarse Gravel
										Very Gravelly and cobbly
15'	.	.	.	100/5"	15'	.				Same as above
20'	.	6	.	100/6"	20'	.				Same as above
25'	.	.	.	.	.	.				Too Gravelly/cobbly to sample
										Grading to less Gravelly/cobbly
									SM	Out of cobbles
30'	.	3	.	41	30'	.				Tan to brown Silty **SAND** with minor Gravel, loose, dry
35'	.	5	.	100/ 5"	35'	.				Gray to brown Silty **SAND** with lenses of partially cemented Sand, loose, dry
									CL	Change in drilling at 38'
40'	.	5	.	58/6"	40'	.				Green Silty **CLAY** with gypsum crystals, hard, dry, Muddy Creek Formation

WELL



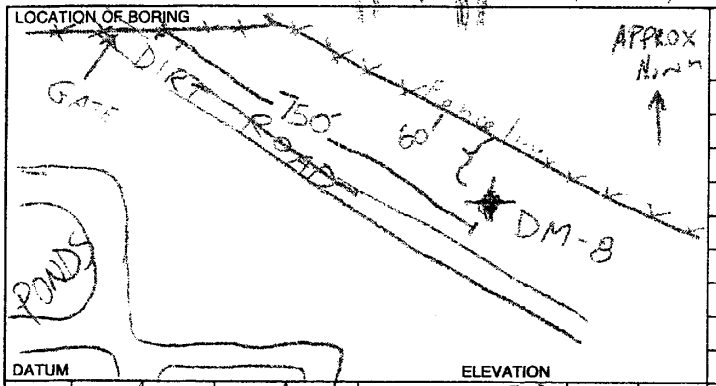
SAMPLING METHOD: 2" Split Spoon, 140 lb Hammer, 30" Drop
DRILLING METHOD: Mobile Drill B-59 8" HSA
DATE STARTED: 10/16/98
DATE COMPLETED: 10/16/98

Boring completed at a depth of 40 feet below ground surface.
Groundwater not encountered.
Logged by: DMC; Reviewed by: MCH

Dames & Moore

2 groves of palm trees off exit 1/4 mile

LOCATION OF BORING



DATUM

ELEVATION

JOB NUMBER	CLIENT	LOCATION
25716-019	BM1	Upper Ponds

DRILLING METHOD: See DM-9 log

BORING NUMBER: DM-8X

SHEET: 1 OF 7

SAMPLING METHOD: See DM-9 Log

DRILLING: START TIME 0932 DATE 3 Sep 98; FINISH TIME 1130 DATE 5 Sep 98

SURFACE CONDITIONS: Sandy gravel, sparse vegetation

DRILLING CONTRACTOR

55761

BY

CHECKED BY

DATE

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/FT. SAMPLER	AUGER	SAMPLE	CUTTINGS	DEPTH IN FEET	SOIL GRAPH
SS		0932					0	0	
								1	
								2	GW
								3	
								4	
	18/15	0944		4/23/38		0	0	5	
								6	
								7	GW
								8	
								9	
	9/7	0953		28/50/2		0	0	10	SW
								1	
								2	
								3	
								4	
	19/19	1001		6/18/19		0	0	5	
								6	
								7	
								8	
								9	SW
	12/7	1007		37/42/50				20	
								1	

SANDY GRAVEL; brown; 30% fine to medium sand; 70% fine to coarse subrounded gravel; loose; dry

GRAVELLY SAND brown 40% fine to coarse rounded gravel; 60% fine to coarse sand; loose; dry; trace of cobbles (& boulders?), dry

SAME AS ABOVE

Dames & Moore

LOCATION OF BORING

JOB NUMBER	CLIENT	LOCATION
25 7[illegible]-019	BMI	Upper Ponds

DRILLING METHOD:

BORING NUMBER: DM-8X

SHEET 2 OF 7

SAMPLING METHOD:

DRILLING: START TIME / FINISH TIME; DATE / DATE

DATUM

ELEVATION

SURFACE CONDITIONS:

DRILLING CONTRACTOR

55760

BY

DATE

CHECKED BY

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/6" ON SAMPLER	PID AUGER	PID SAMPLE	PID CUTTINGS	DEPTH IN FEET	SOIL GRAPH	DESCRIPTION
	12/7	1007		37/62/6		0	0	20	SW	GRAVELLY SAND; brown; 40% fine to coarse gravel; 60% fine to coarse sand; dry; dense
	17/14	1020		75/46/50/5		0	0	25	SW	Same as above
								27–28	SM	SILTY SAND w/ massive gypsum (selenite [illegible]) [illegible] beds?) brown; dry; v. dense. MUDDY CREEK FRM. ~~Did not use split spoon [illegible] sampler [illegible]~~ Sampled after returning to bottom
	9/9	1032/1145		88/50/3"		0	0	30	SM	
	10/10	1207/13[illegible]		33/40/4"		0	0	35	ML	SANDY SILT; brown; 15% v f sand; 80% silt; 5% clay; low plasticity; dry.
	17/15	1346		37/49/[illegible]		0	0	40	ML	SAME AS ABOVE

Dames & Moore

LOCATION OF BORING

JOB NUMBER	CLIENT	LOCATION
	#M1	UD

DRILLING METHOD:

BORING NUMBER: DM 8X

SHEET: 3 OF 7

SAMPLING METHOD:

DRILLING — START TIME / FINISH TIME

SURFACE CONDITIONS:

DATE / DATE

DATUM

ELEVATION

DRILLING CONTRACTOR

55762

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/6" SAMPLER	~~OVA~~ PID: AUGER	SAMPLE	CUTTINGS	DEPTH IN FEET	SOIL GRAPH	
	17/15	1316				0	0	40	ML	SANDY SILT, brown; trace of clay. 15% v f-m sand 80% silt; 5% clay; low plasticity, damp
								1		
								2		
								3		
								4		
	18/18	1418		24/43/55		0	0	5	ML	SILT;
								6		Change to greyish green, Trace of v.f. sand; has gypsum crystals; damp; low plasticity
								7	ML	
								8		
								9		
	18/18	1414		19/18/16		0	0	50		
								1		
								2		
								3	ML	
								4		
	18/18	1508		24/27/43		0	0	5	ML	Change to brown; clay ~~NP~~ to 15%
								6		CLAYEY
								7		~~CLAY~~ SILT; brown; 15% clay; 85% silt; damp; low med plasticity; trace of gypsum crystals
								8		
								9		
	18/18	1529		4/17/31		0	0	60	ML	
								1		

BY LLG DATE 4-4-92 CHECKED BY MLH

Dames & Moore

LOCATION OF BORING

JOB NUMBER	CLIENT	LOCATION
25716-19	BMI	U. PONDS

DRILLING METHOD:

BORING NUMBER: DM-8X

SHEET: 4 OF 7

SAMPLING METHOD:

DRILLING: START TIME / FINISH TIME

SURFACE CONDITIONS:

DATE / DATE

DRILLING CONTRACTOR

DATUM

ELEVATION

55763

BY CLG DATE 9-8-98 CHECKED BY MAC 4

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/FT. 6" SAMPLER	AUGER	PID SAMPLE	PID CUTTINGS	DEPTH IN FEET	SOIL GRAPH	
	18/18					0	0	60	ML	CLAYEY SILT; interlayered & mottled brown & greyish green; 20% clay; 80% silt; dry
								1		
								2		
								3		
								4		
	18/18	1547		11/18/23		0	0	5		Same as above, damp
								6		
								7	ML	
								8		
								9		
	18/18	1609		11/17/22		0	0	70		Same as above, damp
								1		
								2		
								3		
								4		
	18/18	1631		12/17/22		0	0	5	ML	Same as above; dry
		~~1631~~		~~12/17/22~~				6		
								7		
								8		
							9	9		
	18/18	1718		20/23/36		0	8	80	ML	Stopped Drilling for Today
							moisture?	1		

Dames & Moore

LOCATION OF BORING	JOB NUMBER	CLIENT	LOCATION
	25716-019	BMI	Upper Ponds

DRILLING METHOD:

SAMPLING METHOD:

BORING NUMBER: DM-8XX

SHEET 5 OF 7

DRILLING — START TIME / FINISH TIME; DATE / DATE

DATUM

ELEVATION

SURFACE CONDITIONS:

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/6" SAMPLER	~~OVA~~ PID AUGER	PID SAMPLE	PID CUTTINGS	DEPTH IN FEET	SOIL GRAPH	DESCRIPTION
										Resumed drilling on 4 Sep 98
	18/18	(4 SEP) 0746		20/27/36		0	8	80		CLAYEY SILT w/ sand; brown and green interlayered & mottled; 20%
							1	1	ML	clay 80% silt; low plasticity; damp; w gypsum crystals.
								2		
								3		
								4		
	18/18	0823		9/16/23		0	6	5		Change to all brown; still has gypsum
								6		but much less than above; very damp
								7		
								8		
								9		
	18/18	0848		9/19/50		2	31	90	ML	Same as above; clay increases to 30%
								1		
								2		
								3		
								4		
	18/18	0920		9/17/23		3	24	5		CLAYEY SILT, brown; 40% clay;
								6	ML	60% silt; med plasticity; moist
								7		
								8	CL	SILTY CLAY, brown; 70% clay
										30% silt; moist; high plasticity
							92	9		
		1138		22/32/59		33	108	100		
								1		CLAYEY SILT, [illegible] w/ rotten (sewage odor)
										OUT OF AUGERS HAD TO STOP FOR TODAY

DRILLING CONTRACTOR

55764

BY CLC

DATE 9-?-98

CHECKED BY MCH

Dames & Moore

LOCATION OF BORING	JOB NUMBER	CLIENT	LOCATION
	25716	BMI	U. PONDS

DRILLING METHOD:

SAMPLING METHOD:

SURFACE CONDITIONS:

BORING NUMBER: DM-8X

SHEET 6 OF 7

DRILLING	
START	FINISH
TIME	TIME
DATE	DATE

DATUM

ELEVATION

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/FT. SAMPLER	AUGER	~~OVA~~ PID SAMPLE	PID CUTTINGS	DEPTH IN FEET	SOIL GRAPH	
	18/18	1138/0831		22/38/50				100		RESUMED DRILLING ON 5 Sep. 98 SILTY CLAY, gray to black. 40% silt.
								1	CL	60% clay; med to high plasticity; rotten sewage odor; damp
								2		
								3		
								4		
	18/18	0841		9/16/30		2	8	5		Same as above; grey green; no odor; damp.
								6		gypsum crystals common (5%).
								7		
								8		Driller says he thinks we've hit water, but
								9		has said that before, even in the hole
	18/18	0911		13/19/23		0	0	110	CL	Same as above but dry.
								1		
								2		
								3		
								4		
	18/18	0936		17/21/22		0	0	5		Same as above; damp
								6	CL	
								7		
								8		
								9		
	18/18	1007		16/19/30		2	13	120		
								1		

DRILLING CONTRACTOR

55765

BY CLG DATE 1-3-98 CHECKED BY MEH

LOCATION OF BORING

JOB NUMBER	CLIENT	LOCATION
2576	BMI	U. PONDS

DRILLING METHOD:

BORING NUMBER: DM-8X

SHEET: 7 OF 7

SAMPLING METHOD:

DRILLING: START TIME — FINISH TIME: 1130

SURFACE CONDITIONS:

DATE — DATE: 5 Sept 98

DATUM

ELEVATION

DRILLING CONTRACTOR

55766

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/FT. / SAMPLER	OVA PID: AUGER	OVA PID: SAMPLE	OVA PID: CUTTINGS	DEPTH IN FEET	SOIL GRAPH	
	18/18	1007		14/19/30		2	13	120		SILTY CLAY, grey green; 40% silt, 60% clay; damp; low to high plasticity, v. stiff to hard
								1	CL	
								2		
								3		
								4		
	19/12	1031		12/25/33		0	0	5		Same as above
								6		
								7		
								8		
								9		
	14/18	1057		23/42/50/5		0	0	130		SILTY CLAY; same as above. Damp
								1	CL	RAN OUT OF AUGERS STOPPED FOR TODAY
								2		
								3		
								4		
								5		
								6		
								7		
								8		
								9		
								0		
								1		

BY CLG DATE 9/8/98 CHECKED BY MACH

Dames & Moore

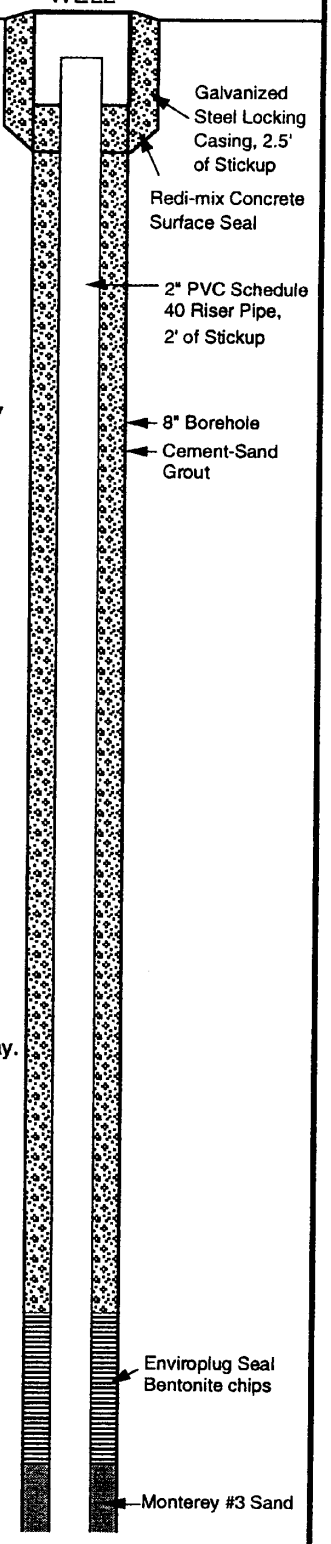
LOG OF BORING DM-9

BMI UPPER PONDS
HENDERSON, NEVADA
For Basic Management, Inc.

Depth In Feet	ANALYTICAL DATA PID (ppm) AUGER	ANALYTICAL DATA PID (ppm) SAMPLE	ANALYTICAL DATA PID (ppm) CUTTINGS	SAMPLE DATA BLOWS/FT. SAMPLER	SAMPLE DATA SAMPLE DEPTH	SAMPLE DATA SAMPLE NUMBER	SAMPLE DATA SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION
0'									SM/ GM	Brown to tan Silty **SAND** with Gravel and cobbles, alluvium
5'	0	.	.	.	5'	.				Same as above, auger stuck on cobble, unable to sample
10'	.	12	.	81	10'	.			SM	Brown to tan Silty **SAND**, minor Gravel, loose, slightly moist
15'	.	6	.	50/4"	15'	.				Same as above, grading to reddish brown
20'	.	4	.	65/ 10"	20'	.				Same as above
25'	.	4	.	63/6"	25'	.				Dark reddish brown Silty **SAND**, loose, slightly moist
										Drill bit broke at 12:35 on 10/16/98, stopped for the day. Resume drilling at 8:00 on 10/19/98.
30'	.	4	.	76/ 11"	30'	.				Same as above
35'	.	5	.	98/ 11"	35'	.			SW	Brown to reddish brown Gravelly **SAND**, minor Silt, loose, slightly moist
40'										

Continue on next page

WELL



Continue on next page

SAMPLING METHOD: 2" Split Spoon, 140 lb Hammer, 30" Drop
DRILLING METHOD: Mobile Drill B-59 8" HSA
DATE STARTED: 10/16/98
DATE COMPLETED: 10/19/98

Boring completed at a depth of 61 feet below ground surface.
Groundwater not encountered.
Logged by: DMC; Reviewed by: MCH

Dames & Moore

LOG OF BORING DM-9

BMI UPPER PONDS
HENDERSON, NEVADA
For Basic Management, Inc.

Depth In Feet	ANALYTICAL DATA PID (ppm) AUGER	ANALYTICAL DATA PID (ppm) SAMPLE	ANALYTICAL DATA PID (ppm) CUTTINGS	SAMPLE DATA BLOWS/FT. SAMPLER	SAMPLE DATA SAMPLE DEPTH	SAMPLE DATA SAMPLE NUMBER	SAMPLE DATA SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION	WELL (Continued)
40'	.	3	.	100/ 11"	40'	.			SM	Tan to brown Silty **SAND**, minor Gravel, loose, slightly moist	Top of Screen 40'
45'	.	17	.	98/ 11"	45'	.				As above, slightly more Gravel	2" Dia. PVC .010" Slotted Screen
50'	.	24	.	98	50'	.				As above	
55'	.	10	.	17	55'	.				As above	
									ML	Tan Sandy **SILT**, medium dense, slightly moist	
									CL	Brown to green Silty **CLAY** with gypsum crystals, stiff, moist, Muddy Creek Formation	
60'	.	14	.	30	60'	.				Green to brown Silty **CLAY** with gypsum crystals, very stiff, moist, trace of free water	Screen Bottom 60'
65'											61' Hole Depth

SAMPLING METHOD: 2" Split Spoon, 140 lb Hammer, 30" Drop
DRILLING METHOD: Mobile Drill B-59 8" HSA
DATE STARTED: 10/16/98
DATE COMPLETED: 10/19/98

Boring completed at a depth of 60 feet below ground surface.
Groundwater not encountered.
Logged by: DMC; Reviewed by: MCH

Dames & Moore

BORING NO.: DM-9X

PROJECT BMI ~~Upper Ponds~~ LOCATION Upper Ponds

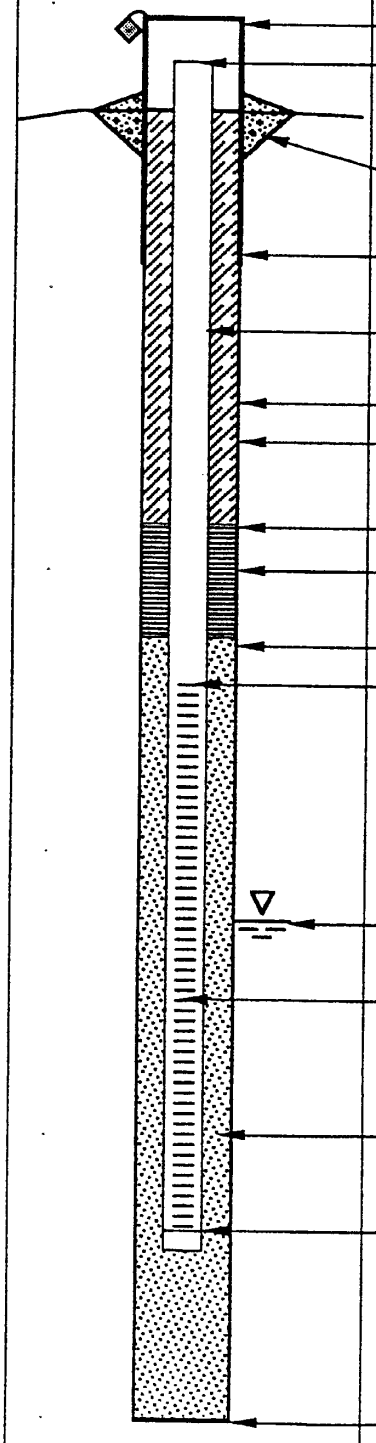
PROJECT NO. 25716-019-169

GROUND ELEVATION _____ DATE 25SEPT98

FIELD GEOLOGIST Chris Janey

DRILLER ~~BT~~ Lee Roberts Compliance Drilling

DRILLING METHOD 8" augers



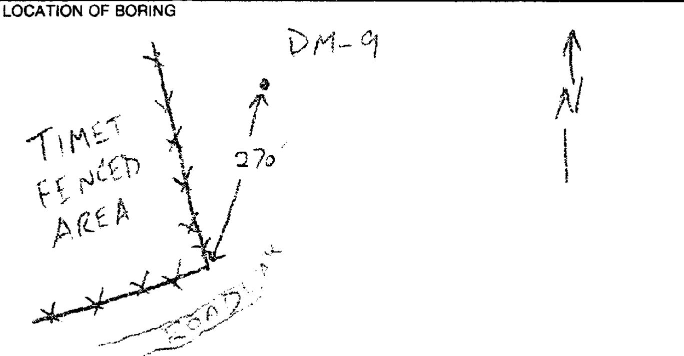
ELEVATION OF TOP OF SURFACE CASING:	
ELEVATION OF TOP OF RISER PIPE: (+1.75' above grade)	
grade	0'
TYPE OF SURFACE SEAL: cement-sand grout	
DIAMETER OF SURFACE CASING: 5" square	
TYPE OF SURFACE CASING: steel, w/ hinged lid	
RISER PIPE DIAMETER AND TYPE: 2" Sch. 40 PVC	
BOREHOLE DIAMETER:	8"
TYPE OF BACKFILL: cement-sand grout	
DEPTH TO TOP OF SEAL:	55'
TYPE OF SEAL: Enviroplug Medium Bentonite pellets	
DEPTH TO TOP OF SAND PACK:	60.2'
DEPTH TO TOP OF SCREEN:	65.45'
DEPTH TO WATER (below grade) 3 sept 98	73.50
SCREEN DIAMETER AND TYPE: Sch 40 2" PVC	
SCREEN SLOT SIZE: 0.010"	
TYPE AND VOLUME OF SAND PACK: 9-100 bags of Lapis Lustre #3	
DEPTH TO BOTTOM OF SCREEN (below grade)	85.45
DEPTH OF HOLE: below grade	86.90

WELL CONSTRUCTION DIAGRAM

NOT TO SCALE

Dames & Moore

LOCATION OF BORING



DATUM ______ ELEVATION ______

JOB NUMBER	25716-019
CLIENT	BMI - Upper Ponds
LOCATION	Henderson NV
DRILLING METHOD:	MOBILE DRILL HOLLOW STEM AUGER
SAMPLING METHOD:	3" OD split spoon no sleeves. 140lb hammer w/ 30" drop
SURFACE CONDITIONS:	Gravelly sand no vegetation for 25 feet
BORING NUMBER	DM-9X
SHEET	1 OF 5
DRILLING START TIME	0844
DRILLING FINISH TIME	1535
START DATE	1 Sept 98
FINISH DATE	1 Sep 98

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/6" SAMPLER	AUGER	SAMPLE	CUTTINGS	DEPTH IN FEET	SOIL GRAPH	DESCRIPTION
SS		0844			O	●		0	SW	GRAVELLY SAND; brown; 25% fine & medium rounded limestone gravel; 75% f. & coarse rounded sand; loose; dry
	18 / 18	0857		11/14/24		O	O	5		SAME AS ABOVE
	9 / 5	0918		43/50/5"		O	O	10	SW	Grading to w/ coarser gravel; dense, slightly damp.
	11 / 11	0926		50/5"		O	O	15	SW	Same as above
	8 / 6	0957		41/50/5"		O	O	20	SW	Grading to well cobbles + boulders

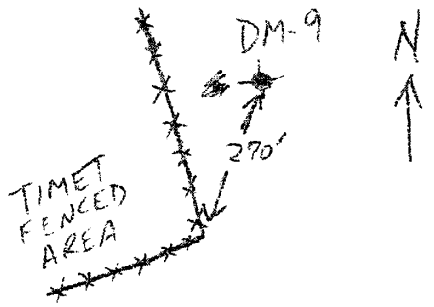
DRILLING CONTRACTOR [illegible]

55751

BY [illegible] DATE [illegible] CHECKED BY [illegible]

Dames & Moore

LOCATION OF BORING



JOB NUMBER	CLIENT	LOCATION
2576-09	BMI - USP	[illegible]

DRILLING METHOD:

BORING NUMBER: DM-9X

SHEET: 2 OF 5

SAMPLING METHOD:

DRILLING: START TIME / FINISH TIME

SURFACE CONDITIONS:

DATE / DATE

DATUM

ELEVATION

DRILLING CONTRACTOR

55752

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/FT. SAMPLER	OVA/PID AUGER	OVA/PID SAMPLE	OVA/PID CUTTINGS	DEPTH IN FEET	SOIL GRAPH	
	8/6	0937		41/50/4"		0	0	2 0		GRAVELLY SAND, with cobbles + boulders, brn to gy. cobbles + boulders: 25% fine to coarse grained. 75% fine to coarse sand + gravel
								1		
								2	SW	
								3		
								4		
	1/0	0948		100/1"	0	[illegible]	0	5		No recovery; probably the same as above
								6		
								7		
								8	SW	
								9		
	10/10	0956		38/50/4"		0	0	3 0		GRAVELLY SAND w/ cobbles + boulders as above
								1		
								2		
								3	SW	
								4		
	7/3	1004		50/3"				5		SAME AS ABOVE
								6		
								7		
								8		
								9		
	6/5	1019		100/6				4 0	SW	Grading to w/ more cobbles + boulders
								1		

BY [illegible] DATE [illegible] CHECKED BY [illegible]

Dames & Moore

LOCATION OF BORING	JOB NUMBER	CLIENT	LOCATION
	25716-019	BMI	UP

DRILLING METHOD:

SAMPLING METHOD:

BORING NUMBER: DM 9X

SHEET 3 OF 5

DRILLING: START TIME / FINISH TIME; DATE / DATE

DATUM

ELEVATION

SURFACE CONDITIONS:

DRILLING CONTRACTOR

55753

BY ___ DATE ___ CHECKED BY MCM

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/6" SAMPLER	AUGER	SAMPLE (PID)	CUTTINGS (PID)	DEPTH IN FEET	SOIL GRAPH	DESCRIPTION
	8 / 6	1019		100/6"		0	0	40	SW	GRAVELLY SAND w/ cobbles + boulders; brown; 10% cobbles + boulders; 30% fine to coarse gravel; 60% fine to coarse sand; damp; dense.
	14 / 0	1030		11/24/50/5"		0	0	45	SW	No recovery, sample fell out but the same as above
								49		SILTY SAND, brown; 20% silt (+ clay?); 80% mostly v. fine to fine sand; dense; damp. MUDDY CREEK FRM.?
	18 / 18	1036		9/26/29		0	0	50	SM	
	11 / 7	1050		31/50/5"		0	0	55	SM	SAME AS ABOVE.
	6 / 8	1102		50/6"		0	0	60	SM	SAME AS ABOVE, slightly damper

Dames & Moore

LOCATION OF BORING	JOB NUMBER	CLIENT	LOCATION
		BMI- ~~UP~~	PONDS

BORING NUMBER DM-9X

SHEET 4 OF 5

DRILLING METHOD:

SAMPLING METHOD:

SURFACE CONDITIONS:

DRILLING	
START	FINISH
TIME	TIME
DATE	DATE

DATUM

ELEVATION ~~OVA~~ PID

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/6" SAMPLER	AUGER	SAMPLE	CUTTINGS	DEPTH IN FEET	SOIL GRAPH	
	6/8	1102		5?/6"		0	0	60	SM	SILTY SAND; brown; 20% silt (& clay?) 80% mostly very fine to fine sand; very dense; ~~damp~~ moist
	18/18	1110		7/8/23		0	0	5	SM	Same as above
	18/15	1122		11/27/29		0	0	70	SM	Same as above; a little more clay
	18/18	1131		12/17/21		0	0	5		Same as above but with fine to coarse semi-angular gravel; wet? [illegible] green, bottom 4 inches
	?/6	1424		100/6"		0	0	80	ML	SANDY SILT w/ clay, grey green; 20% clay, 20% v.f. sand, 60% silt, WET

55754

DRILLING CONTRACTOR

BY CLG

CHECKED BY [illegible]

DATE 9-8-92

Dames & Moore

LOCATION OF BORING

JOB NUMBER	CLIENT	LOCATION
24716-09	BMI UMTRA	UP

DRILLING METHOD:

BORING NUMBER: DM-9X

SHEET 5 OF 5

SAMPLING METHOD:

DRILLING: START TIME — FINISH TIME: 1535

SURFACE CONDITIONS:

DATE — DATE: 1 Sept 98

DATUM

ELEVATION

DRILLING CONTRACTOR

55755

BY _____ DATE _____ CHECKED BY _____

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	TIME	SAMPLE NUMBER / SAMPLE DEPTH	BLOWS/FT. SAMPLER	OVA PID AUGER	OVA PID SAMPLE	OVA PID CUTTINGS	DEPTH IN FEET	SOIL GRAPH
	6/6	1174		100/6"		0	0	80	
								1	
								2	ML
								3	
								4	
		1531		/			0	5	
								6	
	1K/2	1535		51/12/20		0	0	7	
								8	ML
								9	
								90	
								1	
								2	
								3	
								4	
								5	
								6	
								7	
								8	
								9	
								0	
								1	

SAND; SILT w/ clay; grey green; 20% clay; 20% v. f. sand; 60% silt, WET

Same as above

Same as above

TD ≈ 87'. Will install a well.

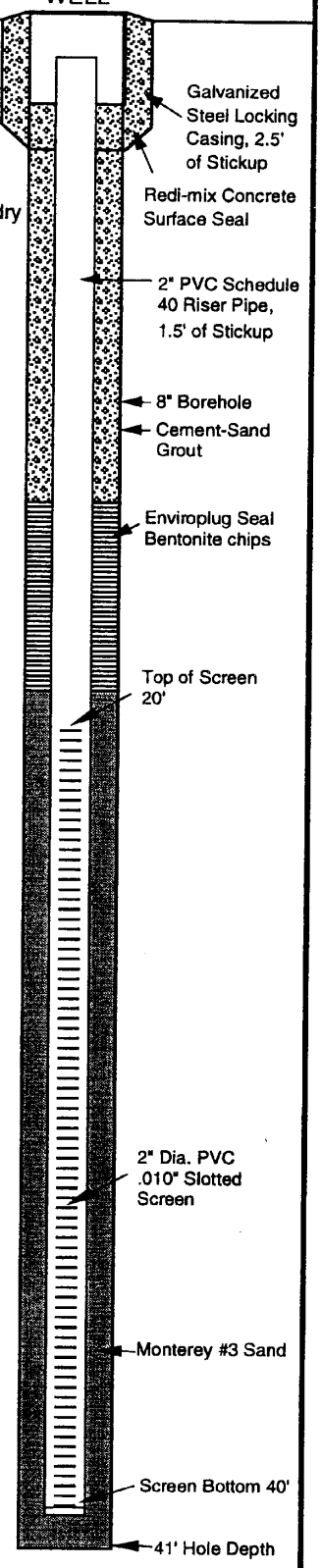
Dames & Moore

LOG OF BORING DM-10

BMI UPPER PONDS
HENDERSON, NEVADA
For Basic Management, Inc.

Depth In Feet	ANALYTICAL DATA PID (ppm) AUGER	ANALYTICAL DATA PID (ppm) SAMPLE	ANALYTICAL DATA PID (ppm) CUTTINGS	SAMPLE DATA BLOWS/FT. SAMPLER	SAMPLE DATA SAMPLE DEPTH	SAMPLE DATA SAMPLE NUMBER	SAMPLE DATA SAMPLE TYPE	SOIL TYPE SYMBOL	SOIL TYPE USCS	DESCRIPTION
0'									SM	Tan Silty **SAND** with Gravel, alluvium
									SM/ GM	
5'	.	1	.	70	5'	.				Tan to brown Silty **SAND** with Gravel up to 2" loose, dry
10'	.	6	.	72/11"	10'	.				Same as above
15'	.	4	.	74/7"	15'	.				Same as above
20'	.	6	.	72/9"	20'	.				Tan to brown Silty **SAND** with fine Gravel, loose, dry
25'	.	5	.	50/6"	25'	.				Same as above, grading to coarse Gravel
30'	.	4	.	50/4"	30'	.				Same as above with cobbles
35'	.	6	.	50/6"	35'	.				Same as above
										More fines in cuttings and grading to reddish brown Sand
40'	.	6	.	.	40'	.			CL	Brown Silty **CLAY** with gypsum crystals, stiff, dry, Muddy Creek Formation

WELL



SAMPLING METHOD: 2" Split Spoon, 140 lb Hammer, 30" Drop
DRILLING METHOD: Mobile Drill B-59 8" HSA
DATE STARTED: 10/19/98
DATE COMPLETED: 10/19/98

Boring completed at a depth of 41 feet below ground surface
Groundwater not encountered.
Logged by: DMC; Reviewed by: MCH

Dames & Moore

BORING #:	E-1
DATE:	5/19/01
START TIME:	14:45
LOGGED BY:	Doug Errett (ENVIRON)
DRILLING CO:	VIRONEX
DRILLER:	Bruce Ashmore
RIG:	Geoprobe 66 DT
SAMPLING METHOD:	2-foot continuous stainless steel soil core
BORING DIA:	2-inch internal diameter
BORING DEPTH	5'
ORGANIC VAPOR EQUIPMENT	MiniRAE 2000 Photoionization Detector

ENVIRON
BORING LOG

PROJECT: Henderson, NV

CASE # 01-2131F

COMMENTS:

Northeastern parcel, sampling location 1.

DEPTH (feet)	BLOW COUNTS	RECOVERY (inches)	ORGANIC VAPORS (ppm)	SAMPLE(S) DESIGNATION	DESCRIPTION
0-1	N/A	24	0.7	E-2 (0-1)	Tan to light brown very fine-grained silty sand (SW-SM).
1-3		24	1.0		Light tan to light brown and reddish brown medium- to fine-grained sand with occasional gravel to ¼-inch diameter, poorly sorted and sub-angular (SP-SM).
3-5		20	1.6	E-2 (4-5)	Same as above.

COMMENTS:
Borehole E-1 plugged on 5/22/01 using dry bentonite pellets, filled to grade.

BORING #:	E-2
DATE:	5/19/01 and 5/22/01
START TIME:	14:15
LOGGED BY:	Doug Errett (ENVIRON)
DRILLING CO:	VIRONEX
DRILLER:	Bruce Ashmore
RIG:	Geoprobe 66 DT
SAMPLING METHOD:	2-foot continuous stainless steel soil core
BORING DIA:	2-inch internal diameter
BORING DEPTH	9'
ORGANIC VAPOR EQUIPMENT	MiniRAE 2000 Photoionization Detector

ENVIRON
BORING LOG

PROJECT: Henderson, NV

CASE # 01-2131F

COMMENTS:

Northeastern parcel, sampling location 2.

DEPTH (feet)	BLOW COUNTS	RECOVERY (inches)	ORGANIC VAPORS (ppm)	SAMPLE(S) DESIGNATION	DESCRIPTION
0-1	N/A	24	0.7	E-2 (0-1)	Tan to light brown very fine-grained silty sand (SW-SM).
1-3		22	1.0		Light tan to light brown and reddish brown medium- to fine-grained sand with occasional gravel to ¼-inch diameter, poorly sorted and sub-angular (SP-SM).
3-5		18	0.4	E-2 (4-5)	Same as above.
5-7		22	0.7		Brown to reddish brown and tan gravelly sand, poorly sorted and sub-angular (SW).
7-9		24	1.6	E-2 (6-8)	Same as above, WET at 8'.

COMMENTS:
Collected intervals deeper than 5' below ground surface on 5/22/01.
Borehole E-2 plugged on 5/22/01 using dry bentonite pellets, filled to grade.

SUMMARY OF BORING NO. B-1 HB-1

DATE DRILLED: 05/17/88

ELEVATION: Not Measured

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

TD 72 MC 66'

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
0			sl. moist		red-dish brown	FILL: GRAVELLY SAND with silt, no cobbles			
10		25	moist	medium dense	dark brown	GRAVELLY SAND with silt	SW		
				dense to very dense	brown	SILTY SAND with gravel	SM		
15					red-dish brown	GRAVELLY SAND partially cemented	SP		
				mod.h dense to very dense	brown	SILTY SAND more sand	SM		
20									

GROUNDWATER not encountered during drilling

END OF BORING AT 71 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

APPROVED FOR PUBLICATION BY _____ ON 7/25/88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

DRAWING NO. A-6

SUMMARY OF BORING NO. B-1

DATE DRILLED: 05/17/88

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ELEVATION: Not Measured

- CONTINUED -

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
20		50 6"	moist	dense to very dense	brown	SILTY SAND gravel lens			
						---with clay to 23'			
25									
					red-dish brown	GRAVELLY SAND trace gravel, trace cobbles	SP		
30		50 9"		mod. hard		---partially cemented			
				very dense			GP		
						---partially cemented			
35				mod. hard					
				very dense			SP		
						---partially cemented			
				mod. hard very dense			SP		
40									

GROUNDWATER not encountered during drilling

END OF BORING AT 71 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

APPROVED FOR PUBLICATION BY _____ ON 9/2/88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-6

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

SUMMARY OF BORING NO. B-1

DATE DRILLED: 05/17/88

ELEVATION: Not Measured

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

- CONTINUED -

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
40		50/12"	moist	very dense	dark brown	GRAVELLY SAND trace cobble	SW		
						---sand lens			
45									
						---with cobbles to 49.5'			
50		50/12"							
			moist		brown	SILTY SAND trace gravel	SM		
55						---with gravels			
					red-dish brown	GRAVELLY SAND	SP		
60									

GROUNDWATER not encountered during drilling

END OF BORING AT 71 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

SUMMARY OF BORING NO. B-1

DATE DRILLED: 05/17/88

ELEVATION: Not Measured

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
60		50/9"	moist	very dense	red-dish brown	GRAVELLY SAND with silt, trace cobbles ---more sand ---trace clay	SP		
				hard	gray	CALICHE			
65				very stiff	red-dish brown	SILTY CLAY	CL		
70									
75									
80									

GROUNDWATER not encountered during drilling

END OF BORING AT 71 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

APPROVED FOR PUBLICATION BY _____ ON 9/2/88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-6

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

SUMMARY OF BORING NO. B-2 HB-2

DATE DRILLED: 05/10/88

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ELEVATION: Not Measured

TD 76 MC 71'

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
0			dry		light brown	FILL: GRAVELLY SAND with silt, trace cobbles ---some gravel lenses			
5		25	moist	dense to very dense		GRAVELLY SAND trace silt ---alternating large and small gravel horizons	SP		
15		30				GRAVELLY SAND with silt	SW		
20									

GROUNDWATER not encountered during drilling

END OF BORING AT 76 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

APPROVED FOR PUBLICATION BY ON 7/12/88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

DRAWING NO. A-7

SUMMARY OF BORING NO. B-2

DATE DRILLED: 05/10/88

ELEVATION: Not Measured

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

- CONTINUED -

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
20			very moist	dense to very dense	light brown	GRAVELLY SAND with silt	SW		
				very dense	brown	SILTY SAND smaller gravels	SM		
25		40							
			wet			---lenses of large gravel			
30									
35		50/9"			light brown	GRAVELLY SAND trace silt	SW		
40									

GROUNDWATER not encountered during drilling

END OF BORING AT 76 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

APPROVED FOR PUBLICATION BY ON 9/2/88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-7

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

SUMMARY OF BORING NO. B-2

DATE DRILLED: 05/10/88

ELEVATION: Not Measured

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

- CONTINUED -

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
40			wet	very dense	light brown	GRAVELLY SAND with some gravel lenses	SP		
45				mod. hard	brown	---partially cemented			
				very dense			SP		
50						---sandy lens 5'			
55		50				---with silt			
60									

GROUNDWATER not encountered during drilling

END OF BORING AT 76 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-7

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

SUMMARY OF BORING NO. B-2

DATE DRILLED: 05/10/88

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ELEVATION: Not Measured

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
60			wet	very dense	brown	GRAVELLY SAND	SP		
65		50 / 9"		mod. hard		---trace clay			
				very dense		---with silt	SP		
				hard	white	CALICHE			
70				very stiff	brown	SILTY CLAY	CL		
75									
80									

▼ GROUNDWATER not encountered during drilling

END OF BORING AT 76 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

APPROVED FOR PUBLICATION BY _____ ON 4/21/88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-7

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

SUMMARY OF BORING NO. B-3 HB-3

DATE DRILLED: 05/16/88

ELEVATION: Not Measured

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

TD 63 MC 57.5'

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
0			dry	loose to medium dense	brown	FILL: GRAVELLY SAND occasional cobble lens			
5		23							
			sl. moist	dense to very dense	brown	SILTY SAND small gravel, no cobbles	SM		
10									
					red-dish brown	GRAVELLY SAND with silt	SP		
15		50/1"		mod. hard		---partially cemented			
				very dense			SP		
						---small gravely lens			
20									

GROUNDWATER not encountered during drilling

END OF BORING AT 63 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

MOVED FOR PUBLICATION BY ON 9/2/88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-8

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

SUMMARY OF BORING NO. B-3

DATE DRILLED: 05/16/88

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ELEVATION: Not Measured

- CONTINUED -

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
20			sl. moist	very dense	red-dish brown	GRAVELLY SAND with silt	SP		
						---with cobbles to 25'			
25		50	moist		brown	GRAVELLY SAND with silt	SW		
30									
35		40/2"			red-dish brown	GRAVELLY SAND occasional cobbles in alternating lenses	SP		
40									

▼ GROUNDWATER not encountered during drilling

END OF BORING AT 63 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

APPROVED FOR PUBLICATION BY _____ ON 9/2/88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-8

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

DATE DRILLED: 05/16/88

SUMMARY OF BORING NO. B-3

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ELEVATION: Not Measured

- CONTINUED -

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
40			moist	very dense	red-dish brown	SILTY SAND with gravel	SM		
						GRAVELLY SAND trace silt, large gravel lenses	SP		
45		50/1"		mod. hard		---smaller gravels			
				very dense	brown	SILTY SAND with gravel	SM		
50					red-dish brown	SANDY GRAVEL	GP		
55		50/2"		mod. hard		---occasional cobble			
				hard	gray	CALICHE			
			moist	very stiff	brown to light tan	SILTY CLAY 2 colors of clay	CL		
60									

GROUNDWATER not encountered during drilling

END OF BORING AT 63 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

PUBLI... BY ... ON ... '88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-8

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

SUMMARY OF BORING NO. B-3

DATE DRILLED: 05/16/88

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ELEVATION: Not Measured

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
60			moist	very stiff	brown to light brown	SILTY CLAY	CL		
65									
70									
75									
80									

▼ GROUNDWATER not encountered during drilling

END OF BORING AT 63 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

OVED FOR PUBLICATION BY ON 7/2/88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-8

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

BORING HB-1

SAMPLING METHOD: Dames & Moore "U"-Type
DRILLING METHOD: 4-Inch Diameter Hand Auger

DEPTH IN FEET	ANALYTICAL DATA: LAB	ANALYTICAL DATA: O.V.A. (ppm) AUGER	O.V.A. (ppm) SAMPLE	O.V.A. (ppm) CUTTINGS	SAMPLE DATA: BLOWS PER FOOT	SAMPLE DATA: SAMPLE DEPTH	SAMPLE DATA: SAMPLE NUMBER	SAMPLE DATA: SAMPLE TYPE	SOIL TYPE: SYMBOLS	SOIL TYPE: USCS	DESCRIPTION
0			0		-	0'	1	■		SW	Brown pea Gravelly fine to medium SAND with trace Silt, moist
											Gravel grading coarser
			0		-	4'	2	■			As above, slightly more SILT
5											
10											

Boring completed at a depth of 4-1/2 feet on February 2, 1990.
No ground water encountered.

BORING HB-2

SAMPLING METHOD: Dames & Moore "U"- Type
DRILLING METHOD: 4-Inch Diameter Hand Auger

DEPTH IN FEET	ANALYTICAL DATA: LAB	ANALYTICAL DATA: O.V.A. (ppm) AUGER	O.V.A. (ppm) SAMPLE	O.V.A. (ppm) CUTTINGS	SAMPLE DATA: BLOWS PER FOOT	SAMPLE DATA: SAMPLE DEPTH	SAMPLE DATA: SAMPLE NUMBER	SAMPLE DATA: SAMPLE TYPE	SOIL TYPE: SYMBOLS	SOIL TYPE: USCS	DESCRIPTION
0			0		0	0'	1	■		SW	Brown fine Gravelly SAND with trace Silt and occasional cobbles, moist, well-graded, loose
			0		0	2.5'	2	■			Brown Gravelly fine SAND with some coarse Sand and Silt, moist, medium dense
5											
10											

Boring completed at a depth of 3 feet on February 2, 1990.
No ground water encountered.

LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

Dames & Moore
FIGURE A-8

SUMMARY OF BORING NO. B-4 HB-4

DATE DRILLED: 05/10/88

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ELEVATION: Not Measured

TD 50 MC 45'

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
0			dry		light brown	FILL: GRAVELLY SAND with silt ---occasional cobble ---occasional gravel lens	SP		
				dense to very dense		GRAVELLY SAND with silt, being slightly cemented			
5		50/6"							
10									
15		50/6"		mod. hard		---partially cemented			
			sl. moist	very dense	brown	SILTY SAND with gravel	SM		
20									

GROUNDWATER

END OF BORING AT 50 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

APPROVED FOR PUBLICATION BY ON 9/2/88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-9

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

SUMMARY OF BORING NO. B-4

DATE DRILLED: 05/10/88

ELEVATION: Not Measured

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

- CONTINUED -

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
20			sl. moist	very dense	brown	SILTY SAND with gravel	SM		
					light brown	GRAVELLY SAND with silt	SP		
25		50/6"		mod. hard					
				very dense			SP		
					brown	SILTY SAND trace gravel	SM		
30									
35		50/6"		mod. hard		SAND with silt, partially cemented			
				very dense			SP		
40									

GROUNDWATER not encountered during drilling

END OF BORING AT 50 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

APPROVED FOR PUBLICATION BY ON 9/28/88

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-9

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

SUMMARY OF BORING NO. B-4

DATE DRILLED: 05/10/88

ELEVATION: Not Measured

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

- CONTINUED -

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF	
40			sl. moist	very dense	brown	GRAVELLY SAND trace silt ---occasional cobble	SP			
45			moist	very stiff	brown	SILTY CLAY	CL			
50										
55										
60										

GROUNDWATER not encountered during drilling

END OF BORING AT 50 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

HENDERSON RIB'S

PROJECT NO. 87-33479-01

Converse Consultants Southwest — Geotechnical Engineering and Applied Sciences

DRAWING NO. A-9

SUMMARY OF BORING NO. B-4

DATE DRILLED: 05/10/88

ELEVATION: Not Measured

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

- CONTINUED -

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
40			sl. moist	very dense	brown	GRAVELLY SAND trace silt ---occasional cobble	SP		
45			moist	very stiff	brown	SILTY CLAY	CL		
50									
55									
60									

▼ GROUNDWATER not encountered during drilling

END OF BORING AT 50 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-9

SUMMARY OF BORING NO. B-5 HB-5

DATE DRILLED: 05/01/88

ELEVATION: Not Measured

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

TD 40' MC 25.5'

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
0			sl. moist		dark brown	FILL: GRAVELLY SAND occasional cobble ---large gravel ---small gravel	SP		
5		50/9"		dense to very dense		GRAVELLY SAND with silt ---alternating large and small gravel horizons	SP		
10									
15		50				---more sand, trace cobbles to 16.5'			
20				mod. hard very stiff		---partially cemented	SP		

GROUNDWATER not encountered during drilling

END OF BORING AT 40 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

APPROVED FOR PUBLICATION BY [signature] ON 9/2/93

HENDERSON RIB'S

PROJECT NO. 87-33479-01

DRAWING NO. A-10

Converse Consultants Southwest

Geotechnical Engineering and Applied Sciences

DATE DRILLED: 05/01/88

SUMMARY OF BORING NO. B-5

ELEVATION: Not Measured

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

- CONTINUED -

DEPTH IN FEET	SAMPLES (1)	BLOWS/FT. (2)	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	SYMBOL (1)	MOISTURE, %	DRY DENSITY, PCF
20			sl. moist	very stiff	brown	SILTY SAND with gravel	SM		
					red-dish brown	GRAVELLY SAND large gravels	SP		
25	X	50/3"		hard	white	CALICHE			
			moist	very stiff	green	SANDY CLAY	CL		
30									
35					brown	SILTY CLAY	CL		
40									

GROUNDWATER not encountered during drilling

END OF BORING AT 40 FEET

(1) REFER TO KEY TO SOIL SYMBOLS AND TERMS FOR EXPLANATION OF TEST SYMBOLS

(2) USING 240 LB. DRIVING WEIGHT FALLING 30 INCHES AND 3.5 INCH DIAMETER SAMPLER

APPROVED FOR PUBLICATION BY [signature] ON 9/6/88

(ESE)

Log of Boring No. B- 7

Date Drilled: 6/11/96 Location: See Drawing No. 2 Ground Surface Elevation: Not Measured

Logged By: D. Lloyd Driller: T. High Drill Equipment: 6" Hollow Stem Auger

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT	MOISTURE (%)	OVA (ppm)	FIELD OR LABORATORY TESTS
		SANDY SILTY GRAVEL With Clay; light brown, dry					22	
2		**SANDY SILTY GRAVEL;** light brown, dry						
4					22/50			
6								
8								
					38/33		2	
10								
		COARSE SANDY GRAVEL; light brown						
12								
		SILTY SANDY GRAVEL; light brown						
14					25/40		2	
16								
		---with clay						
18		---no clay						
					28/50		2	

APPROVED BY ON

Groundwater Depth Below Surface: None Observed

Driving Weight and Drop: 140 lb. / 30"

End of Boring at 49.5 feet

RHODES - PALM CITY

Henderson, Nevada

Project No. **96-43212-01**

Drawing No. **A-7**

Converse Consultants Southwest, Inc. Geotechnical Engineering and Applied Science

Log of Boring No. B- 7

Date Drilled: 6/11/96 Location: See Drawing No. 2 Ground Surface Elevation: Not Measured
Logged By: D. Lloyd Driller: T. High Drill Equipment: 6" Hollow Stem Auger

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT	MOISTURE (%)	OVA (ppm)	FIELD OR LABORATORY TESTS
22								
24		GRAVELLY SAND; light greenish gray	■		50/3"		4	
26								
28		CLAYEY SILT; slightly gypsiferous, dense, light greenish gray, dry MC(?)	■		50/15"		6	
30								
32								
34		GYPSIFEROUS SILTY SANDSTONE; dense, light greenish gray, moist	■		25/2"		40	
36								
38			■		32/35		4	

Groundwater Depth Below Surface: None Observed
Driving Weight and Drop: 140 lb. / 30"
End of Boring at 49.5 feet

APPROVED BY ON

RHODES - PALM CITY

Henderson, Nevada

Project No. **96-43212-01**

Drawing No. **A-8**

Converse Consultants Southwest, Inc.

Geotechnical Engineering and Applied Science

Log of Boring No. B- 7

Date Drilled: 6/11/96 Location: See Drawing No. 2 Ground Surface Elevation: Not Measured
Logged By: D. Lloyd Driller: T. High Drill Equipment: 6" Hollow Stem Auger

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT	MOISTURE (%)	OVA (ppm)	FIELD OR LABORATORY TESTS
		This log is part of the report prepared by Converse for this project and should be read with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
42								
44			■		21/36		3	
46								
48								
		SANDY SILTSTONE; dark brown, wet	■				4	

APPROVED BY ON

Groundwater Depth Below Surface: None Observed
Driving Weight and Drop: 140 lb. / 30"

End of Boring at 49.5 feet

RHODES - PALM CITY

Henderson, Nevada

Project No.
96-43212-01

Drawing No.
A-9

Converse Consultants Southwest, Inc.

Geotechnical Engineering and Applied Science

(CESC)

Log of Boring No. B- 8

Date Drilled: 6/11/96 Location: See Drawing No. 2 Ground Surface Elevation: Not Measured

Logged By: D. Lloyd Driller: T. High Drill Equipment: 6" Hollow Stem Auger

SUMMARY OF SUBSURFACE CONDITIONS

This log is part of the report prepared by Converse for this project and should be read with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

DEPTH (ft)	GRAPHIC LOG	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT	MOISTURE (%)	OVA (ppm)	FIELD OR LABORATORY TESTS
0						2	
4				34/6"		0	
14				24/45		2	
18				25/30		1	

SANDY SILTY GRAVEL; some clay, dry, light brown

GRAVELLY SANDY SILT; light brown, moist

Groundwater Depth Below Surface: None Observed

End of Boring at 49.5 feet

Driving Weight and Drop: 140 lb. / 30"

APPROVED BY ON

RHODES - PALM CITY

Henderson, Nevada

Project No. **96-43212-01**

Drawing No. **A-10**

Converse Consultants Southwest, Inc.

Geotechnical Engineering and Applied Science

Log of Boring No. B- 8

Date Drilled: 6/11/96 Location: See Drawing No. 2 Ground Surface Elevation: Not Measured
Logged By: D. Lloyd Driller: T. High Drill Equipment: 6" Hollow Stem Auger

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT	MOISTURE (%)	OVA (ppm)	FIELD OR LABORATORY TESTS
		This log is part of the report prepared by Converse for this project and should be read with the report. This summary applies only at the location of the boring and at the time ofdrilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
22								
24			■		30/50		2	
26								
28								
		---brown	■		42/50		<1	
30								
32								
34		GRAVELLY SANDY SILTSTONE; dense, light grayish brown, moist	■		43/50		<1	
36								
38								
		SANDY SILTSTONE; dense, reddish brown, moist	■		36/50		1	

Groundwater Depth Below Surface: None Observed
Driving Weight and Drop: 140 lb. / 30"

End of Boring at 49.5 feet

APPROVED BY ON

RHODES - PALM CITY

Henderson, Nevada

Project No.
96-43212-01

Drawing No.
A-11

Converse Consultants Southwest, Inc.

Geotechnical Engineering and Applied Science

Log of Boring No. B- 8

Date Drilled: 6/11/96 Location: See Drawing No. 2 Ground Surface Elevation: Not Measured
Logged By: D. Lloyd Driller: T. High Drill Equipment: 6" Hollow Stem Auger

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT	MOISTURE (%)	OVA (ppm)	FIELD OR LABORATORY TESTS
		This log is part of the report prepared by Converse for this project and should be read with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
42								
44		**CLAYEY SILT**; gypsiferous, dense, light greenish gray to mottled reddish brown, moist	■		10/22			
		MC						
46								
48			■		12/25		7	

APPROVED BY ON

Groundwater Depth Below Surface: None Observed
Driving Weight and Drop: 140 lb. / 30"

End of Boring at 49.5 feet

RHODES - PALM CITY

Henderson, Nevada

Project No. **96-43212-01**

Converse Consultants Southwest, Inc.

Geotechnical Engineering and Applied Science

Drawing No. **A-12**

TABLE 3.3

Well Completion and Water Level Information for
Wells Installed at the BMI and Henderson Areas

WELL	TOTAL DEPTH	SCREENED OR OPEN HOLE INTERVAL	DEPTH TO WATER AND YEAR MEASURED				DEPTH OF MUDDY CREEK FORMATION
			1971	1980	1982	1983	
H-1	91		46.3	Abd.			47
H-2	96	56-96		52.9			50
H-3	100	20-100	50.8	Abd.			55
H-4	77	20-77	45.9	Abd.			55
H-5	200		47.9				50
H-6	135	127-133		41.3			50
H-7	100	20-100		51.75			49
H-8	110	20-110	51.7				55
H-9	105	20-105	50.8				55
H-10	55 old	10-55		32			40
	50 new	39-49			31.3		
H-11	116 old	10-116		89			102
	105 new	95-105			88.5		
H-12	55	10-55		21	22.8		22
H-13	88	10-88		54			38
H-14	55	10-55		23			24
H-15	101	34-101		44			55
H-16	55	10-55		26			28
H-17	101 old	20-101		37			46
	50 new	39-49			37		
H-18	61	41-61		36	36.8		50
H-19	75 old	47-75		33			42
	50 new	35-50			34		
H-20	101	29-101		38	39		41
H-21	101 old	32-101		30			45.5
	55 new	40-55			31.2		
H-22	231	20-231					44
H-23	101 old	32-101		32			42.5
	50 new	30-50			35.6		
H-24	228	221-228		0 -Flowing- 0			38
H-25	102 old	25-102		22			24
	39 new	29-39			22.5		
H-26	25	19-25					
H-27	231	19-231					45
H-28	51	38-51		30	31.7		44.5
H-29	102	26-102		26	28		16
H-30	102	37-102		42	40		37
H-31	Not Drilled	-	-	-	-	-	-

* All depths are in feet below ground surface

TABLE 3.3 (Cont'd)

WELL	TOTAL DEPTH	SCREENED OR OPEN HOLE INTERVAL	DEPTH TO WATER AND YEAR MEASURED				DEPTH OF MUDDY CREEK FORMATION
			1971	1980	1982	1983	
H-32	101	37-101		39	40		38
H-33	101	36-101		38	38.4		37
H-34	44	41-44					44
H-35	94	91-94					35
H-36	44 old	41-44		26			38
	39 new	29-39			28.4		
H-37	50.5	25-50					25
H-38	55	16-55		34	34.5		25
H-39	75	15-75		45	46.1		43
H-40	75	55-75		49	51		40.5
H-41	75	65-75		46	50		54
H-42	55	8-555		33	36		44
H-43	55 old	9-55		30			45.5
	44 new	29-44			32.9		
H-44	231	6-231					49
H-45	Not Drilled	-	-	-	-	-	-
H-46	51	36-51					42
H-47	152	142-152			41.7		52
H-48	43	33-43			32		59
H-49	38	28-38			32		48
H-50	43	33-431			35		40
H-51	42	32-42			34		57.5
H-52	28	18-28			18		18
H-53					26		42
H-54					31		51
H-55					44		43
H-56					30.8		
LG-9	91	85-90		5.5			
LG-10	42			8.6			
LG-11	39	0-39		18.4			
LG-13	250	241-243		38.9			
LG-15	25	23-25		3			
LG-16	47	43-40		3			
LG-17	90	80-82		15.2			
LG-19	70			0-Flowing			
LG-20	20			5.6			
LG-21	40	37-39		29.1			
LG-25	24			11.4			
LG-26	100	87-90		11.7			
LG-27	62	57-62		14			
LG-30	30	27-29		6			
LG-32	155	147-155	35	49.7 Nov 79			54
LG-32R	90	80-90		50			52

TABLE 3.3 (Cont'd)

WELL	TOTAL DEPTH	SCREENED OR OPEN HOLE INTERVAL	DEPTH TO WATER AND YEAR MEASURED				DEPTH OF MUDDY CREEK FORMATION
			1971	1980	1982	1983	
LG-33	45 old	35-45	38 March Dry April	Dry May	50.72 Jun 51.03 Aug 51.31 Oct	51.94 Feb	52
deepened to 60 in May 1980	60 new	50-60		49 May	51.47 Dec		
LG-151				49.7			
LG-165				25			
PG-101	41	31-41		22.3			
PG-102	26	16-26		26	Abd.		
PG-103	16	6-16		4.3			
PG-104	25	15-25		12			
PG-105	25	15-25		13.5			
PG-106	21	11-21		6			
PG-107	22	12-22		15	Abd.		
PG-108	20	10-20		12	Abd.		
PG-109	26	16-26		20.5			
PG-110	21	11-21		11	Abd.		
PG-111	21	11-21		9.8			
PG-112	21	11-21		16.5			
PG-220					47.1		
PG-233					22.2		25
PG-235					24.2		35.6
PG-237					18.3		16.2

Well Owners:

H - Stauffer's 'H' Series Monitoring Wells
LG - Desert Research Institute Monitoring Wells, L.V.
PG - Pittman Groundwater Monitoring Wells, by EPA

Table 1

Tabulation of Data
from Monitoring and Exploration Wells
at Henderson, Nevada

Well Number	Casing Elev.	Surface Elev.	Depth to Muddy Creek Fm.	Elev. of Top of Muddy Creek Fm.	Water Level Elev. Dec. 1982	Water Level Distance from Top of Muddy Creek Fm.
H-1		1794				
H-2	1802.11	1801	50	1751		
H-3		1786	55	1731		
H-4		1790	55	1735		
H-5		1792	49	1743		
H-6		1793	50	1743		
H-7	1788.91	1789?	49	1740	1737.61	-2
H-8	1789.39	1789	55	1734		
H-9	1736.79	1786	55	1731		
H-10*	1704.01	1703.1	40	1663	1672.53	10
H-11*	1866.47	1865.1	102	1763	1778.35	15
H-12	1710.00	1709.2	22	1687	1688.87	2
H-13	1819.47	1818.8	38	1781	1766.24	-15
H-14	1711.94	1711.0	24	1687	1688.82	2
H-15	1772.20	1771.1	55	1716	1725.73	10
H-16	1713.88	1713.3	28	1685	1689.18	4
H-17*	1707.35	1704.6	46	1656	1670.33	14
H-18	1729.80	1728.6	51	1678	1692.53	14
H-19	1729.26	1728.6	42	1687	1695.46	8
H-20	1732.17	1731.9	41	1691	1693.35	2
H-21	1729.45	1728.4	45.5	1683	1697.57	15
H-22#			44			
H-23	1730.6	1729.5	42.5	1687	1695.02	8
H-24*+	1706.63		38		Flowing	
H-25*	1711.08	1710	24	1686	1688.36	
H-26	Not drilled					
H-27#	1729.8	1729?	45	1684?		
H-28	1730.33	1729.1	44.5	1685	1698.18	13
H-29	1717.33	1717.3	23	1694	1689.79	-4
H-30	1740.42	1739.6	37	1703	1698.88	-4
H-31	Not drilled					
H-32	1736.48	1735.9	38	1698	1696.66	-1
H-33	1733.91	1732.6	37	1696	1695.52	0
H-34	1728.49	1727.0	44	1683		
H-35+	1706.65	1705.2	35	1670		

Corehole without well completion
+ Second zone monitor
* Reworked configuration of well

Table 1 - continued

Well Number	Casing Elev.	Surface Elev.	Depth to Muddy Creek Fm.	Elev. of Top of Muddy Creek Fm.	Water Level Elev. Dec. 1982	Water Level Distance from Top of Muddy Creek Fm.
H-36*	1716.20	1715.4	38	1677	1687.86	11
H-37	1712.32	1710.7	25	1685		
H-38	1772.69	1771.7	25	1746	1738.25	-8
H-39	1770.32	1770.7	43	1728	1724.20	-4
H-40	1770.31	1769.0	40.5	1729	1719.30	-10
H-41	1774.92	1773.7	54	1720	1724.12	4
H-42	1729.09	1728.2	55	1684	1693.82	10
H-43*	1729.82	1728.2	45.5	1683	1696.89	14
H-44#			49.5			
H-45	Not drilled					
H-46	1730.03	1728.8	42	1687		
H-47+	1770.54		54		1729.47	
H-48	1682.79	1680.3	59	1621	1650.88	30
H-49	1685.38	1684.1	48	1636	1653.77	18
H-50	1700.48	1699.1	40	1659	1665.96	7
H-51	1699.00	1698.1	57.5	1641	1664.92	24
H-52	1727.71	1726.3	18	1708	1709.68	2
H-53	1713.87	1712.9	42	1672	1688.06	16
H-54	1722.30	1719.8	51	1671	1690.53	20
H-55	1749.05	1748.0	43	1706	1705.43	-1

Corehole without well completion
+ Second zone monitor
* Reworked configuration of well

from the original well. This may have contributed to the low yield of the original well H-17. Well yields will be discussed further in another section.

In September 1981, subsequent to the well upgrading, it was discovered that wells H-10 and 17 had been vandalized by filling the casings with wood, rocks, cable, and metal scraps. This resulted in the redrilling of wells H-10 and 17 with new screened 5" wells as described earlier. Table 1 presents the new well configurations.

In summary, eight new permanent 5" screened wells were installed; three were upgraded by the installation of screens and casings, and two temporary 2" PVC wells were installed during the 1981 drilling program. Additionally, wells outside of the plant area have been securely capped in order to prevent vandalism.

Table 1. Characteristics of New and Upgraded Wells

Well No.	Depth, ft.	Casing Diameter, in.	Casing Depth, ft.	Screened Interval, ft.
10	49	5	39	39-49
11	105	8	11	-
		5	95	95-105
17	49	5	39	39-49
25	39	8	26	-
		5	29	29-39
36	39	5	29	29-39
43	44	8	9	-
		5	29	29-44
48	43	5	33	33-43
49	38	5	28	28-38
50	43	5	33	33-43
51	42	5	32	32-42
52	28	5	18	18-28

Geraghty & Miller, Inc.

Monitoring Well Construction Data

Stauffer Chemical Company/Henderson, Nevada

Well No.	Date Started	Date Completed	Hole Diam.	Total Depth	Casing Diam.	Casing Length	Completion	TOC above GS	TOC Elevation	Contractor/ rig
H-10	10-10-79	10-15-79	10"	55'	10" (c)	11.0'	open hole, 10' - 55'	0.8'	1705.75'	M/CT
H-11	10-15-79	10-18-79	8"	116'	10" (c)	11.3'	open hole, 10' - 116'	1.2'	1866.25'	M/CT
H-12	10-17-79	10-20-79	10"	55'	10" (c)	10.6'	open hole, 10' - 55'	0.8'	1710.00'	M/CT
H-13	10-22-79	10-26-79	8"	88'	10" (c)	10.5'	open hole, 10' - 55'	0.7'	1819.47'	M/CT
H-14	10-24-79	10-25-79	10"	55'	10" (c)	10.5'	open hole, 10' - 55'	0.9'	1711.94'	M/CT
H-15	10-30-79	11- 6-79	8"	44'	10" (c)	10.5'	abandoned & backfilled	-	-	M/CT
H-15	12- 5-79	12- 6-79	9"	65'	10" (c) 8" (c)	10.0' 34.2'	pilot hole	-	-	A/AR
H-15	2- 4-80	2- 4-80	8"	101'	as above		open hole, 34' - 101'	1.1'	1772.20'	G/MR
H-16	10-31-79	11- 3-79	10"	55'	10" (c)	10.5'	open hole, 10' - 55'	0.6'	1713.88'	M/CT
H-17	11- 5-79	11- 9-79	10"	35'	10" (c)	10.5'	abandoned	-	-	M/CT
H-17	11-16-79	11-16-79	9"	35'	8" (c)	30.7'	pilot hole	-	-	A/AR
H-17	2- 7-80	2- 7-80	8"	101'	as above		open hole, 30' - 101'	0.9'	1709.43'	G/MR
H-18	11-13-79	11-13-79	12"	45'	10" (h)	13.5'	pilot hole	-	-	A/AR
H-18	11-14-79	11-16-79	8"	55'	as above		abandoned & backfilled	-	-	M/CT
H-18	2-18-80	2-26-80	10"	61'	6"	61.3'	torch slots,41' - 61'; gravel backfill from 0' - 61'; cement cap	1.2'	1729.80	G/MR
H-19	11-13-79	11-13-79	12"	45'	10" (h)	29.6'	pilot hole	-	-	A/AR
H-19	11-26-79	11-30-79	10"	75'	10"	47.9'	drive casing behind hole	-	-	A/CT

Monitoring Well Construction Data

Stauffer Chemical Company/Henderson, Nevada

Well No.	Date Started	Date Completed	Hole Diam.	Total Depth	Casing Diam.	Casing Length	Completion	TOC above GS	TOC Elevation	Contractor rig
H-19	2-19-80	2-20-80	-	-	6"	50.5'	gravel backfill 49.8'-75'; 10" pulled; torch slots 34.8' - 49.8'; gravel to surface; cement cap	0.7'	1729.26	A/CT
H-20	11-14-79	11-14-79	12"	45'	10" (h)	29.3'	pilot hole	-	-	A/AR
H-20	1-24-80	1-25-80	8"	101'	as	above	open hole, 29'-101'; cement plug at surface	0.3'	1732.17	G/MR
H-21	11-15-79	11-15-79	9"	40'	8" (h)	32.6'	pilot hole	-	-	A/AR
H-21	1-28-80	1-30-80	8"	101'	as	above	open hole, 32'-101'	-	-	G/MR
H-21	2-20-80	2-21-80	-	-	6"	56.0'	gravel backfill, 55'-101'; 8" not pulled; torch slots 40'-50'; sand & gravel cave-in to 38'; open annulus; cement plug at surface	1.1'	1729.45'	A/CT
H-22	11-15-79	11-15-79	12"	25'	10" (h)	21.1'	pilot hole	-	-	A/AR
H-22	2-29-80	3- 6-80	5"	231'	as	above	test hole with core samples; open hole 20'-231'; cement plug at surface	-	-	G/MR
H-23	11-16-79	11-16-79	9"	25'	8" (h)	24.2'	pilot hole	-	-	A/AR
H-23	1-30-80	1-31-80	8"	101'	as	above	open hole, 23' - 101'	-	-	G/MR

Monitoring Well Construction Data

Stauffer Chemical Company/Henderson, Nevada

Well No.	Date Started	Date Completed	Hole Diam.	Total Depth	Casing Diam.	Casing Length	Completion	TOC above GS	TOC Elevation	Contractor rig
H-23	2-22-80	2-26-80	6"	80'(drill) out dog leg)	6"	51.4'	gravel backfill 50'-80'; 8" not pulled; torch slots 30.3'-50.3'; gravel to 25'; sand to 22'; cement to surface.	1.1	1730.60'	A/CT
H-24	11-17-79	11-17-79	12"	35'	10" (h)	25.2'	pilot hole	-	-	A/AR
H-24	11-19-79	12- 6-79	10"	225'	6"	221.3'	sand backfill 220'-225'; pressure cemented 0'-75'; plug fails; cement inside 6"	-	-	M/CT
H-24	1- 3-80	1- 4-80	5"	228'	as	above	drill out cement; open hole 220'-228'	1.4	1706.63	G/MR
H-25	11-17-79	11-17-79	9"	25'	8" (h)	25.7'	pilot hole	-	-	A/AR
H-25	1-10-80	1-12-80	8"	102'	as	above	open hole, 25'-102'; cement plug at surface	0.9'	1710.77	G/MR
H-26	11-19-79	11-19-79	12"	25'	10" (h)	19.0'	pilot hole;adjacent to Well H-25; abandoned	-	-	A/AR
H-27	11-19-79	11-19-79	12"	25'	10" (h)	19.0'	pilot hole	-	-	A/AR
H-27	3-11-80	3-13-80	5"	231'	as	above	test hole with core samples; open hole 19'-231'; cement plug at surface	-	-	G/MR
H-28	11-19-79	11-19-79	9"	25'	8" (h)	25.7'	pilot hole	-	-	A/AR
H-28	12- 3-79	12-12-79	8"	60'	8"	65.0'	drive casing behind hole	-	-	A/CT

Monitoring Well Construction Data

Stauffer Chemical Company/Henderson, Nevada

Well No.	Date Started	Date Completed	Hole Diam.	Total Depth	Casing Diam.	Casing Length	Completion	TOC above GS	TOC Elevation	Contractor/ rig
H-28					6"	66.2'	8" breaks at 35'; set and cement 6" from 0'-66'; abandoned and backfilled	-	-	A/CT
H-28	2-11-80	2-18-80	10"	51'	6"	51.7'	machine slots 37.4' - 50.5'; sand & gravel cave in to 28'; cement to surface	1.2'	1730.33	G/MR
H-29	11-20-79	11-20-79	9"	25'	10" (c) 8" (h)	6.0' 27.3'	pilot hole	-	-	A/AR
H-29	1- 7-80	1-15-80	8"	102'	as	above	open hole, 26' - 102'	1.0'	1717.33	G/MR
H-30	11-20-79	12- 3-79	9"	43'	10" (c) 8" (h)	10.0' 37.7'	pilot hole	-	-	A/AR
H-30	1-17-80	1-18-80	8"	102'	as	above	open hole, 37' - 102'	0.8'	1740.42	A/AR
H-31	12- 3-79	12- 3-79	12"	25'	10" (h)	22.6'	pilot hole; adjacent to Well H-30; abandoned	-	-	A/AR
H-32	12- 4-79	12- 5-79	9"	45'	10" (c) 8" (h)	10.0' 38.1'	pilot hole	-	-	A/AR
H-32	1-21-80	1-21-80	8"	101'	as	above	open hole, 37' - 101'	0.9'	1736.48	G/MR
H-33	12- 4-80	12- 5-79	9"	45'	10" (c) 8" (h)	10.0' 37.4'	pilot hole	-	-	A/AR
H-33	1-21-80	1-21-80	8"	101'	as	above	open hole, 36' - 101'	1.3'	1733.91	G/MR
H-34	12-18-79	12-18-79	5"	60'	2" (T&C)	45.0'	cuttings backfill 43.5'-60' 10 slot well point 41.0'-43.5'; sand to 27'; bentonite to 24' cuttings to 2'; cement to surface	1.5'	1728.49	G/MR

Monitoring Well Construction Data

Stauffer Chemical Company/Henderson, Nevada

Well No.	Date Started	Date Completed	Hole Diam.	Total Depth	Casing Diam.	Casing Length	Completion	TOC above GS	TOC Elevation	Contractor rig
H-35	12-19-79	12-20-79	5"	95'	2" (T&C)	95.6'	10 slot wellpoint 91.6'-94.1'; sand to 70', bentonite to 1', cement to surface	1.5'	1706.65	G/MR
H-36	12-20-79	12-20-79	5"	100'	-	-	test hole with core sample	-	-	G/MR
H-36	12-21-79	12-21-79	5"	44'	2" (T&C)	45.0'	10 slot wellpoint 41.2'-43.7'; sand to 35; bentonite to 32'; cuttings to 2'; cement to surface	1.3'	1717.78	G/MR
H-37	1-16-80	1-17-80	5"	50.5'	2" (T&C)	51.9'	saw-slotted pipe 25.3'-50.3'; gravel to 5'; cuttings to 1'; cement to surface	1.6'	1712.32	G/MR
H-38	1-23-80	1-23-80	12"	15'	8" (c)	16.5'	pilot hole	-	-	A/FA
H-38	2- 8-80	2-11-80	8"	55'	as	above	open hole, 16' - 55'	1.4'	1772.69	A/CT
H-39	2-12-80	2-13-80	12"	14.5'	8" (c)	15.4'	pilot hole	-	-	A/FA
H-39	2-15-80	2-19-80	8"	75'	as	above	open hole, 15.5' - 75'	1.0'	1770.32	A/CT
H-40	2-21-80	2-21-80	12"	15'	10" (c)	16.0'	pilot hole	-	-	
H-40	2-27-80	4- 2-80	8" 6"	43' 75'	- 6"	- 50.0'	- drive casing; bottom 19.4' torch slotted	- 1.3'	- 1770.31	A/CT
H-41	2-22-80	2-22-80	12"	26'	10" (c)	27.0'	pilot hole	-	-	A/FA

Monitoring Well Construction Data

Stauffer Chemical Company/Henderson, Nevada

Well No.	Date Started	Date Completed	Hole Diam.	Total Depth	Casing Diam.	Casing Length	Completion	TOC above GS	TOC Elevation	Contractor/rig
H-41	4- 3-80	4-16-80	6"	75'	6"	57.0'	drive casing; bottom 10.0' torch slotted	1.2'	1774.92'	A/CT
H-42	2-22-80	2-22-80	10"	55'	8" (h)	8.5'	open hole, 7.5' - 55';	0.9'	1729.09'	G/MR
H-43	2-27-80	2-28-80	10"	55'	8"	9.4'	open hole, 8.5' - 55'; cement plug at surface	0.8'	1728.95'	G/MR
H-44	3-17-80	3-19-80	5"	231'	-	-	test hole with core samples; open hole	-	-	G/MR
H-45	3-19-80	-	5"	40;45'	-	-	abandoned after 2 attempts due to lost circulation	-	-	G/MR
H-46	3-25-80	3-29-80	5"	51'	1¼" PVC	52.2'	drill-perforated pipe 36'-51'l gravel to 30'; cuttings to l; cement to surface	1.2'	1730.03'	G/MR
H-47	5-13-80	5-13-80	12"	39'	10" (c)	40.0	pilot hole	-	-	A/FA
H-47	5-15-80	6-18-80	8"	120'	6" (c)	120.0'	annulus pressure cemented by Halliburton	-		
			6"	152'	4" (h)	152.4'	bottom 10.0' torch/ slotted	1.75		A/CT
LG032R	2-22-80	2-22-80	12"	15'	10" (c)	16.0'	pilot hole	-	-	A/FA
LG032R	4-17-80	5- 6-80	10"	70'	6" (c)	72.5'	annulus cemented from bottom	1.5'	-	A/CT
			6"	90'	4" (h)	92.5'	torch slot bottom 10.0'	1.9'	1770.75'	
LG033	5- 8-80	5- 9-80	6"	35'-60'	6"		existing 6" casing	0.8'	-	A/CT
	(existing well deepened)		-	-	4" (h)	63.4'	torch slot bottom 10.0'	2.6	1770.06	

JAEP copy

MA Copy

ATTACHMENT 1

Attached are the notes and drill logs for Test Holes H-1 through H-9. These were drilled as noted in 1971. Holes 1 and 5 were plugged with concrete in 1971. Holes 3 and 4 were destroyed by construction activity in the area, probably about 1973. Hole 2 was destroyed by construction activity in 1980.

General Notes and Drill Logs of Test Holes H-1 through H-9

Hole No. H-1

Drilled on June 7, 8, 9, and 10
Located 15' north of north edge of leach pits
T. D. 91'
Water level - 46' to 49' below surface
Discolored zones - 45' to 90'
Water is also discolored: Yellowish brown and yellowish green
Water has a pH of 9.5 - water acts like solvent for dye used in pH indicator paper - water has a strong odor
Hole was filled with concrete on Sept. 2, 1971

Log

0 -	30'	Light grayish tan coarse sand and gravel - has odor
30 -	40'	Just slightly darker grayish tan coarse sand and gravel - has odor
40 -	47'	Medium to dark gray coarse sand and gravel (gradational zone - sand and gravel decreasing and clay content increasing) - has odor
47 -	52'	Black clay - has very strong odor - hit water at 47'
52 -	60'	Dark olive green to grayish black sandy clay - has strong odor
60 -	70'	Dark gray sandy clay - has strong odor
70 -	77'	Black sandy clay - has strong odor
77 -	91'	Dark gray sandy clay - has strong odor

T. D. 91 feet

Hole No. H-2

Drilled on June 10, 11, 14, and 15
Located 200' south of south edge of leach pits
T. D. 96'
Water level - 50' to 52' below surface
Discolored zones - none
Water is clear, colorless, and odorless - has a pH of 7.0
Hole is cased all the way to bottom - lower 40' of casing is slotted - casing has "bolt-on" cover plate

Log

0 -	45'	Light grayish tan coarse sand and gravel
45 -	50'	Just slightly grayish tan (gradational zone - sand and gravel decreasing, and clay content increasing)
50 -	96'	Tan sandy clay - hit water at 51'

D. 96 feet

Hole No. H-3

Drilled on June 16, 17, and 18
Located 400' north of Hole No. H-1
T. D. 100'
Water level - 50' to 51' below surface
Discolored zones - none
Water is clear, colorless, and odorless but does contain gas
Water has a pH of 6.5 to 7.0 - water acts like solvent for dye used in pH indicator paper
Hole has 20' length of casing cemented-in at surface
Casing has "bolt-on" cover plate

Log

0 - 30'	Light grayish tan coarse sand and gravel
30 - 50'	Just slightly grayish tan coarse sand and gravel, also cobble and boulder zone
50 - 55'	Just slightly grayish tan coarse sand and gravel (gradational zone - sand and gravel decreases and clay content increases) - hit water at 51'
55 - 100'	Tan sandy clay

T. D. 100 feet

Hole No. H-4

Drilled on June 21, 22, and 23
Located 200' north of Hole No. H-1
T. D. 100'
Water level - 50' to 51' below surface
Discolored zones - none
Water is clear, colorless, and odorless but does contain a gas
Water has a pH of 6.5 to 7.0 - water acts like solvent for dye used in pH indicator paper
Hole has 20' length of casing cemented-in at surface
Casing has "bolt-on" cover plate

Log

0 - 30'	Light grayish tan coarse sand and gravel
30 - 45'	Just slightly darker grayish tan coarse sand and gravel
45 - 55'	Grayish tan (gradational zone - sand and gravel decreases and clay increases) - hit water at 51'
55 - 80'	Just slightly light grayish tan sandy clay with caliche fragments
80 - 100'	Tan sandy clay

T. D. 100 feet

Hole No. H-5

Drilled on June 24, 25, and 28
Located 100' north of Hole No. H-1
T. D. 110'
Water level - 50' to 51' below surface
Discolored zones - 63' to 85'
Water is clear and colorless, but it does have a strong odor and contains gas
Water has a pH of 7.0 to 8.0 - water acts like solvent for dye used in pH indicator paper

Hole No. H-5 (Supplemental)

Was drilled to T. D. of 200' on Aug. 10 and 11
Discolored zones - (Within 110' to 200' interval) None
Hit second water zone at 130' to 135'
Hit possible third water zone at 150' to 158'
Water in hole prior to start of drilling on Aug. 10 had degraded in terms of color since June 25 - water is now somewhat turbid and has a gray color, also odor of water was stronger
Water sampled from Hole H-5 after start of drilling on Aug. 10 was clear and colorless, but did have odor
Water has a pH of 7.0 - water acts like solvent for dye used in pH indicator paper

On Aug. 23, a set of water samples were taken from Hole H-5 at 120', 100', 80', 65', and 55' below the surface of the ground. All of these samples were clear, colorless, odorless, and had pH values of 6.5 to 7.0. Apparently water from one and possibly two lower water zones is flowing up-hole under pressure and is preventing the water from the upper water zone from flowing into the hole

On Sept. 1, four additional water samples were taken from Hole H-5 at 55' below the surface of the ground. These samples were taken as water was being pumped from the second water zone (127'-133') in Hole H-6 at a rate of about 12 gpm. The samples removed from Hole H-5 were all clear, colorless, odorless, and had pH values of 6.5 to 7.0.

Hole H-5 was filled with concrete on Sept. 2, 1971.

(Log of Hole No. H-5 on next page)

Hole No. H-5

Log

(All material removed from this hole has odor)

0 - 30'	Light grayish tan coarse sand and gravel
* 30 - 45'	Just slightly darker grayish tan coarse sand and gravel
* 45 - 50'	Grayish tan (gradational zone - sand and gravel decreases and clay increases)
50 - 60'	Light grayish tan sandy clay - hit water at 51'
60 - 70'	Grayish tan sandy clay with caliche fragments
70 - 80'	Dark grayish tan sandy clay with caliche fragments
80 - 85'	Grayish tan sandy clay
85 - 95'	Light grayish tan sandy clay
95 - 130'	Tan sandy clay
130 - 135'	Very light grayish tan clayey sand - some medium to coarse sand and some gravel
135 - 150'	Tan sandy clay
150 - 155'	Light grayish tan clayey sand - some medium to coarse sand and some gravel
155 - 170'	Light grayish tan sandy clay with some coarse sand
170 - 185'	Grayish tan sandy clay
185 - 200'	Grayish tan clay and sand mixture - about 50% medium to coarse sand and gravel

T. D. 200 feet

*When taken on June 24 and 25, these samples did not show any discoloration. Now (Sept. 20) black spots have formed against the inside wall of the glass sample jars.

Hole No. H-6

Drilled on August 11, 12, 13, 16, 17, and 18
Located 100' north and 100' west of Hole H-1
T. D. 135'
Water level (upper water zone) - 50.6' below surface on Aug. 17, 1971
Discolored zones - 55' to 95'
Water (from upper zone) is clear and colorless, but does have a strong odor
Water contains a lot of gas and, when placed in a 5-gallon can, a foam develops on the surface; as the foam dissipates, a scum remains on the surface of the water
Water has a pH of 7.0 - water acts like solvent for dye used in pH indicator paper

120' of 8" casing was cemented in Hole H-6 to seal off the upper water zone - 120' of 6" casing was then placed inside the 8" casing and a 6" hole was drilled from 117' to the T. D. of 135' - 6' casing was then removed

Discolored zones (117' to 135' interval) - none
Water level (second water zone - 127'-133') - under pressure, comes to 45' below ground surface
Water is clear, colorless, odorless, and has a pH of 6.5

Hole is cased and cemented to 120' - casing has a "bolt-on" cover plate

Log

0 - 25'	Light grayish tan coarse sand and gravel
25 - 45'	Just slightly darker grayish tan coarse sand and gravel
45 - 50'	Grayish tan to tan (gradational zone - sand and gravel decreases and clay increases)
50 - 57'	Light grayish tan sandy clay - hit water at 51' - has odor
57 - 65'	Dark grayish tan sandy clay - has odor
65 - 70'	Light grayish tan sandy clay - with some caliche fragments has odor
70 - 75'	Grayish tan sandy clay - with some caliche fragments - has odor
75 - 80'	Light grayish tan sandy clay - with some caliche fragments has odor
80 - 85'	Tan sandy clay - has odor
85 - 90'	Dark grayish tan sandy clay - about 20 to 30% coarse sand and gravel - has odor
90 - 95'	Very light grayish tan sandy clay with slight amount of black streaking - has odor
95 - 105'	Tan clayey sand and some very coarse gravel (up to 3" in di
105 - 127'	Tan sandy clay - has slight odor
127 - 133'	Light brown, tan, and some black sand - medium to fine grained, clean well graded sand - hit 2nd water at 127' - no odor
133 - 135'	Light brown to tan clayey sand - medium to fine grained, clean well graded sand - no odor

T. D. 135 feet

Hole No. H-7

Drilled on August 19, 20, and 23
Located 300' north and 200' west of Hole H-1
T. D. 100'
Water level - 51' below surface
Discolored zones - none
Water is clear, colorless, odorless, and has a pH of 6.5 to 7.0
Water did contain a slight amount of gas
Hole has 20' length of casing cemented-in at surface
Casing has "bolt on" cover plate

Log

0 - 35'	Light grayish tan coarse sand and gravel
35 - 45'	Just slightly darker grayish tan coarse sand and gravel
45 - 50'	Grayish tan to tan (gradational zone - sand and gravel decreases and clay increases)
50 - 55'	Tan sandy clay - hit water at 51'
55 - 70'	Very light tan sandy clay with some caliche fragments
70 - 90'	Tan sandy clay with about 25% coarse sand and gravel - with some caliche fragments
90 - 100'	Tan sandy clay

T. D. 100 feet

Hole No. H-8

Drilled on August 24, 25, 26, and 27
Located 350' north and 100' east of Hole H-1
T. D. 110'
Water level - 51' to 52' below surface
Discolored zones - 55' to 75'
Water is clear and colorless, but does have an odor
Water also contains a gas
When water is placed in a 5-gallon can, a small amount of scum forms on the surface of the water
Water has a pH of 7.0 - water acts like a solvent for dye used in pH indicator paper
Hole has 20' length of casing cemented-in at surface
Casing has "bolt-on" cover plate

Log

0 - 35'	Light grayish tan coarse sand and gravel
35 - 45'	Just slightly darker grayish tan sand and gravel, also cobble and boulder zone
45 - 50'	Just slightly darker grayish tan (gradational zone - sand and gravel decreases and clay increases)
50 - 55'	Just slightly darker grayish tan clayey sand - hit water at 52' - has odor
55 - 60'	Dark grayish sandy clay - has odor
60 - 70'	Light grayish tan sandy clay - about 20 to 25% gravel and broken rock - up to 1½" in dia. - has odor
70 - 75'	Light grayish tan sandy clay - about 20 to 25% gravel and broken rock - up to 1½" in dia. - has odor
75 - 80'	Light tan sandy clay - about 20 to 25% gravel and broken rock - up to 1½" in dia. - has odor
80 - 90'	Tan sandy clay - has slight odor
90 - 110'	Tan sandy clay contains about 20 to 25% of coarse sand and gravel - has slight odor

T. D. 110 feet

Hole No. H-9

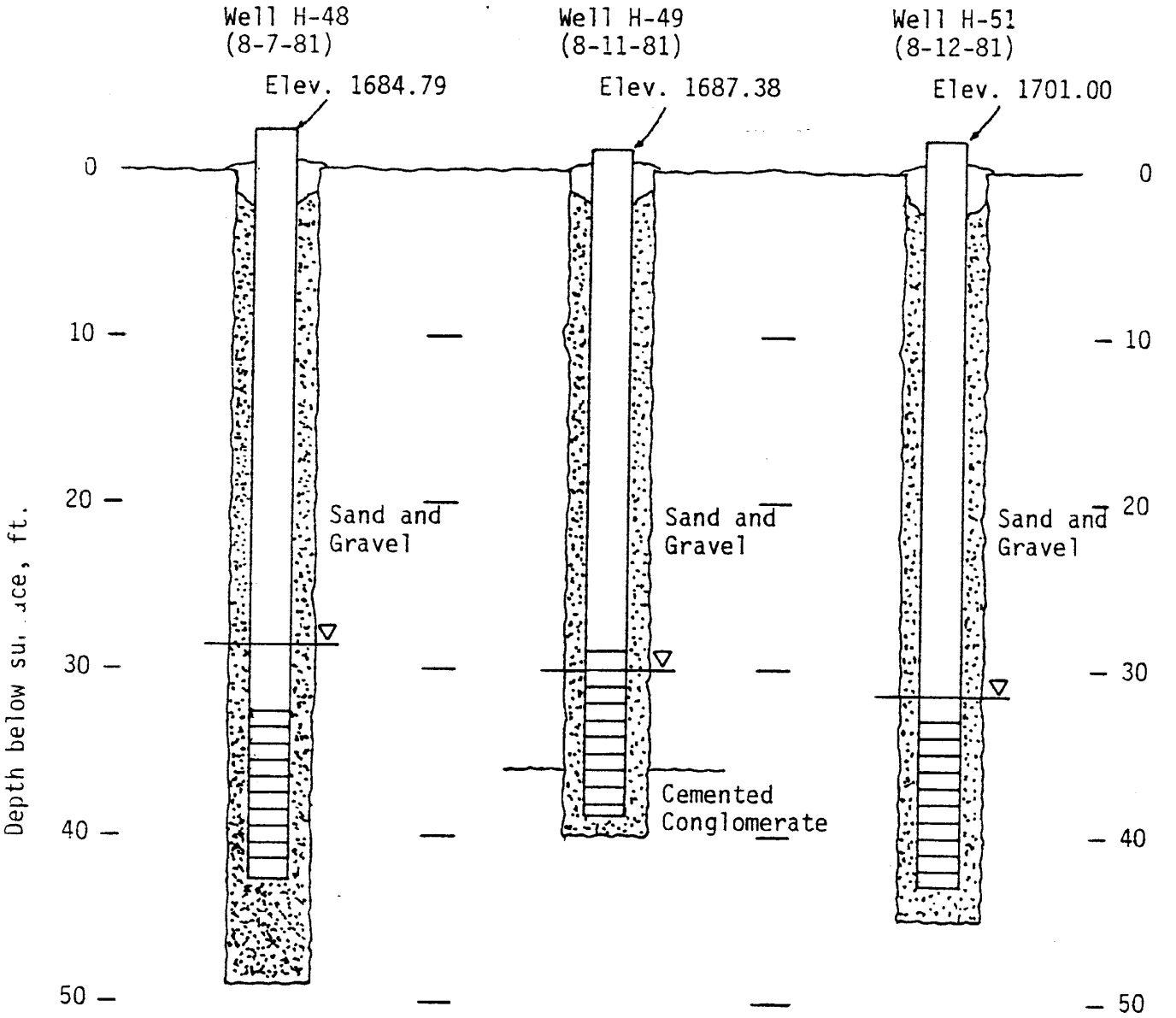
Drilled on August 27, 30, and 31
Located 400' north and 150' east of Hole H-1
T. D. 105'
Water level - 51' below surface
Discolored zones - none
Water is clear and colorless, but it does have a strong odor
Water contains a gas
Water has a pH of 6.5 - water acts like solvent for dye used in pH indicator paper
Hole has 20' length of casing cemented-in at surface
Casing has "bolt-on" cover plate

Log

0 - 35'	Light grayish tan coarse sand and gravel
35 - 45'	Just slightly darker grayish tan coarse sand and gravel
45 - 50'	Just slightly darker grayish tan (gradational zone - sand and gravel decreasing and clay content increasing)
50 - 55'	Light grayish tan sandy clay - hit water at 52' - has slight odor
55 - 60'	Very light grayish tan clayey sand - contains caliche fragments up to 1" in dia. - has slight odor
60 - 65'	Tan sandy clay with caliche fragments up to 1" in dia. - has odor
65 - 85'	Very light tan sandy clay with caliche fragments up to 1" in dia. - has odor
85 - 90'	Tan sandy clay with caliche fragments up to 1" in dia. - has odor
90 - 100'	Tan sandy clay - has slight odor
100 - 105'	Tan sandy clay with coarse sand and gravel content starting to increase - has slight odor

T. D. 105 feet

ATTACHMENT C

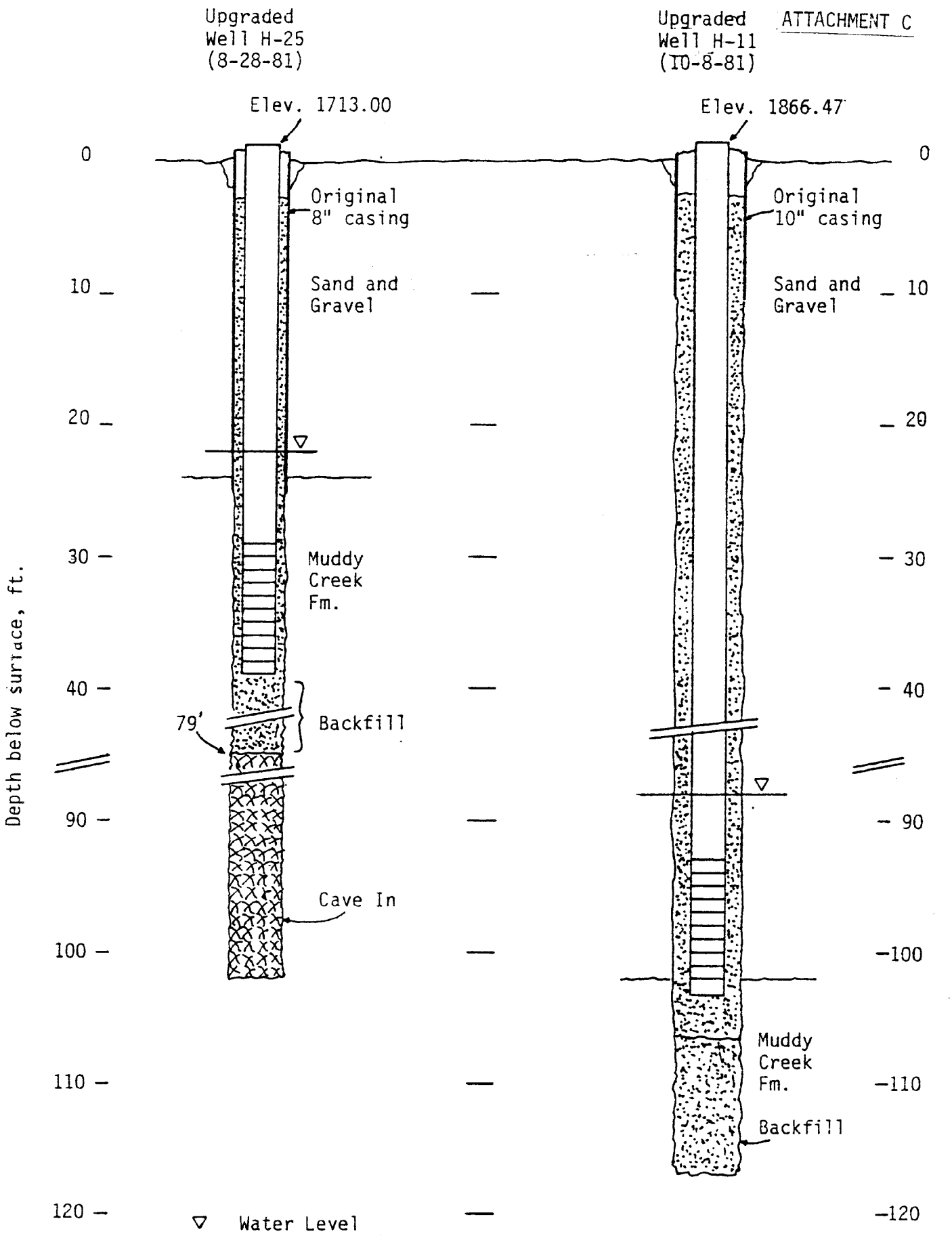


▽ Water Level

All wells were completed with 5 inch diameter casing and well screen.

LEH

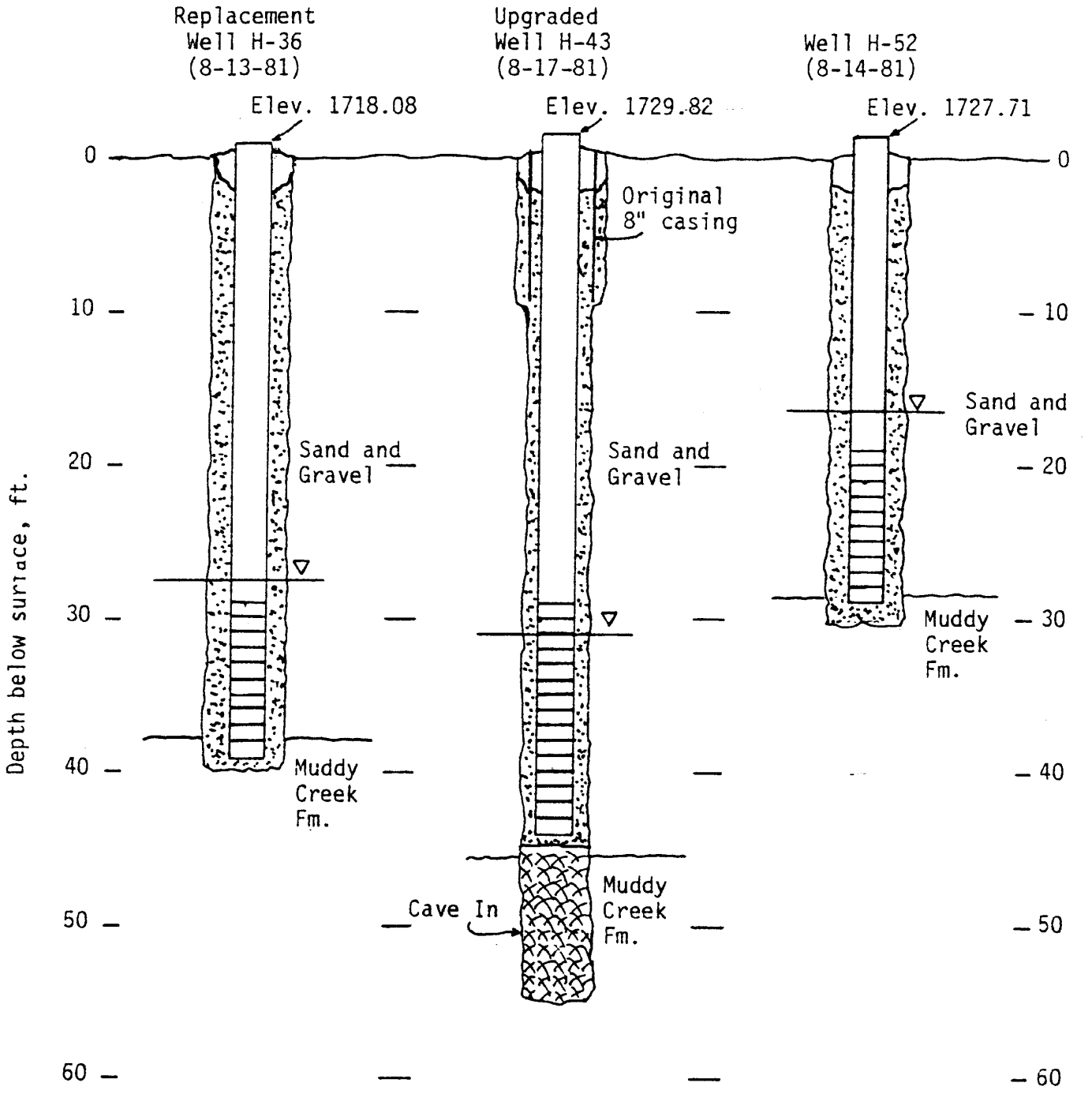
ATTACHMENT C



All wells completed with 5 inch diameter casing and well screen.

LEH

ATTACHMENT C

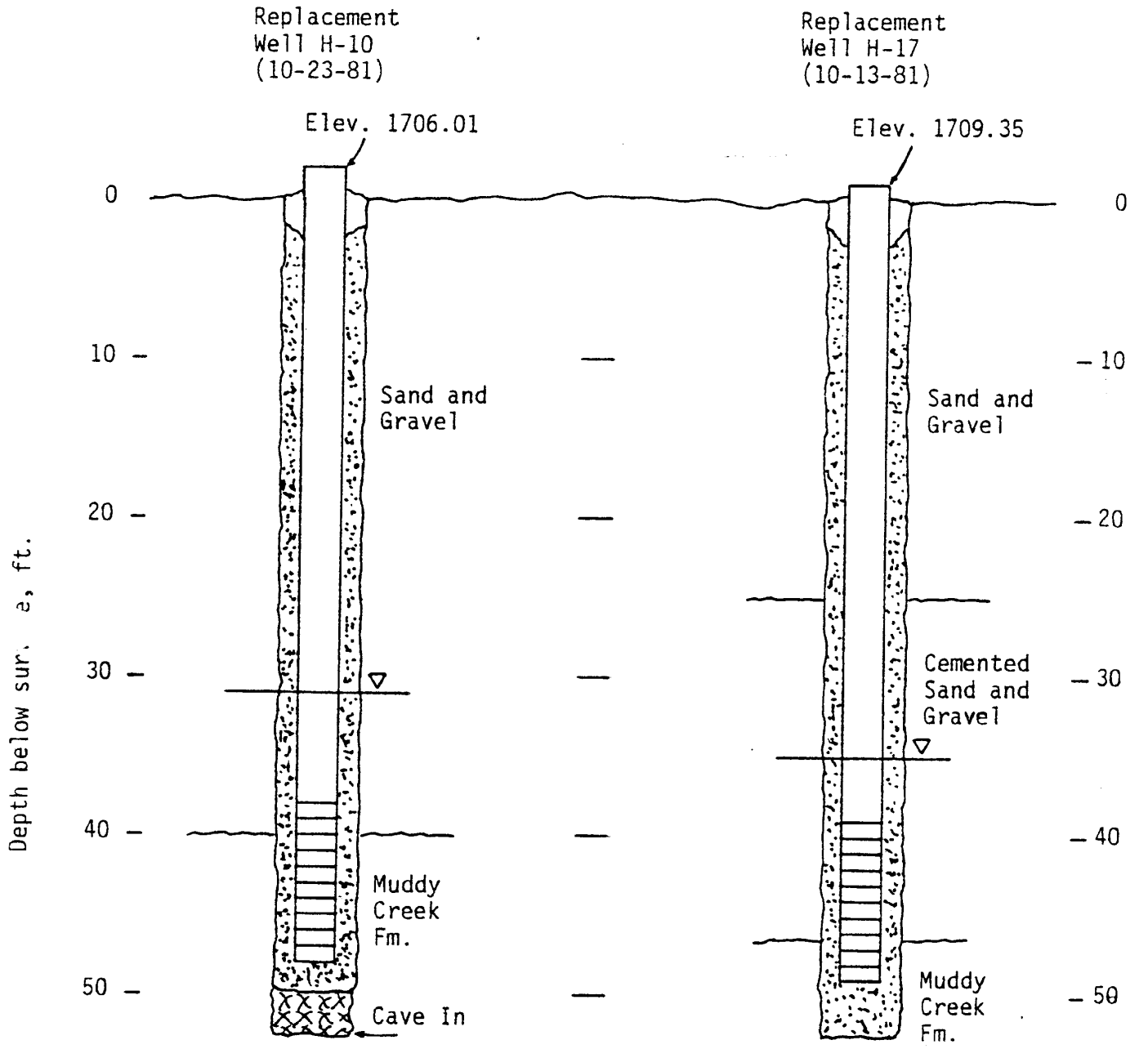


▽ Water Level

All wells were completed with 5 inch diameter casing and well screen

FH

ATTACHMENT C



▽ Water Level

All wells were completed with 5 inch diamater casing and well screens.

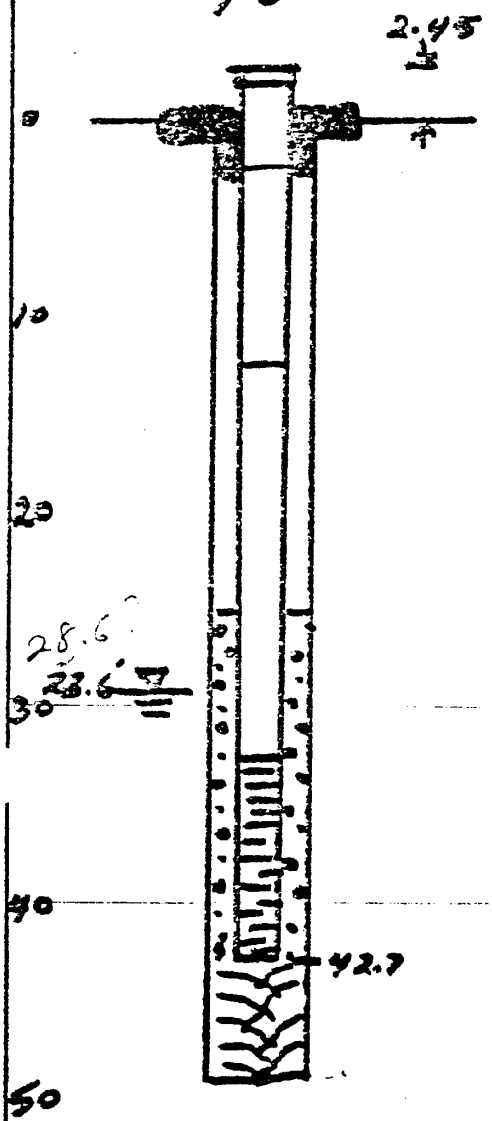
LEH

BY _____ DATE _____ CLIENT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ PROJECT NO. _____

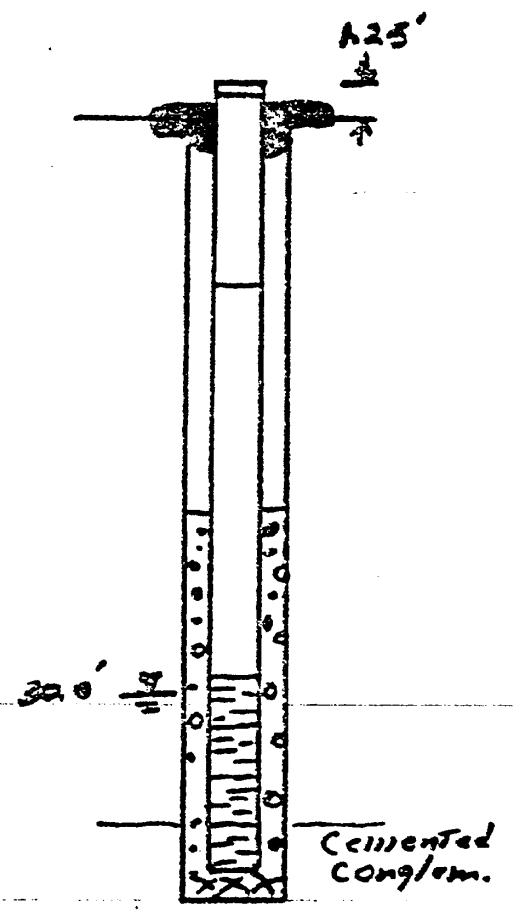
PROJECT _____

#48



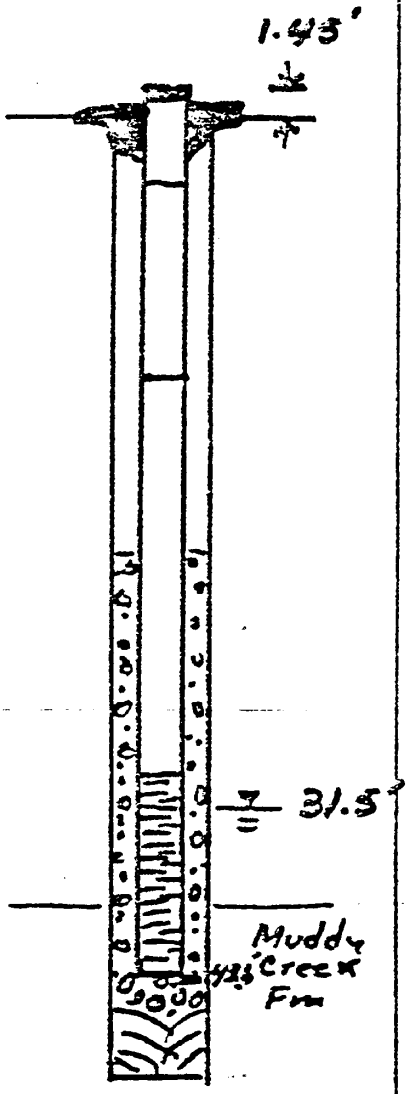
est yield 1½gpm+
drawdown < 1'

#49



est yield 1½gpm+
Drawdown < 1'

#50

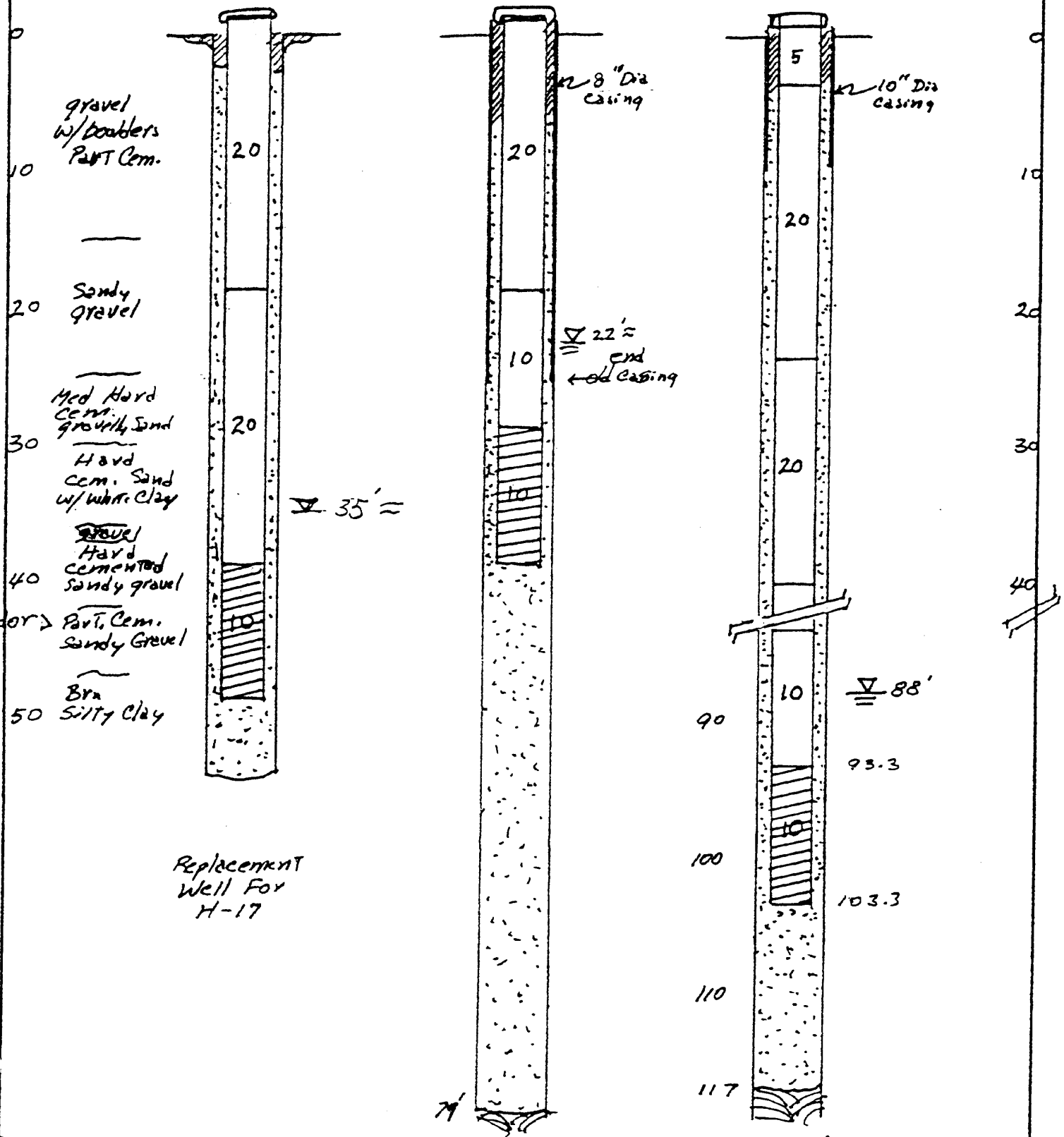


est yield 1.7 gpm
slight odor
salty
clear

BY _____ DATE _____ CLIENT STAUFFER Chem. SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ PROJECT NO. _____

PROJECT Monitor Wells



FORM NO. F-1977A

ConverseWardDavisDixon

SIGNED _____

REG. NO. _____

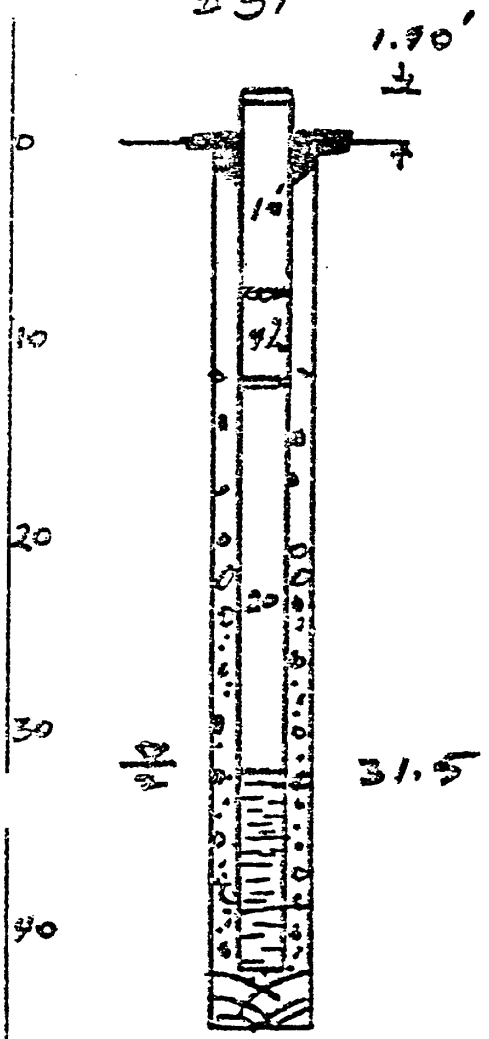
SHEET NO.

BY _____ DATE _____ CLIENT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ _____ PROJECT NO. _____

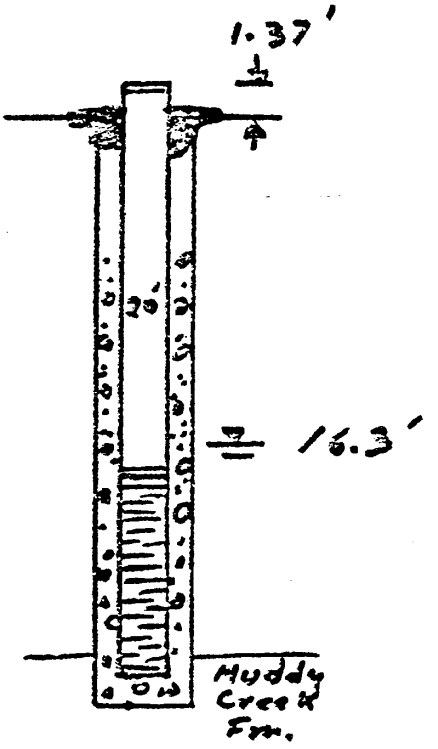
PROJECT _____

#51



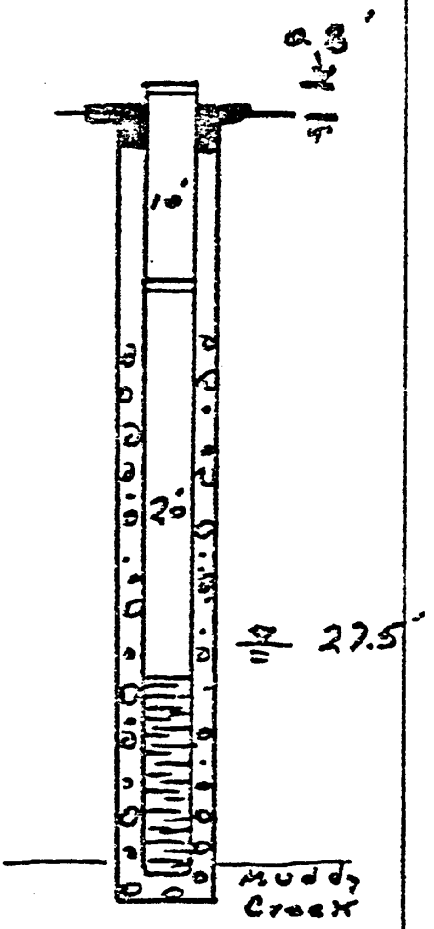
≈ 14.9 PM
drawdown < 1'
Salty
Fairly clear
slight Odor
(less Than when drilled)

#52



≈ 19 PM
No Odor
Fairly clear
little sand

#36



est 1½ gpm +
@ 1' drawdown.

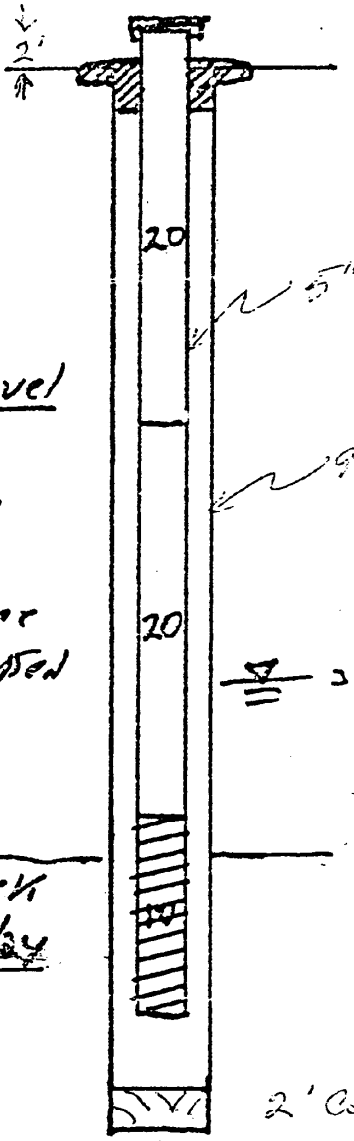
BY _____ DATE _____ CLIENT STAUFFER SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ PROJECT NO. 81-3220

PROJECT MONITOR WELL CONSTRUCTION

H-10 A Replacement Well For H-10

Drilled 10-23-81



0

10

Silty Gravel

20 & Sand

with Zones

of Cobbles

& Thin Zone

30 Partly Cemented

40 Muddy Creek

brn Silty Clay

50

60 Slight odor noted

during development

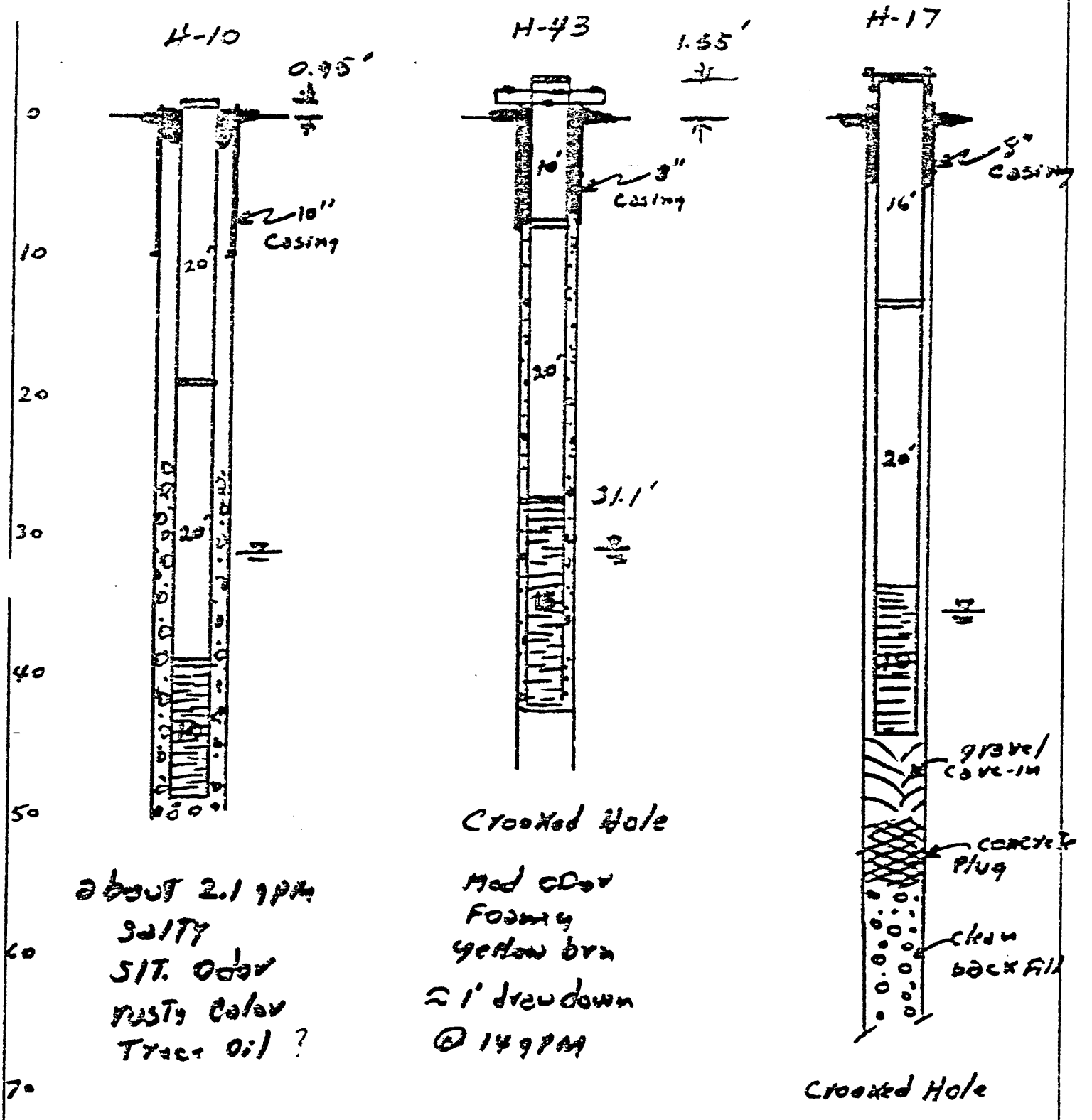
5" ⌀ Casing

9" dia hole

BY _____ DATE _____ CLIENT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ PROJECT NO. _____

PROJECT _____



about 2.1 gpm
salty
slt. odor
rusty color
Trace oil ?

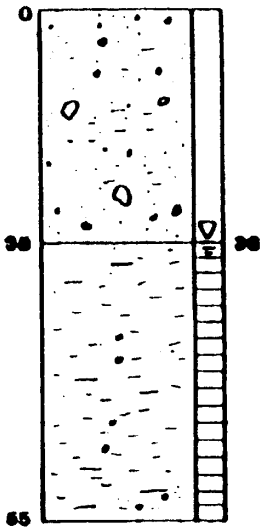
Crooked Hole

Mod odor
Foamy
yellow brn
≈ 1' drawdown
@ 14 gpm

Crooked Hole

bottom at 42.2'
on clay
< 1 gpm

H-10



sand, silty to clayey, greyish-brown, very fine to very coarse, gravel, pebbles, cobbles, and boulders

clay, silty, to silt, clayey, light brown, trace of sand and gravel

Note: Wells H-10 and H-25 are sealed at the surface with cement and gravel packed

WELL LOG

Well No.: H-10

Date Completed: 10/15/79

Project:

Location:

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown, very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel.	0 - 38
Clay, silty, to silt, clayey, light brown; with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation) Notes: water at 38', rose to 32½'; water has organic odor	38 - 55

WELL LOG

Well No.: H-11

Date Completed: 10/18/79

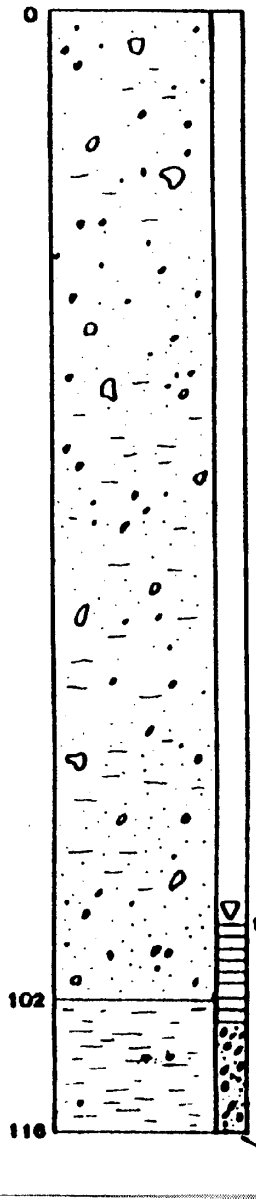
Project:

Location:

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown, very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel.	0 - 30
As above, increase in clayey silt content.	30 - 94
As above, decrease in clayey-silt content.	94 - 102
Clay, silty, to silt, clayey, light brown; with traces of sand and gravel in matrix, also, with occasional thin layers of sand, reworked caliche and caliche (Muddy Creek Formation).	102 - 116

Notes: Water at 94', rose to 90';
no organic odor.

H-11



sand, silty to clayey, greyish-brown, very fine to very coarse, gravel, pebbles, cobbles, and boulders

clay, silty to silt, clayey, light brown, trace sand and gravel

Note: Wells H-11 and H-17R are sealed at the surface with cement and gravel packed

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-12

Date Completed: 10/20/79

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown, very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel. Notes: organic odor at 22' on cutting.	0 - 22
Clay, silty, to silt, clayey, light brown; with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation) Notes: caliche layer 48' - 44'; water at 44', rose to 26'	22 - 55

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-13

Project: Stauffer Chemical Company

Date Completed: 10/26/79

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown, very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles, and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 38
Clay, silty, to silt, clayey, light-brown; with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation) Notes: caliche layers, 80'-86'; water at 80', rose to 65'	38 - 86
Sand, silty, brown, very fine to very coarse (poorly sorted), and gravel (Muddy Creek Formation) Notes: second water zone at 86', water rose to 55'	86 - 88

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-14

Project: Stauffer Chemical Company

Date Completed: 10/25/79

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown, very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Notes: boulders at 6' and 14'; traces of gray sandy clay 15' - 20'	0 - 24
Clay, silty, to silt, clayey, light brown; with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation) Notes: water at 41', rose to 27'	24 - 55

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-15

Project: Stauffer Chemical Company

Date Completed: 2/4/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown, very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 55
Clay, silty, to silt, clayey, light brown; with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation)	55 - 101

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-15

Data Completed: 2/4/80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Split Spoon Samples

Description	Depth Below Land Surface (feet)
15-26-33 blows/6"	71.0 - 72.5
light brown silty clay with caliche fragments	71.0 - 72.0
light brown silt to very fine sand, with some clay and caliche fragments	72.0 - 72.5
45-47-34 blows/6"	81.0 - 82.3
brown clayey silt; and brown sand, very fine to medium, with numerous caliche gravel	81.0 - 82.3
9-15-27 blows/6"	91.0 - 92.5
brown silty clay, with some volcanic gravel	91.0 - 92.5
13-13-21 blows/6"	101.0 - 102.2
brown silty clay, with some caliche gravel	101.0 - 102.2

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-16

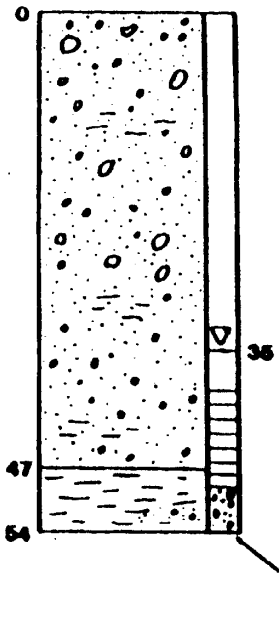
Project: Stauffer Chemical Company

Date Completed: 11/3/79

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown, very fine to very coarse (poorly sorted) and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Notes: trace of brown silty clay with caliche fragments, 15'-28'	0 - 28
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation) Notes: water at 28', rose to 26'	28 - 55

H-17R



sand, silty to clayey, greyish-brown, very fine to very coarse, gravel, pebbles, cobbles, and boulders

clay, silty to silt, clayey, light brown, trace sand and gravel

Note: Wells H-11 and H-17R are sealed at the surface with cement and gravel packed

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-17

Project: Stauffer Chemical Company

Date Completed: 2/7/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles, and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Notes: caliche layers 35'-38'; slight organic odor in cuttings at 38'	0 - 43½
Clay, silty, gray, with caliche 43½'-47'; clay, silty, to silt, clayey, light-brown; with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation)	43½ - 101

Geraghty & Miller, Inc.

WELL LOG

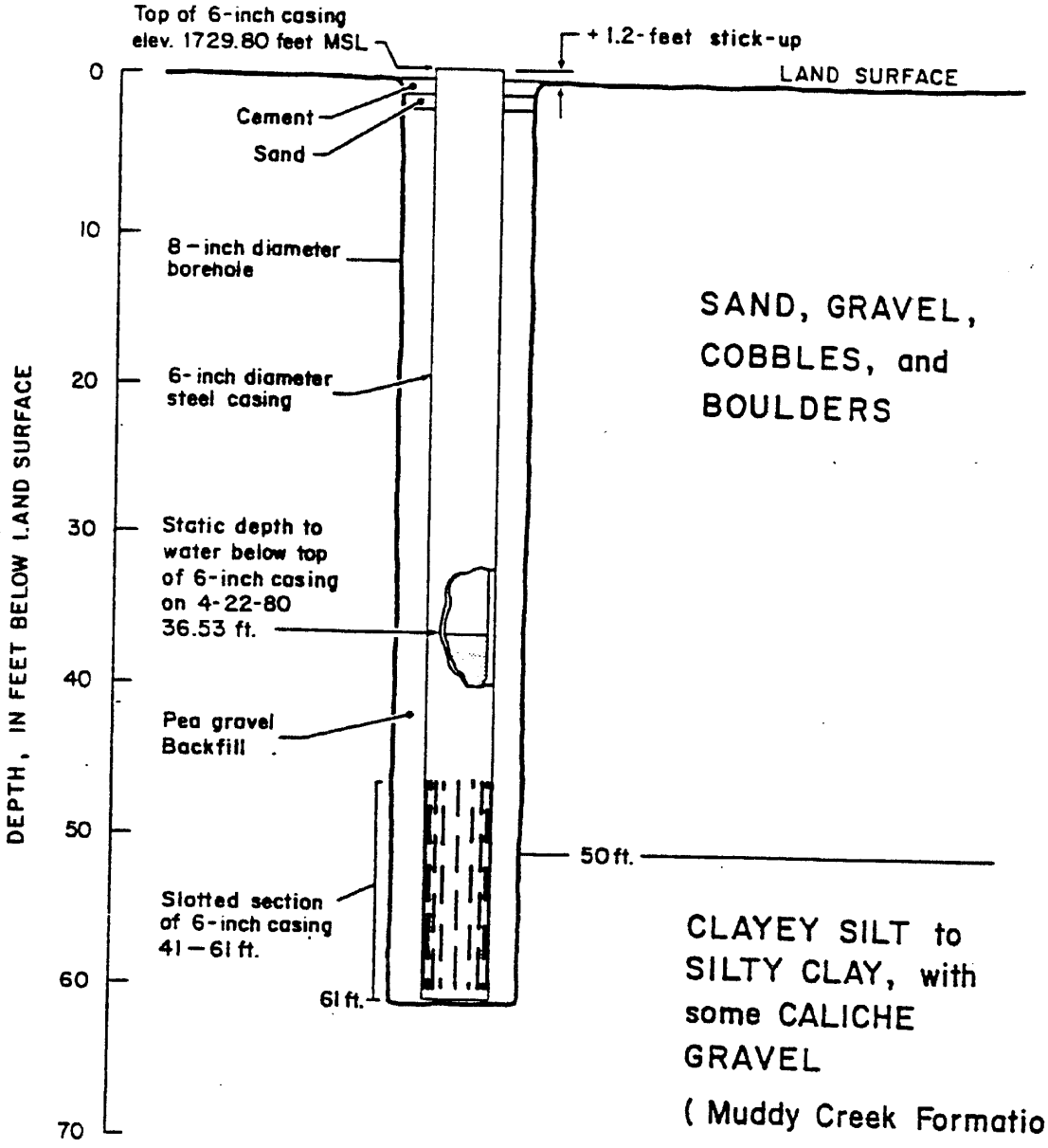
Well No.: H-17 Date Completed: 2/7/80

Project: Stauffer Chemical Company Location: Henderson, Nevada

Split Spoon Samples

Description	Depth Below Land Surface (feet)
49-70 blows/6"	44.5 - 45.5
gray sand, very fine, dense, with some clay and caliche gravel; slight organic odor	44.5 - 45.5
11-22-29 blows/6"	51.0 - 52.5
brown sand, very fine with some silt and clay, and with some small volcanic gravel; no organic odor	
9-13-21 blows/6"	61.0 - 62.5
light brown silty clay	
19-25-35 blows/6"	71.0 - 72.5
white silt, with some clay and very fine to fine sand, dense	71.0 - 71.4
light brown silty clay, with streaks of white silt	71.4 - 72.5
15-30-50 blows/6"	81.0 - 82.5
light brown silty clay, with numerous caliche gravel	81.0 - 82.5
16-20-35 blows/6"	91.0 - 92.5
light brown clayey silt, with numerous caliche fragments	91.0 - 92.5
20-20-32 blows/6"	101.0 - 102.5
light brown silty clay to clayey silt, with some caliche fragments	

WELL H-18



TITLE

CONSTRUCTION DETAILS AND STRATIGRAPHY OF MONITOR WELL H-18

PREPARED FOR

STAUFFER CHEMICAL COMPANY
Henderson Nevada

Geraghty & Miller, Inc.	COMPILED BY M. WARFEL	SCALE SHOWN	FIGURE No.
	PREPARED BY		
	PROJECT MGR. JOHN ISBISTER	DATE JULY 1980	

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-18

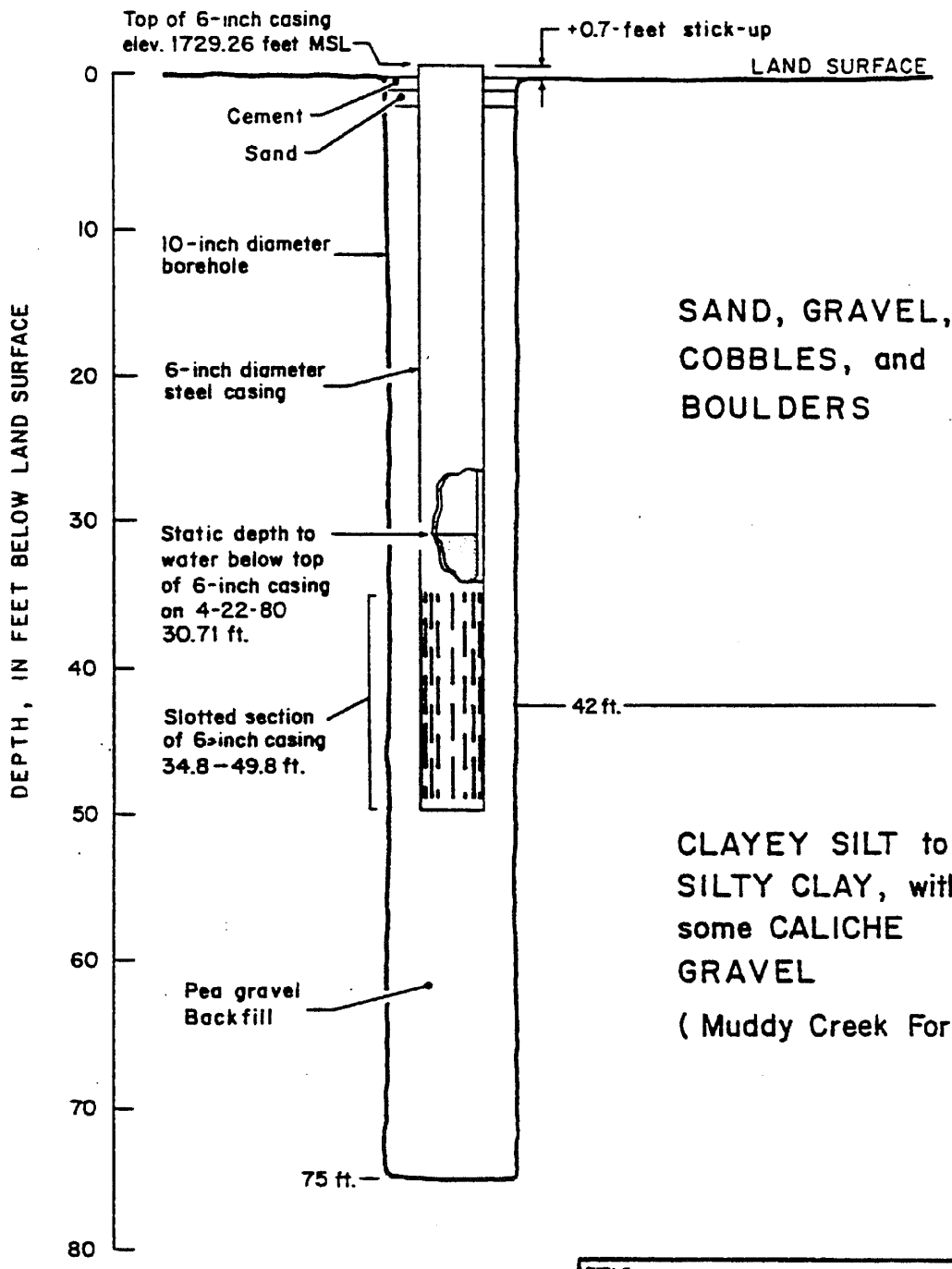
Project: Stauffer Chemical Company

Date Completed: 2/19/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown, very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles, and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Notes: slight organic odor in mud at 40'; becomes moderate by 51'	0 - 51
Clay, silty, gray to white 51'-53'; clay, silty, to silt, clayey, light-brown; with traces of sand and gravel in matrix; also, with occasional thin layers of sand, re-worked caliche, and caliche (Muddy Creek Formation)	51 - 61

WELL H-19



TITLE

CONSTRUCTION DETAILS AND STRATIGRAPHY OF MONITOR WELL H-19

PREPARED FOR

STAUFFER CHEMICAL COMPANY
Henderson Nevada

Geraghty & Miller, Inc.	COMPILED BY M. WARFEL	SCALE SHOWN	FIGURE No.
	PREPARED BY	DATE JULY 1980	
	PROJECT MGR. JOHN ISBISTER		

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-19

Project: Stauffer Chemical Company

Date Completed: 11/30/79

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown, very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 42
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation)	42 - 75

Geraghty & Miller, Inc. WELL LOG

Well No.: H-20 Date Completed: 1/25/80

Project: Stauffer Chemical Company Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Notes: caliche layers, 33'-40'	0 - 41
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation) Notes: white clay and reworked caliche, 77'-78', and 85'-86'	41 - 101

Geraghty & Miller, Inc. WELL LOG

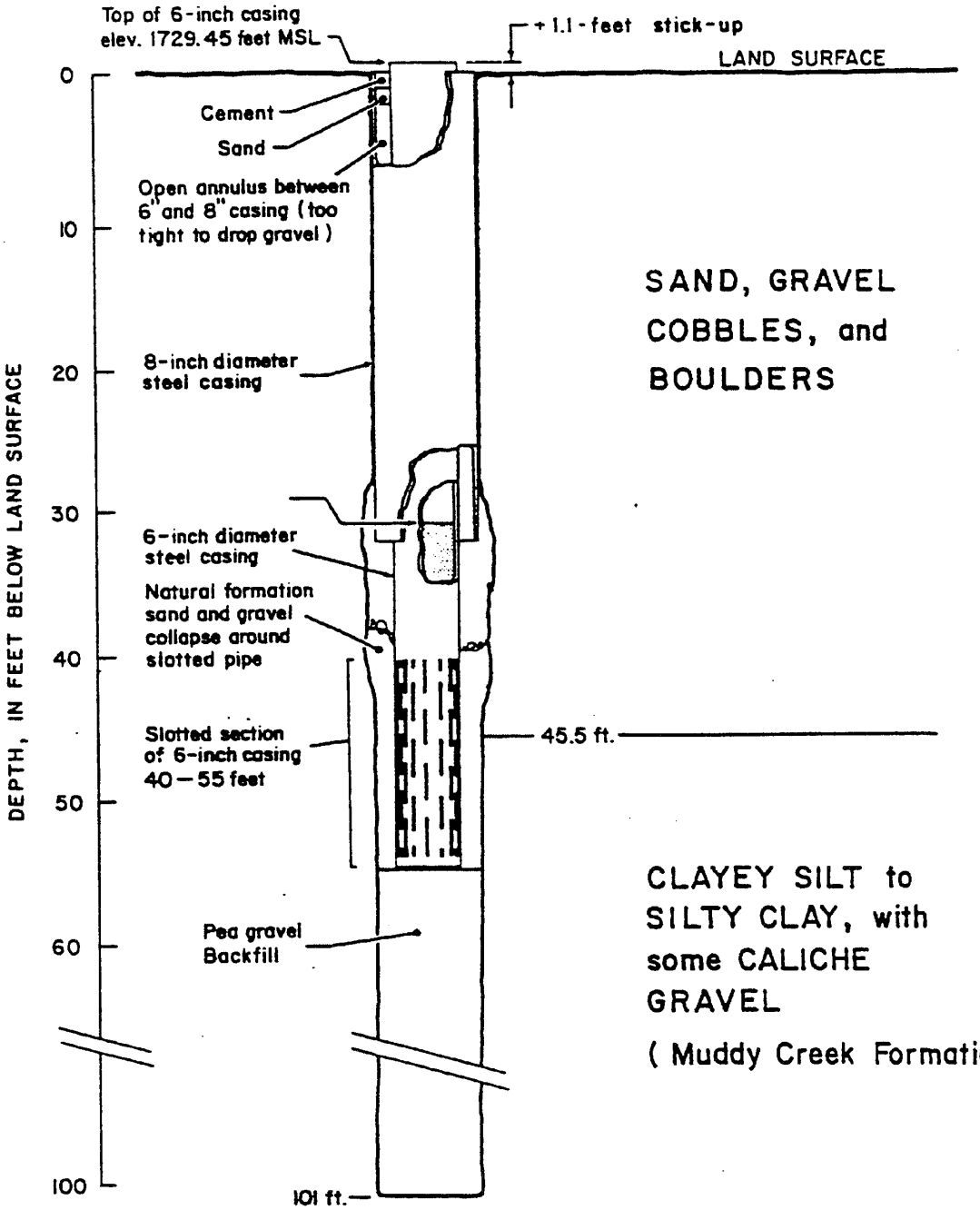
Well No.: H-20 Date Completed: 1/25/80

Project: Stauffer Chemical Company Location: Henderson, Nevada

Split Spoon Samples

Description	Depth Below Land Surface (feet)
drove w/slide hammer no steel blows light brown to white clayey silt, with some fine sand, and with volcanic and caliche gravel	46.0 - 46.3
no split spoon at 51'; difficulty w/ caving	
10-10-12 blows/6" light brown clayey silt, with thin layers of reworked caliche and with occasional angular caliche gravel	61.0 - 62.5
12-12-16 blows/6" light brown sand, very fine, dense light brown clayey silt, with occasional caliche gravel	71.0 - 72.5 71.0 - 71.5 71.5 - 72.5
16-28-45 blows/6" brown sand, very fine, dense, with occasional caliche gravel	81.0 - 82.5
8-10-15 blows/6" brown clayey silt, with occasional caliche gravel	91.0 - 92.5
12-20-22 blows/6" light brown silty clay	101.0 - 102.5

WELL H-21



TITLE

CONSTRUCTION DETAILS AND STRATIGRAPHY OF MONITOR WELL H-21

PREPARED FOR STAUFFER CHEMICAL COMPANY
Henderson Nevada

Geraghty & Miller, Inc.	COMPILED BY M. WARFEL	SCALE SHOWN	FIGURE No.
	PREPARED BY	DATE JULY 1980	
	PROJECT MGR. JOHN ISBISTER		

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-21

Date Completed: 1/29/80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Split Spoon Samples

Description	Depth Below Land Surface (feet)
23-25-25 blows/6"	51.1 - 51.5
brown sand, very fine to fine, with a trace of clay	
35-41-31 blows/6"	61.7 - 62.5
light brown silt, with trace of clay and fine sand	61.7 - 62.2
white to light brown silt and clay (reworked caliche), dense	62.2 - 62.5
10-10-20 blows/6"	71.0 - 72.5
light brown silty clay	
16-18-25 blows/6"	81.0 - 82.5
light brown clayey silt	
13-13-15 blows/6"	91.0 - 92.5
light brown clayey silt, with some sand-sized caliche fragments	
17-32-40 blows/6"	101.0 - 102.5
reddish-brown clayey silt	101.0 - 102.2
caliche, white to buff, dense	102.2 - 102.5

Geraghty & Miller, Inc.

WELL LOG

Well No: H-21

Project: Stauffer Chemical Company

Date Completed: 1/29/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 45½
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation) Notes: thin layers of white silt and clay (reworked caliche), 61'-65', 87', 100'.	45½ - 105

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-22

Project: Stauffer Chemical Company

Date Completed: 3/6/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 44
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation) Notes: Caliche layers 193' - 197'	44 - 231

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-22

Date Completed: 3/6/80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Core Samples

Description	Depth Below Land Surface (feet)
brown sand, fine, clayey, with thin streaks of brown clay; organic odor	45 - 45½
light brown clay, with some fine sand and silt; organic odor present	51 - 51½
light brown silty clay, with numerous fine to coarse caliche fragments; slight organic odor	61 - 61½
light brown sand, very fine, clayey, with streaks of brown clay, and with some caliche fragments; no odor	71 - 71½
as above	81 - 81½
as above	91 - 91½
brown sand, very fine, to silt; clayey, with thin streaks of brown clay	101 - 101½
light brown sandy to silty clay, with occasional thin streaks of caliche	111 - 111½
brown silty clay, with some caliche fragments and a trace of green clay	121 - 121½
brown clayey silt, tightly packed, with some very fine brown sand, and a few caliche fragments	131 - 131½

Geraghty & Miller, Inc. WELL LOG

Well No.: H-22 (continued) Date Completed: 3/6/80

Project: Stauffer Chemical Company Location: Henderson, Nevada

Core Samples

Description	Depth Below Land Surface (feet)
brown sand, very fine, and brown clayey silt, with a few fine to coarse caliche fragments	141 - 141½
brown silty to sandy clay, with numerous caliche fragments	151 - 151½
as above	161 - 161½
as above	171 - 171½
as above	181 - 181½
as above	191 - 191½
as above	201 - 201½
brown clay, with some very fine sand, and a few caliche fragments	211 - 211½
brown silty clay, with numerous caliche fragments	221 - 221½
as above	231 - 231½

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-23

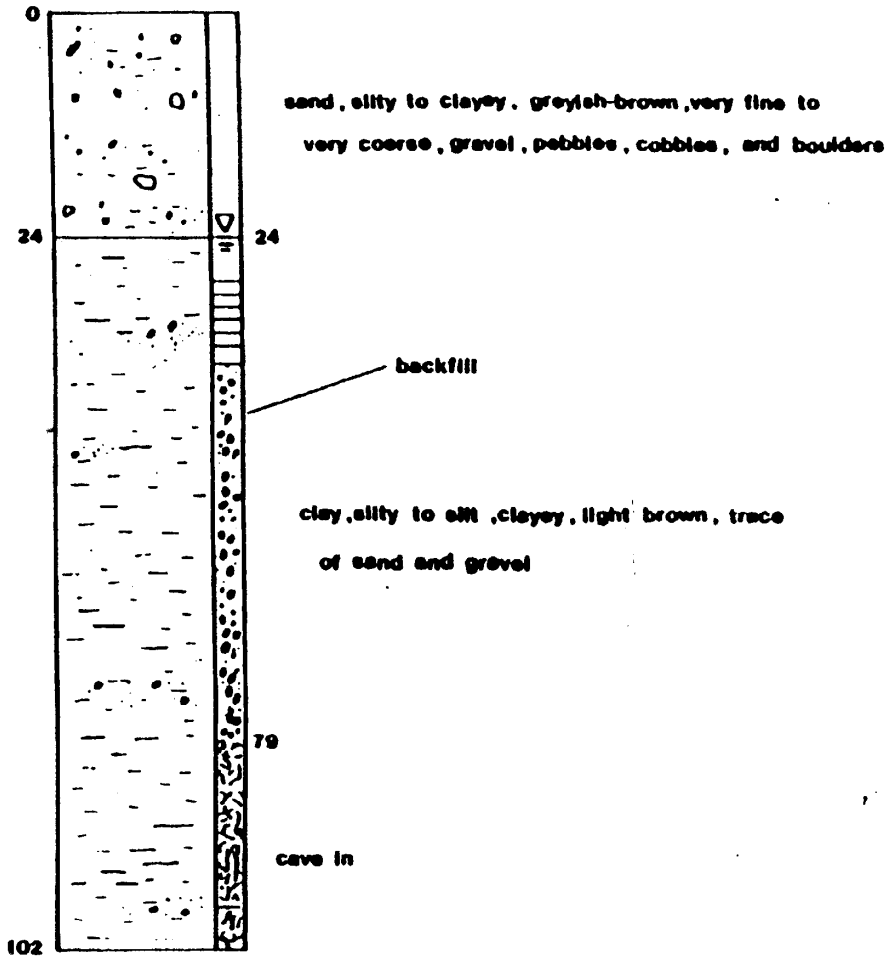
Project: Stauffer Chemical Company

Date Completed: 1/31/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Notes: layers of cemented sand and gravel 27'-29', 31'-34', 40'-41'; organic odor in mud at 37'	0 - 42½
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation) Notes: thin layers of white silt and clay (reworked caliche) at 54'-55', 87', 96'.	42½ - 101

H-25



Note: Wells H-10 and H-25 are sealed at the surface with cement and gravel packed

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-25

Date Completed: 1/11/80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 24
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation)	24 - 102

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-25

Project: Stauffer Chemical Company

Date Completed: 1/11/80

Location: Henderson, Nevada

Split Spoon Samples

Description	Depth Below Land Surface (feet)
7-7-19 blows/6" light brown clayey silt to silty clay, with some caliche gravel	32.0 - 33.5
7-15-36 blows/6" sand, gray, very fine, dense, compacted.	42.0 - 43.5
sand, brown, silty to clayey, very fine, dense, compacted	42.0 - 42.2 42.2 - 43.5
11-13-18 blows/6" light brown clayey silt to silty clay, with some caliche gravel	52.0 - 53.4
7-12-16 blows/6" as above	62.0 - 63.5
5-9-16 blows/6" light brown clayey silt, with some angular volcanic and caliche gravel	72.0 - 73.5
10-14-22 blows/6" as above	82.0 - 83.5
11-14-21 blows/6" light brown clayey silt, with some angular volcanic and caliche gravel	92.0 - 93.5
36-61 blows/6" light brown sandy silt, with some clay and small angular caliche gravel, very dense	102.0 - 103.0

Well No.: H-25

Date Completed: 1/11/80

Project:

Location:

Split Spoon Samples

Description	Depth Below Land Surface (feet)
7-7-19 blows/6" light brown clayey silt to silty clay, with some caliche gravel	32.0 - 33.5
7-15-36 blows/6" sand, gray, very fine, dense, compacted. sand, brown, silty to clayey, very fine, dense, compacted	42.0 - 43.5 42.0 - 42.2 42.2 - 43.5
11-13-18 blows/6" light brown clayey silt to silty clay, with some caliche gravel	52.0 - 53.4
7-12-16 blows/6" as above	62.0 - 63.5
5-9-16 blows/6" light brown clayey silt, with some angular volcanic and caliche gravel	72.0 - 73.5
10-14-22 blows/6" as above	82.0 - 83.5
11-14-21 blows/6" light brown clayey silt, with some angular volcanic and caliche gravel	92.0 - 93.5
36-61 blows/6" light brown sandy silt, with some clay and small angular caliche gravel, very dense	102.0 - 103.0

WELL LOG

Well No.: H-25

Date Completed: 1/11/80

Project:

Location:

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 24
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation)	24 - 102

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-27

Project: Stauffer Chemical Company

Date Completed: 3/13/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 45
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation)	45 - 231

Geraghty & Miller, Inc.

WELL LOGS

Well No.: H-27

Date Completed: 3/13/80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Core Samples

Description	Depth Below Land Surface (feet)
light brown silty clay, with occasional caliche gravel; slight organic odor	51 - 51½
light brown silty clay; no odor	61 - 61½
light brown clayey silt, with occasional caliche gravel and thin laminations of caliche	71 - 71½
light brown clayey silt, with numerous caliche gravel	81 - 81½
white clayey silt to silty clay, and reworked caliche; color change to green at 91½'	91 - 91½
light brown silty clay, with some caliche gravel	101 - 101½
light brown clayey silt, with numerous caliche gravel	111 - 111½
light brown sand, very fine, with some silt, and with small caliche fragments and caliche gravel, packed dry	121 - 121½
light brown silty clay, with some caliche gravel	131 - 131½
light brown silty clay, with numerous caliche gravel	141 - 141½

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-27 (continued)

Date Completed: 3/13/80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Core Samples

Description	Depth Below Land Surface (feet)
light brown silty clay, with numerous caliche gravel	151 - 151½
light brown clayey silt, with caliche gravel and layers of caliche	161 - 161½
as above	171 - 171½
as above	181 - 181½
as above	191 - 191½
as above	201 - 201½
as above	211 - 211½
brown sand, very fine to coarse, with some silt and clay, packed, dry	221 - 221½
light brown clayey silt	231 - 231½

LITHOLOGY LOG

FOR HENDERSON

WELL NO. H-28

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 44½
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation)	44½ - 51

Data from Geraghty and Miller, Inc., October, 1980.

WELL CONSTRUCTION DETAILS

WELL H-28

Depth: 51 feet

Borehole Diameter: 10 inches

Casing Diameter and Type: 6" steel I.D.

Casing Length: 51.7 feet

Top of Casing Eelvation: 1730.33

Screened Interval: 37.4 to 50.5 feet, 6" factory slotted steel well screen

Gravel Pack Interval: 28 to 51.7 feet

Seal Interval: 0-28 feet: cement

Date Completed: 12-18-80

Data from Geraghty and Miller, Inc., 1980.

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-29

Project: Stauffer Chemical Company

Date Completed: 1/14/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 23
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation)	23 - 102

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-29

Project: Stauffer Chemical Company

Date Completed: 1/14/80

Location: Henderson, Nevada

Split Spoon Samples

Description	Depth Below Land Surface (feet)
7-7-19 blows/6"	
fine to very coarse sand, clayey, brown.	32.0 - 32.8
light brown clayey silt to silty clay.	32.0 - 32.2
	32.2 - 32.8
9-15-17 blows/6"	
light brown clayey silt to silty clay, with occasional angular gravel fragment (caliche and volcanic)	42.0 - 43.5
9-12-20 blows/6"	52.0 - 53.2
light brown silty clay to clayey silt, as above	52.0 - 52.6
light brown sand, very fine, dense	52.6 - 53.2
16-20-28 blows/6"	
light brown clayey silt, with occasional angular caliche gravel fragments	62.0 - 63.5
20-24-30 blows/6"	
as above	72.0 - 73.0
10-15-18 blows/6"	
light brown silty clay, with fine to very fine caliche fragments on matrix	82.0 - 83.5
18-23-30 blows/6"	
light brown silty clay, with fine to very fine caliche fragments in matrix	92.0 - 93.5

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-30

Project: Stauffer Chemical Company

Date Completed: 1/17/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 37
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation) Notes: thin layer(s) of white clay and reworked caliche, 52'-62'	37 - 102

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-30

Date Completed: 1/17/80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Split Spoon Samples

Description	Depth Below Land Surface (feet)
8-15-23 blows/6"	46.2 - 47.2
light brown sand, very fine to fine, with some clay.	46.2 - 46.5
light brown silty to sandy clay, with some caliche gravel.	46.5 - 47.2
11-11-25 blows/6"	52.0 - 53.5
light brown silty clay to clayey silt, with occasional piece of volcanic and caliche gravel.	52.0 - 53.5
10-8-10 blows/6"	62.0 - 63.5
as above	
16-18-24 blows/6"	72.0 - 73.5
as above	
13-18-21 blows/6"	82.0 - 83.5
light brown silty to clayey sand.	82.0 - 82.7
light brown clayey silt, with occasional caliche gravel	82.7 - 83.5
12-22-30 blows/6"	92.0 - 93.5
light brown clayey silt, with occasional caliche gravel	
15-24-30 blows/6"	102.0 - 103.2
as above	

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-32

Project: Stauffer Chemical Company

Date Completed: 1/21/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted) and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 38
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation) Notes: caliche layer 59'-60'	38 - 101

Geraghty & Miller, Inc. WELL LOG

Well No.: H-32 Date Completed: 1/21/80

Project: Stauffer Chemical Company Location: Henderson, Nevada

Split Spoon Samples

Description	Depth Below Land Surface (feet)
16-22-30 blows/6" light brown clayey silt, with thin layers of sand, very fine to fine, and with occasional angular volcanic and caliche gravel	45.7 - 46.7
54 blows/18" light brown sand, very fine, dense, with some clay and occasional angular caliche gravel	51.0 - 52.5
54 blows/18" light brown silty clay, with occasional angular claiche and volcanic gravel	61.0 - 62.5
45 blows/18" as above	71.0 - 72.5
50 blows/18" light brown silty clay. light brown clayey sand, dense, with occasional small angular caliche fragments	81.0 - 82.5 81.0 - 82.0 82.0 - 82.5
51 blows/18" light brown silty clay. silty to clayey sand, very fine, dense, with trace of small angular caliche fragments	91.0 - 92.5 91.0 - 91.8 91.8 - 92.5
34 blows/18" light brown clayey silt, with occasional small angular caliche fragments	101.0 - 102.5

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-33

Project: Stauffer Chemical Company

Date Completed: 1/22/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 37
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation)	37 - 101

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-33

Project: Stauffer Chemical Company

Date Completed: 1/22/80

Location: Henderson, Nevada

Split Spoon Samples

Description	Depth Below Land Surface (feet)
51 blows/18"	43.0 - 44.5
light brown sand, fine, with medium to coarse volcanic and caliche gravel.	43.0 - 43.5
light brown silty sand, very fine, dense, with occasional caliche fragments	43.5 - 44.5
30 blows/18"	51.0 - 52.5
light brown silty sand, very fine, dense, with occasional caliche fragments.	51.0 - 52.0
light brown silty clay, with occasional volcanic and caliche gravel.	52.0 - 52.5
100 blows/12" light brown clayey sand, very fine to fine, dense, with volcanic and caliche fragments	61.0 - 62.0
78 blows/18"	71.0 - 72.5
light brown silty sand, very fine, dense, with occasional caliche fragments.	71.0 - 71.5
light brown silty clay.	71.5 - 72.5
63 blows/18" brown silty clay, with caliche gravel, medium to pebble size	81.0 - 82.5
54 blows/18" brown silty clay, with occasional claiche fragments	91.0 - 92.5
57 blows/18" brown silty clay to clayey silt, with some fine sand, and with occasional caliche fragments.	101.0 - 102.5

Geraghty & Miller, Inc.

WELL LOG

Well No: H-34

Project: Stauffer Chemical Company

Date Completed: 12/18/79

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Notes: organic odor in drilling, mud at 38'; sand and gravel layer 43'-44' (lost circulation momentarily)	0 - 44
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation)	44 - 60

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-34

Date Completed: 12/18/79

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Core and Split Spoon Samples

Description	Depth Below Land Surface (feet)
Core sample light brown silty clay to clayey silt	44 - 44½
Split Spoon Sample 22-22-45 blows/6" as above	50 - 51½
Core sample light brown clayey silt, with some caliche fragments	60 - 60½

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-35

Date Completed: 12/19/79

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Note: organic odor in mud at 34'	0 - 35
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation)	35 - 95

Geraghty & Miller, Inc. WELL LOG

Well No.: H-35 Date Completed: 12/19/79

Project: Stauffer Chemical Company Location: Henderson, Nevada

Core and Split Spoon Samples

Description	Depth Below Land Surface (feet)
Core sample light brown clayey silt to silty clay	36 - 36½
Split spoon 6-6-19 blows/6" as above	62.0 - 63.6
Core sample	95 - 95½
Split Spoon 12-19-34 blows/6" gray-green silt, dense, with some caliche fragments.	95½ - 97 95 - 95½
light brown clayey silt	95½ - 97

Geraghty & Miller, Inc. WELL LOG

Well No.: H-36

Project: Stauffer Chemical Company

Date Completed: 12/20/79

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Note: organic odor in mud at 36'	0 - 40
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation) Notes: caliche layers 68'-72'; thin layers of white clay and reworked caliche, 75'-100'	40 - 101

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-36

Date Completed: 12/20/79

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Core and Split Spoon Samples

Description	Depth Below Land Surface (feet)
Core sample light brown silty clay	41.0 - 41.5
Split spoon sample 9-9-13 blows/6" as above	61.0 - 62.6
Core sample light brown clayey silt, with occasional caliche gravel	100.0 - 100.5

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-37

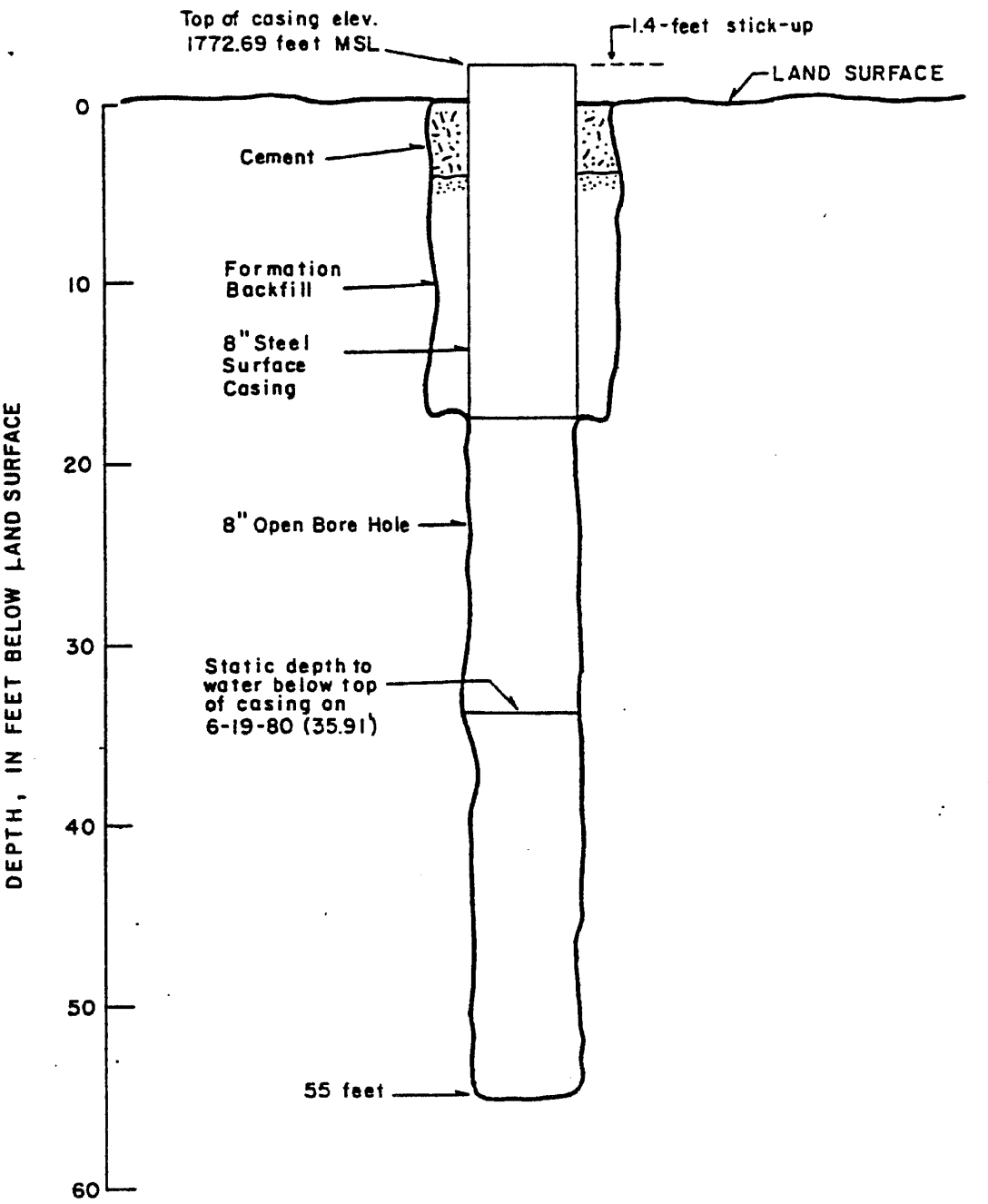
Project: Stauffer Chemical Company

Date Completed: 1/16/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted) and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Notes: caliche layer 16'-18', 23'-25'	0 - 25
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation)	25 - 52

WELL H-38



TITLE

CONSTRUCTION DIAGRAM OF A TYPICAL TEST WELL

PREPARED FOR
STAUFFER CHEMICAL COMPANY
Henderson Nevada

Geraghty & Miller, Inc.	COMPILED BY W. M. WARREN	SCALE SHOWN	FIGURE No.
	PREPARED BY	DATE JULY 1980	
	PROJECT MGR. JOHN ISBISTER		

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-38

Date Completed: 2/11/80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted) and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Notes: caliche layer 18'-19'	0 - 25
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation) Notes: organic odor in cuttings at 35'	25 - 55

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-39

Project: Stauffer Chemical Company

Date Completed: 2/19/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted) and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel .	0 - 43
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation)	43 - 75

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-40

Project: Stauffer Chemical Company

Date Completed: 4/2/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted) and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0 - 40½
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation) Notes: layers of brown to white silty clay and caliche, 45'-50'	40½ - 75

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-41

Project: Stauffer Chemical Company

Date Completed: 4/16/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted) and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Note: caliche layer at 40'; slight organic odor in cuttings at 44½'.	0 - 54
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation)	54 - 75

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-42

Project: Stauffer Chemical Company

Date Completed: 2/22/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted) and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel. Note: caliche layer 42.5-44; organic odor in mud at 41'	0 - 44
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation).	44 - 55

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-42

Date Completed: 2-22-80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Split Spoon Samples

Description	Depth Below Land Surface (feet)
30-31-32 blows/6" light brown clayey silt; organic odor	44.0 - 45.1
light brown clayey silt, with occasional caliche gravel; slight organic odor 55.0-56.1; no organic odor 56.1-56.5	55.0 - 56.5

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-43

Project: Stauffer Chemical Company

Date Completed: 2/27/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Note: caliche layer 43'-45'; organic odor in mud at 45'	0 - 45.5
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation)	45.5 - 55

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-43

Date Completed: 2/27/80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Solit Spoon Samples

Description	Depth Below Land Surface (feet)
10-10-12 blows/6" light brown silty clay, with occasional caliche fragments; organic odor	46.0 - 47.3
7-8-9 blows/6" light brown silty clay to clayey silt, with occasional caliche fragments; thin layer of reworked caliche at 55.0'; no organic odor	55.0 - 56.6

Geraghty & Miller, Inc. WELL LOG

Well No.: H-44

Project: Stauffer Chemical Company

Date Completed: 3/19/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel. Note: caliche layer 38'-41'; slight organic odor in cuttings at 49'	0 - 49½
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation)	49½ - 231

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-44

Date Completed: 3/19/80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Core Samples

Description	Depth Below Land Surface (feet)
light brown silt, hand packed, with some clay; moderate organic odor	51 - 51½
light brown clayey silt to silty clay; no odor	61 - 61½
light brown silty clay, with some subrounded to subangular caliche gravel; moist; no odor	71 - 71½
as above; large gravel fragments in core barrel	81 - 81½
light brown silty clay, with some small caliche fragments	91 - 91½
light brown silty clay	101 - 101½
as above, with some caliche gravel	111 - 111½
light brown clayey silt, with thin laminations and inclusions of reworked caliche and caliche gravel	121 - 121½
as above	131 - 131½
as above	141 - 141½

Geraghty & Miller, Inc. WELL LOG

Well No.: H-44 (continued) Date Completed: 3/19/80

Project: Stauffer Chemical Company Location: Henderson, Nevada

Core Samples

Description	Depth Below Land Surface (feet)
light brown silt to very fine sand, with some clay, and with some caliche gravel	151 - 151½
light brown silty clay, with some caliche gravel	161 - 161½
light brown clayey silt, with caliche gravel fragments and layers of caliche	171 - 171½
as above	181 - 181½
light brown silty clay, with caliche gravel fragments and layers of caliche	191 - 191½
light brown to reddish brown silty clay, with some caliche gravel	201 - 201½
light brown silty clay, with occasional caliche gravel	211 - 211½
light brown clayey silt	221 - 221½
brown sand, very fine to medium, clayey, packed, with cemented layers, dry	231 - 231½

Geraghty & Miller, Inc.

WELL LOG

Well No.: H-46

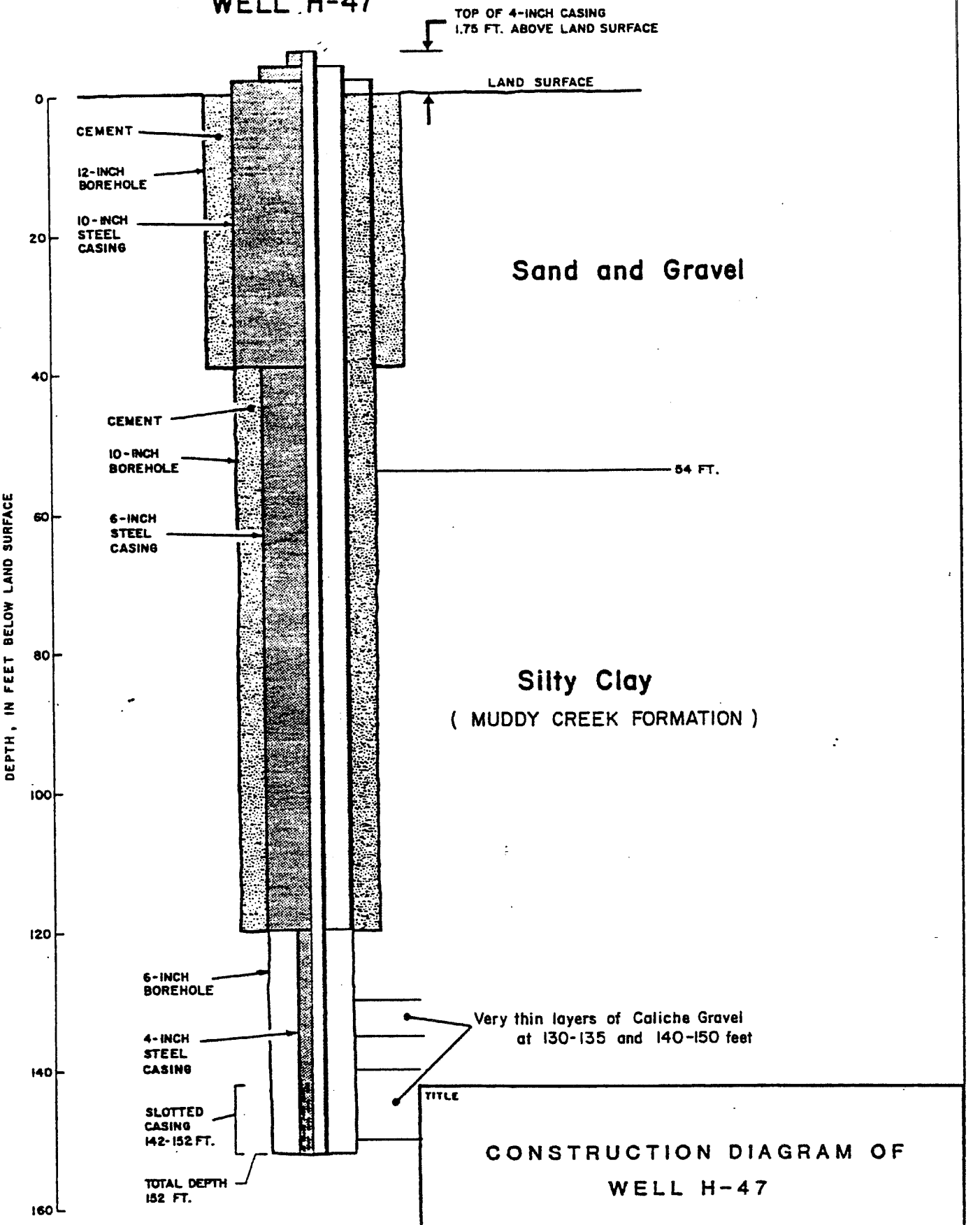
Project: Stauffer Chemical Company

Date Completed: 3/29/80

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel. Note: organic odor in cuttings at 41'	0 - 42
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation)	42 - 51

WELL H-47



TITLE

CONSTRUCTION DIAGRAM OF WELL H-47

PREPARED FOR

STAUFFER CHEMICAL COMPANY

Henderson Nevada

Geraghty & Miller, Inc.	COMPILED BY: BILL WARREN	SCALE: SHOWN	FIGURE No.
	PREPARED BY: WILLIAM H. CICIO	DATE: JULY 1980	
	PROJECT MGR.: JOHN ISBISTER		

453-32P

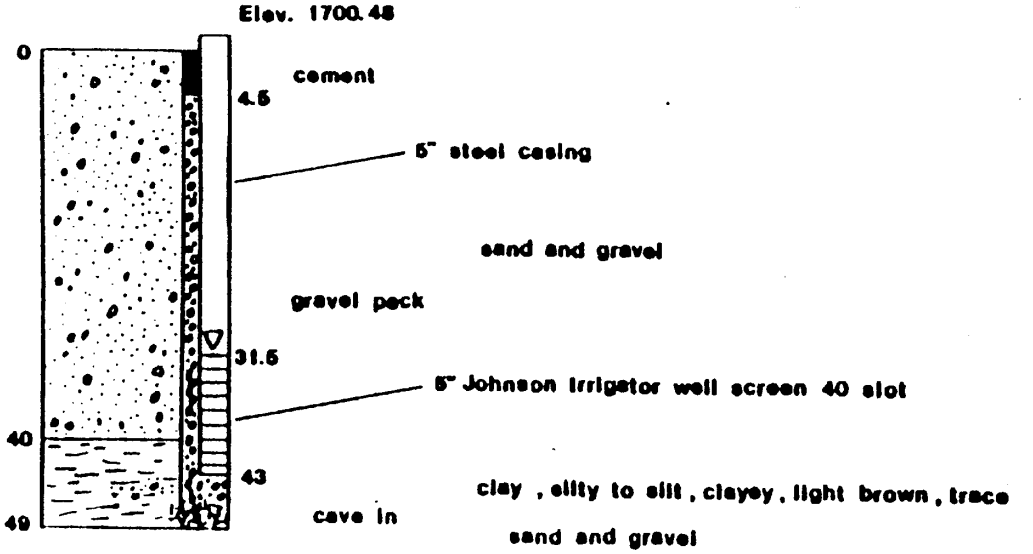
Geraghty & Miller, Inc. WELL LOG

Well No.: H-47 Data Completed: 6/18/80

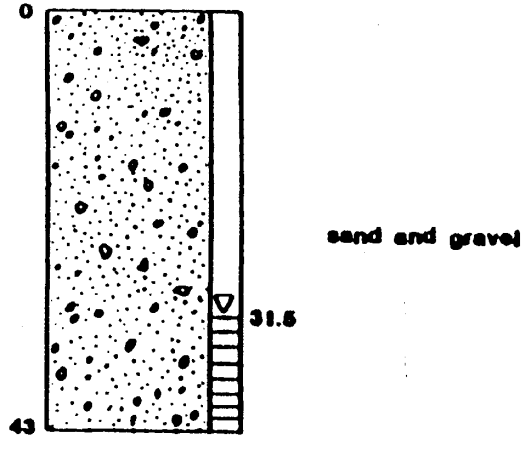
Project: Stauffer Chemical Company Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown, very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles, and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Notes: organic odor in cuttings at 47½'	0 - 54
Clay, silty, to silt, clayey, light-brown; with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation)	54 - 152

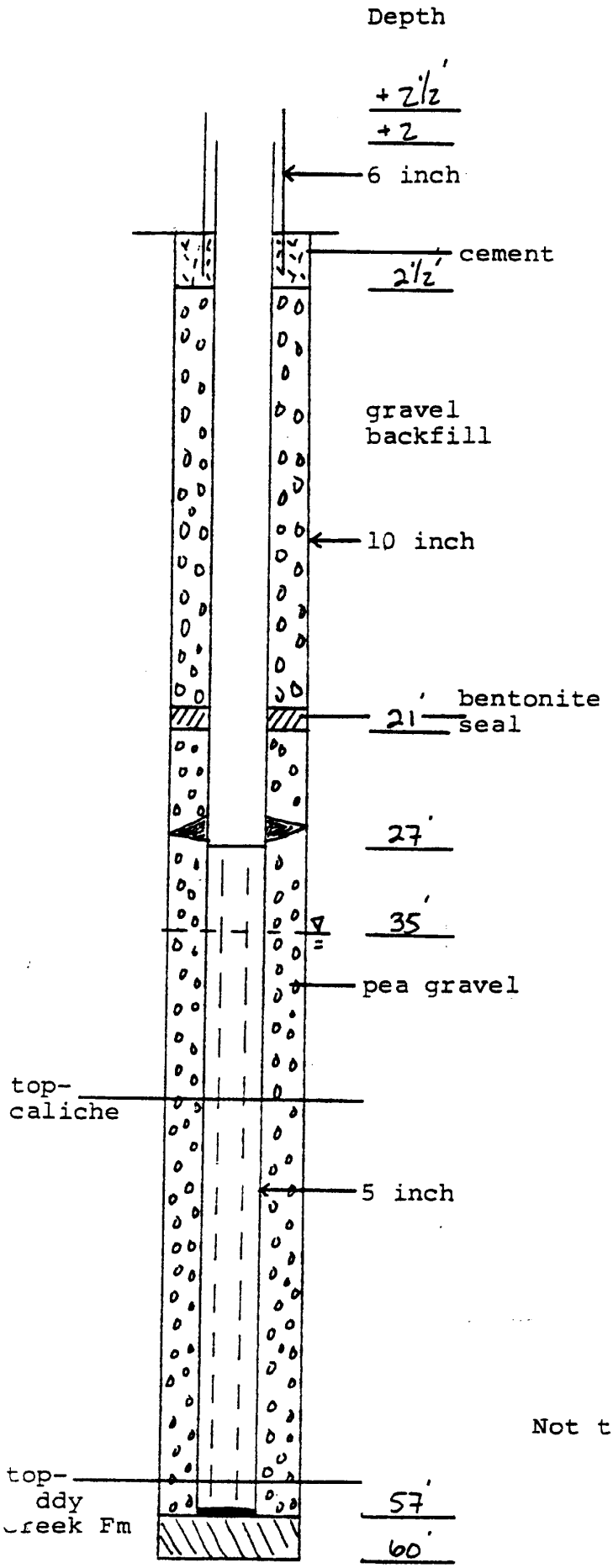
H-50



H-51



Note : Well H-51 is sealed at the surface with cement and gravel packed



Well No: H-58
Henderson

Date installed: 5/31/83

Well casing: steel,
5" ID

Well screen: steel,
5" ID
30' length

Hole diameter: 10"

Drilling method: rotary wash
w/ REVERT

Remarks: T.D.=60',
hole sloughed
to 57'

Muddy Creek Fm at 56'

Top of caliche at 43'

Water level at 35'

Casing installed by
Converse Consultants

Not to scale

Stauffer Chemical Company
Geology Department

Dickerson 6/2/83

MONITOR WELL INVENTORY
KERR-McGEE HENDERSON FACILITY

MONITOR WELL NUMBER	REFERENCE CASING ELEV., MSL	GROUND ELEV., MSL	*CASING STICKUP FT.	*DRILLED WELL DEPTH FT.	**MEASURED WELL DEPTH FT, 6/85 TOC	*SCREENED INTERVAL, FT	CASING TYPE AND SIZE IN.	DATE WELL DRILLED	*DEPTH TO TOP OF MUDDY CREEK FT	ELEV. OF MUDDY CREEK MSL	*DEPTH TO GW FT. 6/85	WATER-TABLE ELEVATION MSL, 6/85	SATURATED AQUIFER THICKNESS FT, 6/85	CHROMIUM CONCENT. mg/l 6/85	GW COND. μmhos/cm^2 6/85	**DEPTH TO WATER, FT TOC, 6/85
H-57	1721.67	1720.17	~1.50	---	---	---	5" steel	---	---	---	---	1688.8	---	---	---	---
H-58	1691.86	1689.56	2.30	---	59.34	---	"	---	56.0	1633.6	32.6	1657.0	23.4	<0.1	---	34.87
MC-1	1730.12	1728.92	1.20	---	43.87	---	2" PVC	---	35.0	1693.9	32.1	1696.9	3.0	---	---	33.25
MC-2	---	1727.0	---	---	---	---	"	---	33.0	1694.0	---	---	---	---	---	---
MC-3	1724.41	1723.81	0.60	---	---	---	"	---	40.0	1683.8	32.6	1691.2	7.4	---	---	33.19
MC-4	---	1718.0	---	---	---	---	"	---	40.0	1678.0	---	---	---	---	---	---
MC-5	1714.45	1713.4	1.05	---	---	---	"	---	36.0	1677.4	26.8	1686.6	9.2	---	---	27.85
MC-6	1710.68	1710.0	0.68	---	---	---	"	---	38.0	1672.0	25.3	1684.7	12.7	---	---	25.98
MC-9	1714.46	1713.6	0.86	---	---	---	"	---	50.0	1663.6	26.4	1687.2	23.6	---	---	27.26
MC-11	1667.2	1662.9	4.30	---	---	---	"	---	10.5	1652.4	4.7	1658.2	5.8	---	---	9.0
MC-15	---	1680.3	---	---	---	---	"	---	59.0	1621.3	---	---	---	---	---	---
MC-16	---	1684.1	---	---	---	---	"	---	48.0	1636.1	---	---	---	---	---	---
MC-17	---	1711.3	---	---	---	---	"	---	61.5	1649.8	---	---	---	---	---	---
MC-18	---	1698.1	---	---	---	---	"	---	57.5	1640.6	---	---	---	---	---	---
MC-19	---	1695.1	---	---	---	---	"	---	42.0	1653.1	---	---	---	---	---	---
MC-20	---	1689.7	---	---	---	---	"	---	29.0	1658.7	---	---	---	---	---	---
MC-26	1716.81	1715.2	1.81	---	---	---	"	---	31.0	1684.2	28.2	1686.8	2.6	---	---	30.01
MC-27	1719.90	1718.4	1.50	---	---	---	"	---	45.0	1673.4	31.0	1687.4	14.0	---	---	32.5
MC-28	1720.50	1719.0	1.50	---	---	---	"	---	49.0	1670.0	31.5	1687.5	17.5	---	---	33.0
MC-29	1722.02	1720.53	1.49	---	49.64	---	"	---	49.0	1671.5	30.5	1690.0	18.5	---	---	32.00
MC-30	1724.13	1722.18	1.95	---	44.46	---	"	---	45.0	1677.2	32.0	1690.2	13.0	---	49,000	33.92
MC-31	1724.53	1723.00	1.53	---	38.66	---	"	---	41.0	1682.0	32.7	1690.4	8.4	---	---	34.18
MC-32	1725.87	1724.77	1.10	---	33.28	---	"	---	33.5	1691.2	31.4	1693.4	2.2	---	10,000	32.47
MC-40	1720.28	1718.86	1.42	---	51.49	---	"	---	51.0	1667.8	30.0	1688.9	21.1	---	---	31.39

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety

PRINT OR TYPE ONLY

OFFICE USE ONLY
Log No.
Permit No.
Basin

NOTICE OF INTENT NO. 8842

OWNER City of Henderson
MAILING ADDRESS 240 Water Street
Henderson, NV 89015

ADDRESS AT WELL LOCATION Waste Water Treatment
Plant #2, MW-2 11
City of Henderson

LOCATION SE ¼ SE ¼ Sec. 6 T. 22 N R. 63 E. Clark County

PERMIT NO. MO-2071 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. TYPE OF WORK
New Well ☒ Recondition ☐
Deepen ☐ Other ☐

4. PROPOSED USE
Domestic ☐ Irrigation ☐ Test ☒ monitor
Municipal ☐ Industrial ☐ Stock ☐

5. TYPE WELL
Cable ☐ Rotary ☒
Other ☐

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
Gravelly Sand		0	10	10
Sand		10	12	2
Gravel		12	14	2
Gravelly Sand	47	14	70	56

Date started 6-27, 19 91
Date completed 6-27, 19 91

7. WELL TEST DATA

Pump RPM	G.P.M.	Draw Down	After Hours Pump

BAILER TEST
G.P.M. ____ Draw down ____ feet ____ hours
G.P.M. ____ Draw down ____ feet ____ hours
G.P.M. ____ Draw down ____ feet ____ hours

8. WELL CONSTRUCTION

Diameter 6 inches Total depth 70 feet
____ inches
____ inches
Casing record PVC
Weight per foot ____ Thickness sch 40

Diameter	From	To
2 inches	0 feet	60 feet
____ inches	____ feet	____ feet
____ inches	____ feet	____ feet
____ inches	____ feet	____ feet
____ inches	____ feet	____ feet
____ inches	____ feet	____ feet

Surface seal: Yes ☒ No ☐ Type cement/Bentonite
Depth of seal 37 38 feet
Gravel packed: Yes ☒ No ☐
Gravel packed from 37 38 feet to 60 feet

Perforations:
Type perforation Factory Slots
Size perforation 0.02"
From 40 feet to 55 feet
From ____ feet to ____ feet
From ____ feet to ____ feet
From ____ feet to ____ feet
From ____ feet to ____ feet

9. WATER LEVEL

Static water level 47 feet below land surface
Flow ____ G.P.M. ____ P.S.I.
Water temperature ____ °F Quality ____

10. DRILLER'S CERTIFICATION

This well was drilled under my supervision and the report is true to the best of my knowledge.

Name KLEINFELDER, INC. (Contractor)
Address 6850 S. Paradise Rd., Las Vegas, NV 89 (Contractor)

Nevada contractor's license number issued by the State Contractor's Board ____

Nevada contractor's driller's number issued by the Division of Water Resources M1591

Nevada driller's license number issued by the Division of Water Resources, the on-site driller ____

Signed Mark P. Drinkard (By driller performing actual drilling on site or contractor)
Date 7/9/91

USE ADDITIONAL SHEETS IF NECESSARY

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY	CHEMICAL ANALYSES FIELD OVA PPM	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
								Compacted native soils, edge of elevated roadway, water levels measured from top of casing
0	Security top						SP	Gravelly sand, (SP), dark brown, top 6 inches dry, moist below top 6 inches drilled with foam to mitigate caving of the borehole some silt
5			0	16				interbedded gravelly sand and sandy gravel, clasts up to 0.75 inches black to brown, coarse sand, loose
10	Solid casing in cement grout							some cementation moist
15							SP	Gravelly sand (SP), brown to black, moist, trace silt, clasts up to 0.75 inches
20								brown to black, moist, clasts up to 1 inch
25								caving
30								brown to black, moist
35	Solid casing in bentonite seal							very moist
40	0.02 inch factory slotted screen in 12 mesh filter pack							Water Table, at 8:00 a.m., 06/27/91
45								
50								

DATE DRILLED: 6-27-91
LOGGED BY: Joseph J. Squire
REVIEWED BY: Todd J. Croft

SURFACE ELEVATION (feet):
TOTAL DEPTH (feet): 70.0
DIAMETER OF BORING: 6.0"

DRILLING METHOD: Air Rotary
SCREEN SIZE: 0.02"
CASING SIZE: 2.0"

KLEINFELDER

PROJECT NUMBER 108521-001 June 1991

LOG OF BORING
H MW-12 MW-12
Waste Water Treatment Plants 1,2 & 3

PLATE 7

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY	CHEMICAL ANALYSES FIELD OVA PPM	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
50	Solid casing with end cap, sediment trap in 12 mesh filter pack		0				SP	Gravelly sand (SP), black to brown, wet, clasts up to 1.5 inches
55							SW	Silty sand (SW/SM), black to brown, trace gravel, wet
60	Borehole collapsed to 58 feet						SP	Gravelly sand (SP), brown to black, wet borehole collapsed to 58 feet
65								
70								
75								
80								
85								
90								
95								
100								
105								

KLEINFELDER

LOG OF BORING
MW-12
(CONT.)

PLATE
7

PROJECT NUMBER 108521-001 June 1991

Waste Water Treatment Plants 1,2 & 3

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

PRINT OR TYPE ONLY
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STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66754
Permit No.
Basin 212

NOTICE OF INTENT NO. 6707

1. OWNER City of Henderson
MAILING ADDRESS 240 Water St. Henderson NV 89015
ADDRESS AT WELL LOCATION Proposed Disposal Expansion Site

2. LOCATION NW ¼ SW ¼ Sec. 5 T. 22 X/S R. 63 E. Clark County
PERMIT NO. MB 403 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☒ Test
☐ Municipal/Industrial ☐ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Auger

6. HMWWT-1 LITHOLOGIC LOG MW-1

Material	Water Strata	From	To	Thickness
GRAVELLY SAND - brn	N	0	40	40
SILTY CLAY - red-brn	N	40	53	13
CLAYEY SAND - red-brn	Y	53	66	13

RECEIVED
JUL 20 1992
Div. of Water Resources
Branch Office - Las Vegas, NV

Date started 4/16, 1991
Date completed 4/16, 1991

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

	G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
N/A			

8. WELL CONSTRUCTION
Depth Drilled 66 Feet Depth Cased 66 Fe

HOLE DIAMETER BIT S.

	From	
6 Inche	0 eet	Feet
Inches	Feet	Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2"		sch 40 PVC	0	66

Perforations:
Type perforation slotted screen
Size perforation .020
From 66 feet to 51 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 50
Placement Method: ☐ Pumped ☒ Poured
Seal Type: ☐ Neat Cement ☒ Cement Grou ☐ Concrete Gro

Gravel Packed: ☒ Yes ☐ No
From 66 feet to 50 feet

9. WATER LEVEL
Static water level 52.2 feet below land surfa
Artesian flow — G.P.M. P.S.
Water temperature °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to t best of my knowledge.
Name WT Environmental Consultants Contractor
Address 4085 Nevso Dr #G Contractor
LV NV 89103
Nevada contractor's license number issued by the State Contractor's Board
Nevada driller's license number issued by the Division of Water Resources, the on-site driller M1761
Signed By driller performing actual drilling on site or contractor
Date 7-30-92

HMWWT-1

(Rev. 3-91) USE ADDITIONAL SHEETS IF NECESSARY (01-627)

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66755
Permit No.
Basin 212

NOTICE OF INTENT NO. 8708

1. OWNER City of Henderson
MAILING ADDRESS 240 Water St Henderson NV 89015
ADDRESS AT WELL LOCATION Proposed Disposal Expansion Site

2. LOCATION SE ¼ SE ¼ Sec. 6 T. 22 X S R. 63 E. Clark County
PERMIT NO. M/O 403 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☒ Test
☐ Municipal/Industrial ☐ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Auger

MW-2

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
GRAVELLY SAND - brn	N	0	35	35
SILTY CLAY - w/gypsum red brn	Y	35	47	12

RECEIVED
JUL 20 1992
Div. of Water Resources
Branch Office - Las Vegas, NV

Date started 4/16 1991
Date completed 4/16 1991

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
N/A		

8. WELL CONSTRUCTION
Depth Drilled 47 Feet Depth Cased 47 Feet

HOLE DIAMETER (BIT SIZE)

	From	To
Inches C	Feet	17 Feet
Inches	Feet	Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2		sch 40 PVC	0	47

Perforations:
Type perforation slotted screen
Size perforation .020"
From 47 feet to 32 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 31
Placement Method: ☐ Pumped ☒ Poured
Seal Type: ☐ Neat Cement ☒ Cement Grout ☐ Concrete Grout

Gravel Packed: ☒ Yes ☐ No
From 47 feet to 31 feet

9. WATER LEVEL
Static water level 33.5 feet below land surface
Artesian flow G.P.M. P.S.
Water temperature °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name LT Environmental Consultants (Contractor)
Address 4085 Nexus Dr #6 (Contractor)
LV NV 89103
Nevada contractor's license number issued by the State Contractor's Board
Nevada driller's license number issued by the Division of Water Resources, the on-site driller M1761
Signed (By driller performing actual drilling on site or contractor)
Date 7-30-91

(Rev. 3-91) USE ADDITIONAL SHEETS IF NECESSARY (01-627)

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

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STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66761
Permit No.
Basin 212

NOTICE OF INTENT NO. 8709

1. OWNER City of Henderson
MAILING ADDRESS 240 Water St Henderson NV 89015
ADDRESS AT WELL LOCATION Proposed Disposal Expansion Site

2. LOCATION NW ¼ NE ¼ Sec. 7 T. 22 ☒S R. 63 E. Clark County
PERMIT NO. MO 403 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☒ Test
☐ Municipal/Industrial ☐ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Auger

6. LITHOLOGIC LOG MW-3

Material	Water Strata	From	To	Thickness
GRAVELLY SAND - brn	N	0	35	35
SANDY CLAY - red brn	Y	35	48.5	13.5

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Div. of Water Resources
Branch Office - Las Vegas, NV

Date started 4/17 1991
Date completed 4/17 1991

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
N/A		

8. WELL CONSTRUCTION
Depth Drilled 48.5 Feet Depth Cased 48.5 Feet

BORE HOLE DIAMETER (FT SIZE)

	From	To
Inches	0	48 Feet
Inches		Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2		sch 40 PVC	0	48.5

Perforations:
Type perforation slotted screen
Size perforation .020 inch
From 48.5 feet to 33.5 feet
From ____ feet to ____ feet
From ____ feet to ____ feet
From ____ feet to ____ feet
From ____ feet to ____ feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 32.5
Placement Method: ☐ Pumped ☒ Poured
Seal Type: ☐ Neat Cement ☒ Cement Grout ☐ Concrete Grout

Gravel Packed: ☒ Yes ☐ No
From 32.5 feet to 48.5 feet

9. WATER LEVEL
Static water level 36.5 feet below land surface
Artesian flow ____ G.P.M. ____ P.S.
Water temperature ____ °F Quality ____

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name LT Environmental Consultants (Contractor)
Address 4055 Nevso Dr #6 (Contractor)
LV NV 89103
Nevada contractor's license number issued by the State Contractor's Board ____
Nevada driller's license number issued by the Division of Water Resources, the on-site driller M1761
Signed ____ (By driller performing actual drilling on site or contractor)
Date 4-30-91

HMWWT-3

(Rev. 3-91) USE ADDITIONAL SHEETS IF NECESSARY (01-627)

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

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STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66762
Permit No.
Basin 212

NOTICE OF INTENT NO. 8710

1. OWNER City of Henderson
MAILING ADDRESS 240 Water St
Henderson NV 89015

ADDRESS AT WELL LOCATION Proposed Disposal Expansion Site

2. LOCATION NE ¼ NW ¼ Sec. 7 T. 22 S R. 63 E. Clark County
PERMIT NO. W/O 303
Issued by Water Resources
Parcel No.
Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☒ Test
☐ Municipal/Industrial ☐ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Auger

6. LITHOLOGIC LOG MW-4

Material	Water Strata	From	To	Thickness
GRAVELY SAND - brn	N	0	30	30
SILTY CLAY - redbr	N	30	40	10
SANDY CLAY - redbr	Y	40	51	11

HMWWT-4

Date started 4/17, 1991
Date completed 4/17, 1991

7. WELL TEST DATA

TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
N/A		

8. WELL CONSTRUCTION

Depth Drilled 51 Feet Depth Cased 51 Feet

HOLE DIAMETER (BIT SIZE)

	From	To
6 Inches	0 Feet	51 Feet
Inches	Feet	Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2		sch 40 PVC	0	51

Perforations:
Type perforation slotted screen
Size perforation .020 inch
From 51 feet to 36 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 35
Placement Method: ☐ Pumped ☒ Poured

Seal Type:
☐ Neat Cement
☒ Cement Grout
☐ Concrete Grout

Gravel Packed: ☐ Yes ☐ No
From 35 feet to 51 feet

9. WATER LEVEL

Static water level 43.3 feet below land surface
Artesian flow G.P.M. P.S.I.
Water temperature °F Quality

10. DRILLER'S CERTIFICATION

This well was drilled under my supervision and the report is true to the best of my knowledge.

Name WT Environmental Consultants
Contractor
Address 4085 Nevso Dr #6
Contractor
LV NV 89103

Nevada contractor's license number issued by the State Contractor's Board

Nevada driller's license number issued by the Division of Water Resources, the on-site driller M761

Signed [signature]
By driller performing actual drilling on site or contractor
Date 4-30-91

(Rev. 3-91)

USE ADDITIONAL SHEETS IF NECESSARY

01-627

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

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STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66763
Permit No.
Basin 212

NOTICE OF INTENT NO. 8711

1. OWNER City of Henderson
MAILING ADDRESS 240 Water St Henderson NV 89015
ADDRESS AT WELL LOCATION Proposed Disposal Expansion Site

2. LOCATION SW ¼ NW ¼ Sec. 7 T. 22 ☒S R. 63 E. Clark County
PERMIT NO. MW 403 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☒ Test
☐ Municipal/Industrial ☐ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Auger

6. LITHOLOGIC LOG MW-5

Material	Water Strata	From	To	Thickness
GRAVELLY SAND - brn	N	0	18	18
SILTY CLAY - red-brn	N	18	35	17
GLAYEY SAND - red-brn	Y	35	47	12

RECEIVED
JUL 20 1992
Div. of Water Resources
Branch Office - Las Vegas, NV

Date started 4/16 1991
Date completed 4/16 1991

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

	G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
N/A			

8. WELL CONSTRUCTION
Depth Drilled 47 Feet Depth Cased 47 Feet

HOLE DIAMETER (BIT SIZE)

	From	To
6 Inches	0 Feet	47 Feet
Inches	Feet	Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2		sch 40 PVC	0	47

Perforations:
Type perforation slotted screen
Size perforation .020 inch
From 47 feet to 32 feet
From ____ feet to ____ feet
From ____ feet to ____ feet
From ____ feet to ____ feet
From ____ feet to ____ feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 31
Placement Method: ☐ Pumped ☒ Poured
Seal Type: ☐ Neat Cement ☒ Cement Grout ☐ Concrete Grou

Gravel Packed: ☒ Yes ☐ No
From 31 feet to 47 feet

9. WATER LEVEL
Static water level 34.1 feet below land surface
Artesian flow ____ G.P.M. ____ P.S.I.
Water temperature ____ °F Quality ____

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name LST Environmental Consultants (Contractor)
Address 4055 N. Nellis Dr #6 (Contractor)
LV NV 89103
Nevada contractor's license number issued by the State Contractor's Board ____
Nevada driller's license number issued by the Division of Water Resources, the on-site driller M1761
Signed ____ (By driller performing actual drilling on site or contractor)
Date 4-30-91

HMWWT-5

(Rev. 3-91)

USE ADDITIONAL SHEETS IF NECESSARY

01-627

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
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STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66787
Permit No.
Basin 212

NOTICE OF INTENT NO. 8712

1. OWNER City of Henderson
MAILING ADDRESS 240 Water St Henderson NV 89015
ADDRESS AT WELL LOCATION Proposed Disposal Expansion Site

2. LOCATION NE ¼ NW ¼ Sec. 8 T. 22 S R. 63 E. Clark County
PERMIT NO. M/6 403 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☒ Test
☐ Municipal/Industrial ☐ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Auger

6. LITHOLOGIC LOG MW-6

Material	Water Strata	From	To	Thickness
GRAVELLY SAND - brn	N	0	30	30
SILTY CLAY - red brn	N	30	41	11
SANDY CLAY - red brn	Y	41	51	10

MW-6

RECEIVED
JUL 20 1992
Div. of Water Resources
Branch Office - Las Vegas, NV

Date started 4/18, 1991
Date completed 4/18, 1991

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
NA		

8. WELL CONSTRUCTION
Depth Drilled 51 Feet Depth Cased 51 Feet

HOLE DIAMETER (BIT SIZE)

		To
6 Inches	Feet	51
Inches	Feet	
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2		sch 40 PVC	0	51

Perforations:
Type perforation slotted screen
Size perforation .020 inch
From 51 feet to 36 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 35
Placement Method: ☐ Pumped ☒ Poured
Seal Type: ☐ Neat Cement ☒ Cement Grout ☐ Concrete Grou

Gravel Packed: ☒ Yes ☐ No
From 35 feet to 51 feet

9. WATER LEVEL
Static water level 41.0 feet below land surfac
Artesian flow G.P.M. P.S.I
Water temperature °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to th best of my knowledge.
Name WT Environmental Consultants (Contractor)
Address 4085 Nato Dr #6 (Contractor)
LV NV 89103
Nevada contractor's license number issued by the State Contractor's Board
Nevada driller's license number issued by the Division of Water Resources, the on-site driller M1761
Signed (By driller performing actual drilling on site or contractor)
Date 4-30-9

(Rev. 3-91) USE ADDITIONAL SHEETS IF NECESSARY (01-627)

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

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DO NOT WRITE ON BACK

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE O
Log No. 66757
Permit No.
Basin 212

NOTICE OF INTENT NO.

1. OWNER City of Henderson
MAILING ADDRESS 240 Water St
Henderson NV 89015
ADDRESS AT WELL LOCATION Proposed Disposal Expansion Site

2. LOCATION NE ¼ NE ¼ Sec. 7 T 22 S R 63 E Clark
PERMIT NO. MO 403 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☒ Test
☐ Municipal/Industrial ☐ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RV
☐ Air ☒ Other Auger

6. LITHOLOGIC LOG MW-7

Material	Water Strata	From	To	Thickness
GRAVELLY SAND - brn	N	0	45	45
SILTY CLAY - red brn	N	45	50	5
CLAYEY SAND - red brn	Y	50	56	6

RECEIVED
JUL 20 1992
Div. of Water Resources
Branch Office - Las Vegas, NV

Date started 4/17, 1991
Date completed 4/17, 1991

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
N/A		

8. WELL CONSTRUCTION
Depth Drilled 56 Feet Depth Cased 56 Fe

HOLE DIAMETER (CASING SIZE)

From	To
6 Inches	56 Feet
Inches	Feet
Inches	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2		sch 40 PVC	0	56

Perforations:
Type perforation slotted screen
Size perforation .020 inch
From 56 feet to 41 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 40
Placement Method: ☐ Pumped ☒ Poured
Seal Type: ☐ Neat Cement ☒ Cement Grout ☐ Concrete Grou
Gravel Packed: ☒ Yes ☐ No
From 40 feet to 56 feet

9. WATER LEVEL
Static water level 47.0 feet below land surface
Artesian flow G.P.M. P.S.I.
Water temperature °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name LT Environmental Consultants (Contractor)
Address 4055 Nexus Dr #G (Contractor)
LV NV 89103
Nevada contractor's license number issued by the State Contractor's Board
Nevada driller's license number issued by the Division of Water Resources, the on-site driller M1761
Signed (By driller performing actual drilling on site or contractor)
Date 4-30-91

MW-7

(Rev. 1-91)

USE ADDITIONAL SHEETS IF NECESSARY

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WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

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STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66758
Permit No.
Basin 212

NOTICE OF INTENT NO. 8714

1. OWNER City of Henderson
MAILING ADDRESS 240 Water St Henderson NV 89015
ADDRESS AT WELL LOCATION Proposed Disposal Expansion Site

2. LOCATION SW ¼ NE ¼ Sec. 7 T 22 S R 63 E Clark Count
PERMIT NO. M/D 403 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☒ Test
☐ Municipal/Industrial ☐ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Auger

6. LITHOLOGIC LOG MW-8

Material	Water Strata	From	To	Thickness
GRAVELLY SAND- brn	N	0	50	50
SILTY CLAY- red brn	N	50	61	16
SANDY CLAY- red brn	N	61	71	10

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Date started 4/15, 1991
Date completed 4/15, 1991

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

	G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
N/A			

8. WELL CONSTRUCTION
Depth Drilled 71 Feet Depth Cased 71 Fee

HOLE DIAMETER (B

	From		
6 Inches	0	t	71 Feet
Inches	Fee		Feet
Inches	Feet		Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2		sch 40 PVC	0	71

Perforations:
Type perforation slotted screen
Size perforation .020 incl
From 71 feet to 56 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 55
Placement Method: ☐ Pumped ☒ Poured
Seal Type: ☐ Neat Cement ☒ Cement Grout ☐ Concrete Grou

Gravel Packed: ☒ Yes ☐ No
From 55 feet to 71 feet

9. WATER LEVEL
Static water level 62.1 feet below land surfac
Artesian flow G.P.M. P.S.I
Water temperature °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to th best of my knowledge.
Name WT Environmental Consultants (Contractor)
Address 4885 Nevso Dr #6 (Contractor)
LV NV 89103
Nevada contractor's license number issued by the State Contractor's Board
Nevada driller's license number issued by the Division of Water Resources, the on-site driller M1761
Signed (By driller performing actual drilling on site or contractor)
Date 4-30-92

HMWNT-8

(Rev. 3-91)

USE ADDITIONAL SHEETS IF NECESSARY

(01-627)

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66759
Permit No.
Basin 212

NOTICE OF INTENT NO. 8715

1. OWNER City of Henderson
MAILING ADDRESS 240 Water St
Henderson NV 89005

ADDRESS AT WELL LOCATION Proposed Disposal Expansion Site

2. LOCATION NW ¼ SW ¼ Sec. 7 T. 22 S R. 63 E. Clark County
PERMIT NO. M/0403 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☒ Test
☐ Municipal/Industrial ☐ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Auger

6. LITHOLOGIC LOG MW-9

Material	Water Strata	From	To	Thickness
GRAVELLY SAND- brn	N	0	39	39
SILTY CLAY- mdbn	N	39	45	6
CLAYEY SAND- mdbn	Y	45	55	10

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Div. of Water Resources
Branch Office - Las Vegas, NV

Date started 4/18, 1991
Date completed 4/19, 1991

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
N/A		

8. WELL CONSTRUCTION
Depth Drilled 55 Feet Depth Cased 55 Feet

DRILL HOLE DIAMETER (BIT SIZE)
From
6 Inches 0 Feet ___ Feet
___ Inches ___ Feet ___ Feet
___ Inches ___ Feet ___ Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2		sch 40 PVC	0	55

Perforations:
Type perforation slotted screen
Size perforation .020 inch
From 55 feet to 40 feet
From ___ feet to ___ feet
From ___ feet to ___ feet
From ___ feet to ___ feet
From ___ feet to ___ feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 39
Placement Method: ☐ Pumped ☒ Poured
Seal Type: ☐ Neat Cement ☒ Cement Grout ☐ Concrete Grou

Gravel Packed: ☒ Yes ☐ No
From 39 feet to 55 feet

9. WATER LEVEL
Static water level 44.1 feet below land surface
Artesian flow ___ G.P.M. ___ P.S.I.
Water temperature ___ °F Quality ___

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name LST Environmental Consultants (Contractor)
Address 4085 Nelso Dr #G (Contractor)
LV NV 89103
Nevada contractor's license number issued by the State Contractor's Board ___
Nevada driller's license number issued by the Division of Water Resources, the on-site driller M1761
Signed ___ (By driller performing actual drilling on site or contractor)
Date 4-30-91

HMWWT-7

(Rev. 3-91)

USE ADDITIONAL SHEETS IF NECESSARY

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PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 66760
Permit No.
Basin 212

NOTICE OF INTENT NO. 8729

1. OWNER City of Henderson
MAILING ADDRESS 240 Water St Henderson NV 89015
ADDRESS AT WELL LOCATION Proposed Disposal Expansion Site

2. LOCATION NW ¼ NW ¼ Sec. 7 T 22 S R 63 E Clark County
PERMIT NO. M/O 403 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☒ Test
☐ Municipal/Industrial ☐ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Auger

6. LITHOLOGIC LOG MW-10A

Material	Water Strata	From	To	Thickness
GRAVELLY SAND-brn	N	0	40	40
SANDY CLAY-red brn	Y	40	54	14

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HMWWT-10

8. WELL CONSTRUCTION
Depth Drilled 54 Feet Depth Cased 54 Feet

HOLE DIAMETER (BIT SIZE)

	From	To
4 Inches	0 Feet	54 Feet
Inches	Feet	Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2		sch 40 PVC	0	54

Perforations:
Type perforation slotted screen
Size perforation .020 inch
From 54 feet to 39 feet
From ____ feet to ____ feet
From ____ feet to ____ feet
From ____ feet to ____ feet
From ____ feet to ____ feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 38
Placement Method: ☐ Pumped ☒ Poured
Seal Type: ☐ Neat Cement ☒ Cement Grout ☐ Concrete Grout

Gravel Packed: ☒ Yes ☐ No
From 38 feet to 54 feet

9. WATER LEVEL
Static water level 39.9 feet below land surface
Artesian flow ____ G.P.M. ____ P.S.I.
Water temperature ____ °F Quality ____

Date started 4/19, 1991
Date completed 4/19, 1991

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
N/A		

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name WT Environmental Consultants (Contractor)
Address 4085 N. Nevada Dr. #6
LV NV 89103 (Contractor)
Nevada contractor's license number issued by the State Contractor's Board ____
Nevada driller's license number issued by the Division of Water Resources, the on-site driller M 1761
Signed ____ (By driller performing actual drilling on site or contractor)
Date 4-30-91

(Rev. 3-91)

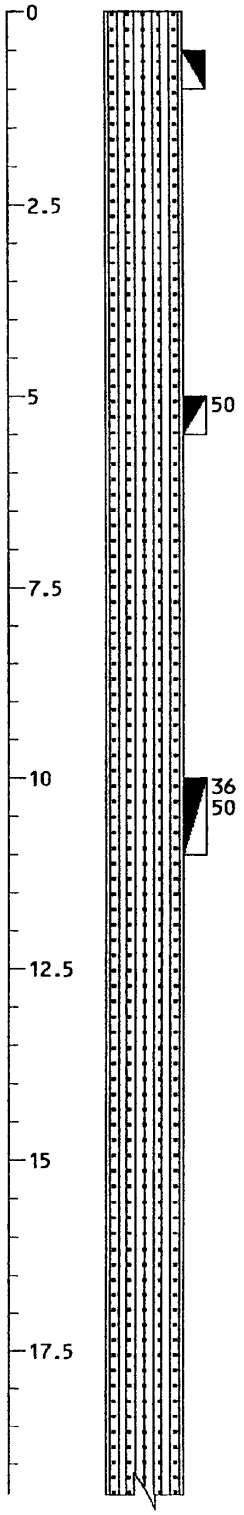
USE ADDITIONAL SHEETS IF NECESSARY

(O)-627

EXPLORATION LOG
HP2

PROJECT: TIMET PABCO ROAD PONDS
PROJECT NO.: 99949V3
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 02/04/00
EXPLORATION SIZE: 4 1/4" I.D. H.S.A.
EQUIPMENT: B-4500 MOBILE DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: DUGAN/COOKE

INITIAL DEPTH TO WATER: 47.0 FEET BGS
DATE MEASURED: 02/04/00
FINAL DEPTH TO WATER: 47.0 FEET BGS
DATE MEASURED: 02/04/00



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		SP-SM	Brown (7.5 YR 5/3) poorly graded sand with silt and gravel, dry to slightly moist and medium dense. No odor or staining. PID=0.0 ppmV. No odor or staining. PID=0.0 ppmV.					
			...Brown (7.5 YR 4/4), less gravel and smaller clasts. No odor or staining. PID= 0.0 ppmV.					
			...No odor or staining. PID=0.0 ppmV.					

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

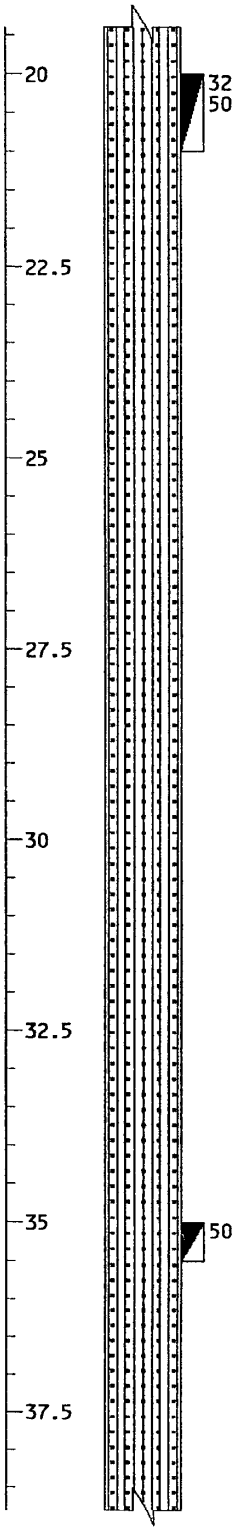
Figure No. 4A

EXPLORATION LOG
HP2

PROJECT: TIMET PABCO ROAD PONDS
PROJECT NO.: 99949V3
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 02/04/00
EXPLORATION SIZE: 4 1/4" I.D. H.S.A.
EQUIPMENT: B-4500 MOBILE DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: DUGAN/COOKE

INITIAL DEPTH TO WATER: 47.0 FEET BGS
DATE MEASURED: 02/04/00
FINAL DEPTH TO WATER: 47.0 FEET BGS
DATE MEASURED: 02/04/00

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20	32/50		...No odor or staining. PID=0.0 ppmV.					
22.5								
25								
27.5								
30								
32.5			...more gravel					
35	50		...No odor or staining. PID=0.0 ppmV.					
37.5								



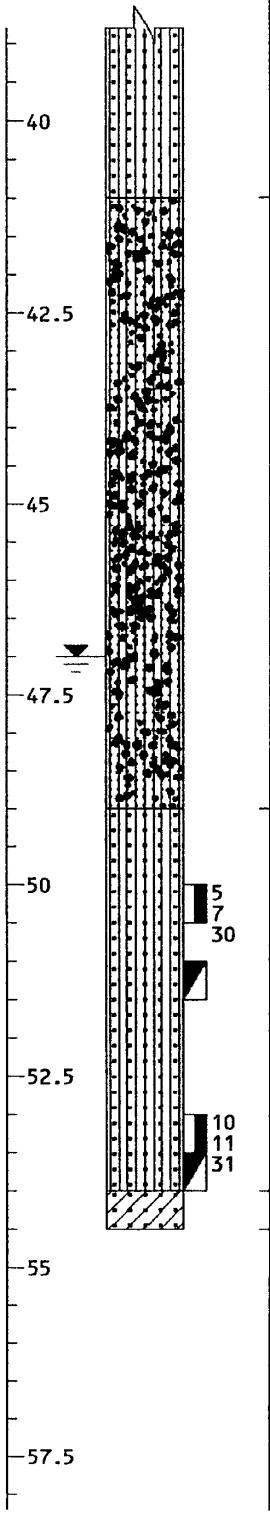
GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 4A

EXPLORATION LOG
HP2

PROJECT: TIMET PABCO ROAD PONDS
PROJECT NO.: 99949V3
OLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 02/04/00
PLORATION SIZE: 4 1/4" I.D. H.S.A.
EQUIPMENT: B-4500 MOBILE DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: DUGAN/COOKE

INITIAL DEPTH TO WATER: 47.0 FEET BGS
DATE MEASURED: 02/04/00
FINAL DEPTH TO WATER: 47.0 FEET BGS
DATE MEASURED: 02/04/00



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		GP-GM	Brown (7.5 YR 3/4) poorly graded gravel with silt and sand, slightly moist and dense. No Odor or staining. PID = 0.0 ppmV.					
			GROUNDWATER AT 47.5 FEET BGS. Insufficient groundwater for sample collection. Drill to 50.0 feet BGS.					
		SP-SM	Brown (7.5 YR 4/4) poorly graded sand with silt and gravel, slightly moist and very dense. No odor or staining. PID = 0.0 ppmV. ...more gravel. No odor or staining. PID = 0.0 ppmV. Insufficient Groundwater for sample collection. Drill to 53.0 feet BGS.					
			...No odor or staining. PID = 29.5 ppmV.					
		SP-SC	Brown (7.5 YR 5/4) poorly graded sand with clay and gravel, wet and very dense. No odor or staining. PID = 0.0 ppmV.					
			END OF BORING AT 54.5 FEET					

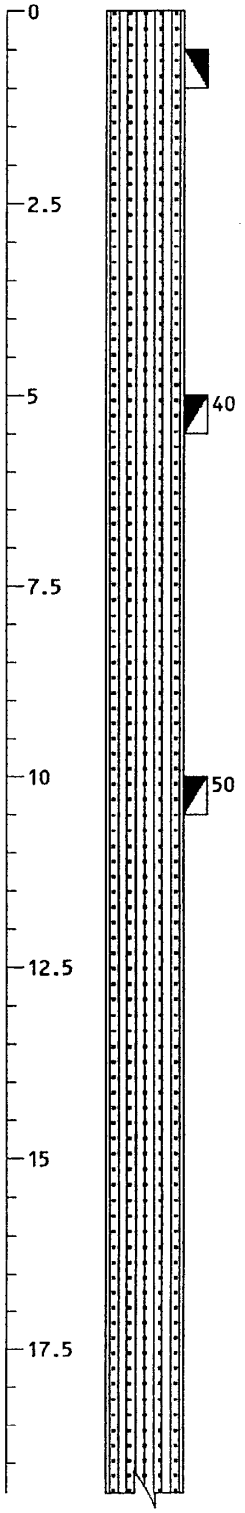
GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 4A

EXPLORATION LOG
HP3

PROJECT: TIMET PABCO ROAD PONDS
PROJECT NO.: 99949V3
HOLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 02/04/00
EXPLORATION SIZE: 4 1/4" I.D. H.S.A.
EQUIPMENT: B-4500 MOBILE DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: SORRELL/COOKE

INITIAL DEPTH TO WATER: NGE
DATE MEASURED: NA
FINAL DEPTH TO WATER: NGE
DATE MEASURED: NA



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		SP-SM	Brown (7.5 YR 5/3) poorly graded sand with silt and gravel, dry to slightly moist and medium dense. No odor or staining. PID=0.0 ppmV.					
			...Dark brown (7.5 YR 3/3), minor amounts of gravel, very dense					
			No recovery due to split spoon not being able to penetrate soil. Collect baggie sample. No odor or staining. PID= 0.0 ppmV.					
			No recovery from split spoon sampler due to sampler not being able to penetrete soil. Collect baggie sample. No odor or staining. PID=0.0 ppmV.					
			...more gravel, larger clasts(3/4"-1.5")					
			...less gravel, smaller clasts (3/8"-1/2")					

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 5A

EXPLORATION LOG
HP3

PROJECT:	TIMET PABCO ROAD PONDS	**PROJECT NO.:**	99949V3
HOLE LOCATION:	SEE FIGURE 1	**EXPLORATION DATE:**	02/04/00
EXPLORATION SIZE:	4 1/4" I.D. H.S.A.	**EQUIPMENT:**	B-4500 MOBILE DRILL RIG
ELEVATION:	EGS	**DRILLER/LOGGER:**	SORRELL/COOKE

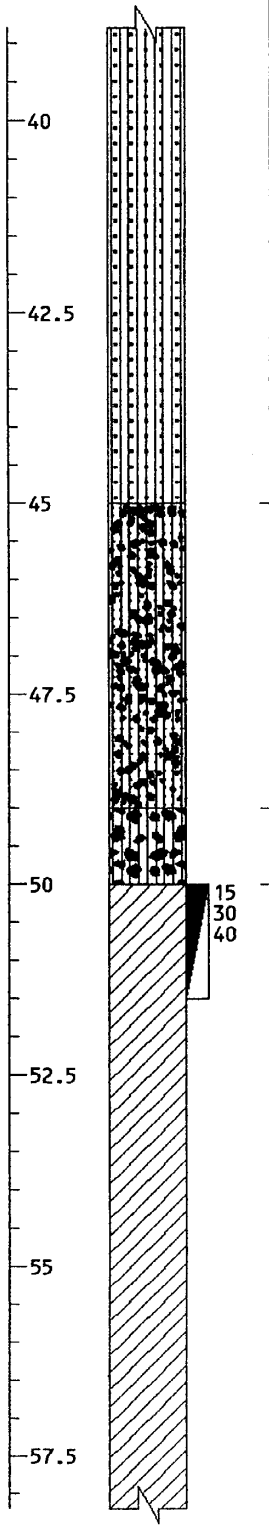
INITIAL DEPTH TO WATER:	NGE	**DATE MEASURED:**	NA
FINAL DEPTH TO WATER:	NGE	**DATE MEASURED:**	NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20	50 50 50		...No odor or staining. PID=0.0 ppmV.					
22.5								
25								
27.5								
30								
32.5			...Dark brown (7.5 YR 4/2), less gravel No odor or staining. PID=0.0 ppmv.					
35	50		...More gravel, larger clasts(1.5"). No odor or staining. PID=0.0 ppmV.					
37.5								

EXPLORATION LOG
HP3

PROJECT:	TIMET PABCO ROAD PONDS	**PROJECT NO.:**	99949V3
'OLE LOCATION:	SEE FIGURE 1	**EXPLORATION DATE:**	02/04/00
PLORATION SIZE:	4 1/4" I.D. H.S.A.	**EQUIPMENT:**	B-4500 MOBILE DRILL RIG
ELEVATION:	EGS	**DRILLER/LOGGER:**	SORRELL/COOKE

INITIAL DEPTH TO WATER:	NGE	**DATE MEASURED:**	NA
FINAL DEPTH TO WATER:	NGE	**DATE MEASURED:**	NA



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		GP-GM	Brown (7.5 YR 3/3) poorly graded gravel with silt and sand, slightly moist and dense. No odor or staining. PID=0.0 ppmV.					
		GM	Brown (7.5 YR 5/2) silty gravel, slightly moist and very dense. No odor or staining. PID=0.0 ppmV.					
		CL	Reddish brown (5 YR 5/4) gravelly lean clay with sand, slightly moist and very stiff. No odor or staining. PID=0.0 ppmV.					

EXPLORATION LOG
HP3

PROJECT: TIMET PABCO ROAD PONDS
PROJECT NO.: 99949V3
OLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 02/04/00
PLORATION SIZE: 4 1/4" I.D. H.S.A.
EQUIPMENT: B-4500 MOBILE DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: SORRELL/COOKE

INITIAL DEPTH TO WATER: NGE
DATE MEASURED: NA
FINAL DEPTH TO WATER: NGE
DATE MEASURED: NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
60	25 40 50		Light brown (7 YR 6/3) lean clay, moist and very stiff. No odor or staining. PID=0.0 ppmV.					
			END OF BORING AT 61.5 FEET					
62.5								
65								
67.5								
70								
72.5								
75								
77.5								

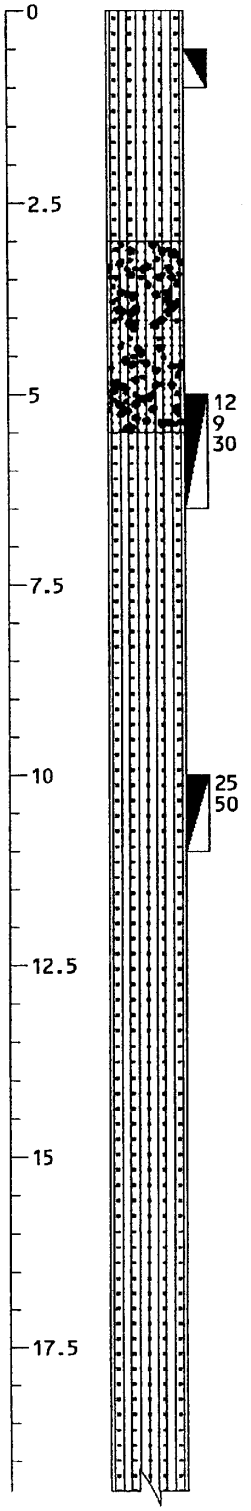
GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 5A

EXPLORATION LOG
HP5

PROJECT:	TIMET PABCO ROAD PONDS	**PROJECT NO.:**	99949V3
HOLE LOCATION:	SEE FIGURE 1	**EXPLORATION DATE:**	02/03/00
EXPLORATION SIZE:	4 1/4" I.D. H.S.A.	**EQUIPMENT:**	B-4500 MOBILE DRILL RIG
ELEVATION:	EGS	**DRILLER/LOGGER:**	DUGAN/COOKE

INITIAL DEPTH TO WATER:	NGE	**DATE MEASURED:**	NA
FINAL DEPTH TO WATER:	NGE	**DATE MEASURED:**	NA



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
		SP-SM	Brown (7.5 YR 5/3) poorly graded sand with silt and gravel, dry to slightly moist and medium dense. No odor or staining. PID = 2.6 ppmV.					
		GP-GM	Brown (7.5 YR 5/3) poorly graded gravel with silt and sand, slightly moist and medium dense. No odor or staining. PID = 3.6 ppmV.					
			...No odor or staining					
		SP-SM	Brown (7.5 YR 5/2) poorly graded sand with silt and gravel, slightly moist and medium dense. No odor or staining. PID = 5.4 ppmV.					
			...No odor or staining. PID = 4.8 ppmV.					
			...more gravel, larger clasts (1"-2")					
			...less gravel, smaller clasts (1/2"-3/4")					

EXPLORATION LOG
HP5

PROJECT: TIMET PABCO ROAD PONDS **PROJECT NO.:** 99949V3
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 02/03/00
EXPLORATION SIZE: 4 1/4" I.D. H.S.A. **EQUIPMENT:** B-4500 MOBILE DRILL RIG
ELEVATION: EGS **DRILLER/LOGGER:** DUGAN/COOKE

INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA

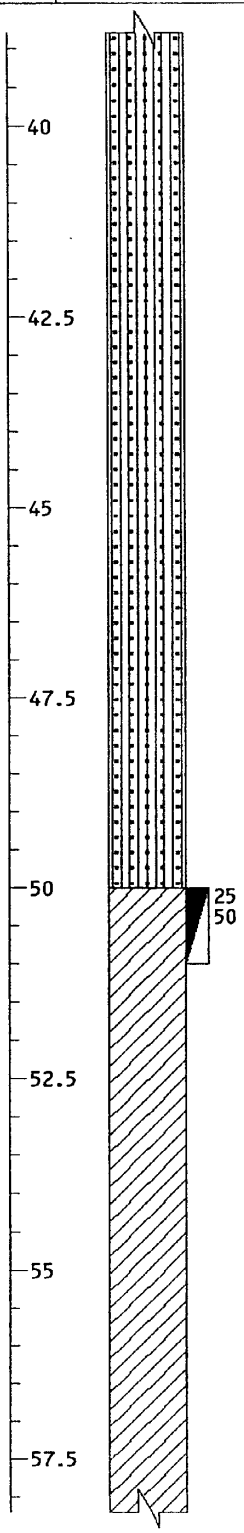
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20	30 50		...No odor or staining. PID=4.1 ppmV. ...minor amounts of gypsum and clay nodules (1/2"-1")					
22.5								
25								
27.5								
30								
32.5								
35	40 20		...No odor or staining. PID=2.7 ppmV.					
37.5								

EXPLORATION LOG
HP5

PROJECT: TIMET PABCO ROAD PONDS **PROJECT NO.:** 99949V3
HOLE LOCATION: SEE FIGURE 1 **EXPLORATION DATE:** 02/03/00
EXPLORATION SIZE: 4 1/4" I.D. H.S.A. **EQUIPMENT:** B-4500 MOBILE DRILL RIG
ELEVATION: EGS **DRILLER/LOGGER:** DUGAN/COOKE

INITIAL DEPTH TO WATER: NGE **DATE MEASURED:** NA
FINAL DEPTH TO WATER: NGE **DATE MEASURED:** NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
40			...less gravel with silt and sand, slightly moist and dense. No odor or staining. PID = 0.0 ppmV.					
42.5								
45								
47.5								
50	25/50	CL	Brown (5 YR 5/3) lean clay with sand, slightly moist and very stiff. No odor or staining. PID = 1.0 ppmV.					
52.5								
55								
57.5								



GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 6A

EXPLORATION LOG
HP5

PROJECT: TIMET PABCO ROAD PONDS
PROJECT NO.: 99949V3
OLE LOCATION: SEE FIGURE 1
EXPLORATION DATE: 02/03/00
PLORATION SIZE: 4 1/4" I.D. H.S.A.
EQUIPMENT: B-4500 MOBILE DRILL RIG
ELEVATION: EGS
DRILLER/LOGGER: DUGAN/COOKE

INITIAL DEPTH TO WATER: NGE
DATE MEASURED: NA
FINAL DEPTH TO WATER: NGE
DATE MEASURED: NA

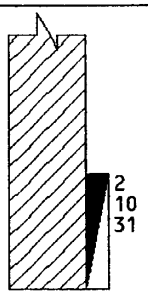
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
60			No odor or staining. PID = 1.4 ppmV.					
			END OF BORING AT 61.5 FEET					
62.5								
65								
67.5								
70								
72.5								
75								
77.5								

TABLE 3.3 (Cont'd)

[see under H-series for full list]

WELL	TOTAL DEPTH	SCREENED OR OPEN HOLE INTERVAL	DEPTH TO WATER AND YEAR MEASURED				DEPTH OF MUDDY CREEK FORMATION
			1971	1980	1982	1983	
H-32	101	37-101		39	40		38
H-33	101	36-101		38	38.4		37
H-34	44	41-44					44
H-35	94	91-94					35
H-36	44 old	41-44		26			38
	39 new	29-39			28.4		
H-37	50.5	25-50					25
H-38	55	16-55		34	34.5		25
H-39	75	15-75		45	46.1		43
H-40	75	55-75		49	51		40.5
H-41	75	65-75		46	50		54
H-42	55	8-555		33	36		44
H-43	55 old	9-55		30			45.5
	44 new	29-44			32.9		
H-44	231	6-231					49
H-45	Not Drilled	-	-	-	-	-	-
H-46	51	36-51					42
H-47	152	142-152			41.7		52
H-48	43	33-43			32		59
H-49	38	28-38			32		48
H-50	43	33-431			35		40
H-51	42	32-42			34		57.5
H-52	28	18-28			18		18
H-53					26		42
H-54					31		51
H-55					44		43
H-56					30.8		
LG-9	91	85-90		5.5			
LG-10	42			8.6			
LG-11	39	0-39		18.4			
LG-13	250	241-243		38.9			
LG-15	25	23-25		3			
LG-16	47	43-40		3			
LG-17	90	80-82		15.2			
LG-19	70			0-Flowing			
LG-20	20			5.6			
LG-21	40	37-39		29.1			
LG-25	24			11.4			
LG-26	100	87-90		11.7			
LG-27	62	57-62		14			
LG-30	30	27-29		6			
LG-32	155	147-155	35	49.7 Nov 79			54
LG-32R	90	80-90		50			52

TABLE 3.3 (Cont'd)

WELL	TOTAL DEPTH	SCREENED OR OPEN HOLE INTERVAL	DEPTH TO WATER AND YEAR MEASURED				DEPTH OF MUDDY CREEK FORMATION
			1971	1980	1982	1983	
LG-33	45 old	35-45	38 March Dry April	Dry May	50.72 Jun 51.03 Aug 51.31 Oct	51.94 Feb	52
deepened to 60 in May 1980	60 new	50-60		49 May	51.47 Dec		
LG-151				49.7			
LG-165				25			
PG-101	41	31-41		22.3			
PG-102	26	16-26		26	Abd.		
PG-103	16	6-16		4.3			
PG-104	25	15-25		12			
PG-105	25	15-25		13.5			
PG-106	21	11-21		6			
PG-107	22	12-22		15	Abd.		
PG-108	20	10-20		12	Abd.		
PG-109	26	16-26		20.5			
PG-110	21	11-21		11	Abd.		
PG-111	21	11-21		9.8			
PG-112	21	11-21		16.5			
PG-220					47.1		
PG-233					22.2		25
PG-235					24.2		35.6
PG-237					18.3		16.2

Well Owners:

H - Stauffer's 'H' Series Monitoring Wells
LG - Desert Research Institute Monitoring Wells, L.V.
PG - Pittman Groundwater Monitoring Wells, by EPA

Monitoring Well Construction Data

Stauffer Chemical Company/Henderson, Nevada

Well No.	Date Started	Date Completed	Hole Diam.	Total Depth	Casing Diam.	Casing Length	Completion	TOC above GS	TOC Elevation	Contractor/ rig
H-41	4- 3-80	4-16-80	6"	75'	6"	57.0'	drive casing; bottom 10.0' torch slotted	1.2'	1774.92'	A/CT
H-42	2-22-80	2-22-80	10"	55'	8" (h)	8.5'	open hole, 7.5' - 55';	0.9'	1729.09'	G/MR
H-43	2-27-80	2-28-80	10"	55'	8"	9.4'	open hole, 8.5' - 55'; cement plug at surface	0.8'	1728.95'	G/MR
H-44	3-17-80	3-19-80	5"	231'	-	-	test hole with core samples; open hole	-	-	G/MR
H-45	3-19-80	-	5"	40;45'	-	-	abandoned after 2 attempts due to lost circulation	-	-	G/MR
H-46	3-25-80	3-29-80	5"	51'	1¼" PVC	52.2'	drill-perforated pipe 36'-51'l gravel to 30'; cuttings to l; cement to surface	1.2'	1730.03'	G/MR
H-47	5-13-80	5-13-80	12"	39'	10" (c)	40.0'	pilot hole	-	-	A/FA
H-47	5-15-80	6-18-80	8"	120'	6" (c)	120.0'	annulus pressure cemented by Halliburton	-		
			6"	152'	4" (h)	152.4'	bottom 10.0' torch/ slotted	1.75		A/CT
LG032R	2-22-80	2-22-80	12"	15'	10" (c)	16.0'	pilot hole	-	-	A/FA
LG032R	4-17-80	5- 6-80	10"	70'	6" (c)	72.5'	annulus cemented from bottom	1.5'	-	A/CT
			6"	90'	4" (h)	92.5'	torch slot bottom 10.0'	1.9'	1770.75'	
LG033	5- 8-80	5- 9-80	6"	35'-60'	6"		existing 6" casing	0.8'	-	A/CT
	(existing well deepened)		-	-	4" (h)	63.4'	torch slot bottom 10.0'	2.6	1770.06	

MW Copy

Well	Location	Drilled/Cased	Depth	Description	S. W. L. (ft. below datum) Total Depth (ft.) Shut Down (hrs.) Casing String (ft.)
LG001	236104414			No log available	
002	226201324			No log available	
003	226206324			No log available	
004	216314424	48/48	0-48	Peat and muck; w. sand and gravel, crse	3.35-27-17-19
					7.06-48-17-19
005	216314424	100/100	0-100	silt, reddish-brown; w. sand and gravel (40) crse-med grn, quartz, sandstone, feldspars, volcanics and limestone	
006	216328112	44/44	0-36	sand and gravel, fine grn, volcanic	2.43-42-16-22
			36-44	gravel, cemented; w. igneous fragments; 2'-3' weathered zone	
007	216328112	135/135	0-20	sand and gravel, fine volcanic	
			20-37	sand, fine and pea gravel	
			37-40	sand, crse, volcanic	
			40-48	sand, med-fine grn, volcanic	
			48-55	sand, fine grn, volcanic	
			55-65	sand and gravel, fine grn, volcanic	
			65-78	gravel, pea, and very crse; volcanics w. conglomerate of volcanic fragments	
			78-120	silt, very clayey, dark reddish-brown	
			120-135	siltstone(?), brown and green, well indurated	
008	216330414	33.50[1]		No log available	
009	216329332	90/91	0-35	gravel, med-fine grn, volcanic w. sand (15) crse, volcanic, gypsum	
			35-45	sand, crse, volcanic; w. gravel (10) med grn, volcanic	
			45-50	silt, w. sand (20) fine	
			50-54	gravel, med grn, volcanic	
			54-63	sand, crse, volcanic	
			63-69	sand, crse, volcanic; w. clay (40) reddish-brown	
			69-73	clay, cream	
			73-90	clay, blue; w. gypsum	
					5.46-80-17-75
010	216329332	42/42	0-35	sand and gravel, med-fine grn, volcanic; w. gypsum	
			35-40	sand, crse, volcanic	
011	216329334	38.60[1]		No log available	
012	216329334	38.01[1]		No log available	
013	226305321	250/244	0-35	gravel, volcanic; w. sand, crse-med grn, volcanic	
			35-50	sand, fine-med grn; w. gravel (20) med grn, volcanic	
					35.6-45-36-43
			50-53	sand, fine-med grn; w. silt (25)	
			53-55	clay, beige, silty	
			55-57	sand, crse, volcanic; w. clay, brown w. manganese stain	
			57-60	clay, brown, silty	
			60-65	clay, brown, silty; w. clay, white	
			65-80	clay, reddish-brown, silty	
			80-84	clay, light brown silty	
			84-102	clay, beige, silty; w. clay, light green w. manganese stain	36.8-90-17-69
			102-126	clay, cream	37.8-105-17-95
			126-130	clay, beige and light green, gypsiferous	
			130-165	clay, beige gypsiferous	
			165-172	clay, bluish-green	36.8-165-17-115
			172-190	clay, brown gypsiferous	
			190-220	clay, dark brown, gypsiferous	48.5-220-19-170
			220-250	clay, blue gypsiferous	38.9-250-16-234
014	226305321	45/46	0-35	sand and gravel, volcanic	
			35-45	sand, fine-med grn, volcanic; w. gravel (20) med grn, volcanic	35.6-45-36-43
015	216330323	25/26	0-22	sand and gravel w. fragments of limestone, chert and dolomite	
			22-25	gravel, med grn, beige; w. sand (20) fine grn both composed of limestone, chert and dolomite	
016	216330323	47/47	0-24	sand, fine grn, beige; w. gravel crse composed of chert, grey limestone and dolomite	
			24-29	sand, fine, beige composed of limestone, chert and dolomite	
			29-43	clay, greenish-grey; w. (10) sand, fine	
			43-47	clay, cream and blue-grey	

017	216331122	62/63	0-11	gravel, crse; w. sand and pebbles of rhyolite, scoria, basalt and some chalcedony quartz	5.8-11-17-10
			11-18	gravel and sand, crse, composed of scoria, basalt, rhyolite	
			18-22	sand, fine grn	
			22-45	sand, fine and med grn	5.6-82-2-43
			45-87	no log available	
			87-90	clay, green	69.43-83-21-82
018	216331122	19.75/19.75[2]	0-0.5	sand, grey-light brown, gravelly	
			0.5-1	sand, brown	
			1-3	sand, light brown	
			3-7.5	sand, light brown, silty	
			7.5-16.5	sand, brown, gravelly	
			16.5-19.75	gravel, grey-brown, sandy	
019	216331224	70/68	0-20	sand and clay, fine grn, brown; w. gravel (5) volcanic	
			20-30	sand and clay, fine grn, grey	
			30-34	sand, gine grn, grey, volcanic	4.40-34-1.5-20
			34-38	clay, grey, sandy; w. gravel med grn, volcanic	
			38-45	gravel, med-crse; w. sand, crse, volcanic	
			45-57	clay, cream	
			57-62	clay, buff green, very adhesive	
			62-70	clay, blue - flowing	
020	216331224	20/18	0-20	sand, fine grn; w. some clay	4.11-20-2-17.5 4.07-20-17.5-17.5
021	216331331	40/40	0-10	alluvium, disturbed	
			10-17	no log available	
			17-20	gravel, crse, grn, brown, composed of scoria, basalt, and chalcedony quartz; w. sand (15) med grn	
			20-27	sand, coarse-fine grn, brown; w. clay (15)	
			27-30	clay, brown, sandy; w. gravel, fine grn (15-20) fine grn composed of scoria, basalt, etc.	
			30-40	clay, hard, pinkish-brown w. some manganese stain; w. clay, plastic, green	
022	226331331	22[2]	0-20-	sand, brown, silty	
			20-22	sand, red-brown, silty	
023	226306421	45/45	0-35	sand and gravel, volcanic	
			35-45	silt and gravel	
024	226306421	30/30[2]	0-.5	salts, evaporative	
			.5-1	transitional	
			1-2	sand, brown	
			2-6	sand, red-brown, gravelly	
			6-9	sand, light red-brown, silty	
			9-10	sand, red-brown, gravelly	
			10-11.5	sand, light red-brown	
			11.5-30	sand, red-brown, gravelly.	
025	216307232	24/24	0-24	sand and gravel, fine-med grn, reddish, volcanic	11.4-21-41-10
026	216307232	100/91	0-37	sand and gravel, fine-med grn, reddish	
			37-42	sand and clay, fine grn, maroon; w. gravel (10) med grn, volcanic	
			42-45	gravel, crse, volcanic; w. sand, med grn	
			45-58	sand, fine grn, volcanic; w. gravel, (5) crse	
			58-90	clay, brown silty	19.5-83-17-67
			90-93	sand and gravel, fine grn	
			93-100	clay, brown; w. sand (10) crse grn	
027	216236211	62/63	0-13	no log available	7.95-13-?-0
			13-25	sand and gravel, crse, volcanic, intermixed w. cobbles	6.98-26-41-16
			25-55	sand, med grn, volcanic	6.16-45-17-32
			55	siltstone, reddish-brown, sandy	5.6-62-17-62
028	216336211	19.75/19.75[2]	0-1	sand, light brown, silty	
			1-5	sand, brown, gravelly	
			5-14	sand, light brown, gravelly	
			14-15.75	sand, brown, gravelly	
029	216226421	100/101	0-23	sand and gravel, med-crse, light grey, volcanic	7.17-15-20-11 5.79-23-0.5-11
			23-30	sand, very fine grn, tan; w. clay	
			30-34	sand, very fine grn, volcanic	
			34-42	gravel, med grn, volcanic	4.83-34-17-34
			42-100	siltstone, reddish-brown, sandy; w. gravel (10) fine grn, volcanic	1.17-100-17-38
030	216226421	30/30	0-23	gravel and sand, crse, volcanic	
			23-30	sand and gravel, volcanic	5.28-30-17-30
031	226211312	63/63	0-30	gravel, med grn, volcanic; w. sand (10) med-fine grn, volcanic	
			30-38	gravel, med-fine grn, volcanic; w. sand and silt (20)	
			38-63	silt; w. sand (25) crse grn	36.7-63-17-35

LG022A is included as a separate log.

032 226211441 150/147

033 226211441 45/40
034 216215441 35.20[1]
035 216215441 105/105

036 216222241 50/50

037 216222241 31/32
038 226204232 112/93

039 226204232 40/40

040 226204232 112/101

041 206232123 68/69

042 206232123 170/170

043 216229434 56/57

0-68 sand and gravel, volcanic 38.1-41.6-17-40
40.04-47-18-33
36-75-62.5-0.5-54
68-105 sand, crse grn, volcanic; w. pea gravel (5) 38.2-10-19-80
105-120 silt, beige, sandy
120-150 gravel and sand, calcified 36.5-150-5.5-143
35.0-150-17-143
0-45 sand and gravel, volcanic 36.0-45-17-40
No log available
0-10 sand, fine-crse grn, volcanic, construction fill dirt
10-50 clay, tan-beige, sandy; w. gravel (20) crse grn, composed of limestone, chert and dolomite
50-70 clay, light tan
70-80 clay, greenish-grey w. manganese stain
80-85 clay, cream, light green w. some manganese stain
85-105 clay, reddish-brown; w. sand (10-20) fine grn
Muddy Creek fm?
0-45 siltstone, beige, sandy;w. gravel (10) med grn, limestone
45-50 clay, cream
0-31 siltstone, beige, sandy 7.94-50-3-15
0-2 sand, crse grn, loose
2-3 caliche
3-7 gravel, light grey, composed of fragments of basalt, scoria, and trachyte
7-18 siltstone, reddish-brown, sandy; w. gravel (10) fine grn, volcanic
18-20 conglomerate, tan to grey, composed of clasts of basalt, scoria, chert and dacite 4.04-20-39-5
20-30 siltstone, tan, sandy; w. fragments of basalt, scoria and trachyte
30-35 conglomerate and siltstone, greyish-tan
35-45 siltstone, reddish-brown, sandy
45-50 siltstone, reddish-tan, sandy
50-56 siltstone, light chocolate-brown
56-63 siltstone, brown, sandy
63-74 siltstone, beige, sandy
74-80 siltstone and conglomerate, grey-brown, sandy
80-86 siltstone, tan, sandy
86-97 siltstone and conglomerate, greyish-tan,sandy
97-112 siltst one, tan, sandy 4.21-112-17-90
0-20 siltstone, beigh, sandy; w. conglomerate, grey, intraformational
20-28 siltstone, brownish grey, sandy; w. conglomerate, grey, intraformational
28-33 siltstone, beige, sandy
33-40 siltstone, brown sandy; w. conglomerate, intra-formational
0-16 siltstone, tan,, sandy; w. gravel (15) composed of pebbles of limestone, basalt and scoria
16-17.5 sandstone, brown, cemented by CaCo3
17-5-22 siltstone, tan, sandy, same as 0-16 interval
22-28 sandstone and conglomerate, light grey; w. gravel (10-15) volcanic
28-37 siltstone, brown, sandy
37-43 sandstone and conglomerate, light grey
43-59 siltstone, brown, sandy
59-70 siltstone, grey, sandy; w. silt (50), sandy (50)
70-100 siltstone, brown-tan 6.50-85-20-40
0-35 silt and gravel, light grey, sandy
35-37 caliche
37-42 silt and gravel, light grey, sandy
42-57 silt, light beige, sandy
57-60 silt, light green, sandy
60-65 clay or silt, cream and beige, sandy
0-41 silt, light grey, sandy; w. gravel, crse
41-63 silt, light beige, sandy
63-80 clay, cream; w. clay, beige
80-108 silt, beige, sandy
108-126 silt, cream, sandy
126-137 silt, light beige, sandy
137-148 silt, white, sandy
148-157 silt, tan, sandy
157-170 silt, beige, sandy

0-25 siltstone, tan, sandy; w. pea gravel (10)
25-28 siltstone, beige, sandy
28-29 sandstone, reddish-brown, intraformational, cemented
29-35 siltstone, beige, sandy
35-42 siltstone, light pinkish-brown, sandy; w. sand (35) crse grn
42-56 siltstone, beige, sandy; w. gravel (10), med grn

044	216229434	130/130	0-37	silt, beige, sandy	
			37-40	silt, beige, sandy; w. sand, crse, volcanic	
			40-42	sand and gravel, pinkish-beige, well cemented	
			42-55	silt, pinkish-brown, sandy; w. sand (30) crse, volcanic	
			55-60	silt, beige, sandy	
			60-67	silt, light chocolate brown, sandy	
			67-75	silt, tan, sandy; w. sand and gravel (10) crse	
			75-90	silt, greyish-brown	
			90-125	silt, pinkish-tan	
045	216219111	125/125	0-15	silt, beige, sandy; w. caliche	
			15-37	silt, light chocolate brown, sandy	
			37-48	silt, pinkish-brown, sandy; w. gravel (15)	
			48-55	silt, chocolate brown, sandy	
			55-70	silt, pinkish-brown, sandy	
			70-125	silt, chocolate brown, sandy	
046	216219111	40/40	0-15	silt, beige, sandy; w. caliche	28.45-125-41-125
			15-37	silt, light chocolate brown, sandy	
			37-40	silt, pinkish-brown, sandy; w. sand and gravel (15)	
047	206136444	100/100	0-19	silt, beige, sandy; w. pebbles, limestone	
			19-63	silt, flesh colored	
			63-65	anhydrite(?), light grey, sugary	14.06-45-17-40
			65-70	silt, flesh colored	
			70-81	anhydrite (?), light grey, sugary	
			81-93	silt, flesh colored	
			93-100	silt, beige sandy	
048	206136444	40/40	0-19	silt, beige, sandy	
			19-40	silt, flesh colored	
049	216329332			No log available	
050	216235414			No log available	
051	216330414			No log available	
052	216330414			No log available	
053	216330414			No log available	
054	216329332			No log available	
055	216329322			No log available	
056	216203133			No log available	

[1]Dewatering well installed by the A & K Construction Co. in conjunction with installation of the S.N.W.P. pipeline. Cased to full depth of drilled hole with continuously slotted 20 inch diameter pipe.

[2]Observation well installed by Montgomery Engineers of Nevada, Inc. for B.M.I., Inc. Cased to full depth with continuously slotted 2 inch diameter pipe.

To: Don Baker

From: Art Turner

5-25-82

LOG OF TEST PIT OR AUGER HOLE
FOR BORROW AND FOUNDATION INVESTIGATIONS

Feature: Las Vegas Wash | Project: Pittman Verification Program | Area Designation:

Hole No.: LO022A | Coordinates N: | E: | Ground Elevation: | Approx. Dimensions: 6-3/4" by 28.2

Water Level: 5.25 btc | Method of Excavation: 6-3/4" Power Auger | Date: 3/23/82 | Logged by: D Russell & D Trudeau

CLASSIFICATION SYMBOL: WATER	CLASSIFICATION SYMBOL: GRAPHIC	DEPTH (FEET)	SIZE AND TYPE OF SAMPLE TAKEN	CLASSIFICATION AND DESCRIPTION OF MATERIAL (SEE CHART - "UNIFIED SOIL CLASSIFICATION") GIVE GEOLOGIC AND IN-PLACE DESCRIPTION FOR FOUNDATION INVESTIGATIONS)	PERCENTAGE OF COBBLES AND BOULDERS ## VOLUME OF HOLE SAMPLED (CUBIC FEET)	WEIGHT OF 3 TO 6-INCH SAMPLED LBS	PERCENTAGE BY VOLUME OF 3 TO 6-INCH MAT'L	WEIGHT OF PLUS 6-INCH SAMPLED LBS	PERCENTAGE BY VOLUME OF PLUS 6-INCH MAT'L
mg		0'-23.2'		Quaternary Alluvial Fan and Valley Fill Mixtures: Augers to poorly Graded Sand. Gravelly, approximately 60% skip graded sand, with 40% hard sub angular gravel, maximum size recovered 1-1/2". Sample Limy. Dry to wet. Brown					
c		23.2'-28.2'		Tertiary Muddy Creek Formation: Augers to Sandy Clay. Little HCL reaction. Light brown to cream color. Augers slow smooth but highly resistant to drilling.					

Preliminary

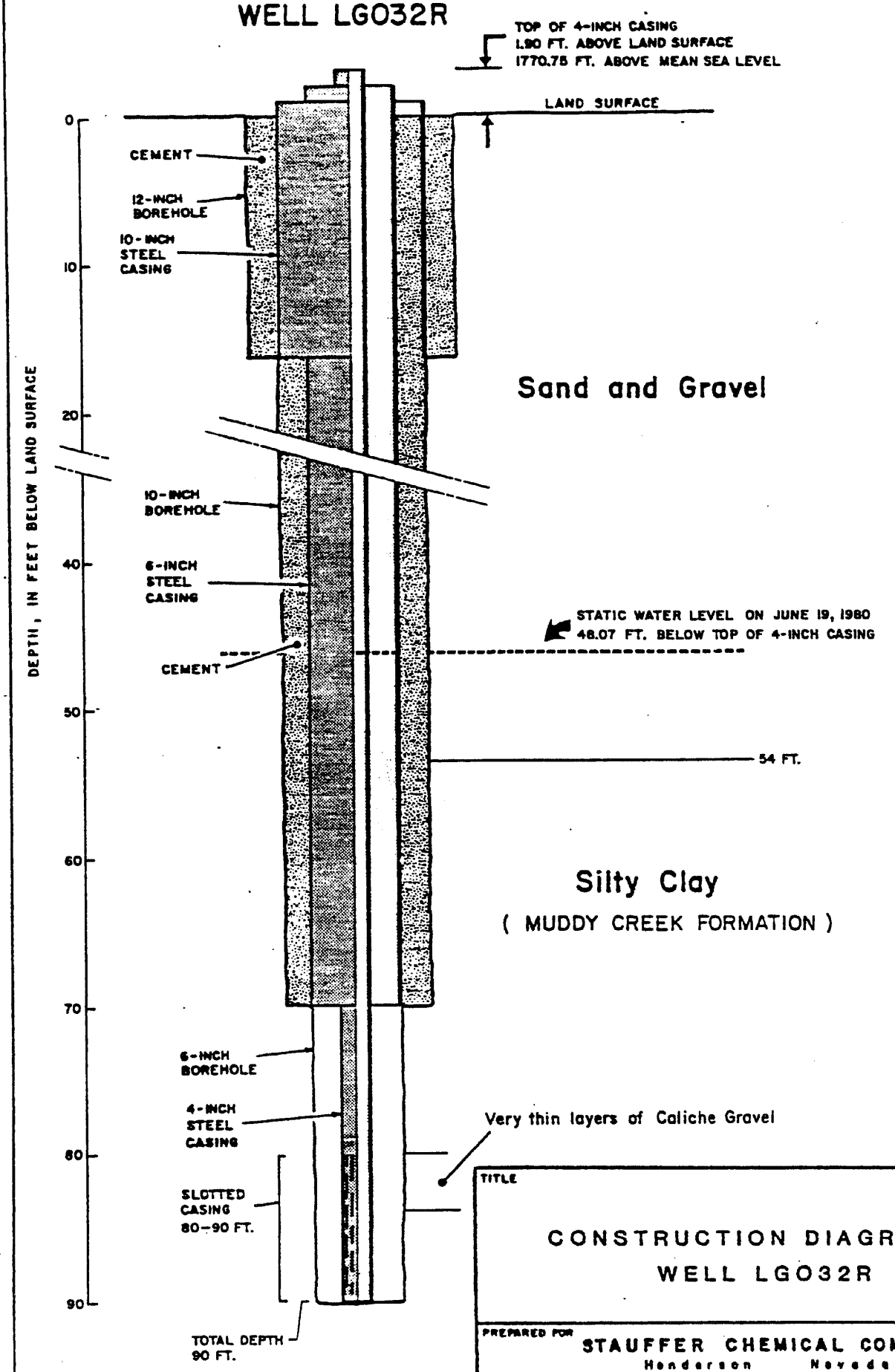
REMARKS:

Installed 23' of 2" PVC. 3' to 23' depth slotted. A concrete meter box with cast iron lid set over pipe. Well located 10' west of LO021. BTC = Below top of casing.

*: Record water test and density test data, if applicable, under remarks.
Record after water has reached its natural level; give date of reading adjacent to graphic symbol or in remarks.

(Wt. of rock sampled) 100 / (Bulk specific gravity of rock) 62.4 (Cubic feet of hole sampled)

WELL LGO32R



NOTE VERTICAL SCALE CHANGE

TITLE

CONSTRUCTION DIAGRAM OF WELL LGO32R

PREPARED FOR STAUFFER CHEMICAL COMPANY
Henderson Nevada

Geraghty & Miller, Inc.	COMPILED BY: BILL WARREN	SCALE: SHOWN	FIGURE No.
	PREPARED BY: WILLIAM H. CICIO	DATE: JULY 1980	
	PROJECT MGR.: JOHN ISBISTER		

Geraghty & Miller, Inc.

WELL LOG

Well No.: LG032R

Date Completed: 5/6/80

Project: Stauffer Chemical Company

Location: Henderson, Nevada

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted) and gravel, pebbles, cobbles and boulders rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel Note: organic odor in cuttings at 47'	0 - 54
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix also with occasional thin layers of sand reworked caliche, and caliche (Muddy Creek Formation) Note: thin layer(s) of water-bearing caliche (sand to small gravel sized particles) 80'-84'.	54 - 90

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 1

FEATURE: Exploratory Wells
PROJECT: CRBSCP Las Vegas Wash Unit Title II
STATE: Nevada
HOLE NO.: LG225
LOCATION: Gibson Road North, T22S R62E, Sec. 02 cbbl Est. 1738
COORDS. N. ... E. ...
GROUND ELEV.:
DIP (ANGLE FROM HORIZ.): 90°
BEGUN: 5/15/80
FINISHED: 5/20/80
DEPTH OF OVERBURDEN: N/A
TOTAL DEPTH: 50'
BEARING:
DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED: See Remarks Below
LOGGED BY: D.A. Trudeau
LOG REVIEWED BY: D. Bronstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM	TO	LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
Drilling Equipment 28L BeCyrous Erie Cable Tool **Drilling and Sampling Procedure** 12.0" cable tool 0-50' Wash sample every 5'. Drove casing 0-20' **Hole Stability** Hole unstable 0-40' **Water Level** 22.0' 5/16/80 **Purpose of Hole** Shallow aquifer observation well **Drill Site** Gibson Road 1/8mi. south of intersection with Sunset, on east side of rd. **Hole Completion** Set 6" galvanized steel pipe 0-45'. Field slottled lower 5'. Put cap on bottom. Gravel packed 5-50 with pea gravel. Pulled 12" conductor casing.	PB 12"								0–50 (TD = 50')			**0.0'-43.0' Quarternary Alluvial Fan Deposits** Consists of Bouldery, cobbly sands and gravels and gravelly sands. Which are gray to brown. Cobbles and boulders visible in hole. Contact with Muddy Creek Fm. based on lithogic change. 0.0'-23.0' Rockbits to Boulders, Cobbles in a Well graded Gravelly Sandy Matrix. Gravels consist of mostly fine to coarse subangular to subrounded volcaninc gravel. Sand consists of fine to coarse subrounded volcanic grains. Matrix has up to 10% low plastic fines. Color light gray. Violent Hcl reaction. Boulders up to 3' in diameter visible in the hole. First water at 23.0'. 23.0'-43.0' Rockbits to Gravelly Sand. About 20% fine subangular volcanic gravel, max. size 3/8"; 60% fine to coarse subangular to subrounded mostly volcanic sand, 20% medium plastic fines. Color gray brown. Moderate Hcl reaction. **43.0'-50.0' Tertiary Muddy Creek Fm.** Consist of gravelly clay which is brown in color. Contact based on change in drilling from hard to easy. Description based on wash samples. 43.0'-50.0' Rockbits to Gravelly Clay. About 20% fine to coarse subrounded to subangular mostly caliche gravel, max. size 1 3/4"; 30% fine to coarse, mostly fine sand; 50% medium plastic fines. Color brown. Light to moderate Hcl reaction.

EXPLANATION

PB = Percussion bit

CORE LOSS / CORE RECOVERY

Type of hole: D = Diamond, H = Haystellite, S = Shot, C = Churn
Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing
Approx. size of hole (X-series): Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
Approx. size of core (X-series): Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"
Outside dia. of casing (X-series): Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 3

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE NV

HOLE NO. LG226 LOCATION Gibson Road North T22S,R62E, Sec. 08 cbbc

COORDS. N. E. GROUND ELEV. Esc. 1038' DIP (ANGLE FROM HORIZ.) 90°

BEGUN 4/12/80 FINISHED 6/26/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 305.0' BEARING

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Remarks Below LOGGED BY D. A. Trudeau LOG REVIEWED BY W. Brandstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P Cs, or Cm)	DEPTH (FEET) TO	LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
Drilling Equipment Failing 1250 BuCyrus Erie cable tool Drilling Sampling Procedure: Drilled 12" hole with tricone rock-bit 0'-20' and 100'-305' with failing. Cable tool rig used because of caving. Used 12" percussion bit 10'-100'. Surface casing set 0'-16'. Cored (4") 100'-103' 100% recovery; 150'-154' 58% recovery; 200'-204' 88% recovery; 250'-254' 38% recovery; 300'-301.5' 100% recovery. Wash sample every 5'. Drilling Fluid Failing-Baroid Lo-Loss Cable Tool-Water Hole Stability: Hole caving 0'-30'. Water Level Depth in Ft. / Date 9.5 / 5/21/80 Note water level is higher than adjacent shallow well. Purpose of Hole Deep aquifer observation hole. Location: Hole is on east side of Gibson Road about 1/8 mile south from intersection with Gibson Road.	PB 12"								10			0.0'-40.0' Quaternary alluvial fan Deposits Rockbits to boulders, cobbles, gravels and sand; and gravelly sandy clay which are light gray to brown to white brown. Materials very hard to drill. Deposits grade downward into fined grained Tertiary Muddy Creek Formation. Descriptions based on wash samples. 0.0'-28.0' Rockbits to boulders, cobbles, gravels and sand. Boulders 3' in dia. visible in hole to 12'. Boulders, cobbles, gravels and sand are subrounded to subangular and volcanic (basalt?). Some caliche and limestone clasts. Gravels and sand are well graded. Up to 10% fines in matrix. Color light gray. Moderate HCL reaction. First water at 28.0'. 28.0'-40.0' Rockbits to gravelly sandy clay. About 10% subangular volcanic and caliche gravel, max size 3/8 inch; 40% well graded subrounded to rounded volcanic and caliche sand; 50% low to medium plastic fines. Color brown to white brown. Violent HCL reaction.
									20			
									30			
	PB 12"								40			
									50			40.0' to 305.0 Tertiary Muddy Creek Formation Rockbits and cores to sandy clay, sandstone, gravelly sand, gravelly clay, sand, clay, caliche, clayey gravel and mudstone which are brown to white brown to red brown in color. Description based on wash sample and core. 40.0'-100.0' Rockbits to sandy clay. About 10% fine subrounded volcanic, limestone and caliche gravel, max. size 1.0 inch; 20% fine to coarse volcanic, limestone, and caliche sand; 70% low to medium plastic fines. Color brown to white brown to red brown. Violent HCL reaction.
									60			
									70			
									80			
									90			100.0'-305.0' Rockbits to sands, clay, and caliche. Cuttings composed mostly of fine to coarse sand with lesser amounts of low to medium plastic fines. Caliche indicated by drill bit chatter. Color brown. Violent HCL reaction. For a detailed description of the interval refer to core descriptions below.

EXPLANATION

CORE LOSS

CORE RECOVERY

PB=Rockbit
PB=Pernssion bit
Note suite of Geophysical logs available on this hole.

Type of hole . . . . . D = Diamond, H = Hayste1lite, S = Shot, C = Churn
Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing
Approx. size of hole (X-series) . . Ex = 1-1 2" Ax = 1-7 8" Bx = 2-3 8" Nx = 3"

GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE NV

HOLE NO. LG226 LOCATION Gibson Road North T22S,R62E, Sec. 02 cbb2 GROUND ELEV. Esc. 1738' DIP (ANGLE FROM HORIZ.) 90°

BEGUN 4/12/80 FINISHED 6/26/80 DEPTH OF OVERBURDEN TOTAL DEPTH 305.0' BEARING

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Remarks Below LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P, Ca, or Cm)	PERCOLATION TESTS: DEPTH (FEET) TO	PERCOLATION TESTS: LOSS (G.P.M.)	PERCOLATION TESTS: PRESSURE (P.S.I.)	PERCOLATION TESTS: LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
Hole Completion: Set 6 5/8" OD steel casing 0'-301.4' with plate on bottom. Lower 10' field slotted. Developed and placed pea gravel 150'-305'. Cemented by tremie pipe 0'-150'.	4" C	100										100.0'-100.5' Gravelly sand. About 30% fine subrounded limestone and volcanic gravel, max. size 1 inch; 50% fine to coarse, mostly fine sand; 20% low plastic fines. Color brown. Little HCL reaction. Damp.
	RB 12"											100.5'-103.0' Sandstone and gravelly sand. Sandstone consists of 5% caliche gravel, max. size 1/2 inch; 75% poorly graded fine sand; 20% low plastic fines. Sandstone is poorly consolidated and can be broken with light finger pressure. At 102.5' find 2 inch bed of coarse gravel in a sandy matrix. Gravel max. size is 1 inch and is mostly rounded limestone, caliche, and basalt(?). Interval has violent HCL reaction. Damp.
	4" C	58										103.0'-104.0' Sandy clay and gravelly clay. Sandy clay consists of some fine to coarse caliche gravel, max. size 1.5 inch; 40% poorly graded fine sand; 60% medium plastic fines. Color brown. Little HCL reaction. Gravelly clay found from 103.5'-104.0'. Gravelly clay is like above except there is up to 30% gravel. Damp.
												130.0'-154.0' Sandstone and caliche, sandstone is composed of 60% fine to coarse, mostly fine sand; and 40% low to medium plastic fines. Color brown. Violent HCL reaction. Sandstone is moderate consolidated and can be broken with light to hard hand pressure. Caliche in a 2 inch bed encountered at bottom of core. It has irregular contact with sandstone, and can be broken with moderate hammer blow. Damp.

EXPLANATION

Note suite of Geophysical logs available on this hole.

R=Rockbit
C=Core

CORE LOSS
CORE

Type of hole ..... D = Diamond, H = Hoystellite, S = Shot, C = Churn
Hole sealed ..... P = Packer, Cm = Cemented, Cs = Bottom of casing
Bx = 2.3 8" Nx = 3"

GEOLOGIC LOG OF DRILL HOLE

SHEET 3 OF 3

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE NV

HOLE NO. LG226 LOCATION Gibson Road North T22S,R62E, Sec. 02 cbb2 GROUND ELEV. Est. 1738' DIP (ANGLE FROM HORIZ.) 90°

BEGUN 4/12/80 FINISHED 6/26/80 COORDS. N. E. DEPTH OF OVERBURDEN N/A TOTAL DEPTH 305.0' BEARING

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Remarks Below LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P, Cs, or Cm)	PERCOLATION TESTS: DEPTH (FEET) TO	PERCOLATION TESTS: LOSS (G.P.M.)	PERCOLATION TESTS: PRESSURE (P.S.I.)	PERCOLATION TESTS: LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
	4" C	88							0			
	FB 12"								10			
									20			
									30			
									40			
	4" C	38							50			
									60			
									70			
									80			
									90			
	4" C	100		TD=305								

200.0'-204.0' Sandstone and caliche. Sandstone is composed of fine to coarse grained sand in a clay matrix. Sandstone is competent, it takes medium to hard hand pressure to break. A 3 inch bed of caliche occurs at bottom of core. It takes a hard hammer blow to break. Color brown. Violent HCL reaction. Note caliche nodules and gravel up to 2" diameter encountered at top of core.

250.0'-254.0' Mudstone and sandstone. One ft. of mudstone was recovered composed of 30% poorly graded fine sand and 70% clay. Color brown. Violent HCL reaction. Can be broken with light finger pressure. Lower 5 inches recovered was sandstone composed of 70% fine to coarse grained sand and 30% clay matrix. Color brown. Violent HCL reaction. Can be broken with mediumto hard hand pressure. Note 2" diameter piece of volcanic gravel recovered in top of core.

300.0'-301.25' Clayey gravel. Consists of 50% fine to coarse subrounded and subangular caliche and volcanic gravel, max. size 2 1/2 inches; 20% poorly graded fine sand; and 30% medium plastic fines. Color brown. Violent HCL reaction. Damp.

301.25'-301.5' Mudstone. Consists of mostly clay sized particles. It is very competent, it is very hard to break with hand pressure. Color White to red. Violent HCL reaction. Damp.

EXPLANATION

CORE LOSS

CORE RECOVERY

Note suite of Geophysical logs available on this hole.

FB=Rockbit

C=Core

Type of hole . . . . . D = Diamond, H = Hayestellite, S = Shot, C = Churn

Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing

Aprox. size of hole (X-series) Ex = 1-1 2", Ax = 1-7 8", Bx = 2-3 8", Nx = 3"

Aprox. size of core (X-series) Ex = 7 8", Ax = 1-1 8", Bx = 1-5 8", Nx = 2-1 8"

Water and Power

GEOLOGIC LOG OF DRILL HOLE

SHEET ..... OF ..

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE Nevada

HOLE NO. [illegible] LOCATION Gibson Road South T22S, R62E, Sec 14 bbc 1 GROUND ELEV. Est 1832' DIP (ANGLE FROM HORIZ.) 90°

BEGUN 6/19/80 FINISHED 7/17/81 DEPTH OF OVERBURDEN [illegible] TOTAL DEPTH 305.0' BEARING

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Remarks Below LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (F, Cs, or Cm)	DEPTH (FEET) TO	LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
Drilling Equipment Failing 1250 **Drilling and Sampling Prodedure** Drilled 7-7/8" hole for geologic logging to 305'. Dragbit 0-170', rockbit 170'-TD. Reamed 0-105' with 12" rockbit. Wash sample every 5'. **Drill Fluid** Failing - water, Guar Gum. **Hole Stability** Caving 0-18'. **Water level** Depth in Water ft. Date Not Measured **Purpose of Hole** Shallow aquifer observation well. **Drill Site** East side of Gilson Road, ½ mi. north of intersection with Lake Mead Drive. **Hole Completion** Backfilled hole with gravel to 110 ft. grouted 105-110. Set 6" mild steel casing with plate on bottom to 100'. Field Slotted 90'-100'. Backfilled with pea gravel 5-105'. Grouted 0-5'. **Note** Set of Geologic Logs available. Geophysical Logs labeled LG 228.	RB 7.9"											**0-18.0' Quaternary Alluvial Fan Deposits** Consists of boulders and cobbles in a gravelly sand matrix which grades downward into a gravelly sandy clay. Color light gray to gray brown. Contact with underlying Muddy Creek Fm. is tentative and is based on change in drill characteristics. Description based on wash samples. 0.0-18.0' Rockbits to boulders and cobbles and gravelly sand. Subrounded igneous cobbles and boulders up to 3 feet in dia. encountered on ground surface and visible down the hole. Gravelly sands consist of 50% mostly fine subrounded to subangular volcanic gravel, max. size ½ in.; 50% fine to coarse mostly coarse sand. Color light gray to dark brown. Light HCL reaction. **18.0'-305.0' Tertiary Muddy Cr. Fm.** Rockbits and cores to Sandy Clay, Gravelly Sandy Clays, Gravelly Sands and Sands which are brown to gray brown to dark gray to cream in color. Contact tentative based on lithologic change. Description based on wash samples. 18.0'-125.0' Rockbits to Gravelly Sandy Clay. Consists of about 40% fine subrounded to subangular volcanic gravel, max. size 3/4 in.; 30% fine sand; 30% medium plastic fines. Color brown. Violent HCL reaction. Gravel may be from zones above. 125.0'-170.0' Rockbits to Gravelly Sand. Consists of about 40% fine subrounded to subangular volcanic gravel, max. size ½ in.; 50% fine to coarse, mostly coarse sand; 10% medium plastic fines. Color brown. Violent HCL reaction. Gravels may be from zones above. Materials drilled with drag bit.

EXPLANATION

CORE LOSS

CORE RECOVERY

RB = Rockbit

Note suite of Geophysical logs available on this hole(labeled LG228)

Type of hole ..... D = Diamond, H = Hayestellite, S = Shot, C = Churn
Hole sealed ..... P = Packer, Cm = Cemented, Cs = Bottom of casing
Approx. size of hole (X-series) .. Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
Approx. size of core (X-series) .. Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"

Water and Power

GEOLOGIC LOG OF DRILL HOLE

SHEET 2 OF 2

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE Nevada

HOLE NO. LG 227 LOCATION Gibson Road, South, T22S, R62E Sec. 14 bbc GROUND ELEV. Est. 1832' DIP (ANGLE FROM HORIZ.) 90°

COORDS. N. E.

BEGUN 6/19/80 FINISHED 7/17/80 DEPTH OF OVERBURDEN 0' TOTAL DEPTH 305.0' BEARING

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Remarks Below LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P, Cs, or Cm)	PERCOLATION TESTS: DEPTH (FEET) TO	PERCOLATION TESTS: LOSS (G.P.M.)	PERCOLATION TESTS: PRESSURE (P.S.I.)	PERCOLATION TESTS: LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
	RB 7.9											170.0'-270.0' Rockbits to Gravelly Clayey Sand and Sand. Gravelly clayey sand consists of 30% fine subrounded to subangular volcanic gravel, max. size ½ in.; 40% fine to coarse, mostly coarse sand; and 30% medium plastic fines. Color brown to gray brown. Violent HCL reaction. Materials hard from 170'-235.0'. Had to change to rockbit to drill. Increasing clay from 235.0'-270.0'. 270.0'-290.0' Rockbits to Sandy Clay. Consists of a trace of fine volcanic gravel; max. size ½ in.; 40% fine to coarse mostly fine sand; 60% low to medium plastic fines. Color light brown to cream. 290.0'-305.0' Rockbits to Gravelly Clayey Sand. Consists of 30% fine subrounded to subangular volcanic gravel, max. size ½ in.; 40% fine to coarse, mostly coarse sand; 30% medium plastic fines. Color brown to gray brown. Violent HCL reaction.
												TD = 305'

RB = Rockbit

EXPLANATION

CORE LOSS

CORE RECOVERY

Type of hole . . . . . D = Diamond, H = Hayestellite, S = Shot, C = Churn
Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing
Approx. size of hole (X-series) . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
Approx. size of core (X-series) . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"
Outside dia. of casing (X-series) . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"

GEOLOGIC LOG OF DRILL HOLE

SHEET ..... OF .....

FEATURE Exploratory Wells PROJECT CRBSCD Las Vegas Wash Unit STATE Nevada

HOLE NO. [illegible] LOCATION Gibson Road South 7225', 862E, Sec. 14 bbc 2 Est. 1802' GROUND ELEV. ..... DIP (ANGLE FROM HORIZ.) 90°

BEGUN 7/17/80 FINISHED 7/ /80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 305.0' BEARING .....

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED Not Measured LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Broadbent

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P, Ca, or Cm)	PERCOLATION TESTS: DEPTH (FEET) TO	PERCOLATION TESTS: LOSS (G.P.M.)	PERCOLATION TESTS: PRESSURE (P.S.I.)	PERCOLATION TESTS: LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
Drill Equipment Failing 1250 and DeCyrus Erie Drilling and Sampling Procedure Drilled 12 in. hole with DeCyrus cable tool 0-50 ft. and 240-280 ft. Drilled with 12¼ inch drag bit. 50-170. 12¼ inch rock bit 170-265, 265-305'. Cored (4") 50-55'; 60% recovery and 260-265', 60% recovery. Wash sample every 5 ft. Drill Fluid DeCyrus Erie - Water Failing - Water QuarGum, Bentonite and Bara Floss. Hole Stability Hole stable Water Level Depth in ft. Date Not measured. Drill Site East side of Gibson road, ½ mile nort of intersection with Lake Mead Drive. Hole Completion Set 6" mild steel casing 0-300' with plate on bottom. Field slotted 290-300'. Backfilled with pea gravel 150-300' and grouted 0-150'.	PB 12" 4" C	60										0.0-20.0 Quaternary Alluvial Fan Deposits Rockbits to Boulders Cobbles in a gravelly sand matrix which are light gray to brown. Contact with underlying Muddy Cr. Fm. is tentative based on change in Lithology. Description based on wash samples. 0-20'0 Rockbits to Boulders and Cobbles in a gravelly sand matrix. Subrounded volcanic boulders visible on the surface and down the hole. Gravelly sand consists of 50% mostly fine subrounded to subangular volcanic gravel, max. size ½-inch; and 50% fine to coarse mostly coarse sand. Color light gray to dark brown. Light HCL reaction. 20.0' - 305.0' Tertiary Muddy Cr. Fm. Rockbits to Sandy Clay, clayey sand, sandy gravels, sands, gravel, clayey gravel, and gravelly clay which are tan to brown to brown to gray brown to dark gray to cream in color. Description based on wash samples and core. 20.0' - 55.0' Rockbits to Sandy Clay. About 30% poorly graded fine sand and 70% low to medium plastic fines. Color brown to tan brown. Violent HCL reaction. 50' - 55.0' Sandy clay. About 20% poorly graded fine sand, and 80% low to medium plastic fines. Color tan brown. Violent HCL reaction. 55.0' - 100.0' Rockbits to Clayey Sand. Consists of a trace of fine subangular volcanic gravel; 80% well graded sand; and 20% low to medium plastic fines. Violent HCL reaction. 100.0 - 185.0' Rockbits to sandy gravels. Consists of about 50% fine subrounded to subangular igneous gravel, max. size 0.5 in; 30% well graded sand; 20% low plastic fines. Color gray brown. Violent HCL reaction.
	RB 12"											

EXPLANATION

PB=Percussion bit
RB=Rockbit
C=Core

CORE LOSS
CORE RECOVERY

Type of hole ..... D = Diamond, H = Hayrattlite, S = Shot, C = Churn
Hole sealed ..... P = Packer, Cm = Cemented, Ca = Bottom of casing
Approx. size of hole (X-series) .. Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
Approx. size of core (X-series) .. Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"

Water and Power

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 2

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Fault STATE Nevada

HOLE NO. LW228 LOCATION Gibson Road South T22S, R62E, Sec. 14 SBBM GROUND ELEV. 1432' DIP (ANGLE FROM HORIZ.) 90

BEGUN 7/17/80 FINISHED 7/18/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 293' BEARING

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED Not Measured LOGGED BY D.A. Trudeau LOG REVIEWED BY

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P, Cs, or Cm)	PERCOLATION TESTS: DEPTH (FEET) TO	PERCOLATION TESTS: LOSS (G.P.M.)	PERCOLATION TESTS: PRESSURE (P.S.I.)	PERCOLATION TESTS: LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
	RB 12"								0			185.0' - 225.0' Rockbits to Sands. Consists of about 5% fine subrounded to subangular volcanic gravel, max. size 3/8 in.; 95% fine to coarse mostly medium grained sand; and a trace of plastic fines. Color gray brown. Violent HCL reaction. 225.0' - 240.0' Rockbits to Gravel. Consists of about 90% poorly graded fine subrounded to subangular igneous gravel; max. size 3/8 in. 5% well graded sand; 5% medium plastic fines. Color dark gray. Violent HCL reaction. 240.0' - 255.0' Rockbits to Clayey Gravel. Consists of about 50% poorly graded fine subrounded to subangular igneous gravel; max. size 3/8 inch.; 20% well graded sand; 30% medium plastic fines. Color brown. Violent HCL reaction. 255.0' - 260.0' Rockbits to Gravelly Clay. Consists of about 30% fine subrounded to subangular igneous gravel, max. size 3/8 in.; 20% poorly graded mostly fine sand; 50% medium plastic fines. Color brown. Violent HCL reaction. 260'0 - 290.0' Rockbits to Sandy Clay and Sand. Sandy Clay consists of a trace of fine igneous gravel; about 50% fine to coarse mostly fine grained sand; 50% low to medium plastic fines. Color cream to light brown. Moderate HCL reaction. Sand described below. 260.0 - 265.0 ft. Sand About 100% fine to medium grained sand, mostly subangular igneous and medium grained. Trace of fines. Color dark gray to cream. Violent HCL reaction. Unit is lightly consolidated.
									10			
									20			
									30			
									40			
									50			
									60			
									70			
									80			
									90			

EXPLANATION

RB=Rockbit

CORE LOSS

CORE RECOVERY

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn
Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing
Approx. size of hole (X-series) . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
Approx. size of core (X-series) . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"

Water and Power

GEOLOGIC LOG OF DRILL HOLE

SHEET ... OF ...

FEATURE Exploratory Wells PROJECT Gibson Las Vegas Basin STATE Nevada

HOLE NO. LG22S LOCATION Gibson Road South, T22S,R62E Sec. 14 bbc 2

COORDS. N. ... E. ... GROUND ELEV. Est. 1032' DIP (ANGLE FROM HORIZ.) ...

BEGUN 7/17/80 FINISHED 7/ /80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 305.0' BEARING ...

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED Not Measured LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P, Ca, or Cm)	PERCOLATION TESTS: DEPTH (FEET) TO	PERCOLATION TESTS: LOSS (G.P.M.)	PERCOLATION TESTS: PRESSURE (P.S.I.)	PERCOLATION TESTS: LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
	RB 12"											290.0' - 305.0' Rockbits to Gravelly, Clayey Sand. Consists of about 30% fine subrounded to subangular igneous gravel, max. size ½-inch; 40% fine to coarse mostly coarse sand; 30% low to medium plastic fines. Color brown to gray brown. Violent HCL reaction.
	4" C	60										
												TD=305'

EXPLANATION

RB=Rockbit
C=Core

CORE LOSS
CORE RECOVERY

Type of hole ... D = Diamond, H = Hayrstellite, S = Shot, C = Churn
Hole sealed ... P = Packer, Cm = Cemented, Cs = Bottom of casing
Approx. size of hole (X-series) ... Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
Approx. size of core (X-series) ... Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"

LG231

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF

FEATURE: Exploratory Wells
PROJECT: CRBSCP Las Vegas Wash Unit
STATE: Nevada

HOLE NO.: LG 231
LOCATION: KDWN Towers, T21S, R63E, Sec 32 [illegible]
COORDS. N. .... E. ....
GROUND ELEV.: Est 1660'
DIP (ANGLE FROM HORIZ.): 90°

BEGUN: 7/02/80
FINISHED: 7/ /80
DEPTH OF OVERBURDEN: N/A
TOTAL DEPTH: 105.0'
BEARING:

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED: See Remarks Below
LOGGED BY: D.A. Trudeau
LOG REVIEWED BY: D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P, Cs, or Cm)	TO	LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
Drilling Equipment BuCyrus Erie Cable Tool **Drilling Sampling Procedure** 12 inch percussion bit 0'-105' Wash sample every 5" (?). **Drill Fluid** Water **Hole Stability** Sluffing 0-30' **Water Level** not measured **Drill Site** Near KDWN Towers in Henderson. **Hole Completion** Set 6" mild steel casing 0-98.5' with plate on bottom, and lower 10' field slotted. Backfilled with gravel and grouted 0-5'.	HB 12"								10–90			For approximately similar geologic conditions refer to the well logs at LG232, and LG232A.

EXPLANATION

HB = HookBit

CORE LOSS
CORE RECOVERY

Type of hole . . . . . . D = Diamond, H = Hayrellite, S = Shot, C = Churn
Hole sealed . . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing
Approx. size of hole (X-series) . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
Approx. size of core (X-series) . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"
Outside dia. of casing (X-series) . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"
Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

Water and Power

LG 232

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 1

FEATURE Exploratory Wells — PROJECT CRBSCP Las Vegas Wash Unit — STATE Nevada

HOLE NO. LG 232 — LOCATION KDWN Towers T21S,R63E, Sec. 32 cdc 2

COORDS. N. ..... E. ..... — GROUND ELEV. Est. 1660' — DIP (ANGLE FROM HORIZ.) 90°

BEGUN 7/02/80 — FINISHED 7/30/80 — DEPTH OF OVERBURDEN N/A — TOTAL DEPTH 305.0' — BEARING .....

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Below — LOGGED BY D.A. Trudeau — LOG REVIEWED BY D. Branscomb

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P, Cs, or Cm)	PERCOLATION TESTS: DEPTH (FEET) TO	PERCOLATION TESTS: LOSS (G.P.M.)	PERCOLATION TESTS: PRESSURE (P.S.I.)	PERCOLATION TESTS: LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
Drilling Equipment Failing 1250 **Drilling and Sampling Procedure** 12 inch dragbit 0-305.0'. Wash sample every 5 ft. Cored following depth with respective recovery. 45'-50' 100% 100'-105' 20% 150'-155' 100% 200'-205' 80% 250'-255' 100% 300'-305' 100% **Drilling Fluid** Water, Quar Gum, and native clays **Hole Stability** Hole open with minor sluffing **Water Level** Depth in ft. — Date Not measured **Purpose of Hole** Deep Aquifer Observation Well. **Drill Site** Dus east of KDWN Towers in Henderson **Hole Completion** Set 6" mild steel casing 0-300' with plate on bottom. Field slotted 290'-300'. Backfilled with gravel 150'-305' grouted 0-150'.	Db 12" C 4"	100									<u>0-30.0' Quarternary Alluvial Fan and Valley Fill Mixtures</u> Rockbits to sand and sandy gravel which are dark gray in color. Contact with underlying Muddy Creek Fm. based on change in lithology. Description based on wash samples. <u>0-20'</u> Rockbits to sand. Consists of about 100% poorly graded medium grain subangular volcanic sand. Trace of plastic fines. Color dark gray. Moderate to high HCL reaction. <u>20-30'</u> Rockbits to sandy gravel. Consists of about 80% poorly graded fine gravel, max. size 0.2'; 20% well graded volcanic sand, trace of plastic fines. Color dark gray. Low to high HCL reaction. <u>30.0'-305.' Tertiary Muddy Creek Fm</u> Rockbits and cores to gravelly clay, sandy clay, clayey gravel, clayey sand and gypsum which are brown to light green to reddish brown to cream to tan brown to turquoise in color. Contact based on change in lithology. Description based on wash samples and core. <u>30.0'-55.0'</u> Rockbits to gravelly clay and sandy clay. Consists of about 30% poorly graded fine gravel; max. size 0.2 inch; about 20% fine to coarse mostly fine sand; 50% medium plastic fines. Color green to greenish white. Violent HCL reaction. Note no samples 35-50 ft. <u>45'-50'</u> Sandy clay and gypsum. Sandy clay consists of a trace of subrounded igneous gravel max. size 0.5 inch; about 20% poorly graded fine sand; 80% medium to high plastic fines. Color brown 45-46', light green 46-48.5' and reddish brown 48.5'-50.0'. Low to high HCL reaction 45'-48.5'. Low reaction 48.5-50.0'. Gypsum occurs as small crystals throughout interval and makes up about 10% of core. Vein of gypsum 0.5 inch thick, 4 inch long at 45.5'. One inch bed of crystals at 48 ft.
	Db 12"											

EXPLANATION

Db=Dragbit
C=Core

CORE LOSS
CORE RECOVERY

Type of hole ..... D = Diamond, H = Hayesville, S = Shot, C = Churn
Hole sealed ..... P = Packer, Cm = Cemented, Cs = Bottom of casing
Approx. size of hole (X-series) .. Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
Approx. size of core (X-series) .. Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"
Outside dia. of casing (X-series). Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"
Inside dia. of casing (X-series).. Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

GEOLOGIC LOG OF DRILL HOLE

SHEET 2 OF 4

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit

HOLE NO. LG232 LOCATION KDWN Towers T21S,R63E Sec. 32 cdc2 STATE Nevada

COORDS. N. E. GROUND ELEV. Est. 1660' DIP (ANGLE FROM HORIZ.) 90°

BEGUN FINISHED DEPTH OF OVERBURDEN N/A TOTAL DEPTH 305.0' BEARING

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Below LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P, Cs or Cm)	PERCOLATION TESTS: DEPTH (FEET) TO	PERCOLATION TESTS: LOSS (G.P.M.)	PERCOLATION TESTS: PRESSURE (P.S.I.)	PERCOLATION TESTS: LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
	4" C	20							0			
	Db 12"								10			55.0'-305.0' Rockbits to gypsum, s clay and clayey gravel. Consists about 50% crystallin gypsum occu in pieces up to 0.2 inch thick. Sandy Clay is about 30% poorly g fine sand; 70% medium plastic fi Color reddish brown to green. Li HCL reaction. No samples 85-105 See core description for additio information.
									20			100'-105' Sandy Clay, Gypsum and Clayey Gravel. Sandy clay consists of about 20% poorly graded fin sand; and 80% medium to higl plastic fines. Color brown to 101.8 and light green 10 to 102.8 ft. No Hcl reactio Gypsum occurs as crystal in- terspersed throughout Sandy Clay. Crystals are up to 3 inches. long and make up 5(of sample to 101.8' and are coarse sand sized and make u 20% of sample 101.8' to 102. Clayey gravel occurs from 102.8' to 105.0 and consists of about 70% fine subrounded igneous and gypsum gravel, max size 0.3 inch; and 30% sandy clay. Color light brow No Hcl reaction.
									30			
									40			
	4" C	100							50			
	Db 12"								60			150.0'-155.0' Gravel, sandy clay, and gypsum. About 50% of core composed of sand clay. 50% of core from 150'- 152.5' is gravel; gravel is poorly graded fine subangula igneous and crystalline gyps max size 0.5 inch. Sandy cla consists of about 20% poorly graded fine sand and 80% med- ium plastic fines. Color tan brown to brown. Little or no HCL reaction. Gypsum occurs as moderately well formed crystals up to 1 inch long interspersed throughout and as crystals in a bed 0.5 inch thick at 154.5'.
									70			
									80			200.0'-205.0' Gypsi- ferous gravel, sandy clay, and gypsum. Gypsiferous grave occur in first 1 ft. recovere and middle section of core. Gypsiferous gravels consist o
									90			

EXPLANATION

Db=Dragbit
C=Core

CORE LOSS
CORE RECOVERY

Type of hole . . . . . D = Diamond, H = Hayzatellite, S = Shot, C = Churn
Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing
Approx. size of hole (X-series) . . Ex = 1-1.2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
Approx. size of core (X-series) . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"
Outside dia. of casing (X-series) . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 4-1/2"

GEOLOGIC LOG OF DRILL HOLE

SHEET 3 OF 4

FEATURE: Exploratory Wells | PROJECT: CRBSCP | STATE: NEVADA

HOLE NO.: LG232 | LOCATION: KDWN Towers T21S,R63E, Sec. 32 cdc 2 | GROUND ELEV.: Est. 1bpo' | DIP (ANGLE FROM HORIZ.): 90°

COORDS. N. ..... E. .....

BEGUN ..... | FINISHED ..... | DEPTH OF OVERBURDEN: N/A | TOTAL DEPTH: 305.0' | BEARING .....

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED: See Below | LOGGED BY: D. A. Trudeau | LOG REVIEWED BY: D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P, Cs, or Cm)	PERCOLATION TESTS: DEPTH (FEET) TO	PERCOLATION TESTS: LOSS (G.P.M.)	PERCOLATION TESTS: PRESSURE (P.S.I.)	PERCOLATION TESTS: LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
	4" C	80							0			70% fine to coarse subangular igneous and gypsum gravel up to 1.5 inch in diameter; 20% sandy clay. Color brown. No HCL reaction. Gypsum occurs as crystals and makes up 50% of gypsiferous gravels.
	Db 10 12"								10			
									20			Sandy clay consists of about 10% poorly graded fine sand and 90% medium to high plastic fines. Color dark brown at beginning and end of core run and cream in between. No Hcl reaction. Gypsum occurs as 0.1 inch diameter crystal interspersed throughout and as bed 0.1 ft. thick 1.5 ft. from bottom of core.
									30			
									40			250.0'-255.0' Sandy clay and gypsum. Sandy clay consists of about 20% poorly graded fine sand and 80% medium to high plastic fines. Color light green to turquoise to cream colored. Gypsum occurs as crystals up to 1.5 inch long interspersed throughout making up 30% of core. Beds of almost 100% gypsum crystals that are 0.5 ft. thick occur at 250.8' and 252.8'.
	4" C	100							50			
	Db 60 12"								60			
									70			300.0'-305.0' Sandy Clay, Clayey sand, gypsum and clayey gravel. Clayey sand consists of about 80% poorly graded fine sand, 20% low to medium plastic fines. Occurs from 300.'-301.'. Color light green. No HCL reaction. Sandy clay and gypsum occurs from 301'-303'. Sandy clay consists of about 20% poorly graded fine sand and 80% clay of medium to high plasticity. Gypsum makes up to 10% of sample and occur mostly as sand size gypsum crystals interspersed throughout. Gypsum crystals up to 1 inch long do occur. Clayey Gravel occurs from 303'-304.2'. Clayey gravel consists of about 50% fine sub angular igneous and crystalline gypsum gravel; 50% sandy clay Color light green. No Hcl reaction. Sandy clay and gyps
									80			
									90			

EXPLANATION

CORE LOSS

CORE RECOVERY

Db=Dragbit

C=Core

Type of hole ..... D = Diamond, H = Hayestellite, S = Shot, C = Churn

Hole sealed ..... P = Packer, Cm = Cemented, Cs = Bottom of casing

Approx. size of hole (X-series) .. Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"

Approx. size of core (Y-series) .. Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"

-741
nd Power

GEOLOGIC LOG OF DRILL HOLE

SHEET 4 OF 4

CRBSCP Las Vegas Wash

FEATURE Exploratory Wells PROJECT STATE Nevada

HOLE NO. LG-232 LOCATION KDJN Towers T21S R63E Sec. 32 cdc2

COORDS. N. E. GROUND ELEV. 1660' DIP (ANGLE FROM HORIZ.) 90°

BEGUN FINISHED DEPTH OF OVERBURDEN N/A TOTAL DEPTH 305.0' BEARING

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branscecer

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS: DEPTH (FEET) FROM (P, Cs, or Cm)	PERCOLATION TESTS: DEPTH (FEET) TO	PERCOLATION TESTS: LOSS (G.P.M.)	PERCOLATION TESTS: PRESSURE (P.S.I.)	PERCOLATION TESTS: LENGTH OF TEST (MIN.)	ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
	4" C	100			TD=305'							occurs from 304.2'-305.0' Sandy clay consists of about 10% poorly graded fine sand and 90% medium plastic fines. Color light green. No HCL reaction gypsum occur as crystals up to 3 inch long interspersed in sandy clay and is 10% of total sample.

EXPLANATION

C=Core

CORE LOSS

CORE RECOVERY

Type of hole . . . . . D = Diamond, H = Hayerallite, S = Shot, C = Churn
Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing
Approx. size of hole (X-series) . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
Approx. size of core (X-series) . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"

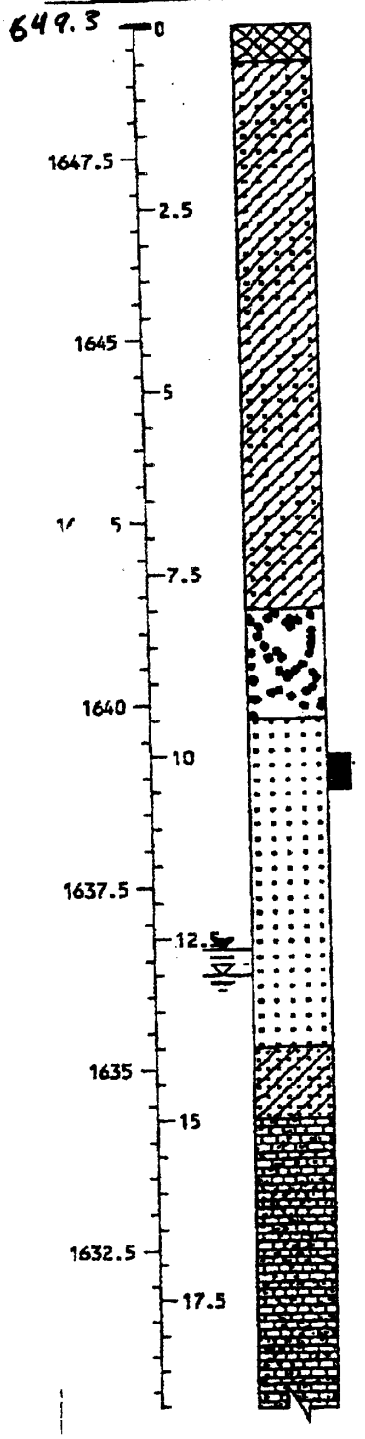
EXPLORATION LOG
MW-AJ

CONFIDENTIAL

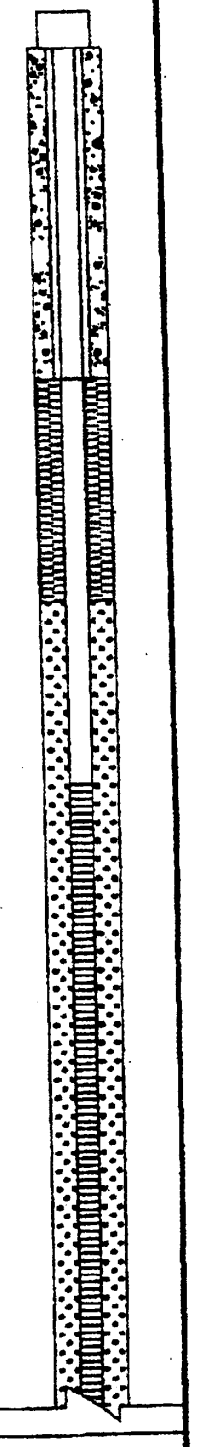
PROJECT: FORMER PEPCON FACILITY
SITE LOCATION: SEE SITE PLAN
EXPLORATION SIZE (diameter): 2" MONITORING WELL
G.S. ELEVATION: 1649.30

PROJECT NO.: 97664V1
EXPLORATION DATE: 2-12-98
EQUIPMENT: MOBILE B-61 HDX
LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 13' DATE MEASURED: 2-12-98
FINAL DEPTH TO WATER: 12.65' DATE MEASURED: 4-16-98



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
		F	Fill: Asphalt and roadbed.	
		SP-SC	Brown poorly graded sand with clay and gravel (fine), dry to slightly moist and dense (mostly subrounded basalt).	
			...6" gravel lense	
		GP	Brown poorly graded gravel (fine) with clay and sand, dry to slightly moist and dense.	
		SP	Dark brown poorly graded sand with gravel (fine), very moist to wet and very dense.	
			...small gravel layer (3")	
			...Groundwater Encountered	
		SC	Very pale brown clayey sand, wet and medium dense.	
		C	White caliche, dry, cemented and hard to very hard.	
			...strongly cemented and very hard to 19.0	

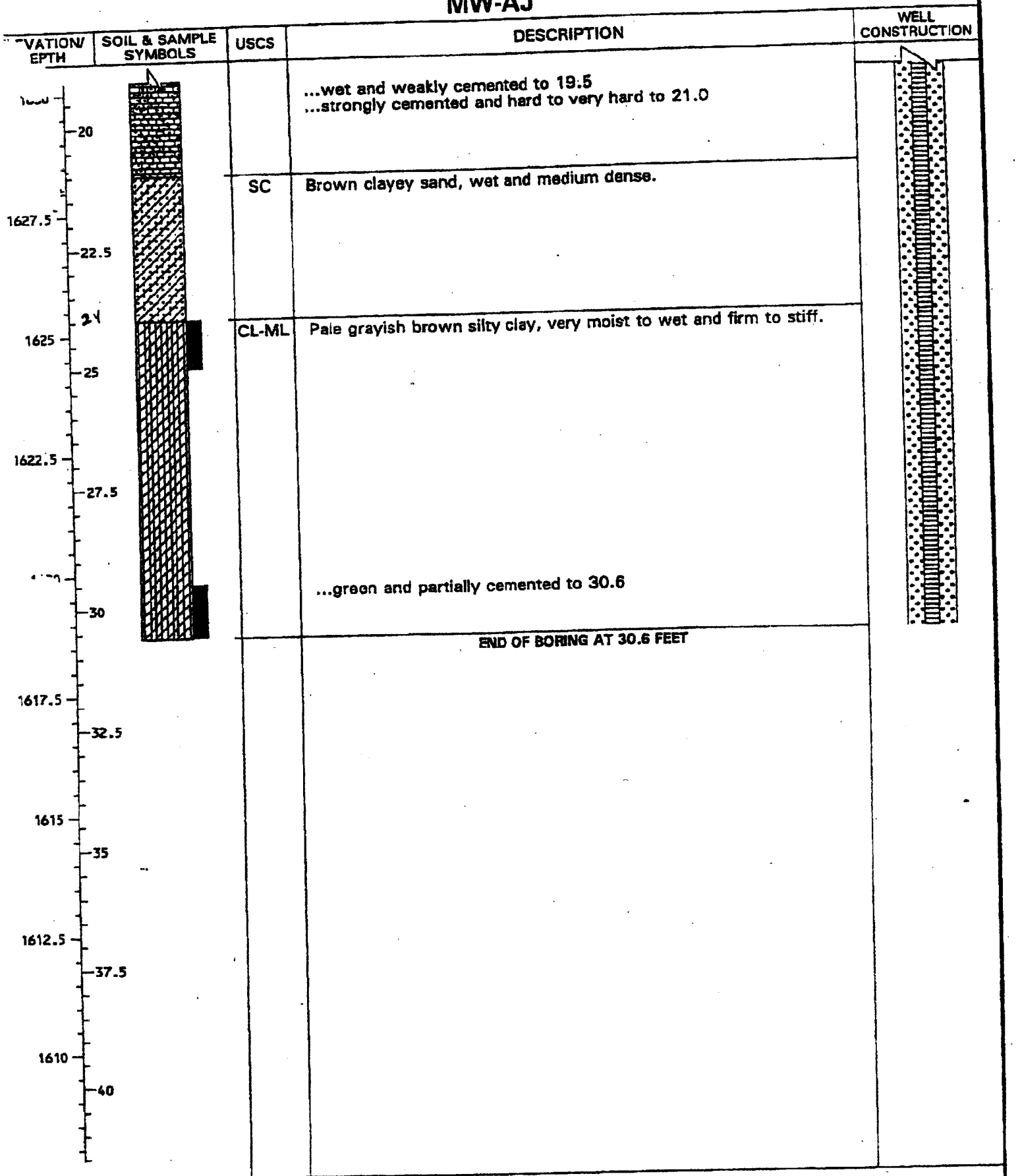


GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 46

CONFIDENTIAL

EXPLORATION LOG
MW-AJ



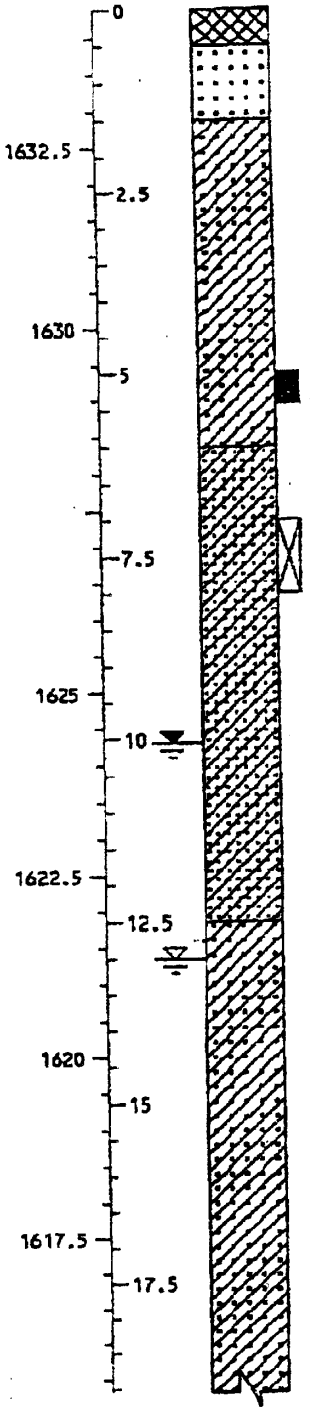
CONFIDENTIAL

EXPLORATION LOG
MW-K1

PROJECT: FORMER PEPCON FACILITY
LOCATION: SEE SITE PLAN
EXPLORATION SIZE (diameter): 2" MONITORING WELL
G.S. ELEVATION: 1634.37

PROJECT NO.: 97664V1
EXPLORATION DATE: 2-23-98
EQUIPMENT: MOBILE B-61 HDX
LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 13' DATE MEASURED: 2-23-98
FINAL DEPTH TO WATER: 10.05' DATE MEASURED: 2-26-98



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
		F	Fill: Asphalt and roadbed.	
		SP	Brown poorly graded sand with gravel, dry to slightly moist and dense.	
		SP-SC	Brown poorly graded sand with clay, slightly moist and dense.	
			...with white moist clay nodules to 5.0	
			...partially cemented to 6.0	
		SC	Brown clayey sand, slightly moist to moist and medium dense to dense.	
			...moist and medium dense to 12.5	
		SP-SC	Brown poorly graded sand with clay, wet and medium dense. Groundwater Encountered	
			...with gravel to 21.0	

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 16

EXPLORATION LOG
MW-K1

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1615 / 20				
		C	White caliche, wet, cemented and hard.	
1612.5 / 22.5				
			END OF BORING AT 23.5 FEET	
1610 / 25				
1607.5 / 27.5				
30				
1602.5 / 32.5				
1600 / 35				
1597.5 / 37.5				
1595 / 40				

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 16

EXPLORATION LOG
MW-K5

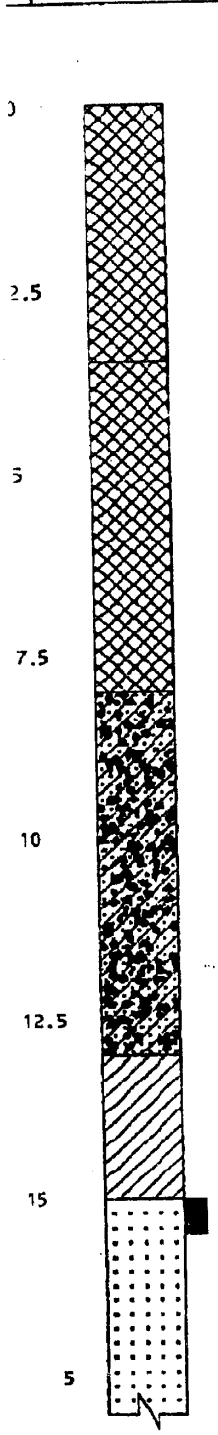
CONFIDENTIAL

'ORMER PEPCON FACILITY
.TION: SEE SITE PLAN
ATION SIZE (diameter): 2" MONITORING WELL
EVATION: 1592.49

PROJECT NO.: 97664V1
EXPLORATION DATE: 4-2-98
EQUIPMENT: MOBILE B-61-HDX
LOGGED BY: S. JOHNSON

DEPTH TO WATER: 24 DATE MEASURED: 4-2-98
EPTH TO WATER: 18.7 DATE MEASURED: 4-3-98

/	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		F	Dark brown poorly graded sand with silt, moist and dense.	
2.5		F	Dark brown poorly graded gravel with clay and sand, moist and dense. ...black with organic material to 8.0	
5				
7.5		GP-GC	Dark brown poorly graded gravel with clay and sand, moist and dense.	
10				
12.5		CL	Dark brown sandy lean clay, moist and very stiff.	
15		SP	Dark brown poorly graded sand, moist to very moist and very dense. ...groundwater encountered, medium dense to 22.0	
5				



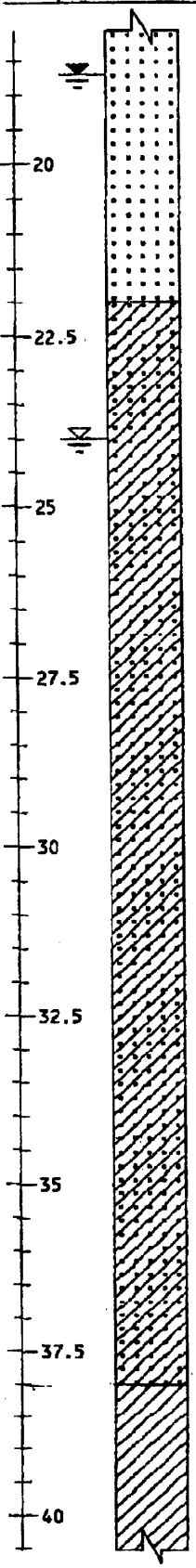
GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

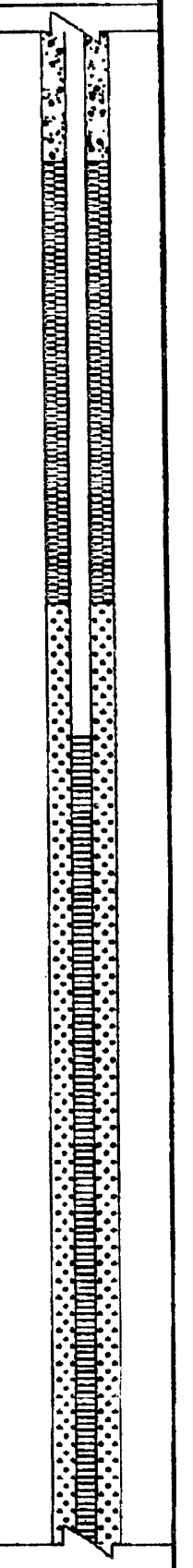
Figure No. 19

EXPLORATION LOG
MW-K5

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
72.5 — 20			...gravel lense to 22.0	
1570 — 22.5		SP-SC	Dark reddish brown clayey sand, wet and medium dense to dense.	
67.5 — 25			...gravel lense to 27.5	
1565 — 27.5			... dense to 32.5	
62.5 — 30			...gravel lense to 32.5	
1560 — 32.5			...dense to very dense to 35.0	
57.5 — 35			...medium dense to 38.0	
1555 — 37.5		CL	White and green mottled sandy lean clay, moist to very moist and stiff.	
40				





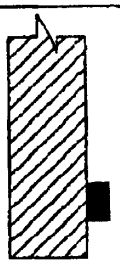
GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 19

EXPLORATION LOG
MW-K5

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1550 — 42.5			END OF BORING AT 43.5 FEET	
547.5 — 45				
1545 — 47.5				
542.5 — 50				
1540 — 52.5				
537.5 — 55				
1535 — 57.5				
1532.5 — 60				
530 — 62.5				



GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 19

EXPLORATION LOG
MW-K6

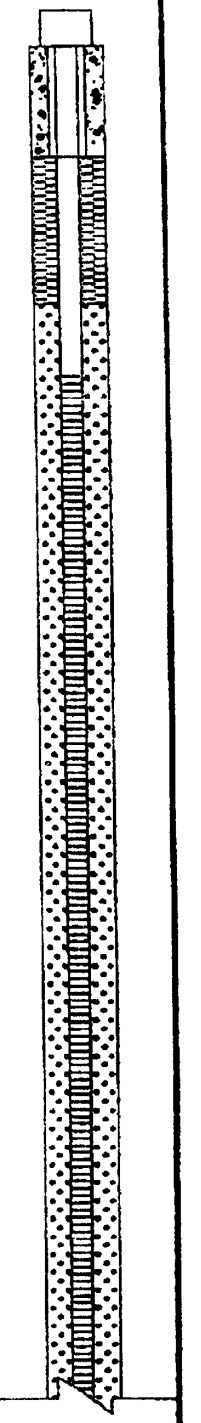
CONFIDENTIAL

ECT: FORMER PEPCON FACILITY
E LOCATION: SEE SITE PLAN
EXPLORATION SIZE (diameter): 2" MONITORING WELL
G.S. ELEVATION: 1557.77

PROJECT NO.: 97664V1
EXPLORATION DATE: 3-12-98
EQUIPMENT: MOBILE B-53
LOGGED BY: S. ORNDORFF

NITIAL DEPTH TO WATER: 5 DATE MEASURED: 3-12-98
FINAL DEPTH TO WATER: 2.40 DATE MEASURED: 3-16-98

EVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
57.5 / 0		SP-SM	Light brown poorly graded sand with silt and gravel, dry and very dense. ...slightly moist to 3.0	
1555 / 2.5		SC	Brown clayey sand with gravel, moist to wet and very dense.	
52.5 / 5		GP-GC	Brown poorly graded gravel with clay and sand, wet and very dense. Groundwater Encountered	
1550 / 7.5			...fine gravel to 10.0	
47.5 / 10		SP-SC	Brown poorly graded sand with clay and gravel, wet and very dense.	
1545 / 12.5				
42.5 / 15				
) / 17.5				



GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 20

EXPLORATION LOG
MW-K6

CONFIDENTIAL

SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
20			
22.5			
25			
27.5	GP-GC	Brown poorly graded gravel with clay and sand, wet and very dense.	
30			
32.5	SP	Brown poorly graded sand, wet and very dense.	
	SC	Pale pinkish brown clayey sand, wet and very dense.	
35			
	CL	White and pink mottled sandy lean clay, wet and stiff.	
37.5			
40			
		END OF BORING AT 41 FEET	

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 20

EXPLORATION LOG
MW-K7

CONFIDENTIAL

FORMER PEPCON FACILITY — PROJECT NO.: 97664V1
TION: SEE SITE PLAN — EXPLORATION DATE: 3-11-98
ATION SIZE (diameter): 2" MONITORING WELL — EQUIPMENT: MOBILE B-53
EVATION: 1554.45 — LOGGED BY: S. ORNDORFF

DEPTH TO WATER: 7.5 — DATE MEASURED: 3-11-98
EPTH TO WATER: 8.19 — DATE MEASURED: 3-16-98

SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
	SP-SM	Light brown poorly graded sand with silt and gravel, dry and dense. ...dry to slightly moist to 3.0	
2.5	CL	Brown sandy lean clay with gravel, slightly moist and very stiff.	
	GP-GC	Light brown poorly graded gravel with clay and sand, slightly moist to moist and very dense.	
	SP-SC	Light brown poorly graded sand with clay, moist and very dense.	
0	SC	Light brown clayey sand with gravel, wet and dense. Groundwater Encountered	
2.5	ML	Brown silt with sand, wet and stiff.	
5			
7.5			

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 21

EXPLORATION LOG
MW-K7

CONFIDENTIAL

SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
20		...6" clay lense	
22.5			
25			
27.5			
	SP-SM	Light brown poorly graded sand with silt, wet and very dense.	
32.5			
	GP-GM	Very pale brown poorly graded gravel with silt and sand, wet and very dense.	
35			
37.5			
	SP	Very pale brown poorly graded sand with gravel, wet and dense.	
40			
		END OF BORING AT 41 FEET	

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 21

EXPLORATION LOG
MW-K8

CONFIDENTIAL

FORMER PEPCON FACILITY
LOCATION: SEE SITE PLAN
DRILLING SIZE (diameter): 2" MONITORING WELL
ELEVATION: 1560.25

PROJECT NO.: 97664V1
EXPLORATION DATE: 3-10-98
EQUIPMENT: MOBILE B-53
LOGGED BY: S. ORNDORFF

DEPTH TO WATER: 18.0 DATE MEASURED: 3-10-98
DEPTH TO WATER: 18.88 DATE MEASURED: 3-16-98

W/	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		GP-GM	Light brown poorly graded gravel with silt and sand, dry and very dense. ...reddish brown and dry to slightly moist to 3.0	
2.5		SP	Reddish brown poorly graded sand with gravel, dry to slightly moist and very dense.	
5			...slightly moist to 13.5	
			...with coarse gravel to 9.5	
10				
12.5		GP	Reddish brown poorly graded gravel with sand, slightly moist and very dense.	
15		SP	Reddish brown poorly graded sand with gravel, slightly moist to moist and very dense.	
17.5		SP-SM	Brown poorly graded sand with silt and gravel, wet and very dense. Groundwater Encountered	

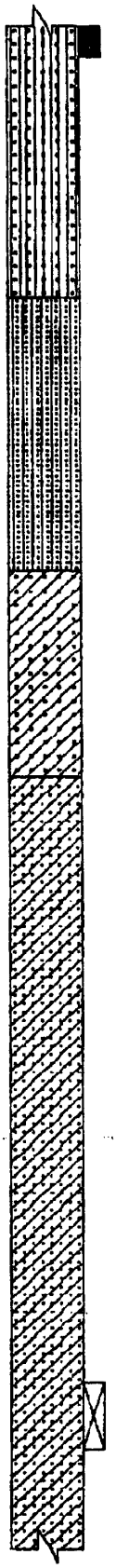
GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

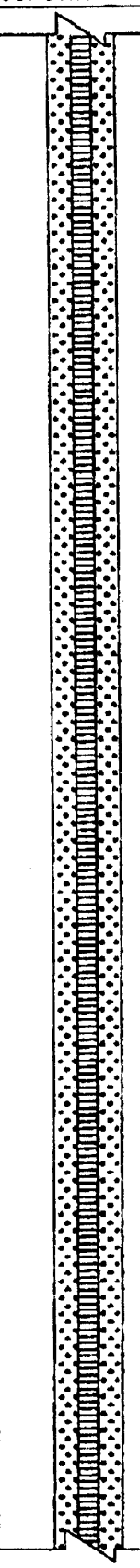
Figure No. 22

EXPLORATION LOG
MW-K8

CONFIDENTIAL

N/ SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
-20			
-22.5	SM	Brown silty sand with gravel, wet and very dense.	
-25			
-27.5	SP-SC	Brown poorly graded sand with clay and gravel, wet and very dense.	
-30	SC	Brown poorly graded clayey sand, wet and dense.	
-32.5			
-35			
-37.5			
-40			





GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 22

EXPLORATION LOG
MW-K8

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
42.5				
1517.5				
45		GP-GC	Light brown poorly graded gravel with clay and sand, wet and very dense.	
1515				
47.5		CL	White gravelly clay with sand, wet and very stiff.	
1512.5				
50			END OF BORING AT 50 FEET	
1510				
52.5				
1507.5				
55				
1505				
57.5				
1502.5				
60				
1500				
62.5				

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 22

EXPLORATION LOG
MW-QS

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY
LOCATION: SEE SITE PLAN
EXPLORATION SIZE (diameter): 2" MONITORING WELL
G.S. ELEVATION: 1633.46

PROJECT NO.: 97664V1
EXPLORATION DATE: 12/23/97
EQUIPMENT: MOBILE B-53
LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 13.45 DATE MEASURED: 4/16/98
FINAL DEPTH TO WATER: 13.49 DATE MEASURED: 4/20/98

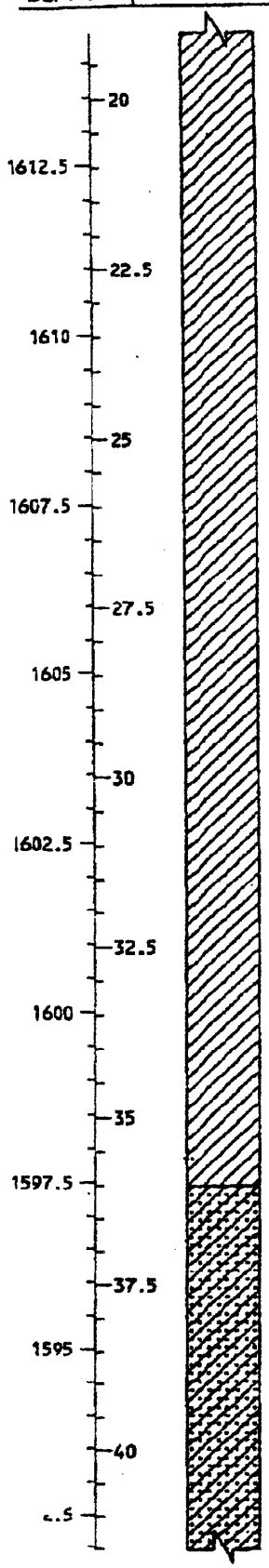
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0 / 1633.5		GP-GM	Pale brown poorly graded gravel with silt and sand, dry and medium dense to dense.	
2.5 / 1630		SW-SM	Brown well graded sand with silt and gravel, slightly moist to moist and dense.	
5 / 1627.5		GP	Brown poorly graded gravel with sand, slightly moist to moist and dense. Minor silt/clay content, basalt gravel.	
7.5 / 1625		C/G	Brown cemented sand and gravel, dry, cemented and hard.	
10 / 1622.5		C	Pale brown caliche, dry, strongly cemented and very hard.	
12.5 / 1620	▽		...white to 16.0	
15 / 1617.5		SC	Brown clayey sand, slightly moist to moist and dense.	
17.5				

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

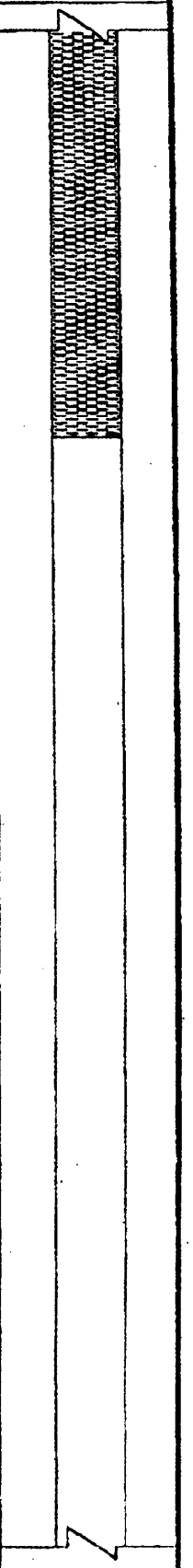
Figure No. 29

EXPLORATION LOG
MW-QS

CONFIDENTIAL



USCS	DESCRIPTION
CL	Pale brown sandy lean clay with nodules, moist and stiff to very stiff.
	...white to 32.0
	...dry to slightly moist with gravel and dry hard clay nodules to 32.0
	...moist with no nodules or gravel to 36.0
SC	... Reddish brown clayey sand, wet and stiff.
	...light brown to 47.0



EXPLORATION LOG
MW-QS

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
42.5 / 1590 / 45 / 1587.5				
			END OF BORING AT 47 FEET	
47.5 / 1585 / 50 / 1582.5 / 52.5 / 1580 / 55 / 1577.5 / 57.5 / 1575 / 60 / 1572.5 / 62.5 / 1570				

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 29

EXPLORATION LOG
MW-R

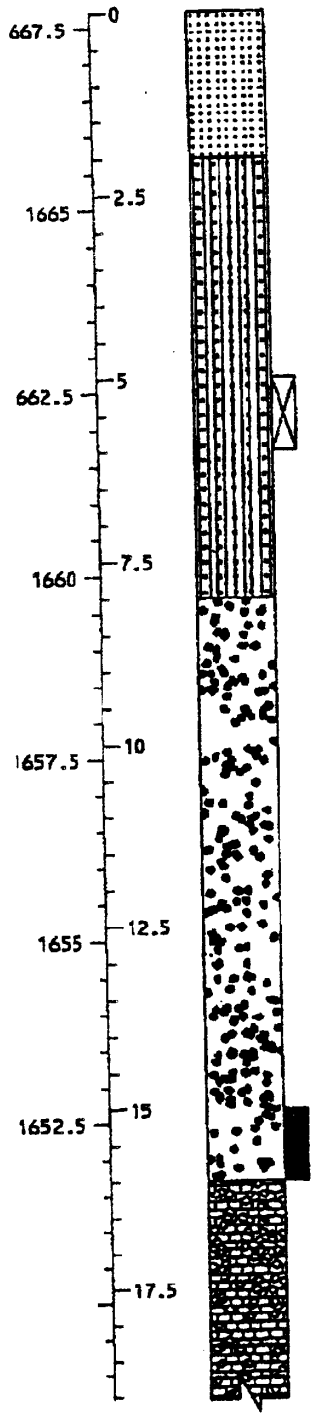
CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY
LOCATION: SEE SITE PLAN
EXPLORATION SIZE (diameter): 2" MONITORING WELL
G.S. ELEVATION: 1667.7

PROJECT NO.: 97664V1
EXPLORATION DATE: 12/23/97
EQUIPMENT: MOBILE B-61
LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 31.0 DATE MEASURED: 12/23/97
FINAL DEPTH TO WATER: 21.40 DATE MEASURED: 12/30/97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
667.5 / 0		SW	Pale brown well graded sand with gravel, dry and dense. Basalt gravel. ...brown, slightly moist to moist to 2.0	
1665 / 2.5		SP-SM	Brown poorly graded sand with silt and fine gravel, slightly moist and dense.	
662.5 / 5				
1660 / 7.5		GP	Brown poolry graded gravel with sand, slightly moist and dense. Basalt and rhyolite gravel, subrounded to subangular. ...more fine gravel and sand, dark brown and slightly moist to moist to 16.0	
1657.5 / 10				
1655 / 12.5				
1652.5 / 15		C/G	Dark brown cemented sand and gravel, slightly moist, cemented and hard. Sand with fine gravel. ...light grayish brown, dry to slightly moist and strongly cemented and hard to very hard to 22.0 ...more medium gravel to 20.0	
17.5				

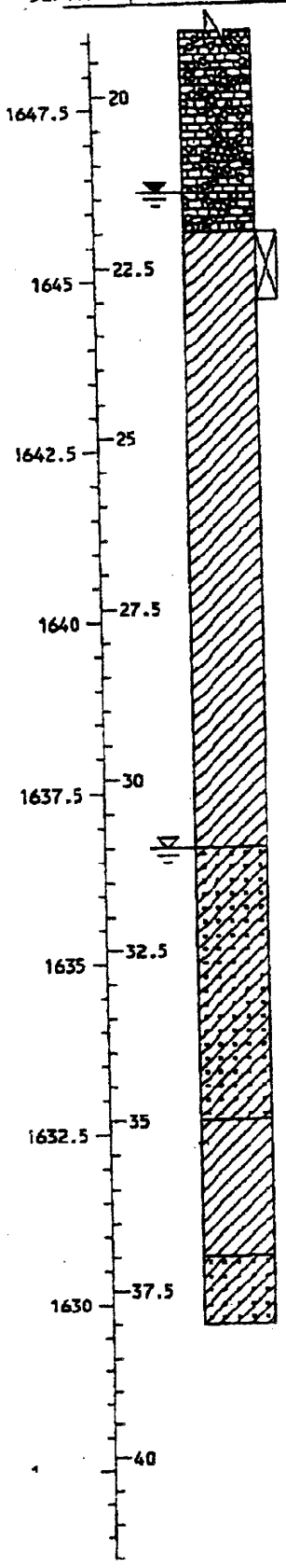


GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

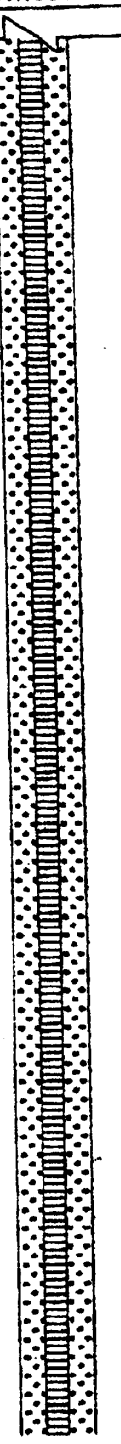
Figure No. 31

EXPLORATION LOG
MW-R

CONFIDENTIAL



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
			...more fine gravel and sand, plastic fines to 22.0	
		CL	Light brown sandy lean clay, moist and stiff ...very moist, soft to firm to 24.0 ...moist and stiff to very stiff to 31.0	
		SP-SC	GROUNDWATER ENCOUNTERED ... Light greenish brown poorly graded sand with clay, wet and loose to medium dense.	
		CL	Light green sandy lean clay, very moist to wet and firm	
		SP-SC	Reddish brown poorly graded sand with clay, very moist and stiff to very stiff.	
			END OF BORING AT 38 FEET	



GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 31

EXPLORATION LOG
MW-S

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY
LOCATION: SEE SITE PLAN
EXPLORATION SIZE (diameter): 2" MONITORING WELL
G.S. ELEVATION: 1606.2

PROJECT NO.: 97664V1
EXPLORATION DATE: 4-1-98
EQUIPMENT: MOBILE B-61-HDX
LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 24 DATE MEASURED: 4-1-98
FINAL DEPTH TO WATER: 23.75 DATE MEASURED: 4-3-98

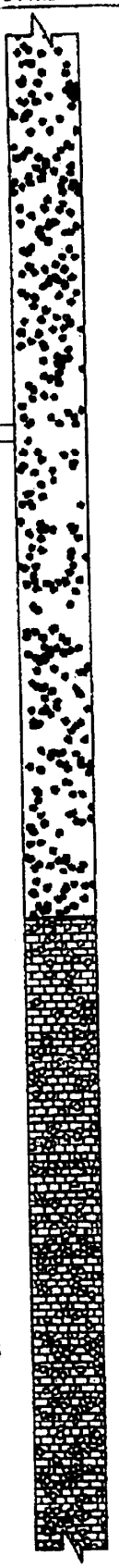
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0				
1605		ML	Light grayish brown sandy silt, dry to slightly moist and stiff.	
2.5		SP-SM	Brown poorly graded sand with silt, dry to slightly moist and dense.	
02.5				
5				
			...with gravel to 9.0	
7.5				
97.5		GP	Brown poorly graded gravel with sand, dry to slightly moist and dense. (stratified)	
10				
1595				
12.5			...more sand and fine gravel to 29.0	
92.5				
15				
1590				
17.5				

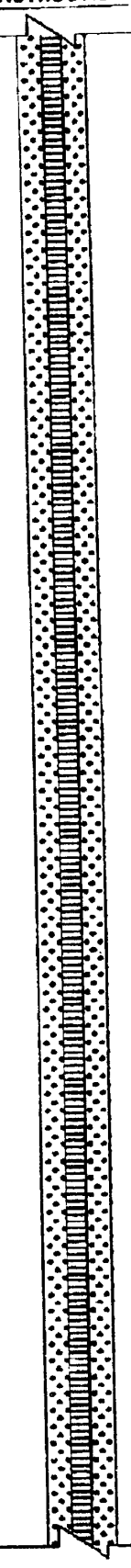
GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 32

EXPLORATION LOG
MW-S

OIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0			
2.5			
		...Groundwater Encountered	
5			
7.5			
		...dark grayish brown, with coarse gravel to 31.0	
0			
	C/G	Dark grayish brown cemented sand and gravel, wet, strongly cemented and very hard.	
2.5			
5			
7.5			
0			





GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

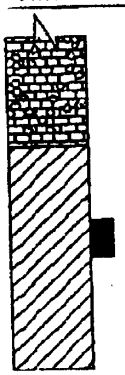
Figure No. 32

EXPLORATION LOG
MW-S

CONFIDENTIAL

SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
	CL	Reddish brown sandy lean clay, very moist and stiff to very stiff.	
		END OF BORING AT 45 FEET	

.5
7.5
0
2.5
5
7.5
50
52.5



GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 32

EXPLORATION LOG
MW-U

CONFIDENTIAL

ECT: FORMER PEPCON FACILITY — PROJECT NO.: 97664V1
E LOCATION: SEE SITE PLAN — EXPLORATION DATE: 3-13-98
EXPLORATION SIZE (diameter): 2" MONITORING WELL — EQUIPMENT: MOBILE B-61-HDX
3.S. ELEVATION: 1591.23 — LOGGED BY: S. JOHNSON

NITIAL DEPTH TO WATER: 23 — DATE MEASURED: 3-13-98
FINAL DEPTH TO WATER: 20.95 — DATE MEASURED: 3-13-98

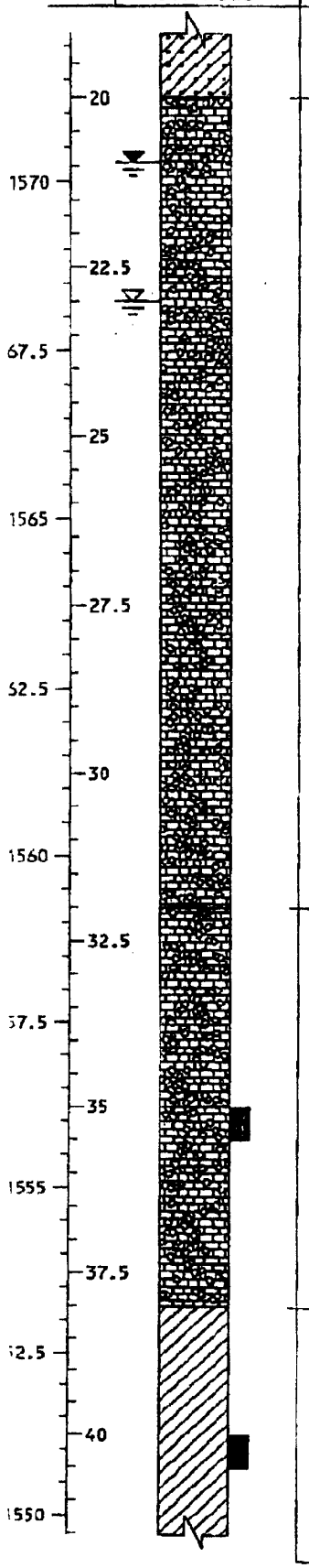
EVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0 / 1590		SC	Brown clayey sand with gravel, slightly moist and dense.	
2.5 / 87.5		GP-GC	Light brown poorly geaded gravel with clay and sand, dry to slightly moist and dense. (stratified)	
5 / 1585				
7.5 / 82.5				
10 / 1580			...moist with wet sand nodules to 12.0 ...cobbles to 12.0	
12.5 / 77.5		SP	Dark brown poorly graded sand, slightly moist, partially cemented and dense.	
		C/G	Brown cemented sand and gravel, slightly moist, cemented and hard.	
15 / 1575		GP	Dark brown poorly graded gravel with sand, slightly moist, partially cemented and dense.	
17.5 / 72.5		SP-SC	Dark brown poorly graded sand with clay, slightly moist, partrially cemented and very dense.	

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 34

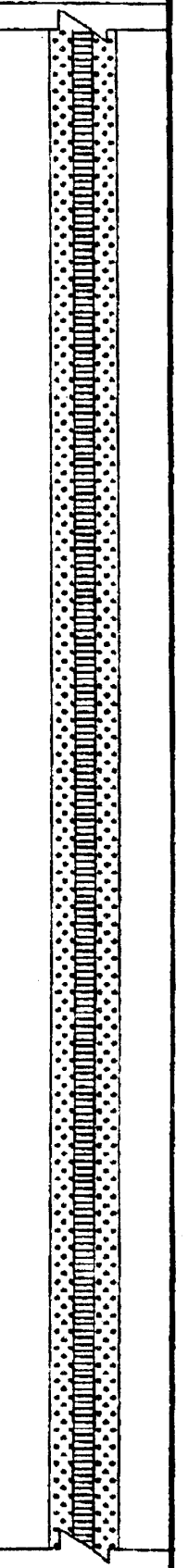
EXPLORATION LOG
MW-U

CONFIDENTIAL



USCS	DESCRIPTION
	...very moist to 20.0
C/G	Brown cemented sand and gravel, moist, moderately cemented and medium hard. Light yellowish brown clayey sand, moist to very moist and dense to very dense. ...Groundwater Encountered, loose to 24.0 ...dense to 26.0 ...soft to 32.0
C/G	Dark brown cemented sand and gravel, wet, cemented and hard. Dark brown poorly graded gravel with clay and sand, wet and medium dense.
CL	Light reddish brown sandy clay, wet and stiff.

WELL CONSTRUCTION



GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 34

EXPLORATION LOG
MW-U

CONFIDENTIAL

L & SAMPLE YMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
		END OF BORING AT 43 FEET	

2.5
5
7.5
0
2.5
5
7.5
50
52.5

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 34

EXPLORATION LOG
MW-V

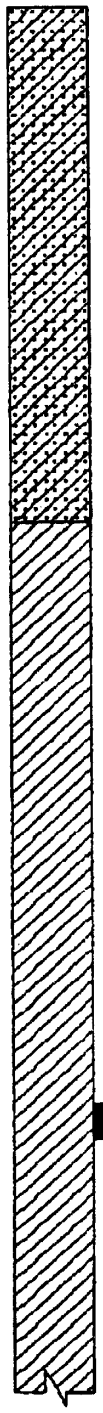
CONFIDENTIAL

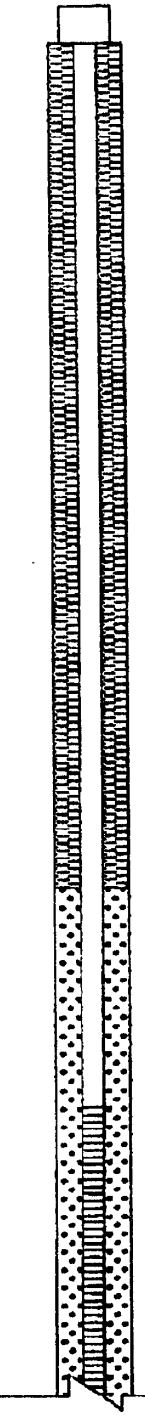
ORMER PEPCON FACILITY — PROJECT NO.: 97664V1
CATION: SEE SITE PLAN — EXPLORATION DATE: 3-13-98
ATION SIZE (diameter): 2" MONITORING WELL — EQUIPMENT: MOBILE B-61-HDX
EVATION: 1597.47 — LOGGED BY: S. JOHNSON

DEPTH TO WATER: 24.5 — DATE MEASURED: 3-30-98
EPTH TO WATER: 22.30 — DATE MEASURED: 3-31-98

SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
	SC	Light brown clayey sand, dry and medium dense. (with caliche nodules)	
	CL	Light reddish brown sandy lean clay, slightly moist and stiff to very stiff. (with caliche nodules)	
		...Groundwater Encountered, very low flow, wet and soft to 11.0	
		...with sand, very moist to wet and firm to 19.0	

.5
.5
0
2.5
5
7.5





GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

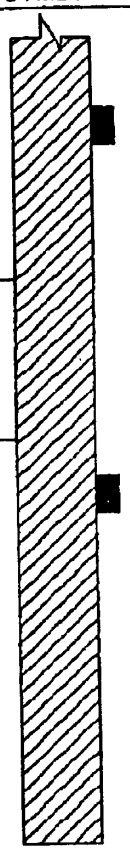
Figure No. 35

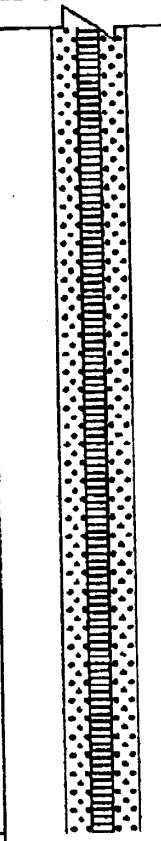
EXPLORATION LOG
MW-V

CONFIDENTIAL

OIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
		...moist and stiff to 21.5	
		...very moist and firm to 24.5	
		...Groundwater Encountered, very moist to wet to 30.0	
		END OF BORING AT 30 FEET	

20
22.5
25
27.5
30
32.5
35
37.5
40





GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 35

EXPLORATION LOG
MW-W

CONFIDENTIAL

ORMER PEPCON FACILITY
OCATION: SEE SITE PLAN
ATION SIZE (diameter): 2" MONITORING WELL
EVATION: 1777.08

PROJECT NO.: 97664V1
EXPLORATION DATE: 3-11-98
EQUIPMENT: MOBILE B-61-HDX
LOGGED BY: C. SCHMIDT

DEPTH TO WATER: 53 DATE MEASURED: 3-11-98
EPTH TO WATER: 45.45 DATE MEASURED: 3-16-98

/	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
)		GP-GM	Brown poorly graded gravel with silt, sand and cobbles, dry and dense.	
:.5			...partially cemented to 7.0	
0			...partially cemented to 11.5	
2.5				
5		C/G	Light brown cemented sand and gravel, dry, strongly cemented and very hard.	
7.5		GP-GM	Brown poorly graded gravel with silt, sand and cobbles, dry and dense.	

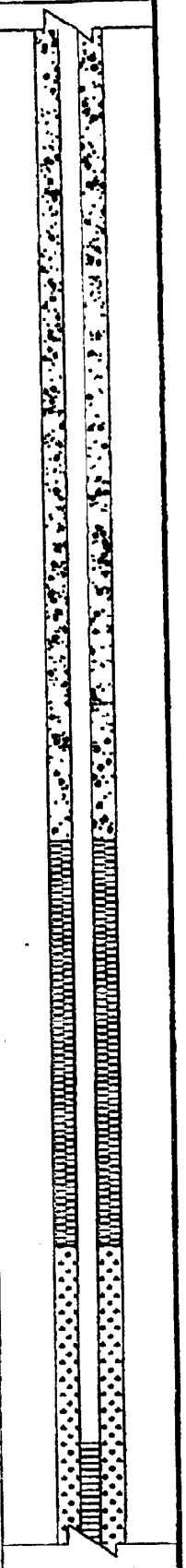
GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 36

EXPLORATION LOG
MW-W

CONFIDENTIAL

OIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
2.5		...cobbles to 24.0	
5		...medium dense to 33.0	
7.5			
2.5		...partially cemented to 43.0	
5			
7.5			
		...moist and very dense to 43.0	



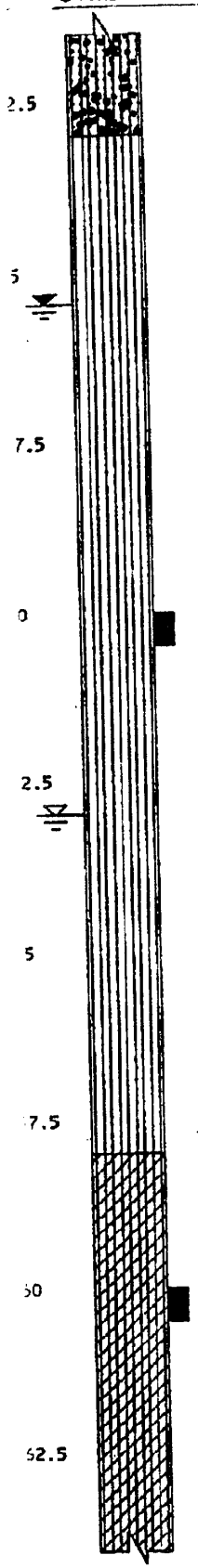
GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

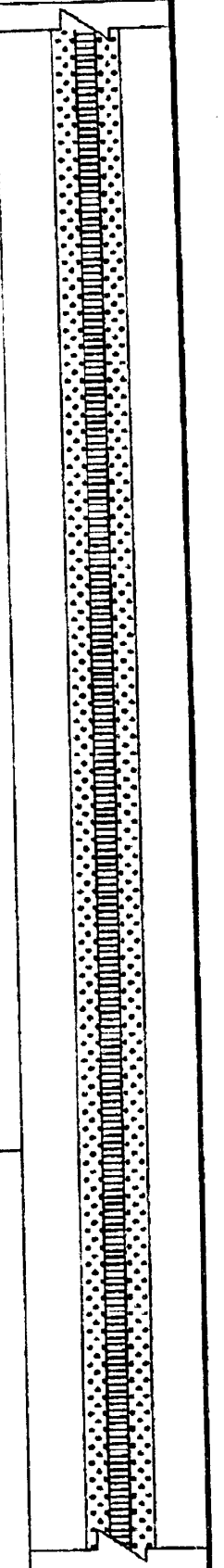
Figure No. 36

EXPLORATION LOG
MW-W

CONFIDENTIAL

OIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
2.5			
	ML	Brown sandy silt, moist, partially cemented and firm.	
5			
7.5			
0			
2.5		...Groundwater Encountered	
5			
7.5			
	CL-ML	Brown silty clay with sand, moist and very stiff.	
50			
52.5			





GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 36

CONFIDENTIAL

EXPLORATION LOG
MW-W

SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
5		END OF BORING AT 65 FEET	
7.5			
70			
72.5			
75			
77.5			
80			
82.5			
85			

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

Figure No. 36

MONITOR WELL INVENTORY
KERR-McGEE HENDERSON FACILITY

MONITOR WELL NUMBER	REFERENCE CASING ELEV., MSL	GROUND ELEV., MSL	*CASING STICKUP FT.	*DRILLED WELL DEPTH FT.	**MEASURED WELL DEPTH FT, 6/85 TOC	*SCREENED INTERVAL, FT	CASING TYPE AND SIZE IN.	DATE WELL DRILLED	*DEPTH TO TOP OF MUDDY CREEK FT	ELEV. OF MUDDY CREEK MSL	*DEPTH TO GW FT. 6/85	WATER-TABLE ELEVATION MSL, 6/85	SATURATED AQUIFER THICKNESS FT, 6/85	CHROMIUM CONCENT. mg/l 6/85	GW COND. $_2$ umhos/cm 6/85	**DEPTH TO WATER, FT TOC, 6/85
H-57	1721.67	~1720.17	~1.50	---	---	---	5" steel	---	---	---	---	1688.8	---	---	---	---
H-58	1691.86	1689.56	2.30	---	59.34	---	"	---	56.0	1633.6	32.6	1657.0	23.4	<0.1	---	34.87
MC-1	1730.12	1728.92	1.20	---	43.87	---	2" PVC	---	35.0	1693.9	32.1	1696.9	3.0	---	---	33.25
MC-2	---	1727.0	---	---	---	---	"	---	33.0	1694.0	---	---	---	---	---	---
MC-3	1724.41	1723.81	0.60	---	---	---	"	---	40.0	1683.8	32.6	1691.2	7.4	---	---	33.19
MC-4	---	1718.0	---	---	---	---	"	---	40.0	1678.0	---	---	---	---	---	---
MC-5	1714.45	1713.4	1.05	---	---	---	"	---	36.0	1677.4	26.8	1686.6	9.2	---	---	27.85
MC-6	1710.68	1710.0	0.68	---	---	---	"	---	38.0	1672.0	25.3	1684.7	12.7	---	---	25.98
MC-9	1714.46	1713.6	0.86	---	---	---	"	---	50.0	1663.6	26.4	1687.2	23.6	---	---	27.26
MC-11	1667.2	1662.9	4.30	---	---	---	"	---	10.5	1652.4	4.7	1658.2	5.8	---	---	9.0
MC-15	---	1680.3	---	---	---	---	"	---	59.0	1621.3	---	---	---	---	---	---
MC-16	---	1684.1	---	---	---	---	"	---	48.0	1636.1	---	---	---	---	---	---
MC-17	---	1711.3	---	---	---	---	"	---	61.5	1649.8	---	---	---	---	---	---
MC-18	---	1698.1	---	---	---	---	"	---	57.5	1640.6	---	---	---	---	---	---
MC-19	---	1695.1	---	---	---	---	"	---	42.0	1653.1	---	---	---	---	---	---
MC-20	---	1689.7	---	---	---	---	"	---	29.0	1658.7	---	---	---	---	---	---
MC-26	1716.81	1715.2	1.81	---	---	---	"	---	31.0	1684.2	28.2	1686.8	2.6	---	---	30.01
MC-27	1719.90	1718.4	1.50	---	---	---	"	---	45.0	1673.4	31.0	1687.4	14.0	---	---	32.5
MC-28	1720.50	1719.0	1.50	---	---	---	"	---	49.0	1670.0	31.5	1687.5	17.5	---	---	33.0
MC-29	1722.02	1720.53	1.49	---	49.64	---	"	---	49.0	1671.5	30.5	1690.0	18.5	---	---	32.00
MC-30	1724.13	1722.18	1.95	---	44.46	---	"	---	45.0	1677.2	32.0	1690.2	13.0	---	49,000	33.92
MC-31	1724.53	1723.00	1.53	---	38.66	---	"	---	41.0	1682.0	32.7	1690.4	8.4	---	---	34.18
MC-32	1725.87	1724.77	1.10	---	33.28	---	"	---	33.5	1691.2	31.4	1693.4	2.2	---	10,000	32.47
MC-40	1720.28	1718.86	1.42	---	51.49	---	"	---	51.0	1667.8	30.0	1688.9	21.1	---	---	31.39

MONITOR WELL INVENTORY
KERR-McGEE HENDERSON FACILITY

MONITOR WELL NUMBER	REFERENCE CASING ELEV., MSL	GROUND ELEV., MSL	*CASING STICKUP FT.	*DRILLED WELL DEPTH FT.	**MEASURED WELL DEPTH FT, 6/85 TOC	*SCREENED INTERVAL, FT	CASING TYPE AND SIZE IN.	DATE WELL DRILLED	*DEPTH TO TOP OF MUDDY CREEK FT	ELEV. OF MUDDY CREEK MSL	*DEPTH TO GW FT. 6/85	WATER-TABLE ELEVATION MSL, 6/85	SATURATED AQUIFER THICKNESS FT, 6/85	CHROMIUM CONCENT. mg/l 6/85	GW COND. $\mu mhos/cm^2$ 6/85	**DEPTH TO WATER, FT TOC, 6/85
MC-41	1720.77	1719.8	0.97	---	---	---	2" PVC	---	51.0	1668.8	31.3	1688.5	19.7	---	---	32.27
MC-42	1721.25	1718.8	2.45	---	---	---	"	---	53.0	1665.8	30.7	1688.1	22.3	---	---	33.15
MC-43	1709.77	~1708.27	~1.50	---	---	---	"	---	>17.0	<1691.3	---	---	---	---	---	---
MC-44	1708.24	~1706.74	~1.50	---	---	---	"	---	>25.0	<1681.7	---	---	---	---	---	---
MC-45	1709.60	~1708.10	~1.50	---	---	---	"	---	>34.0	<1674.1	~24.7	1683.4	>9.3	---	---	26.20
MC-46	1709.54	~1708.04	~1.50	---	---	---	"	---	>32.0	<1676.0	---	---	---	---	---	---
MC-49	1708.69	~1707.19	~1.50	---	---	---	"	---	38.0	~1669.2	~26.2	1681.0	11.8	---	---	27.69
MC-50	1711.77	~1710.27	~1.50	---	---	---	"	---	49.0	~1661.3	~25.2	1685.1	23.8	---	---	26.67
MC-51	1714.44	1713.39	1.05	---	47.20	---	"	---	47.0	1666.4	25.0	1688.4	22.0	---	---	26.05
MC-52	1714.43	1712.93	1.50	---	49.37	---	"	---	46.0	1666.9	25.2	1687.7	20.8	---	---	26.72
MC-53	1713.84	1712.24	1.60	---	41.88	---	"	---	37.0	1675.2	25.6	1686.7	11.5	<0.1	11,900	27.17
MC-54	1719.01	~1717.51	~1.50	---	---	---	"	---	37.5	~1680.0	---	---	---	---	---	---
MC-55	1720.07	1718.82	1.25	---	23.30	---	"	---	21.0	1697.8	>22.1	<1696.8	>-1	---	---	Dry @ 23.30
MC-56	1716.99	~1715.49	~1.50	---	---	---	"	---	49.5	~1666.0	~27.1	1688.4	~22.4	---	---	28.59
MC-59	1723.34	1721.98	1.36	---	23.36	---	"	---	19.5	1702.5	19.4	1702.6	0.1	<0.1	9,000	20.77
MC-60	1701.86	1700.18	1.68	---	32.94	---	"	---	30.5	1669.7	>31.3	<1668.9	>0.8	---	---	>32.94 Dry
MC-61	1704.99	1703.61	1.38	---	48.80	---	"	---	46.0	1657.6	30.0	1673.6	16.0	<0.1	40,000	31.40
MC-62	1699.13	1697.68	1.45	---	51.80	---	"	---	48.5	1649.2	32.0	1665.6	16.4	<0.1	44,000	33.49
MC-63	1697.89	1696.56	1.33	---	52.92	---	"	---	50.5	1646.1	29.4	1667.2	21.1	<0.1	10,800	30.74
MC-64	1696.63	1695.45	1.18	---	43.73	---	"	---	41.0	1654.5	26.3	1669.2	14.7	<0.1	11,500	27.46
MC-65	1704.07	1702.41	1.66	---	42.47	---	"	---	40.0	1662.4	31.3	1671.1	8.7	<0.1	14,500	32.95
MC-66	1701.00	1699.55	1.45	---	48.20	---	"	---	45.5	1654.1	30.6	1669.0	14.9	<0.1	10,200	32.00
MC-67	1691.08	~1689.58	~1.50	---	---	---	"	---	57.0	~1632.6	---	---	---	---	---	---
MC-68	1718.90	~1717.40	~1.50	---	---	---	"	---	42.0	~1675.4	~30.9	1686.5	~11.1	---	---	32.40

MONITOR WELL INVENTORY
KERR-McGEE HENDERSON FACILITY

MONITOR WELL NUMBER	REFERENCE CASING ELEV., MSL	GROUND ELEV., MSL	*CASING STICKUP FT.	*DRILLED WELL DEPTH FT.	**MEASURED WELL DEPTH FT, 6/85 TOC	*SCREENED INTERVAL, FT	CASING TYPE AND SIZE IN.	DATE WELL DRILLED	*DEPTH TO TOP OF MUDDY CREEK FT	ELEV. OF MUDDY CREEK MSL	*DEPTH TO GW FT. 6/85	WATER-TABLE ELEVATION MSL, 6/85	SATURATED AQUIFER THICKNESS FT, 6/85	CHROMIUM CONCENT. mg/l 6/85	GW COND. μmhos/cm^2 6/85	**DEPTH TO WATER, FT TOC, 6/85
MC-69	1717.33	~1715.83	~1.50	---	---	---	2" PVC	---	43.0	~1672.8	~29.0	1686.8	~14.0	---	---	30.53
MC-70	1721.29	1720.66	0.63	---	34.91	---	"	---	34.5	1686.2	29.9	1690.8	4.6	<0.1	---	30.50
MC-74	---	---	---	---	---	---	"	---	33.0	---	---	---	---	---	---	---
MC-79	1720.80	~1719.30	~1.50	---	---	---	"	---	51.0	~1668.3	~29.8	1689.5	~21.2	---	---	31.30
MC-80	1727.81	1726.38	1.43	---	46.90	---	"	---	46.0	1680.4	33.7	1692.7	12.3	---	>50,000	35.09
MC-92	1712.73	~1711.23	~1.50	---	---	---	"	---	48.0	~1663.2	---	---	---	---	---	---
MC-93	1717.89	1716.62	1.27	---	42.82	---	"	---	39.0	1677.6	26.7	1690.0	12.4	<0.1	---	27.93
MC-94	1719.89	1718.43	1.46	---	40.42	---	"	---	38.0	1680.4	27.6	1690.8	10.4	---	---	29.09
MC-95	1717.96	1715.24	2.72	---	49.86	---	"	---	45.0	1670.2	25.6	1689.7	19.5	---	---	28.29
MC-96	1714.43	1712.25	2.18	---	39.58	---	"	---	45.0	1667.3	24.5	1687.7	20.4	---	---	26.71
MC-97	1722.54	1721.04	1.50	---	42.49	---	"	---	40.0	1681.0	30.6	1690.4	9.4	---	11,200	32.12
MC-98	1720.99	~1719.49	~1.50	---	---	---	"	---	44.0	~1675.5	~29.9	1689.6	~14.1	---	---	31.39
MC-99	1718.21	1716.57	1.64	---	49.42	---	"	---	47.5	1669.1	28.9	1687.7	18.6	---	---	30.55
D	1718.77	~1716.77	~2.0	---	---	---	"	---	36.0	~1680.8	~34.8	1682.0	~***1.4	---	---	36.77
E	1719.64	~1717.64	~2.0	---	---	---	"	---	41.0	~1676.6	~39.9	1677.7	~***1.1	---	---	41.94
F	1721.75	~1719.75	~2.0	---	---	---	"	---	42.0	~1677.8	~39.1	1680.7	~***2.9	---	---	41.05
G	1723.01	~1721.01	~2.0	---	---	---	5" steel	---	52.0	~1669.0	~44.5	1676.5	~***7.5	---	---	46.51
H	1722.82	~1720.82	~2.0	---	---	---	"	---	48.0	~1672.8	~30.9	1689.9	~***17.1	---	---	32.92
I	1725.37	~1725.37	~2.0	---	---	---	"	---	42.0	~1683.4	~34.2	1689.2	~***5.8	<0.1	---	36.17

* Measured from ground level
** Measured from top of casing
*** Pumping level

Note: Chromium concentrations in TIMET wells were analyzed in September, 1984.
Saturated Aquifer Thickness is saturated interval above the Muddy Creek Formation.
Negative (-) number indicates saturated interval within Muddy Creek Formation.

GEO-HYDRO - KM

KM - BOCS

MONITOR WELL NUMBER	REFERENCE CASING ELEV., MSL	GROUND ELEV., MSL	*CASING STICKUP FT.	*DRILLED WELL DEPTH FT.	**MEASURED WELL DEPTH FT, 6/85 TOC	*SCREENED INTERVAL, FT	CASING TYPE AND SIZE IN.	DATE WELL DRILLED	*DEPTH TO TOP OF MUDDY CREEK FT	ELEV. OF MUDDY CREEK MSL	*DEPTH TO GW FT. 6/85	WATER-TABLE ELEVATION MSL, 6/85	SATURATED AQUIFER THICKNESS FT, 6/85	CHROMIUM CONCENT. mg/l 6/85	GW COND. $\mu mhos/cm^2$ 6/85	**DEPTH TO WATER, FT TOC, 6/85
M-24	1788.54	1786.34	2.20	40.0	42.69	25-40	2" PVC	5/14/84	36.0	1750.3	37.9	1748.4	-1.9	1.1	4,200	40.13
M-25	1756.81	1753.79	3.02	40.0	41.47	25-40	2" PVC	5/14/84	28.0	1725.8	21.9	1731.9	6.1	12.9	14,000	24.94
M-26	---	1740.94	----	40.0	-----	25-40	2" PVC	5/14/84	35.0	1713.94	----	-----	---	---	-------	-----
M-27	1741.28	1739.46	1.82	35.0	30.92	20-35	2" PVC	5/14/84	>40.0	<1699.5	13.2	1726.4	>26.9	2.6	10,100	14.88
M-28	1811.27	1811.1	-.24	50.5	47.61	30-50	2" PVC	7/23/85	31.0	1780.5	43.0	1768.5	-12.0	<0.1	6,700	42.78
M-29	1806.60	1806.24	0.36	42.0	41.74	42-27	2" PVC	7/12/85	21.0	1785.2	36.1	1770.1	-15.1	0.1	34,600	36.48
M-30	1810.68	1810.88	-.20	46.50	43.32	45-30	2" PVC	7/17/84	25.0	1785.9	39.0	1771.9	-14.0	0.6	5,500	38.80
M-31	1787.92	1785.54	2.38	45.0	47.60	30-45	2" PVC	6/85	35.0	1750.5	35.0	1750.5	0.0	10.4	11,000	37.36
M-32	1787.48	1785.63	1.85	45.0	46.76	30-45	2" PVC	"	34.0	1751.6	33.4	1752.3	0.6	1.3	8,900	35.22
M-33	1786.98	1785.03	1.95	45.0	46.78	30-45	2" PVC	"	35.0	1750.0	32.2	1752.8	2.8	0.1	7,200	34.15
M-34	1776.10	1774.25	1.85	40.0	41.83	25-40	2" PVC	"	35.0	1739.3	29.3	1745.0	5.7	2.2	7,800	31.10
M-35	1775.01	1773.11	1.90	40.0	42.33	25-40	2" PVC	"	33.5	1739.6	27.1	1746.1	6.4	0.6	6,500	28.95
M-36	1758.88	1756.03	2.85	35.0	37.85	20-35	2" PVC	"	27.5	1728.5	21.2	1734.8	6.3	2.0	13,100	24.08
M-37	1759.58	1757.43	2.15	35.0	37.18	20-35	2" PVC	"	27.0	1730.4	23.1	1734.3	3.9	0.3	20,000	25.27
M-38	1759.08	1756.48	2.60	35.0	37.44	20-35	2" PVC	"	28.0	1728.5	21.9	1734.6	6.1	5.3	9,100	24.52
M-39	1760.22	1757.62	2.60	40.0	42.60	20-35	2" PVC	"	34.0	1723.6	19.4	1738.3	14.6	2.0	8,500	21.97
M-40	1797.89	1795.49	2.40	45.0	47.40	30-45	2" PVC	"	32.0	1763.5	37.5	1758.0	-5.5	2.5	11,200	39.93
M-41	1695.60	1693.03	2.57	35.0	37.52	5-35	2" PVC	7/85	24.5	1668.5	4.5	1688.6	20.0	1.7	10,100	7.04
M-42	1696.24	1693.64	2.60	35.0	37.02	4.4-34.4	2" PVC	"	26.0	1667.7	3.5	1690.1	22.4	2.9	11,000	6.16
M-43	1696.16	1693.52	2.64	35.0	37.56	4.9-34.9	2" PVC	"	24.5	1669.0	4.9	1688.6	19.6	0.85	10,500	7.53
M-44	1696.74	1694.19	2.55	35.0	37.65	5.1-35.1	2" PVC	"	20.0	1674.2	10.0	1684.2	10.0	0.38	9500	12.58
M-45	1697.13	1694.73	2.40	35.0	36.59	4.2-34.2	2" PVC	"	27.0	1667.7	15.3	1679.4	11.9	0.04	4625	17.74
M-46	1716.08	1713.34	2.74	45.0	46.09	4.2-44.2	2" PVC	"	41.0	1672.3	8.7	1704.6	32.3	1.8	9600	11.46
M-47	1715.04	1712.50	2.54	45.0	42.59	0.1-40.0	2" PVC	"	42.0	1670.5	9.2	1703.3	32.8	5.1	12,900	11.79
M-48	1719.05	1716.60	2.45	35.0	38.59	6.1-36.1	2" PVC	"	32.0	1684.6	7.3	1709.3	24.7	1.3	11,900	9.78
M-49	1718.89	1716.35	2.54	45.0	46.50	4.0-44.0	2" PVC	"	36.0	1680.4	8.5	1707.9	27.5	1.5	6400	11.02
M-50	1793.87	1791.27	2.60	60.0	62.15	39.6-59.6	2" PVC	"	40.0	1751.3	43.5	1747.8	-3.5	10.0	7200	46.08
M-51	1695.34	1692.66	2.68	35.0	36.62	3.9-33.9	2" PVC	"	26.0	1666.7	4.0	1688.7	22.0	1.7	10,000	6.68
M-52	1790.72	1795.84	2.08	45.0	47.38	34.5-44.5	2' PVC	"	32.0	1763.8	38.5	1757.3	-6.5	1.5	---	41.30

NOTE: All data collected from wells M-41 through M-52 were collected in late July, 1985.

MONITOR WELL INVENTORY
KERR-McGEE HENDERSON FACILITY

MONITOR WELL NUMBER	REFERENCE CASING ELEV., MSL	GROUND ELEV., MSL	*CASING STICKUP FT.	*DRILLED WELL DEPTH FT.	**MEASURED WELL DEPTH FT, 6/85 TOC	*SCREENED INTERVAL, FT	CASING TYPE AND SIZE IN.	DATE WELL DRILLED	*DEPTH TO TOP OF MUDDY CREEK FT	ELEV. OF MUDDY CREEK MSL	*DEPTH TO GW FT. 6/85	WATER-TABLE ELEVATION MSL, 6/85	SATURATED AQUIFER THICKNESS FT, 6/85	CHROMIUM CONCENT. mg/l 6/85	GW COND., μmhos/cm^2 6/85	**DEPTH TO WATER, FT TOC, 6/85
KM Wells	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
M-1	1792.68	1791.38	1.30	50.0	45.38	33.5-43.5	5" Steel	11/81	40.0	1751.4	43.4	1748.0	-3.4	1.2	16,200	44.70
M-2	1780.92	1778.60	1.42	44.0	40.69	30-40	5" Steel	11/81	39.0	1739.6	35.2	1743.4	3.8	3.1	8,800	36.64
M-3	1780.46	1779.76	0.70	44.5	40.44	30-40	5" Steel	11/81	41.0	1738.8	37.2	1742.5	3.8	8.0	13,300	37.92
M-4	1781.45	1780.05	1.40	45.0	41.34	30-40	5" Steel	11/81	36.0	1744.1	35.3	1744.8	0.7	0.6	5,200	36.69
M-5	1747.86	1747.01	0.85	43.0	40.25	29-39	5" Steel	6/1/82	25.5	1721.5	32.6	1714.4	-7.1	<0.1	10,100	33.46
M-6	1729.15	1728.04	1.11	43.0	35.90	25-35	5" Steel	6/2/82	32.0	1696.0	33.2	1694.9	-1.1	<0.1	9,500	34.26
M-7	1729.81	1728.81	1.00	37.0	35.23	25-35	5" Steel	6/3/82	29.5	1699.3	28.7	1700.2	0.9	<0.1	8,300	29.66
M-8	1780.00	1778.80	1.20	45.0	40.96	30-40	5" Steel	6/14/82	43.0	1735.8	36.3	1743.5	7.7	14.0	7,100	36.49
M-9	1778.92	1778.57	0.35	45.0	39.83	30-40	5" Steel	6/15/82	35.0	1743.6	36.1	1742.4	-1.1	32.0	25,000	36.48
M-10	1834.76	1832.70	2.06	75.0	69.45	43-63	5" Steel	5/83	38.0	1794.7	55.2	1777.6	-17.1	<0.1	3,200	57.21
M-11	1814.45	1812.28	2.17	60.0	~58.0	33-53	5" Steel	5/83	36.5	1775.8	43.7	1768.6	-7.2	90.0	25,100	45.82
M-12	1814.90	1812.37	2.53	65.0	49.90	37-47	5" Steel	5/83	34.5	1777.9	44.7	1767.7	-10.2	11.0	21,000	47.22
M-13	1814.23	1812.33	1.90	55.0	54.76	28-48	5" Steel	5/83	37.5	1774.8	46.0	1766.3	-8.5	1.1	6,900	47.90
M-14	1759.43	1757.03	2.40	37.0	39.24	22-37	2" PVC	5/83	28.0	1729.0	25.4	1731.6	2.6	0.2	4,000	27.80
M-15	1750.31	1747.93	2.38	41.0	42.55	26-41	2" PVC	5/83	34.0	1713.9	18.7	1729.3	15.4	6.2	15,100	21.05
M-16	---	1759.42	---	37.0	---	22-37	2" PVC	5/83	30.0	1729.4	---	---	---	---	---	---
M-17	~1769.90	1767.15	2.75	42.0	37.00	27-42	2" PVC	5/83	35.0	1732.2	28.3	~1740.8	~8.6	6.6	9,100	29.07
M-18	1738.93	1737.78	1.14	28.0	29.80	14-24	2" PVC	8/10/83	25.0	1712.8	8.1	1729.7	16.9	0.3	6,500	9.25
M-19	1766.93	1763.63	3.30	40.0	41.20	14.5-34.5	2" PVC	8/10/83	33.0	1730.6	21.8	1741.8	11.2	0.1	14,200	25.11
M-20	1798.21	1795.79	2.42	45.0	46.55	20.4-40.4	2" PVC	8/11/83	39.5	1756.3	33.7	1762.1	5.8	<0.1	6,000	36.07
M-21	1790.50	1788.37	2.13	43.0	44.74	18-38	2" PVC	8/11/83	37.0	1751.4	38.8	1749.6	-1.8	0.20	3,800	40.94
M-22	1758.91	1756.72	2.19	35.0	36.70	11-31	2" PVC	8/11/83	30.0	1726.7	19.4	1737.3	10.6	0.90	8,100	21.60
M-23	1717.61	1715.04	2.57	43.0	44.47	9.4-37.4	2" PVC	8/11/83	37.5	1677.5	9.8	1705.2	27.7	2.5	15,100	12.37

MONITOR WELL INVENTORY
KERR-McGEE HENDERSON FACILITY

MONITOR WELL NUMBER	REFERENCE CASING ELEV., MSL	GROUND ELEV., MSL	*CASING STICKUP FT.	*DRILLED WELL DEPTH FT.	**MEASURED WELL DEPTH FT, 6/85 TOC	*SCREENED INTERVAL, FT	CASING TYPE AND SIZE IN.	DATE WELL DRILLED	*DEPTH TO TOP OF MUDDY CREEK FT	ELEV. OF MUDDY CREEK MSL	*DEPTH TO GW FT. 6/85	WATER-TABLE ELEVATION MSL, 6/85	SATURATED AQUIFER THICKNESS FT, 6/85	CHROMIUM CONCENT. mg/l 6/85	GW COND. $\mu mhos/cm^2$ 6/85	**DEPTH TO WATER, FT TOC, 6/85
M-24	1788.54	1786.34	2.20	40.0	42.69	25-40	2" PVC	5/14/84	36.0	1750.3	37.9	1748.4	-1.9	1.1	4,200	40.13
M-25	1756.81	1753.79	3.02	40.0	41.47	25-40	2" PVC	5/14/84	28.0	1725.8	21.9	1731.9	6.1	12.9	14,000	24.94
M-26	---	1748.94	----	40.0	-----	25-40	2" PVC	5/14/84	35.0	1713.94	----	-----	---	---	------	-----
M-27	1741.28	1739.46	1.82	35.0	30.92	20-35	2" PVC	5/14/84	>40.0	<1699.5	13.2	1726.4	>26.9	2.6	10,100	14.88
M-28	1811.27	1811.1	-.24	50.5	47.61	30-50	2" PVC	7/23/85	31.0	1780.5	43.0	1768.5	-12.0	<0.1	6,700	42.78
M-29	1806.60	1806.24	0.36	42.0	41.74	42-27	2" PVC	7/12/85	21.0	1785.2	36.1	1770.1	-15.1	0.1	34,600	36.48
M-30	1810.68	1810.88	-.20	46.50	43.32	45-30	2" PVC	7/17/84	25.0	1785.9	39.0	1771.9	-14.0	0.6	5,500	38.80
M-31	1787.92	1785.54	2.38	45.0	47.60	30-45	2" PVC	6/85	35.0	1750.5	35.0	1750.5	0.0	10.4	11,000	37.36
M-32	1787.48	1785.63	1.85	45.0	46.76	30-45	2" PVC	"	34.0	1751.6	33.4	1752.3	0.6	1.3	8,900	35.22
M-33	1786.98	1785.03	1.95	45.0	46.78	30-45	2" PVC	"	35.0	1750.0	32.2	1752.8	2.8	0.1	7,200	34.15
M-34	1776.10	1774.25	1.85	40.0	41.83	25-40	2" PVC	"	35.0	1739.3	29.3	1745.0	5.7	2.2	7,800	31.10
M-35	1775.01	1773.11	1.90	40.0	42.33	25-40	2" PVC	"	33.5	1739.6	27.1	1746.1	6.4	0.6	6,500	28.95
M-36	1758.88	1756.03	2.85	35.0	37.85	20-35	2" PVC	"	27.5	1728.5	21.2	1734.8	6.3	2.0	13,100	24.08
M-37	1759.58	1757.43	2.15	35.0	37.18	20-35	2" PVC	"	27.0	1730.4	23.1	1734.3	3.9	0.3	20,000	25.27
M-38	1759.08	1756.48	2.60	35.0	37.44	20-35	2" PVC	"	28.0	1728.5	21.9	1734.6	6.1	5.3	9,100	24.52
M-39	1760.22	1757.62	2.60	40.0	42.60	20-35	2" PVC	"	34.0	1723.6	19.4	1738.3	14.6	2.0	8,500	21.97
M-40	1797.89	1795.49	2.40	45.0	47.40	30-45	2" PVC	"	32.0	1763.5	37.5	1758.0	-5.5	2.5	11,200	39.93

MONITOR WELL INVENTORY
KERR-McGEE HENDERSON FACILITY

MONITOR WELL NUMBER	REFERENCE CASING ELEV., MSL	GROUND ELEV., MSL	*CASING STICKUP FT.	*DRILLED WELL DEPTH FT.	**MEASURED WELL DEPTH FT. 6/85 TOC	*SCREENED INTERVAL, FT	CASING TYPE AND SIZE IN.	DATE WELL DRILLED	*DEPTH TO TOP OF MUDDY CREEK FT.	ELEV. OF MUDDY CREEK MSL	*DEPTH TO GW FT. 6/85	WATER-TABLE ELEVATION MSL, 6/85	SATURATED AQUIFER THICKNESS FT, 6/85	CHROMIUM CONCENT. mg/l 6/85	GW COND., $\mu mhos/cm^2$ 6/85	**DEPTH TO WATER, FT TOC, 6/85
KM Test Borings																
84-2	---	1811.27	---	32.0	---	---	---	7/16/84	28.50	1782.8	---	---	---	---	---	---
84-3	---	1804.33	---	32.0	---	---	---	7/11/84	22.50	1781.8	---	---	---	---	---	---
84-5	---	1805.39	---	29.75	---	---	---	7/13/84	22.50	1782.89	---	---	---	---	---	---
84-7	---	1811.31	---	32.5	---	---	---	7/16/84	31.0	1780.3	---	---	---	---	---	---
84-8	---	~1795.8	---	42.0	---	---	---	7/25/84	29.5	1766.3	---	---	---	---	---	---
84-9	---	~1795.8	---	40.0	---	---	---	7/10/84	30.0	1765.8	---	---	---	---	---	---
84-10	---	~1795.8	---	36.8	---	---	---	7/25/84	36.0	1759.8	---	---	---	---	---	---
84-11	---	~1795.8	---	37.0	---	---	---	7/27/84	28.0	1767.8	---	---	---	---	---	---
84-12	---	~1795.8	---	47.0	---	---	---	7/26/84	35.0	1760.8	---	---	---	---	---	---
85-13	---	1778.57	---	37.0	---	---	---	6/85	35.0	1743.6	---	---	---	---	---	---
85-14	---	1778.80	---	45.0	---	---	---	6/85	43.0	1735.8	---	---	---	---	---	---
85-15	---	1780.05	---	40.0	---	---	---	6/85	36.0	1744.1	---	---	---	---	---	---
85-16	---	1779.76	---	45.0	---	---	---	6/85	41.0	1738.8	---	---	---	---	---	---
TIMET WELLS																
CLU-1	1787.65	1785.42	2.23	43.0	---	28-33	2" PVC	4/11/83	33.0	1752.4	29.8	1755.65	3.30	0.38	11,730	32.00
CLD-1	1743.05	1740.85	2.20	35.0	---	24-29	2" PVC	4/06/83	31.0	1709.9	9.1	1731.72	21.8	0.59	>20,000	11.33
CLD-2	1751.44	1748.84	2.60	42.0	---	32-37	2" PVC	4/29/82	37.0	1711.84	14.7	1734.19	22.4	0.11	18,060	17.25
CLD-2R	-------	---	----	----	---	----	---	---	---	---	---	---	----	----	---	---
CLD-3	1750.19	1747.89	2.30	44.0	---	33-38	2" PVC	4/05/83	39.0	1708.9	8.45	1739.44	30.5	0.20	10,160	10.75
CLD-4	1779.87	1777.71	2.16	45.0	---	34-39	2" PVC	4/06/83	40.0	1737.7	28.3	1749.45	11.8	0.06	>20,000	30.42
J2D-1	1770.03	1767.45	2.58	----	---	-----	---	---	----	---	---	1750.78	----	----	9,100	19.25
J2D-2	-------	---	----	----	---	-----	---	---	----	---	---	---	----	----	---	---

MONITOR WELL INVENTORY
KERR-McGEE HENDERSON FACILITY

MONITOR WELL NUMBER	REFERENCE CASING ELEV., MSL	GROUND ELEV., MSL	*CASING STICKUP FT.	*DRILLED WELL DEPTH FT.	**MEASURED WELL DEPTH FT, 6/85 TOC	*SCREENED INTERVAL, FT	CASING TYPE AND SIZE IN.	DATE WELL DRILLED	*DEPTH TO TOP OF MUDDY CREEK FT	ELEV. OF MUDDY CREEK MSL	*DEPTH TO GW FT. 6/85	WATER-TABLE ELEVATION MSL, 6/85	SATURATED AQUIFER THICKNESS FT, 6/85	CHROMIUM CONCENT. mg/l 6/85	GW COND. $\mu mhos/cm^2$ 6/85	**DEPTH TO WATER, FT TOC, 6/85
TIMET WELLS														---	---	---
J2D-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
J2U-1	---	---	---	---	---	---	---	---	---	---	---	---	---			
DRI WELLS																
PG-102	1695.80	1696.30	-0.50	36.0	27.65	---	2" PVC	---	>36	<1660.3	25.06	1671.24	>10.9	---	---	24.56
PG-103	1694.45	~1694.50	~-0.05	16.0	-----	---	2" PVC	---	>16	<1678.5	~5.0	~1689.5	>11.0	---	---	~5.0'
PG-107	1727.11	1727.16	-0.05	25.0	17.30	---	2" PVC	---	25.0	1702.2	15.27	1711.9	9.7	0.90	14,000	15.22
PG-108	1725.38	1725.68	-0.30	21.0	11.30	---	2" PVC	---	>21	<1704.7	8.95	1716.7	>12.0	0.10	21,600	8.65
Stauffer Wells																
H-10	1703.93	1703.10	0.83	---	49.25	---	5" Steel	---	40.0	1663.1	---	---	---	<0.1	---	---
H-23	1730.60	1729.70	0.90	---	48.36	---	5" Steel	---	42.5	1687.2	34.1	1695.6	8.4	---	---	35.02
H-28	1730.33	1729.33	1.00	---	48.96	---	5" Steel	---	44.5	1684.8	33.7	1695.6	10.8	<0.1	12,000	34.74
H-36	1716.20	1716.40	0.80	---	-----	---	5" Steel	---	38.0	1677.4	28.7	1886.7	9.3	---	---	29.50
H-38	1772.69	1771.05	1.64	---	54.00	---	5" Steel	---	25.0	1746.1	36.0	1735.1	-11.0	---	---	37.60
H-48	1682.79	1680.30	2.49	---	-----	---	5" Steel	---	59.0	1621.3	-----	---	---	---	---	---
H-49	1685.38	1684.22	1.16	---	39.58	---	5" Steel	---	48.0	1636.2	28.2	1656.0	19.8	<0.1	---	29.39
H-50	1700.48	1699.06	1.42	---	44.45	---	5" Steel	---	40.0	1659.1	34.2	1664.8	5.7	0.1	---	35.66
H-51	1699.00	1697.09	1.91	---	44.15	---	5" Steel	---	57.5	1639.6	30.9	1666.2	26.6	<0.1	---	32.82
H-52	1727.71	1726.36	1.35	---	30.04	---	5" Steel	---	28.0	1698.4	17.3	1709.1	10.7	<0.1	8,500	18.64
H-54	1722.30	1719.80	2.50	---	-----	---	5" Steel	---	51.0	1668.8	---	---	---	---	---	---
H-56	1681.60	1680.28	1.32	---	63.00	---	5" Steel	---	-----	---	26.9	1653.4	---	<0.1	---	28.21

Geology - KM monitoring wells KM Box 5

EXPLANATION OF GEOLOGICAL AND WELL CONSTRUCTION DATA

KERR-McGEE HENDERSON FACILITY

RCRA INTERIM STATUS GROUNDWATER MONITORING PROGRAM

Enclosed are:

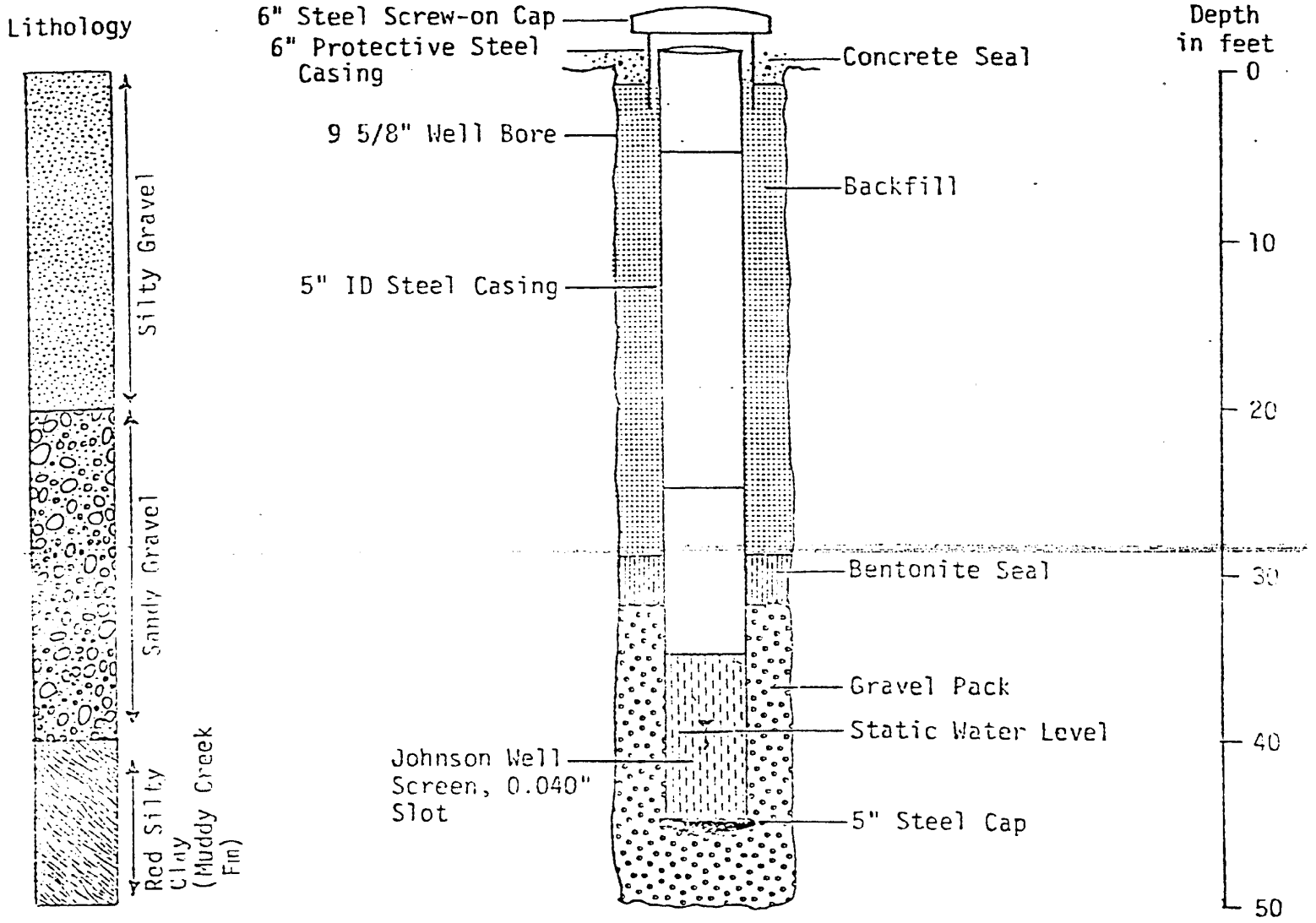
1) Map showing RCRA Interim Status Monitor Well location.

2) Well construction diagrams for RCRA Interim Status Groundwater Monitoring Wells M-1, M-2, M-5, M-6, M-7, M-8, and M-9. (Note: No construction diagram is shown for Well H-28; however, well construction details are enclosed.)

3) Tables showing detailed lithological description of Wells M-5, M-6, M-7, M-8, M-9, and H-28. (Note: The detailed lithological descriptions for Wells M-1 and M-2 are shown on the well construction diagrams.)

4) Well construction and completion tables for Wells M-5, M-6, M-7, M-8, and M-9. (Note: The detailed well construction and completion tables for Wells M-1 and M-2 were not made. Details of construction are shown on the well construction diagrams.)

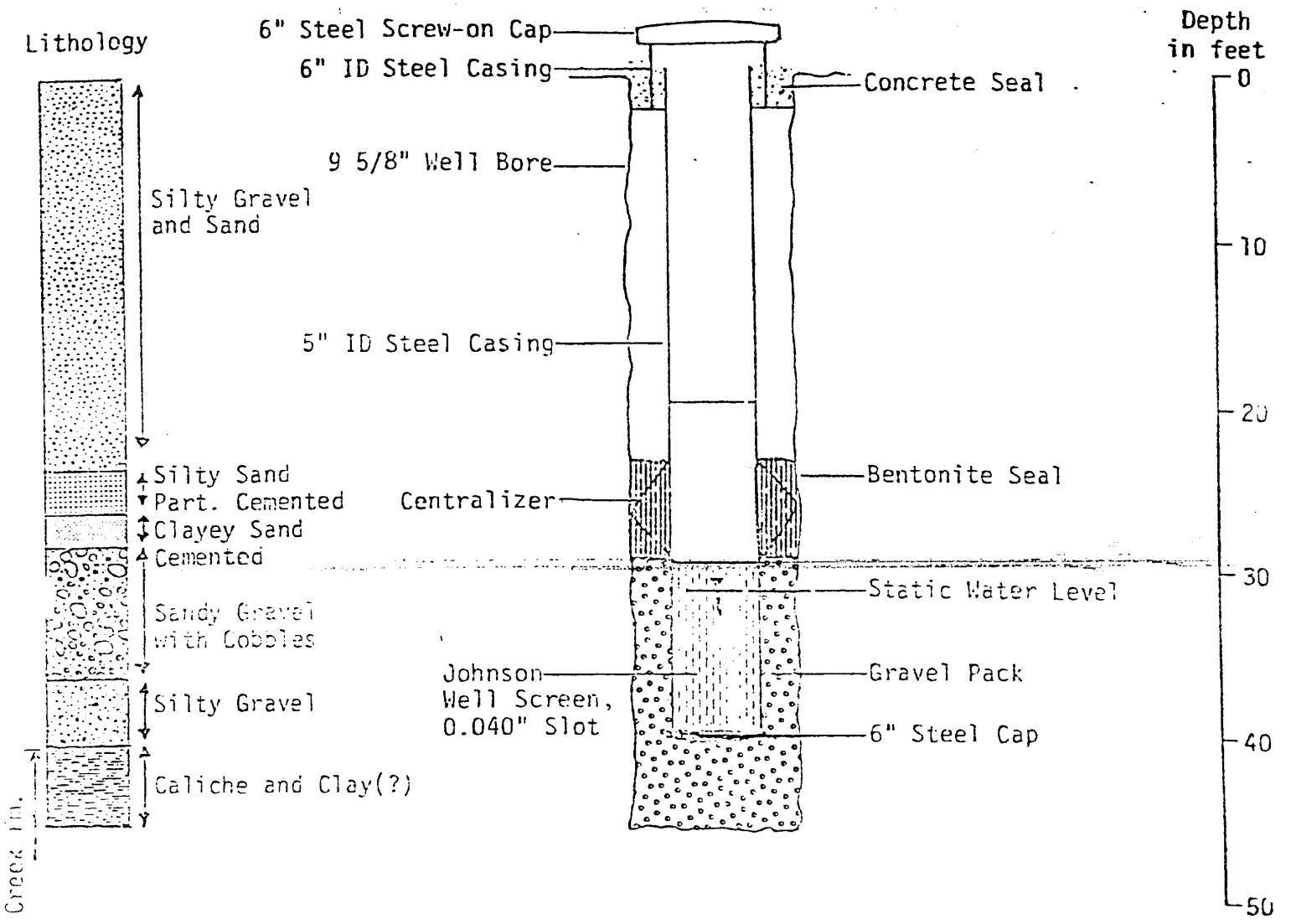
K-M CHEMICAL CORPORATION
Henderson, Nevada Facility
Well No. M-1



Well Yield: Approximately 1/2 gpm
Water Level on 1-14-82: 41.05' (from protector pipe top)
Casing Elevation: 1792.68' above MSL

Geological and Well Construction Data from Converse Consultants 81-3258, 11-13-81.

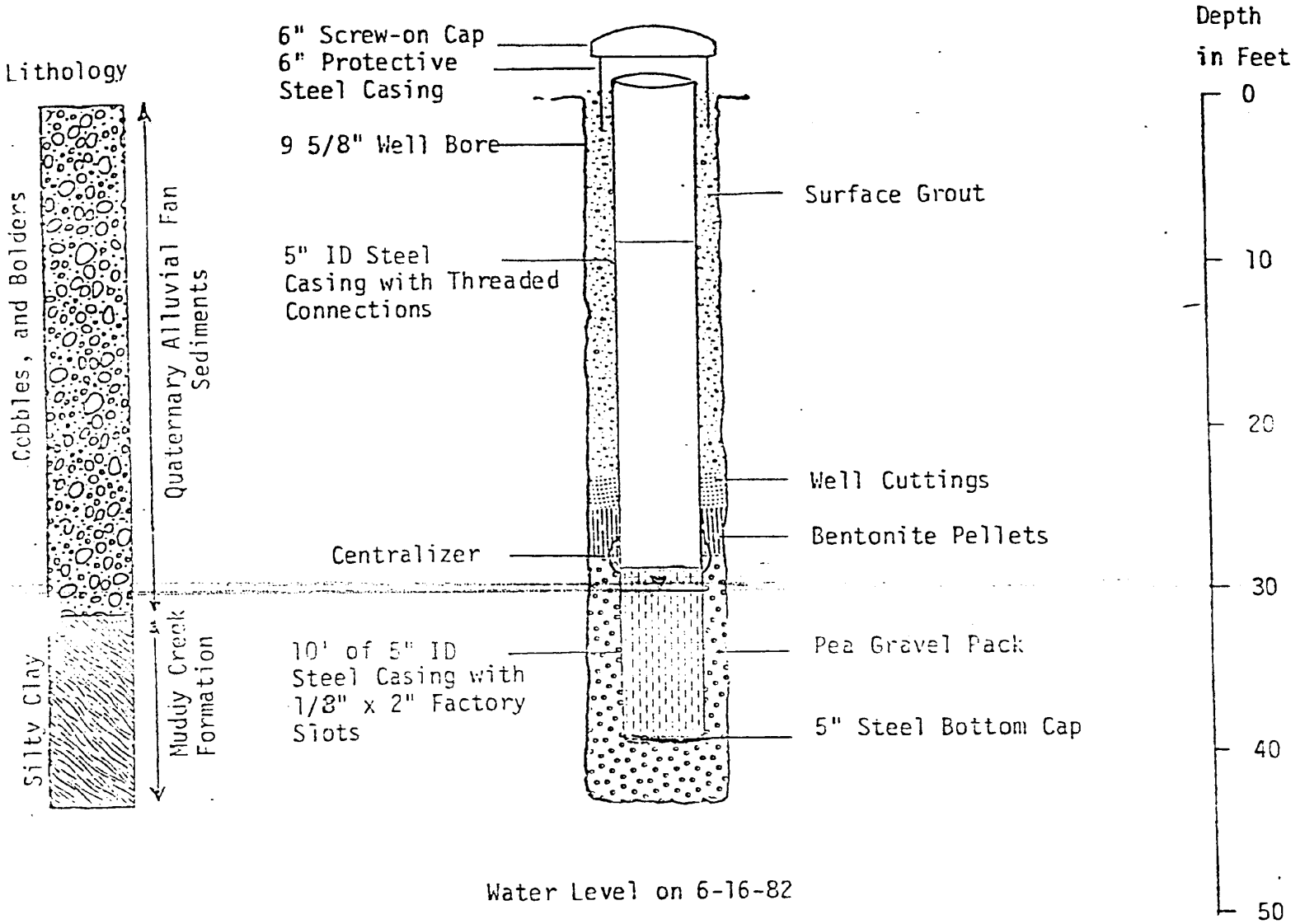
K-M CHEMICAL CORPORATION
Henderson, Nevada Facility
Well No. M-2



Well Yield: Approximately 15 gpm
Water Level on 1-14-82 : 33.25' (from protector pipe top)
Casing Elevation: 1780.02 ft. above MSL

Geological and Well Construction Data from Converse Consultants 81-3258, 11-13-81.

Henderson, Nevada Facility
Well No. M-5



Water Level on 6-16-82

31' 4 3/8"

Measured from Top of Protective Casing

Geology - well Logs KM Box 5

KERR-McGEE CHEMICAL CORPORATION

Henderson Facility

RCRA Monitor Well No. M-5
Well Construction and Completion Table

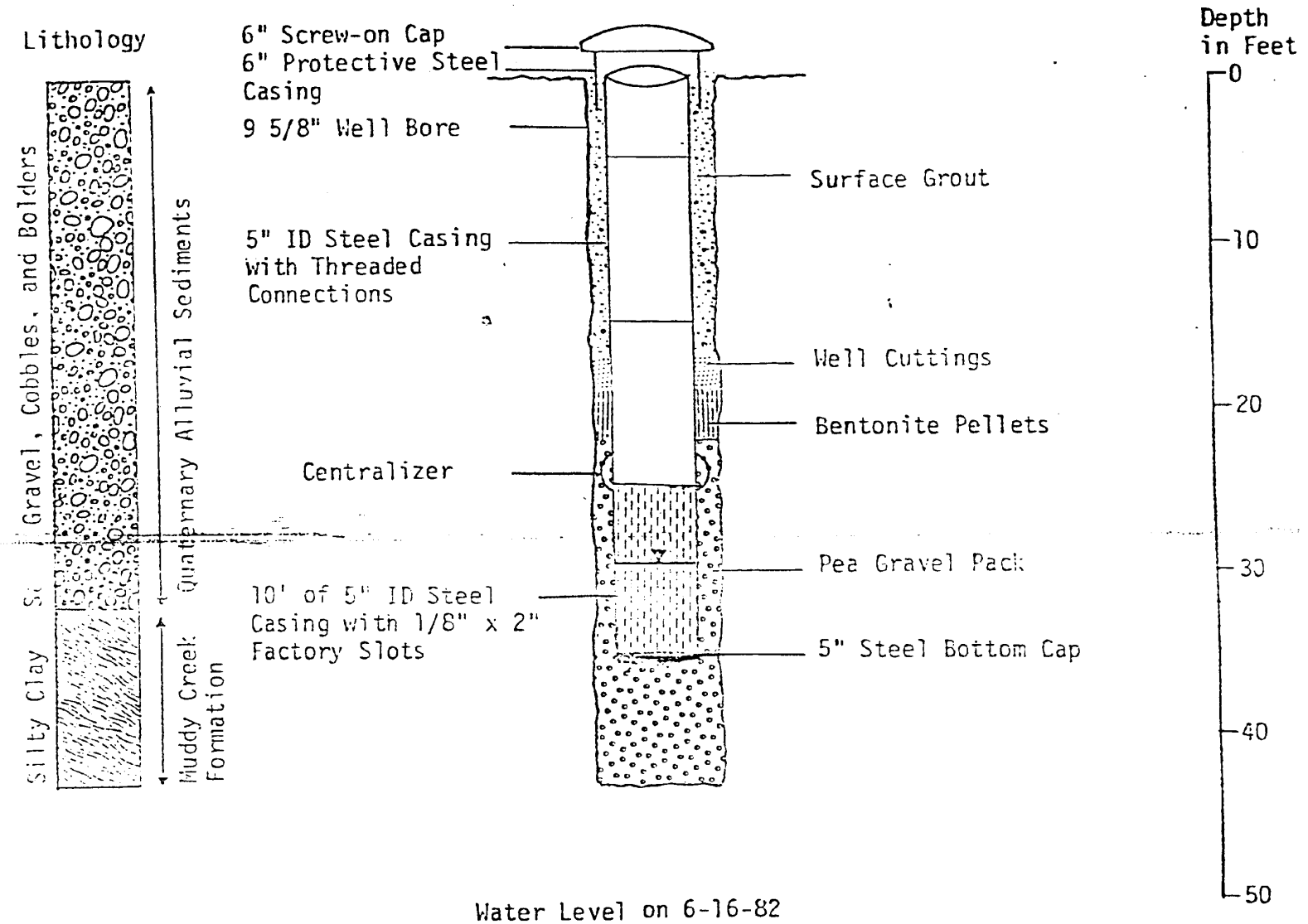
Date Started	June 1, 1982
Date Completed	June 3, 1982 (except for surface grout)
Location	Approx. 100' South of landfill
Elevation from Top of Well Cover	1747.83'
Drilling Method	Rotary rig
Drilling Fluid	Revert
Depth to Muddy Creek	31'.
Total Depth of Well	43'
Borehole Diameter	9 5/8"
Well Casing Diameter/Type	5" ID/threaded steel pipe
Well Casing Interval	39' to surface
Perforated Interval	39' - 29'
Perforation Type/ Size /Open Area	Factory slot/ 1/8" x 2" /4 in^2 per 10'
Casing Above Ground (Well Cover)	Approx. 15"
Gravel Pack Interval	43' - 28'
Type of Gravel	1/8" - 3/8" pea gravel
Surface Seal Interval	22' to surface (grout)
Completion:	0.-22.0' grout 22.0'-24.0' well cuttings 24.0'-28.0' bentonite pellets 28.0'-43.0' gravel pack
Comments: Open hole with gravel from 43.0' to 39.0' Steel 6-inch well cover with cap cemented in place 6-16-82	

Lithology Log
for Henderson
Well No. M-5

Depth in Feet	Lithology Description
0-12.0	Silty sandy gravel
12.0-15.0	Partially cemented sand and gravel
15.0-20.0	Cobbles
20.0-23.0	Silty sand and gravel
23.0-24.5	Gravel and sand with cobbles
24.5-25.5	White clay and gravel with gypsum and cobbles
25.5-28.0	Brown clayey silt with about 50% gypsum
28.0-31.0	Brown clayey silt with sand and gravel and white streaks
31.0-43.0	Brown clay with occasional thin caliche lenses

Top of Muddy Creek at 31 feet

K-M Chemical Corporation
Henderson, Nevada Facility
Well No. M-6



Water Level on 6-16-82

31' 4"

Measured from Top of Protective Casing

KERR-McGEE CHEMICAL CORPORATION

Henderson Facility

RCRA Monitor Well No. M-6
Well Construction and Completion Table

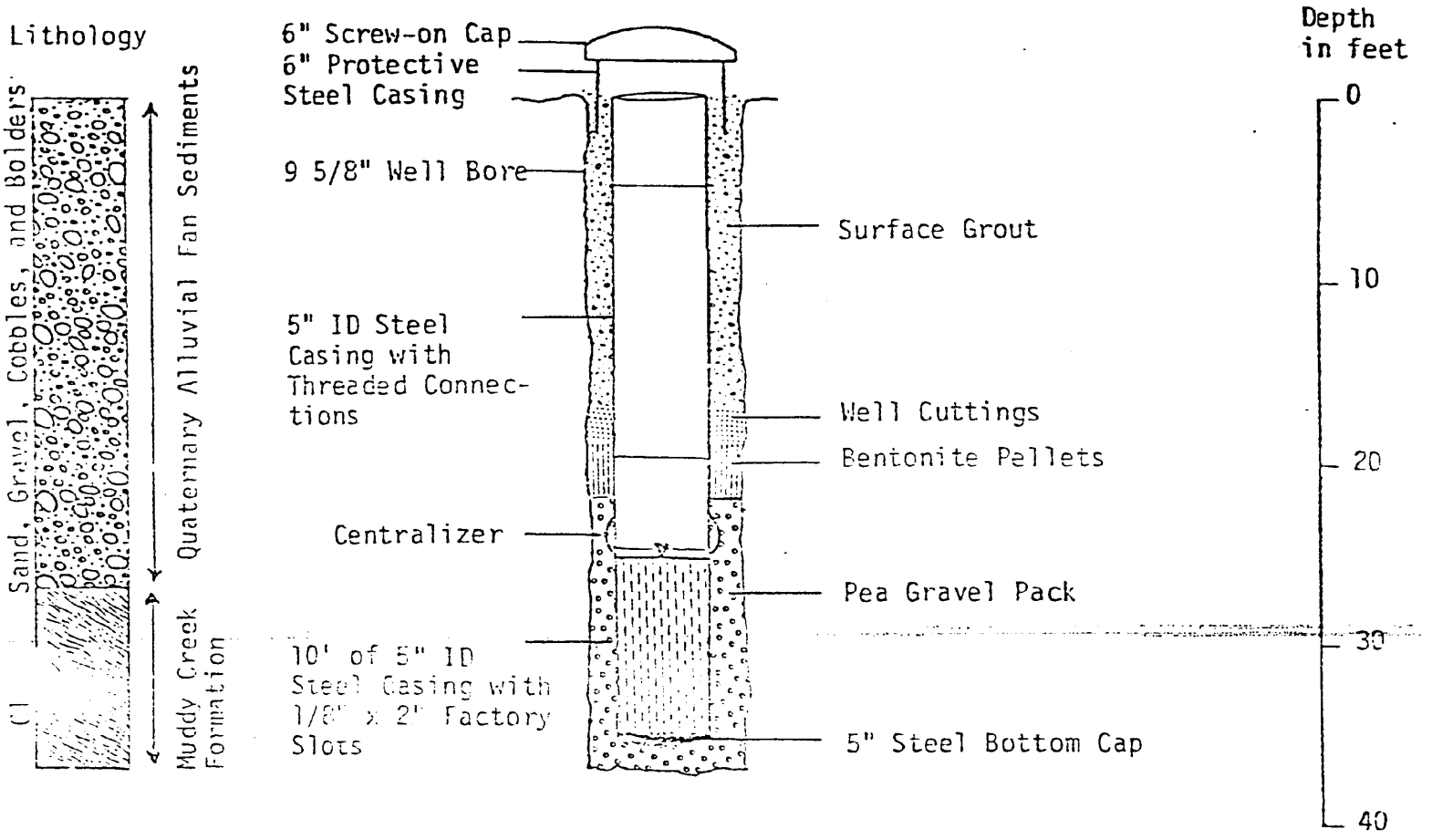
Date Started	June 2, 1982
Date Completed	June 3, 1982 (except for surface grout)
Location	NW corner of landfill
Elevation from Top of Well Cover	1729.17'
Drilling Method	Rotary rig
Drilling Fluid	Revert
Depth to Muddy Creek	32'
Total Depth of Well	43'
Borehole Diameter	9 5/8"
Well Casing Diameter/Type	5" ID/threaded steel pipe
Well Casing Interval	34' to surface
Perforated Interval	35' - 25'
Perforation Type/ Size /Open Area	Factory slot/ 1/8" x 2" / 4 in^2 per 10'
Casing Above Ground (Well Cover)	Approx. 15"
Gravel Pack Interval	43' -22'
Type of Gravel	1/8" - 3/8" pea gravel
Surface Seal Interval	15' to surface
Completion:	0 -15.0' grout 15.0'-18.0' well cuttings 18.0'-22.0' bentonite pellets 22.0'-43.0' gravel pack
Comments: Open hole with gravel from 43.0' to 35.0'. Steel well cover with cap cemented in place on 6-16-82.	

Lithology Log
for Henderson
Well No. M-6

Depth in Feet	Lithology Description
0-29.0	Silty gravel and sand; slightly cemented from 12' - 13'
29.0-32.0	Silty sand and gravel with gypsum
32.0-32.5	Brown silty clay
32.5-34.0	Silty sand and gravel
34.0-38.0	Brown silty clay
38.0-43.0	Brown clay with sand and gravel

Top of Muddy Creek at 32 feet

K-M Chemical Corporation
Henderson, Nevada Facility
Well No. M-7



Water Level on 6-16-82

27' 11 3/4"

Measured from Top of Protective Casing

KERR-McGEE CHEMICAL CORPORATION

Henderson Facility

RCRA Monitor Well No. M-7
Well Construction and Completion Table

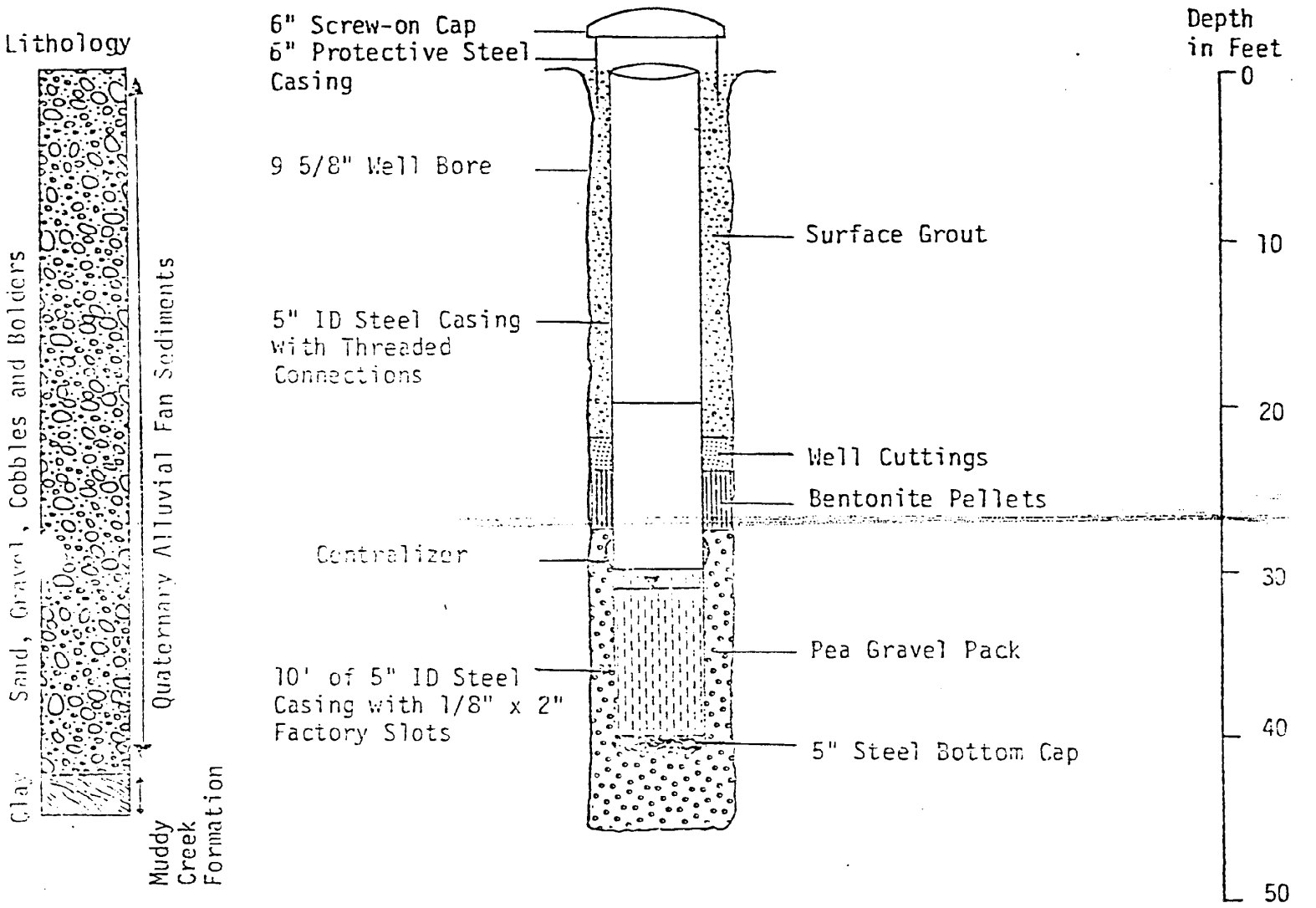
Date Started	June 3, 1982
Date Completed	June 3, 1982 (except for surface grout)
Location	Approx. 120' east of M-6
Elevation from Top of Well Cover	1729.83'
Drilling Method	Rotary rig
Drilling Fluid	Revert
Depth to Muddy Creek	29.5'
Total Depth of Well	37'
Borehole Diameter	9 5/8"
Well Casing Diameter/Type	5" ID/threaded steel pipe
Well Casing Interval	34' to surface
Perforated Interval	35' - 25'
Perforation Type/ Size /Open Area	Factory slot / 1/8" x 2" /4 in^2 per 10'
Casing Above Ground (Well Cover)	Approx. 15"
Gravel Pack Interval	37' - 22'
Type of Gravel	1/8" - 3/8" pea gravel
Surface Seal Interval	15' to surface
Completion:	0 -15.0' grout 15.0'-18.0' well cuttings 18.0'-22.0' bentonite pellets 22.0'-37.0' gravel pack
Comments: Open hole with gravel from 35.0' to 37.0' Steel well cover with cap cemented in place 6-10-82.	

Lithology Log
for Henderson
Well No. M-7

Depth in Feet	Lithology Description
0-15.0	Silty gravel and sand
15.0-18.0	Silty gravel and sand with gypsum
18.0-22.5	Silty gravel and sand with abundant gypsum; approximately 40% gypsum
22.5-28.0	Light brown silty clay with thin beds of caliche. Cemented from 27' - 27.5'
28.0-29.5	Clayey gravel (Not cemented)
29.5-37.0	Brown silty clay.

Top of Muddy Creek at 29.5'

K-M Chemical Corporation
Henderson, Nevada Facility
Well No. M-8



Water Level on 6-16-82

33' 8"

Measured from Top of Protective Casing

KERR-McGEE CHEMICAL CORPORATION

Henderson Facility

RCRA Monitor Well No. M-8
Well Construction and Completion Table

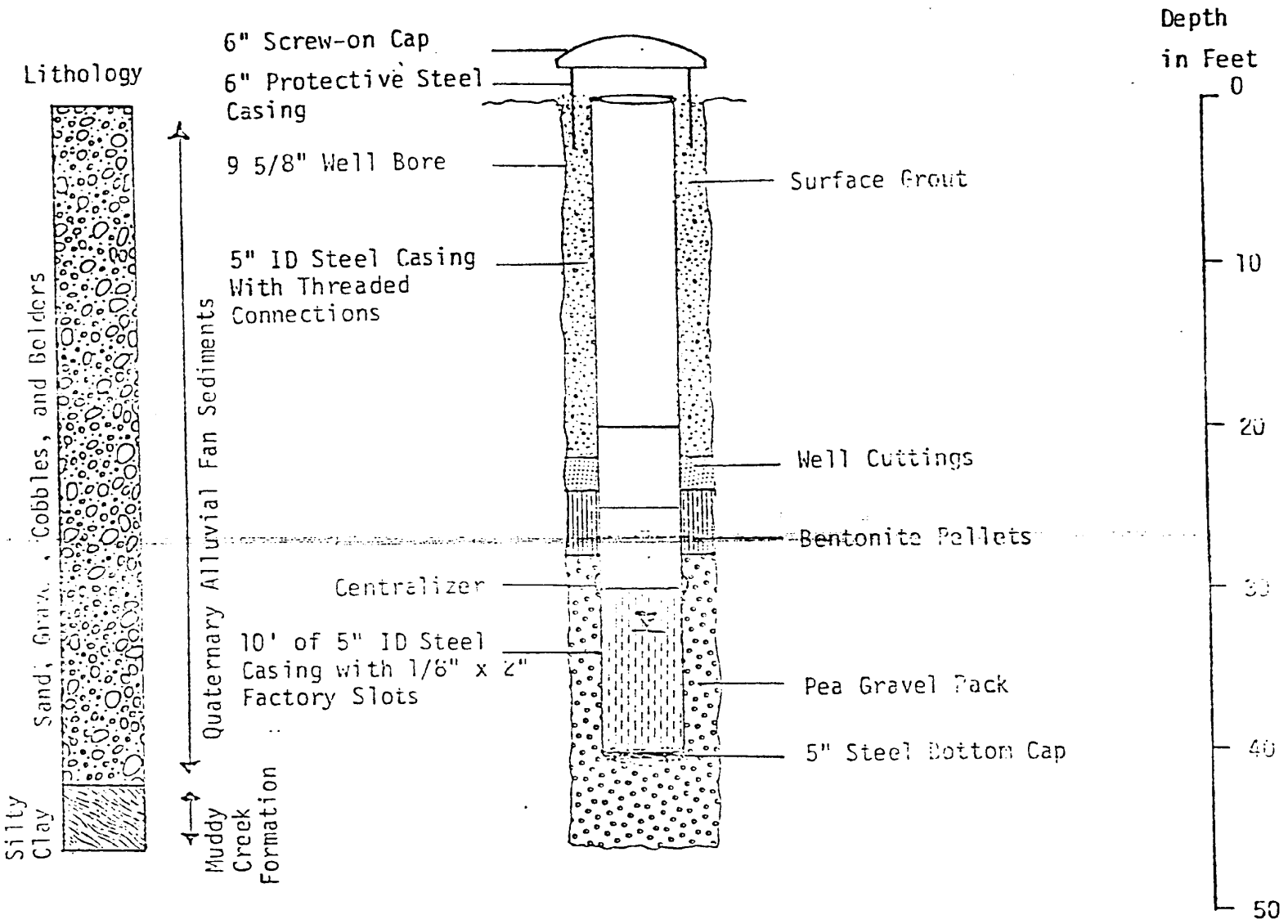
Date Started	June 14, 1982
Date Completed	June 15, 1982 (except for surface grout)
Location	NE corner of S-1 pond
Elevation from Top of Well Cover	1780.00'
Drilling Method	Rotary rig
Drilling Fluid	Revert
Depth to Muddy Creek	42.5'
Total Depth of Well	45'
Borehole Diameter	9 5/8"
Well Casing Diameter/Type	5" ID/threaded steel
Well Casing Interval	40' to surface
Perforated Interval	40' - 30'
Perforation Type/ Size /Open Area	Factory slot/ 1/8" x 2" /4 in^2 per 10'
Casing Above Ground (Well Cover)	Approx. 15"
Gravel Pack Interval	45' - 27.5'
Type of Gravel	1/8" - 3/8" pea gravel
Surface Seal Interval	22' to surface
Completion:	0 -22.0' grout 22.0'-24.0' well cuttings 24.0'-27.5' bentonite pellets 27.5'-45.0' gravel pack
Comments: Open hole with gravel from 40.0' to 45.0'. Steel well cover with cap cemented in place on 6-16-82.	

Lithology Log
for Henderson
Well No. M-8

Depth in Feet	Lithology Description
0-25.0	Silty sandy gravel
25.0-25.5	White dry clayey sand
25.5-33.0	Silty sandy gravel with cobbles; gypsum stringer at 27'
33.0-40.5	Caliche-cemented sand and gravel
40.5-42.5	Sandy gravel slightly cemented
42.5-45.0	Silty clay

Top of Muddy Creek at 42.5'

K-M Chemical Corporation
Henderson, Nevada Facility
Well No. M-9



Water Level on 10-05-82
33' 9"
Measured from Top of Protective Casing

KERR-McGEE CHEMICAL CORPORATION

Henderson Facility

RCRA Monitor Well No. M-9
Well Construction and Completion Table

Date Started	June 15, 1982
Date Completed	June 15, 1982 (except for surface grout)
Location	NW corner of S-1 pond
Elevation from Top of Well Cover	1778.92'
Drilling Method	Rotary Rig
Drilling Fluid	Revert
Depth to Muddy Creek	42'
Total Depth of Well	45'
Borehole Diameter	9 5/8"
Well Casing Diameter/Type	5" ID/threaded steel pipe
Well Casing Interval	40' to surface
Perforated Interval	40' - 30'
Perforation Type/ Size /Open Area	Factory slot/ 1/8" x 2" /4 in^2 per 10'
Casing Above Ground (Well Cover)	Approx. 15"
Gravel Pack Interval	45' - 28'
Type of Gravel	1/8" - 3/8" pea gravel
Surface Seal Interval	22' to surface
Completion:	0 - 22.0' grout 22.0'- 24.0' well cuttings 24.0'- 28.0' bentonite pellets 28.0'- 45.0' gravel pack
Comments: Open hole with gravel from 45.0' to 40.0'. Steel well cover with cap cemented in place on 6-18-82.	

Lithology Log
for Henderson
Well No. M-9

Depth in Feet	Lithology Description
0-19.0	Sand and gravel; unconsolidated
19.0-20.0	Harder sand and gravel with some caliche cementation
20.0-35.0	Sand and gravel; not as hard. Some cementation
35.0-42.0	Gravel, sand, clay, and silt; clay reddish brown; some gypsum at 37'
42.0-45.0	Silty clay and sand

Top of Muddy Creek @ 42.0

Well M-1

Total Depth - 45'

I.D. - 5"

Casing - Steel

Casing Elevation - 1,792.68'

Chromium Concentrations

Date	ppm
1/14/82	12.2
6/1/82	12.9
10/5/82	12.7
1/28/83	9.9
12/14/83	9.5

The 25% reduction in chromium may reflect revised procedures for handling basement liquors (i.e., returning liquor from the basements to the process as soon as possible).

Well M-2

Total Depth - 40'

I.D. - 5"

Casing - Steel

Casing Elevation - 1,780.02'

Chromium Concentrations

Date	ppm
1/14/82	9.0
6/1/82	10.0
10/5/82	9.15
1/7/83	10.7
12/15/83	5.6

This approximate 50% reduction in chromium content may be due to extended pumping of M-3, a well near M-2.

Well M-3

Total Depth - 40'

I.D. - 5"

Casing - Steel

Casing Elevation - 1,780.46'

Chromium Concentrations

Date	ppm
1/14/82	31.1
6/1/82	46.7
9/12/83	37.5
10/83 Avg.	30.0
11/83 Avg.	25.0
12/83 Avg.	20.0

This approximate 40% reduction in chromium is thought to be a result of pumping M-3 (rate approximately 15 gpm) for an extended period of time.

Well M-4

Total Depth - 40'

I.D. - 5"

Casing - Steel

Casing Elevation - 1,781.45'

Chromium Concentrations

Date	ppm
1/14/82	0.18
6/1/82	0.01
8/24/82	<0.02

Well M-4 indicates the western extent of the chromium plume.

Well M-8

Total Depth - 40'
I.D. - 5"
Casing - Steel
Casing Elevation - 1,780.00'

Chromium Concentrations

Date	ppm
10/5/82	5.1
1/7/83	6.0
3/10/83	0.67
6/22/83	2.96
12/14/83	6.7

Additional samples will be collected and analyzed during the month of February.

Well M-9

Total Depth - 40'
I.D. - 5"
Casing - Steel
Casing Elevation - 1,778.92'

Chromium Concentrations

Date	ppm
10/5/82	16.3
1/7/83	18.5
3/10/83	24.5
6/22/83	26.0
12/14/83	29.7

M-9 is located approximately 75' east of M-3; however, it only makes approximately 1-2 gpm. Between the two wells there appears to be a "sink" as indicated on the attached map. It is thought that the extended pumping of M-3 has essentially equalized the chromium concentration in this "sink" area.

Well M-10

Total Depth - 63'
I.D. - 5"
Casing - Steel
Casing Elevation - 1,834.76'

Chromium Concentrations

Date	ppm
6/20/83	<0.02
8/24/83	<0.02

As shown on the attached map, this well is located upgradient of the Unit 4 and Unit 5 basements.

Well M-11

Total Depth - 53'
I.D. - 5"
Casing - Steel
Casing Elevation - 1,814.45'

Chromium Concentrations

Date	ppm
6/14/83	72
8/24/83	92
10/83	44

The approximate 50% drop in chromium concentration in this well, located north of Unit 5, is a result of pumping M-11 and repairing cracks in the Unit 5 basement.

Well M-12

Total Depth - 52'

I.D. - 5"

Casing - Steel

Casing Elevation - 1,814.90'

Chromium Concentrations

Date	ppm
6/14/83	44
8/24/83	42

Additional samples will be collected and analyzed during the month of February.

Well M-13

Total Depth - 48'

I.D. - 5"

Casing - Steel

Casing Elevation - 1,814.23'

Chromium Concentrations

Date	ppm
6/20/83	0.14
8/24/83	1.1

Well M-13 indicates the western extent of the chromium plume.

Well M-14

Total Depth - 38'

I.D. - 2"

Casing - PVC

Casing Elevation - 1,759.43'

Chromium Concentrations

Date	ppm
6/20/83	0.34
8/24/83	0.41

Well M-14 indicates the western extent of the chromium plume.

Well M-15

Total Depth - 41'

I.D. - 2"

Casing - PVC

Casing Elevation - 1,750.31'

Chromium Concentrations

Date	ppm
6/20/83	6.5
8/24/83	6.3

Additional samples will be collected and analyzed for chromium during the month of February.

Well M-16

Total Depth - 38'

I.D. - 2"

Casing - PVC

Casing Elevation - 1,762.20

Chromium Concentrations

Date	ppm
6/20/83	9.0
8/24/83	7.0

Additional samples will be collected and analyzed for chromium during the month of February.

Well M-17

Total Depth - 42'

I.D. - 2"

Casing - PVC

Casing Elevation - 1,770.22'

Chromium Concentrations

Date	ppm
6/20/83	7.0
8/24/83	6.7

Additional samples will be collected and analyzed for chromium during the month of February.

Well M-18

Total Depth - 28'

I.D. - 2"

Casing - PVC

Casing Elevation - 1,738.93'

Chromium Concentrations

Date	ppm
8/24/83	0.73

Well M-18 indicates the eastern extent of the chromium plume.

Well M-19

Total Depth - 40'

I.D. - 2"

Casing - PVC

Casing Elevation - 1,766.93'

Chromium Concentrations

Date	ppm
8/24/83	0.03

Well M-19 indicates the eastern extent of the chromium plume.

Well M-20

Total Depth - 44'
I.D. - 2"
Casing - PVC
Casing Elevation - 1,798.21

Chromium Concentrations

Date	ppm
8/24/83	0.02

Well M-20 indicates the eastern extent of the chromium plume.

Well M-21

Total Depth - 43'
I.D. - 2"
Casing - PVC
Casing Elevation - 1,790.50'

Silted In

Well M-22

Total Depth - 35'
I.D. - 2"
Casing - PVC
Casing Elevation - 1,758.91

Chromium Concentrations

Date	ppm
8/24/83	1.5

Well M-22 indicates the eastern edge of the chromium plume.

Well M-23

Total Depth - 43'
I.D. - 2"
Casing - PVC
Casing Elevation - 1,717.61'

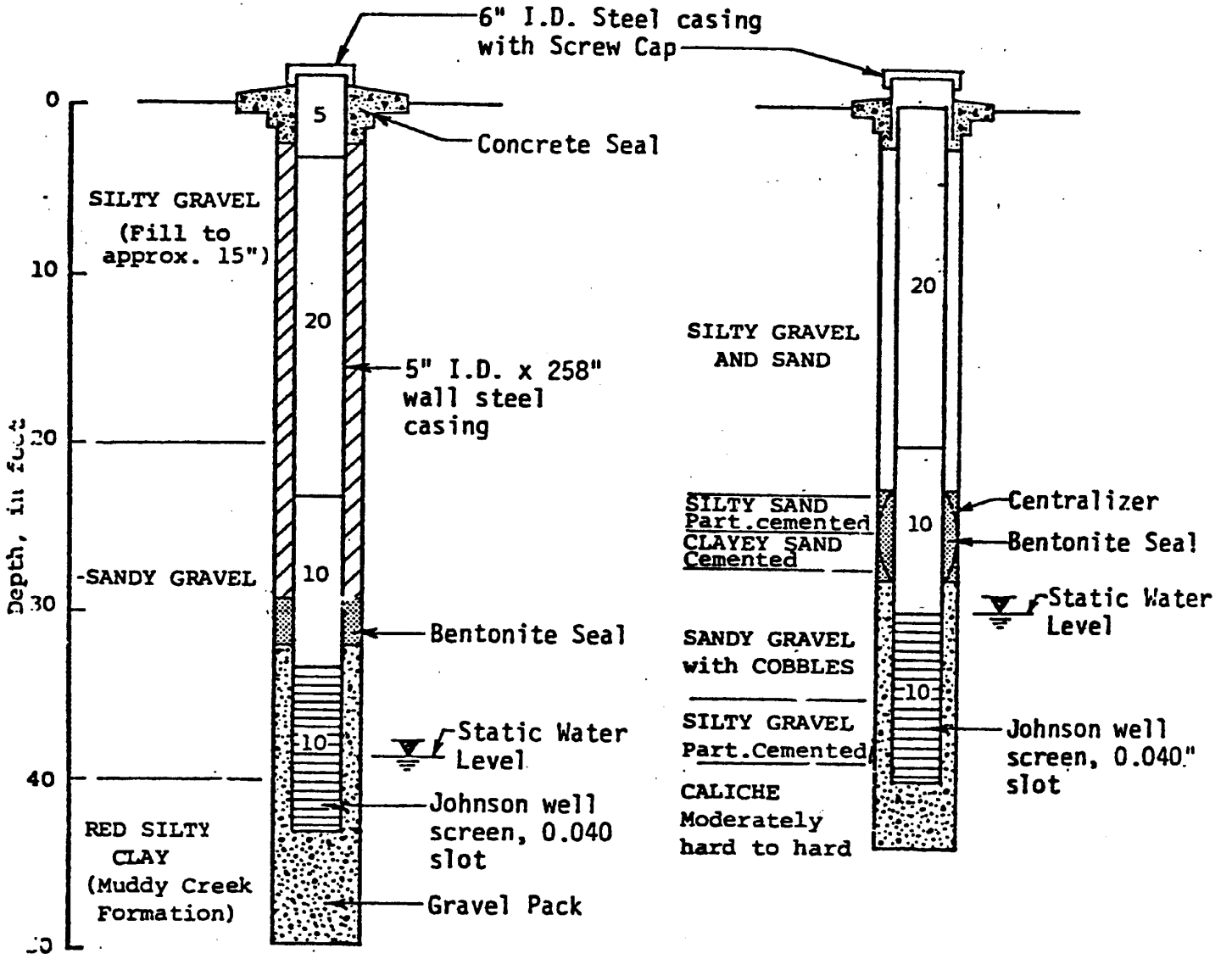
Chromium Concentrations

Date	ppm
8/24/83	3.5

Additional samples will be collected and analyzed for chromium during the month of February.

APPENDIX C

Monitoring Well Logs



YIELD = APPROXIMATELY 1/2 gpm
WATER YELLOW COLORED

M-1

YIELD = PUMP CAPACITY = 15 gpm
WATER YELLOW COLORED

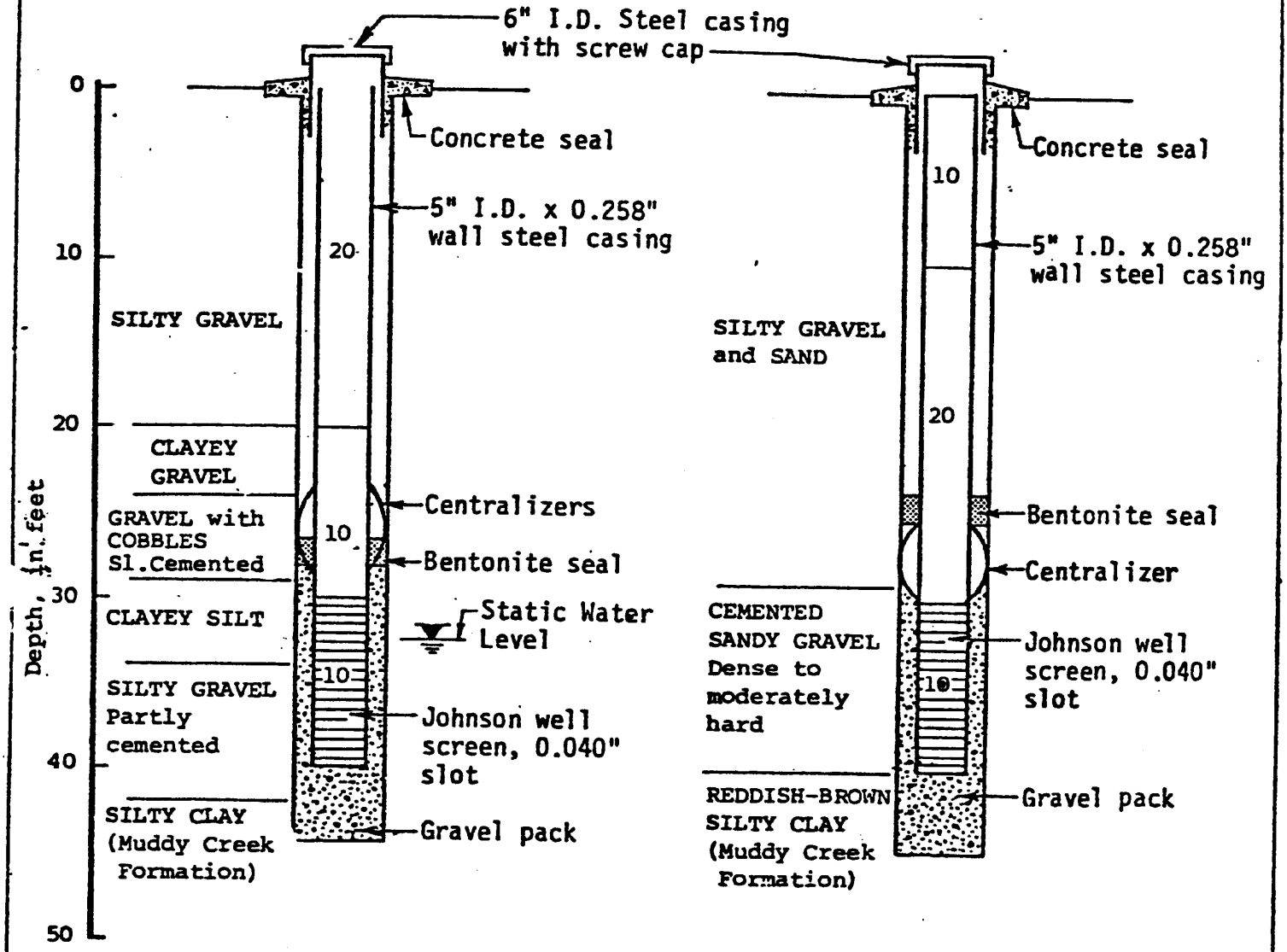
M-2

Project No.

MONITOR WELLS M-1 AND M-2

Drawing No.

ConverseWardDavisDixon Geotechnical Consultants



YIELD = PUMP CAPACITY = 15 gpm
WATER YELLOW COLOR

M-3

YIELD = APPROXIMATELY 3 gpm
WATER MURKY TO CLEAR

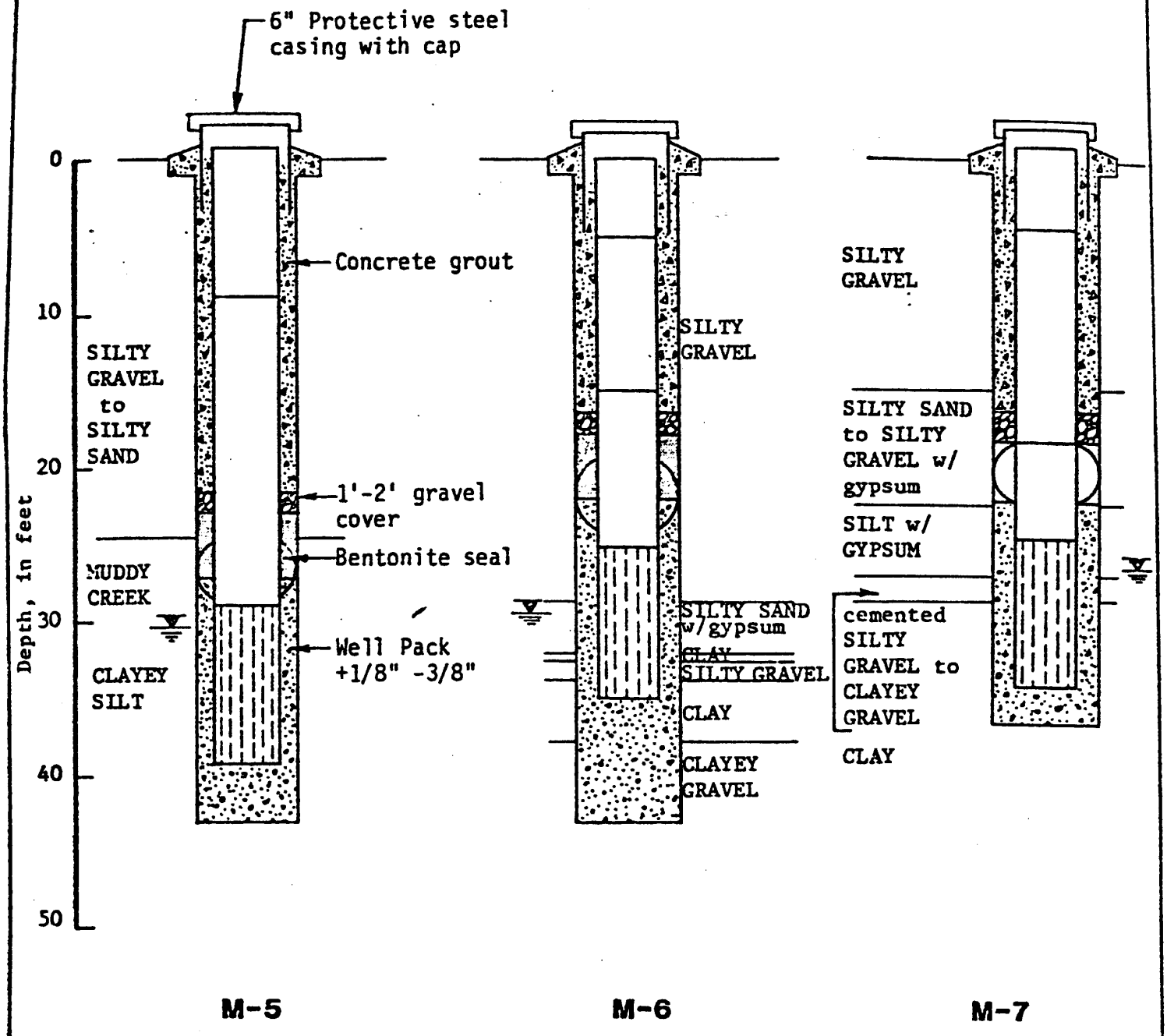
M-4

Project No.

MONITOR WELLS M-3 AND M-4

Figure No.

ConverseWardDavisDixon



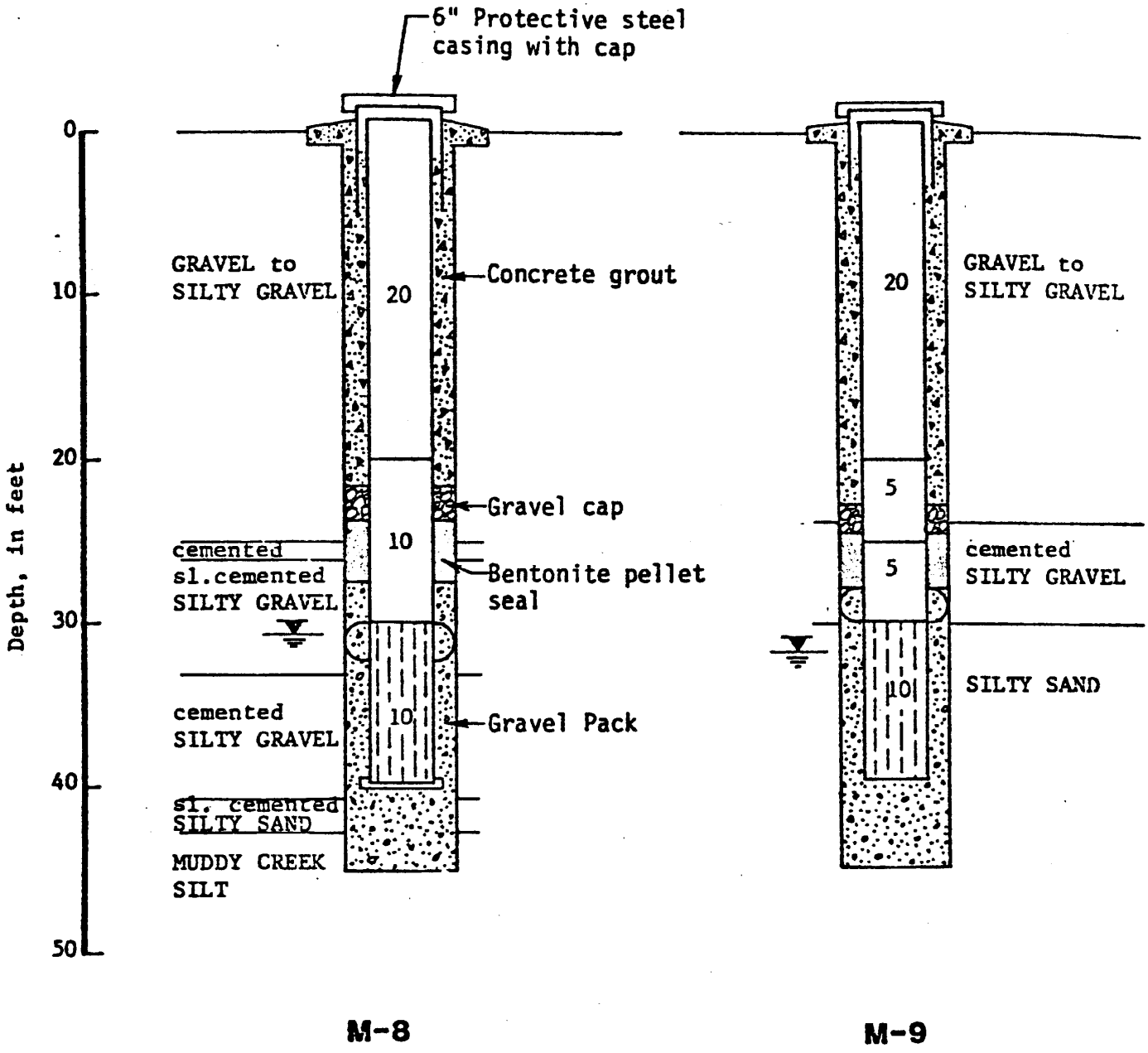
Remarks: Water from wells M-5, M-6 and M-7 has strong organic chemical odor.

MONITOR WELLS, M-5, M-6 AND M-7

Project No.
82-3160

Figure No.

Converse Consultants Geotechnical Engineering and Applied Sciences

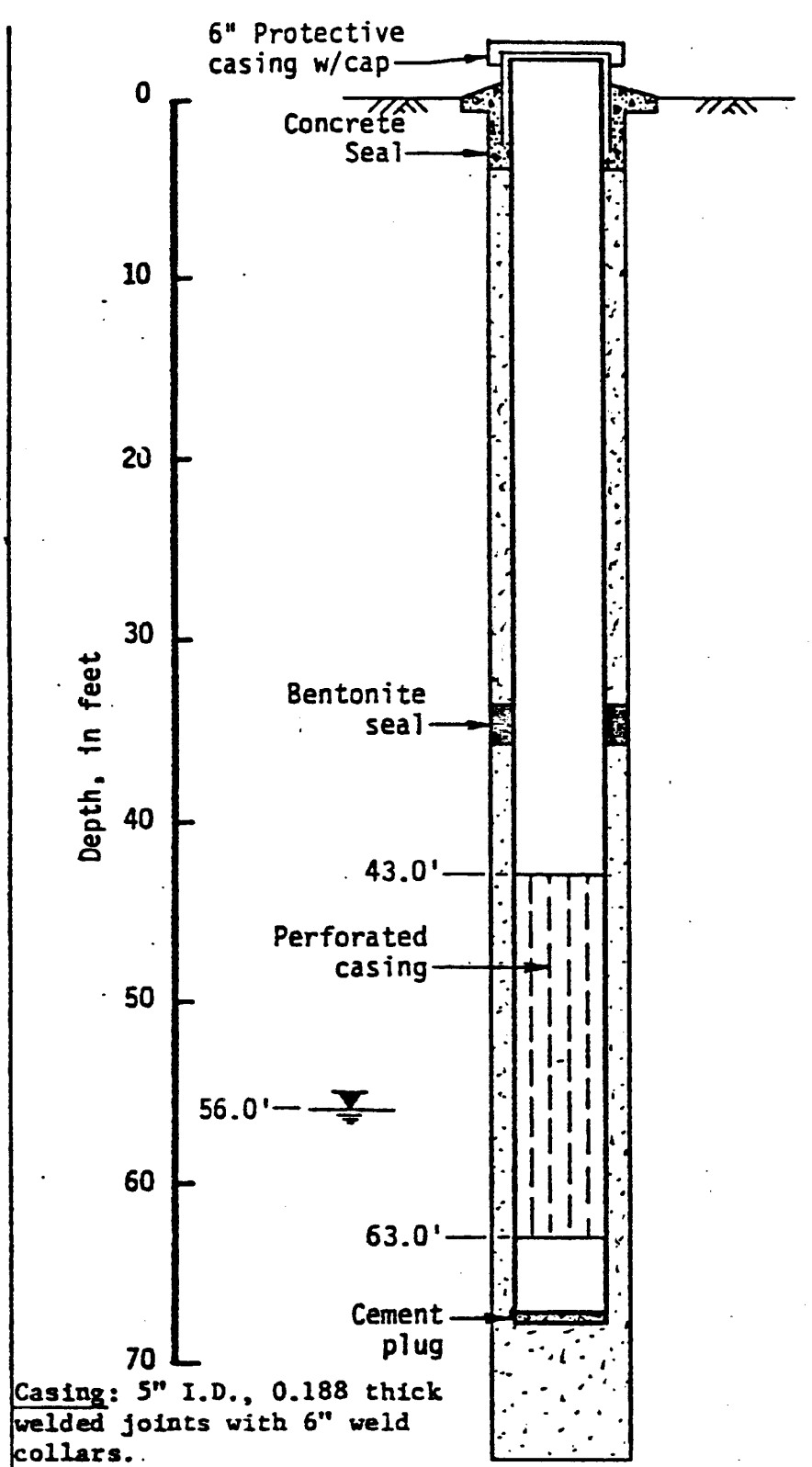


Remarks: Water from well M-8 and M-9 has yellow color.

MONITOR WELLS, M-8 AND M-9

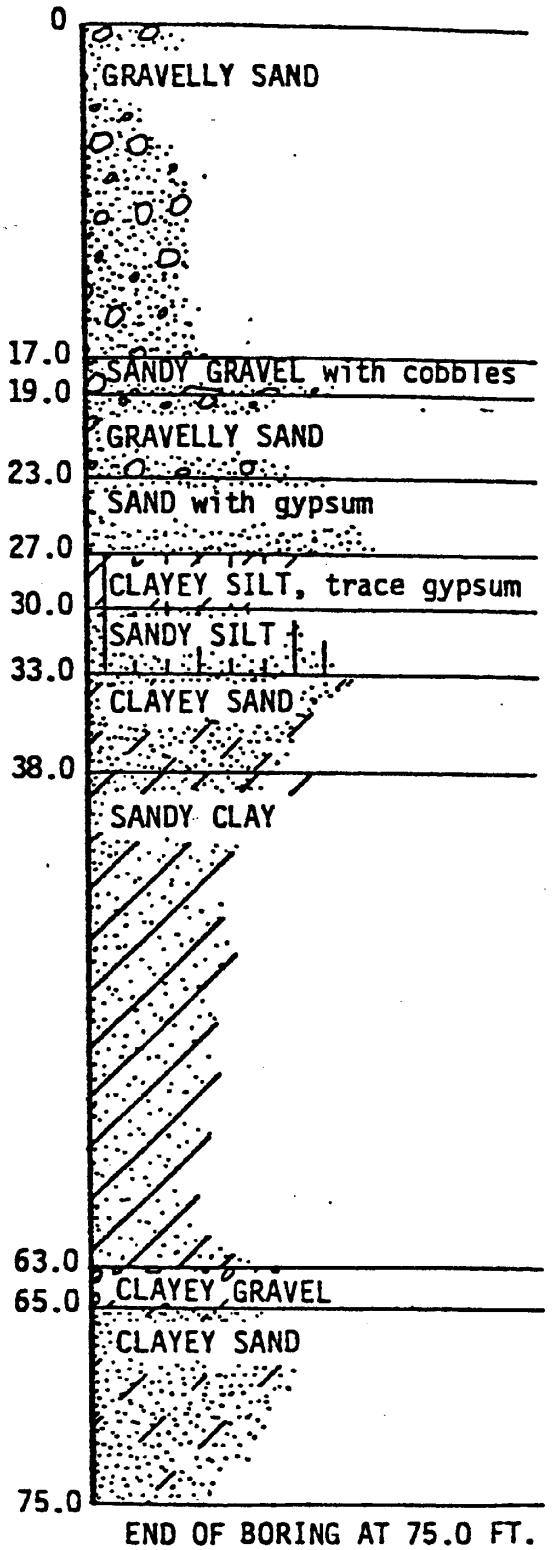
Project No.
82-3160

Figure No.



Casing: 5" I.D., 0.188 thick welded joints with 6" weld collars.
Perforations: .090 slot, 8 rows on 6" centers.
Centralizers: One above perforated section.

LOG OF PILOT HOLE AND WELL BORING



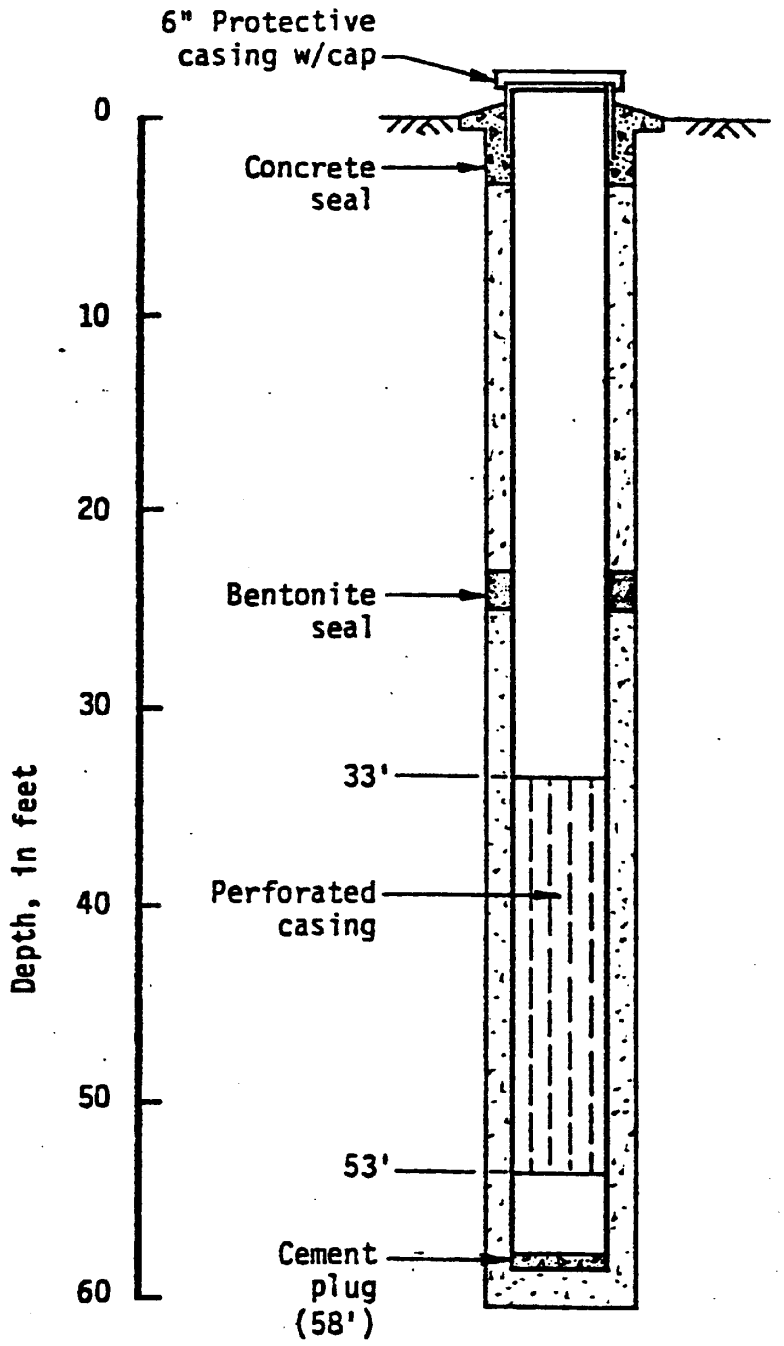
END OF BORING AT 75.0 FT.

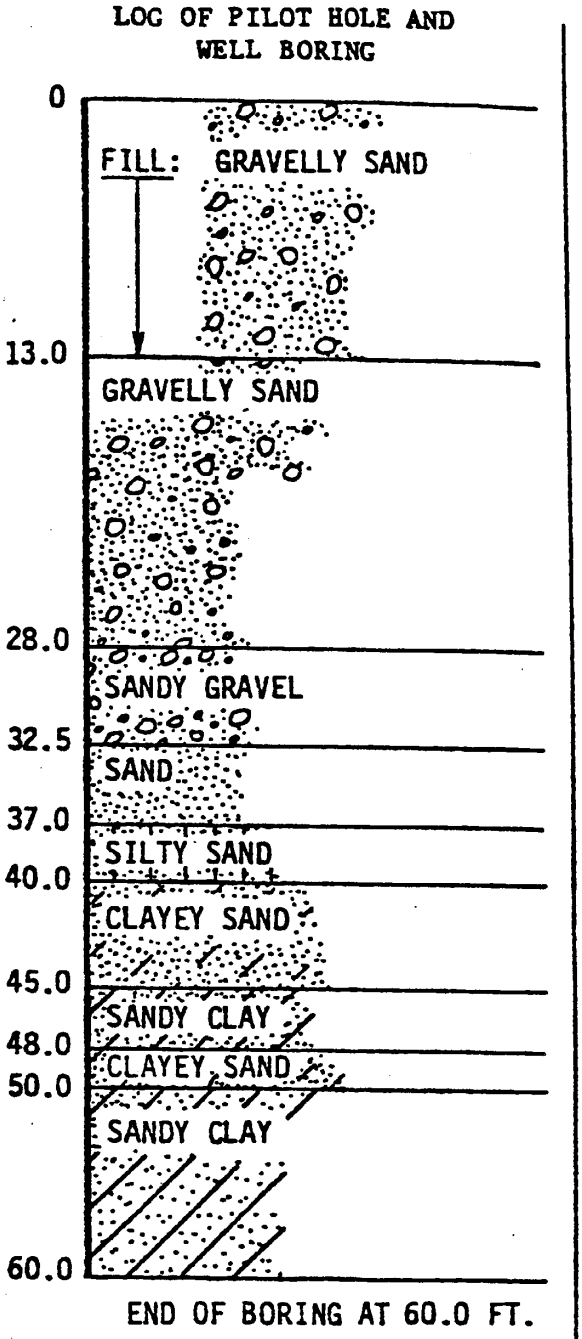
WELL M-10

Project No.
83-3168

Converse Consultants Geotechnical Engineering

Figure No.





Casing: 5" I.D., 0.188 thick welded joints with 6" weld collars.
Perforations: .090 slot, 8 rows on 6" centers.
Centralizers: One above perforated section.

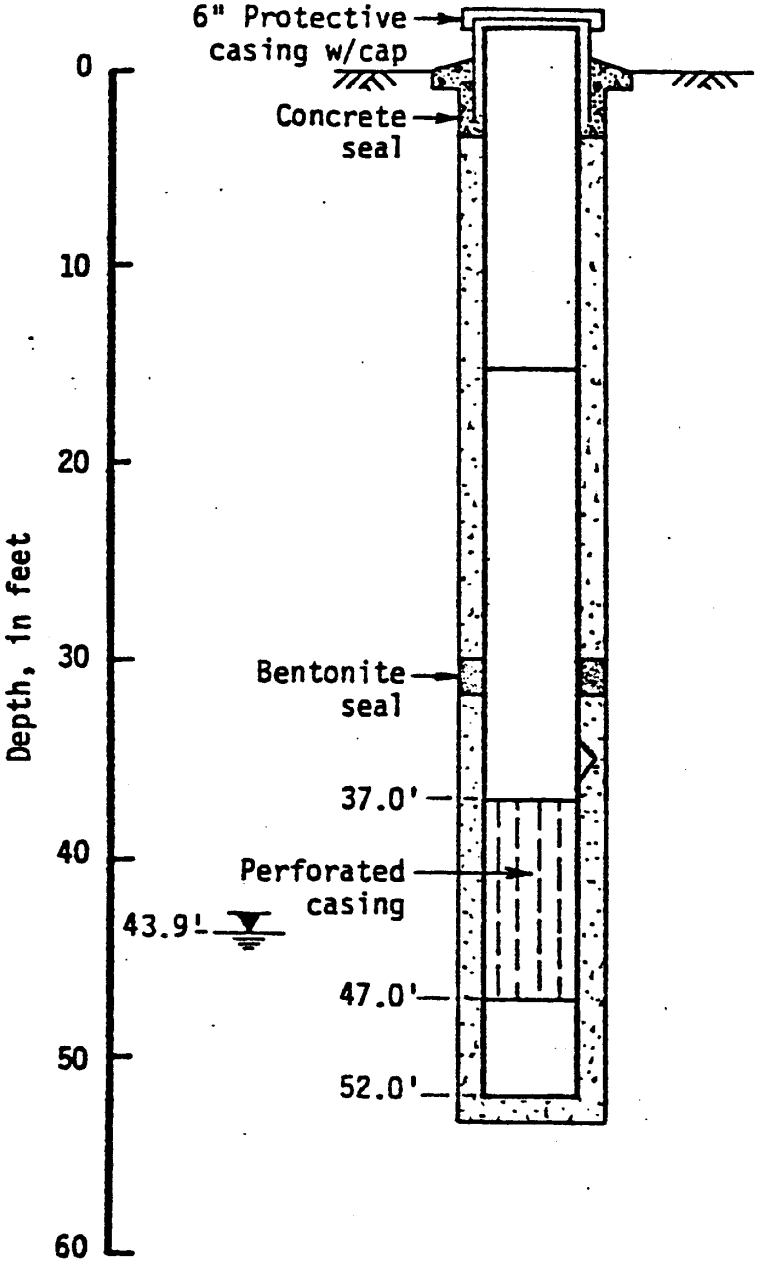
Note: Water level not measured.

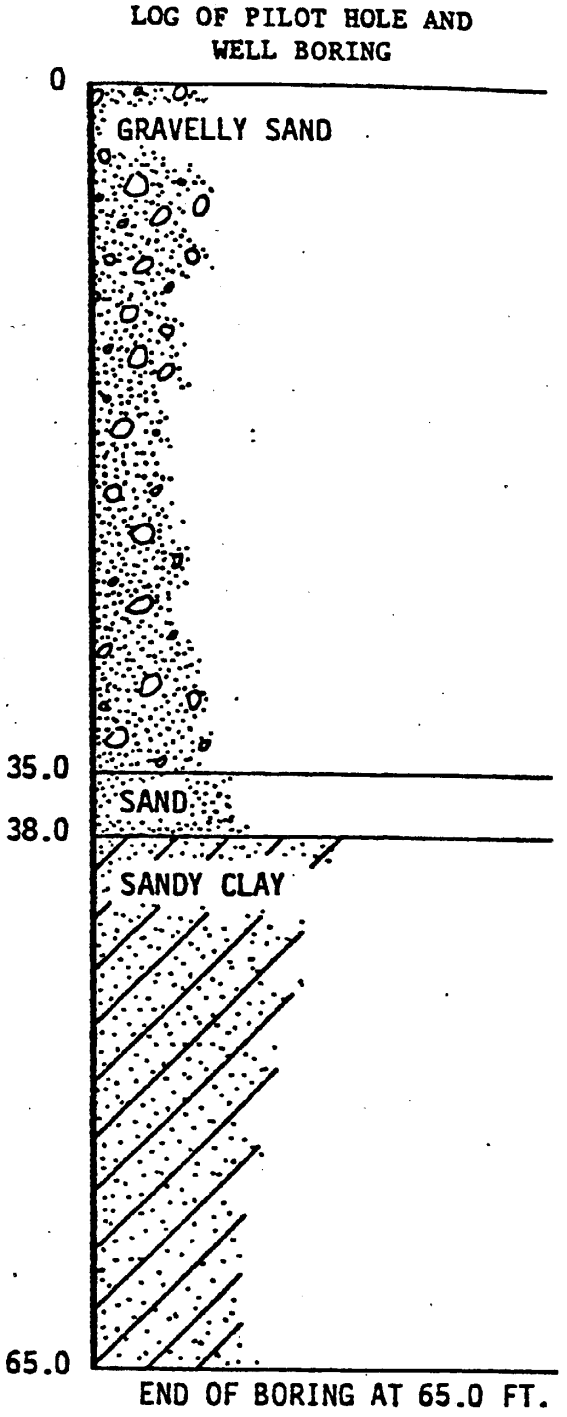
WELL M-11

Project No.
83-3168

Figure No.

Converse Consultants Geotechnical Engineering





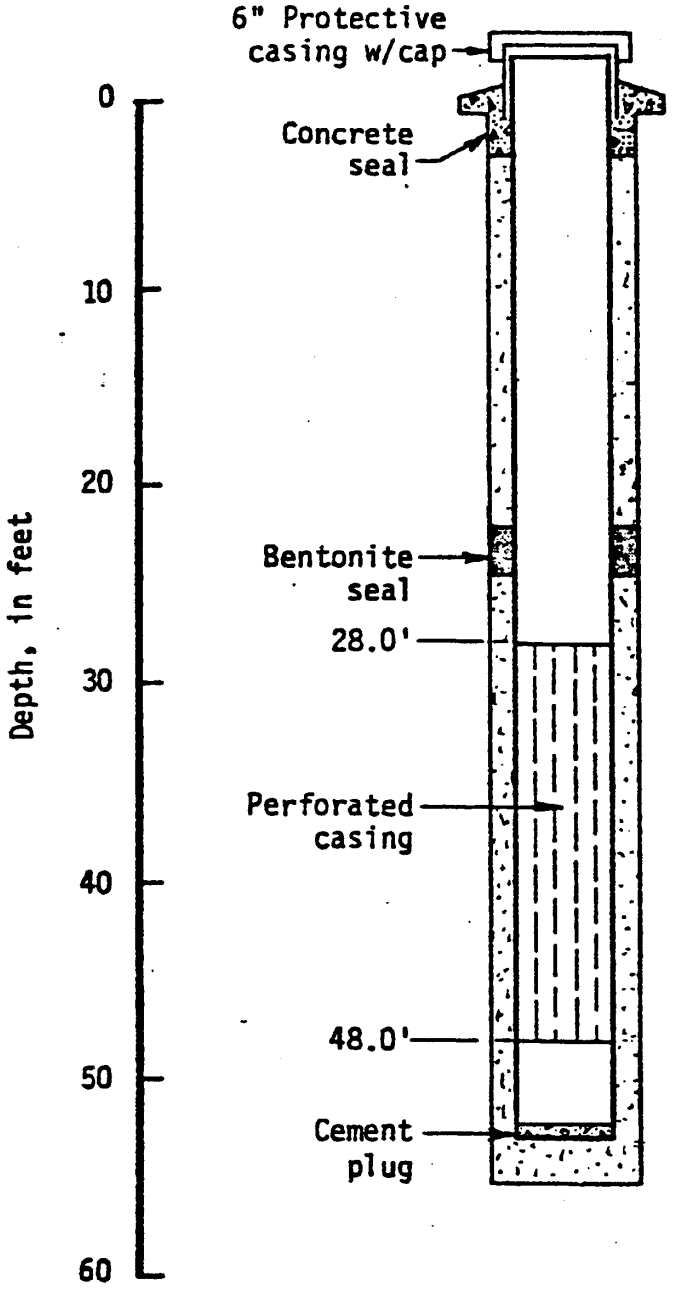
Casing: 5" I.D., 0.188 thick welded joints with 6" weld collars.
Perforations: .090 slot, 8 rows on 6" centers.
Centralizers: One above perforated section.

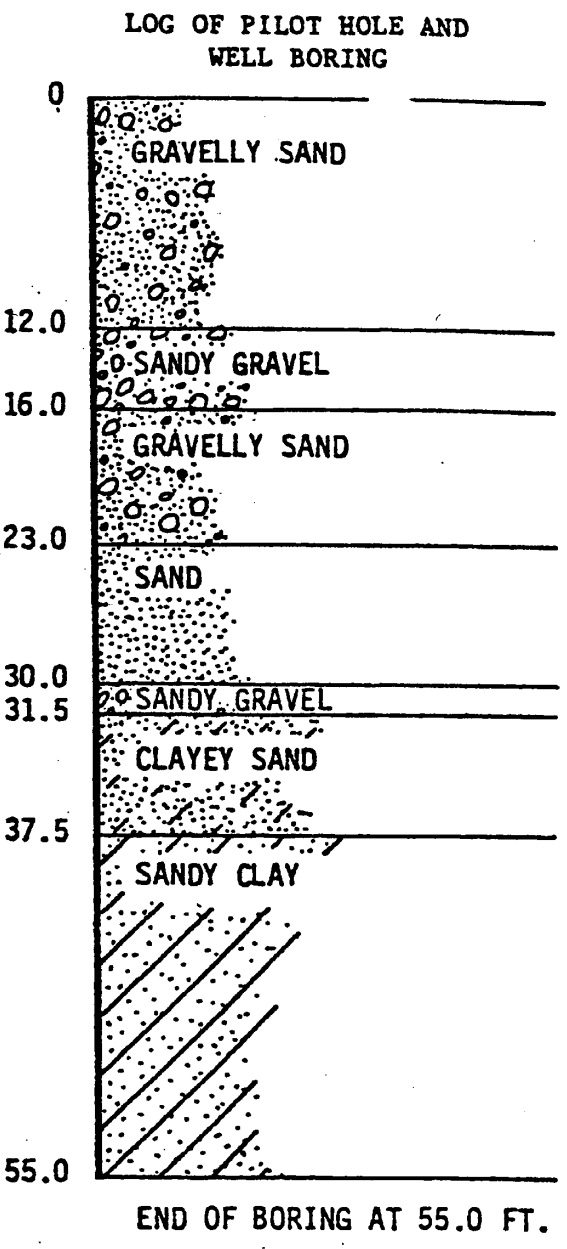
WELL M-12

Project No.
83-3168

Figure No.
4

Converse Consultants Geotechnical Engineering and Applied Sciences





Casing: 5" I.D., 0.188 thick welded joints with 6" weld collars.
Perforations: .090 slot, 8 rows on 6" centers.
Centralizers: One above perforated section.

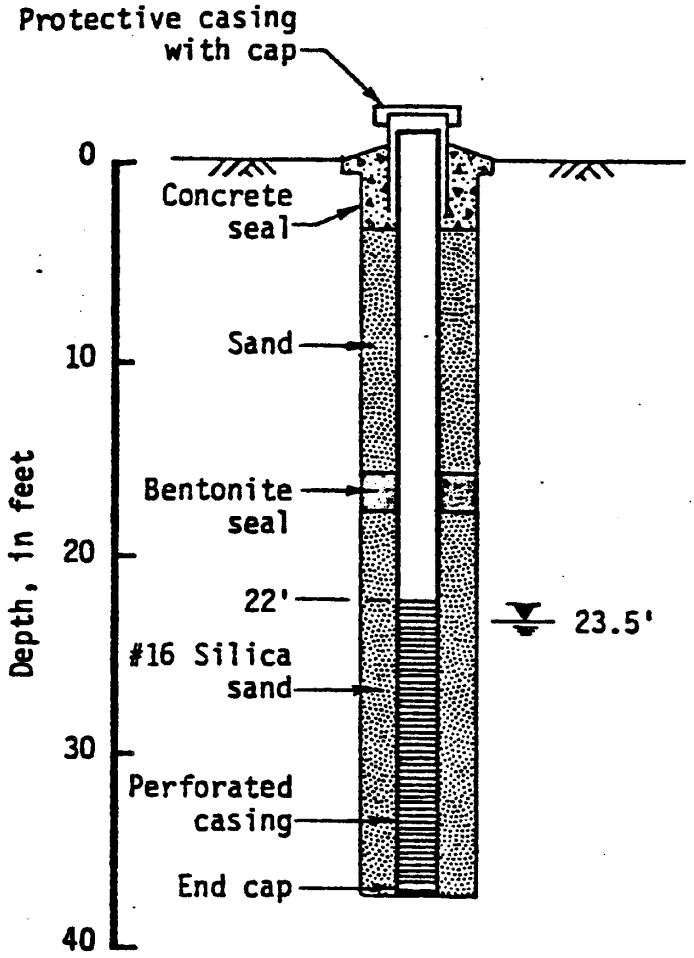
Note: Water level not measured.

WELL M-13

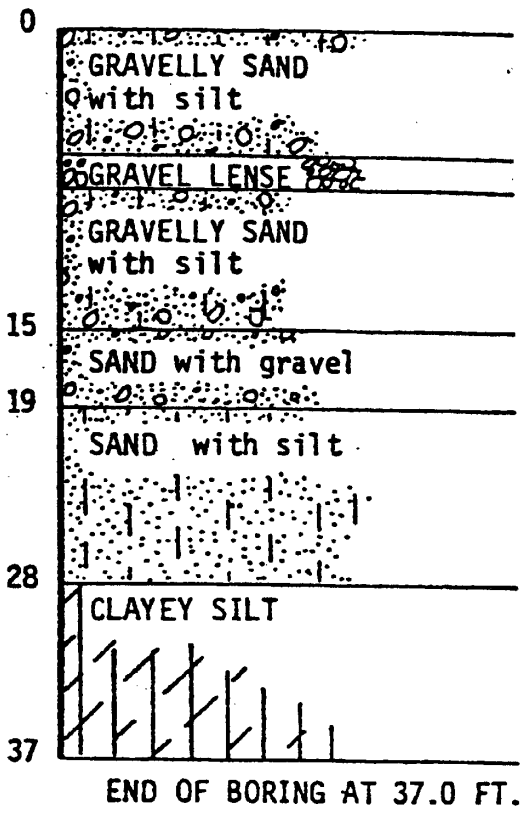
Project No.
83-3168

Figure No.

Converse Consultants Geotechnical Engineering and Applied Sciences



LOG OF PILOT HOLE AND WELL BORING



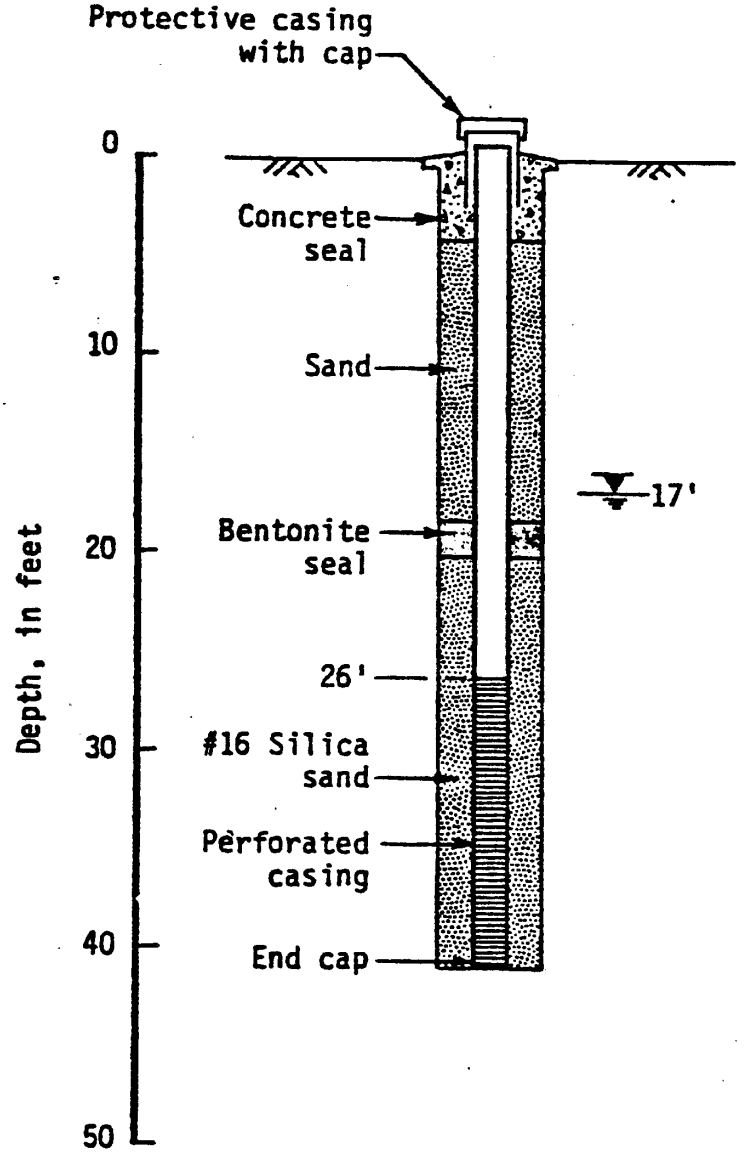
END OF BORING AT 37.0 FT.

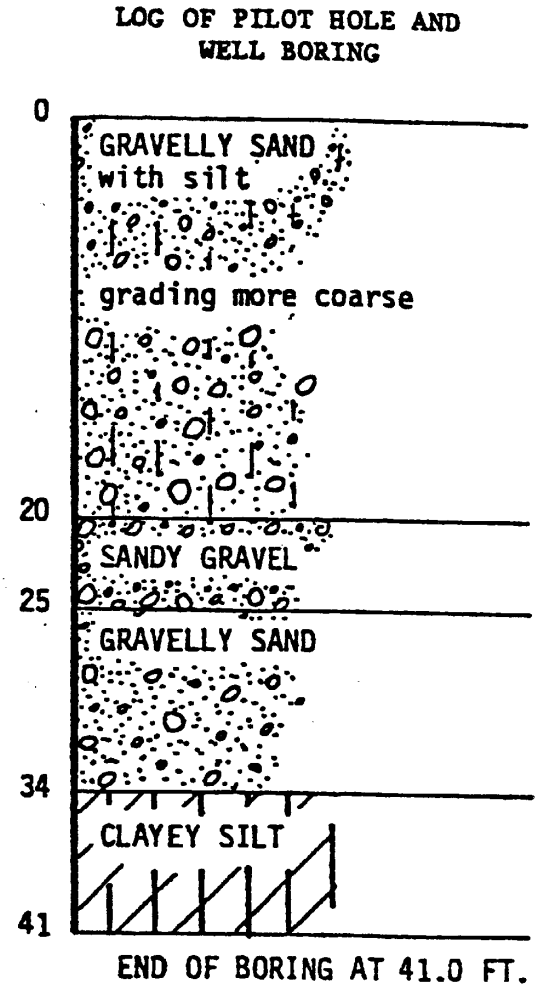
Casing: 2" I.D. PVC, No. 200 with cemented joints
Perforations: .020 slots, factory cut
Centralizers: Two, one each near top and bottom of perforated section.

WELL M-14

Project No.
83-3168

Figure No.



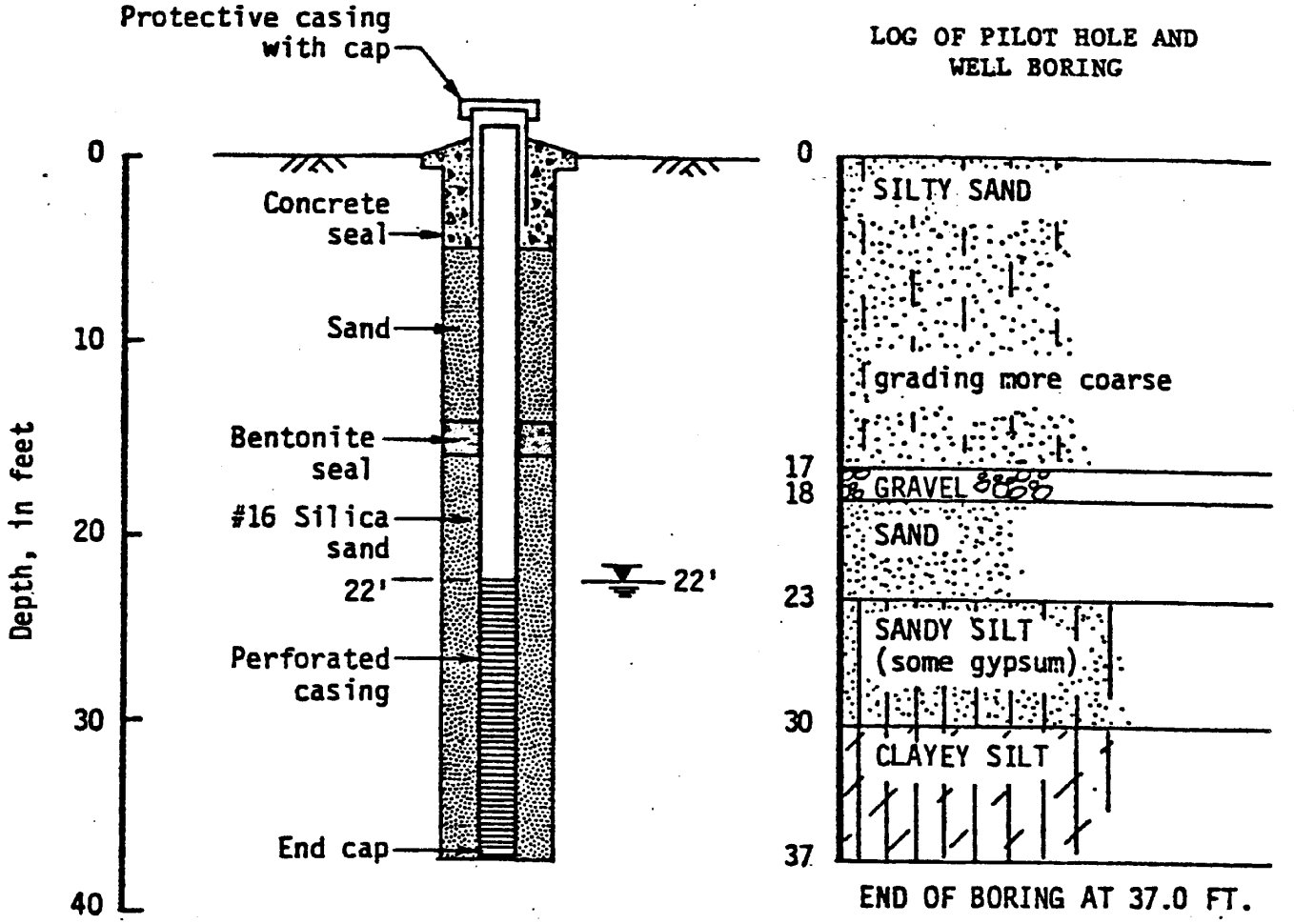


Casing: 2" I.D. PVC, No. 200 with cemented joints
Perforations: .020 slots, factory cut
Centralizers: Two, one each near top and bottom of perforated section.

WELL M-15

Project No.
83-3168

Figure No.

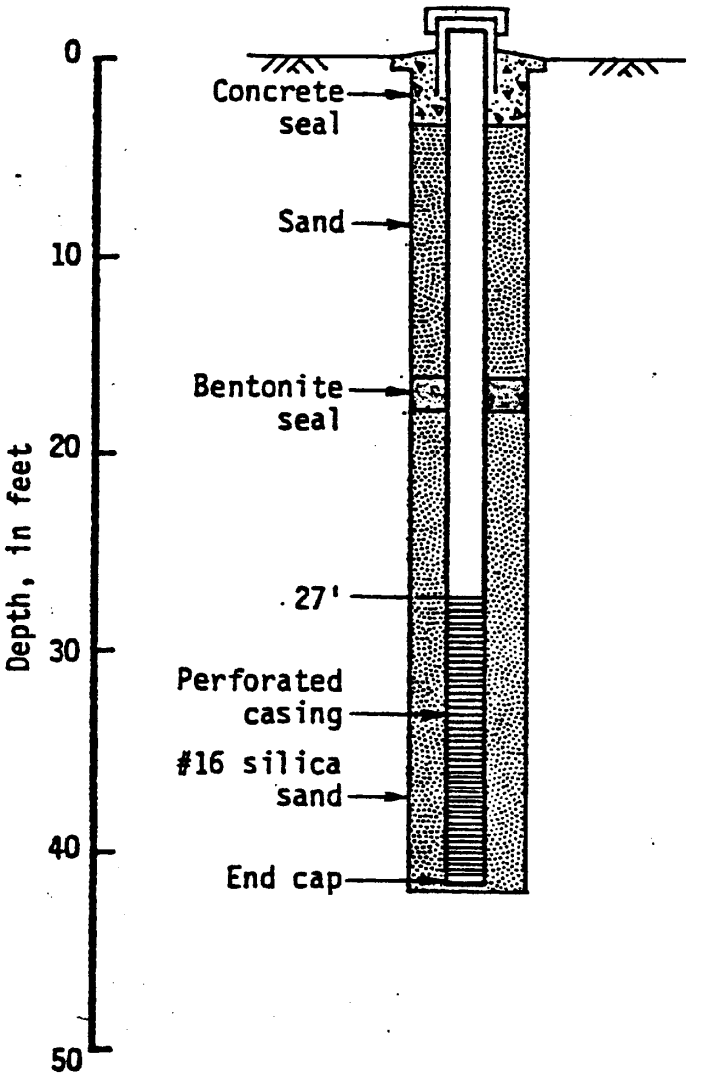


Casing: 2" I.D. PVC, No. 200 with cemented joints
Perforations: .020 slots, factory cut
Centralizers: One, near center of perforated section.

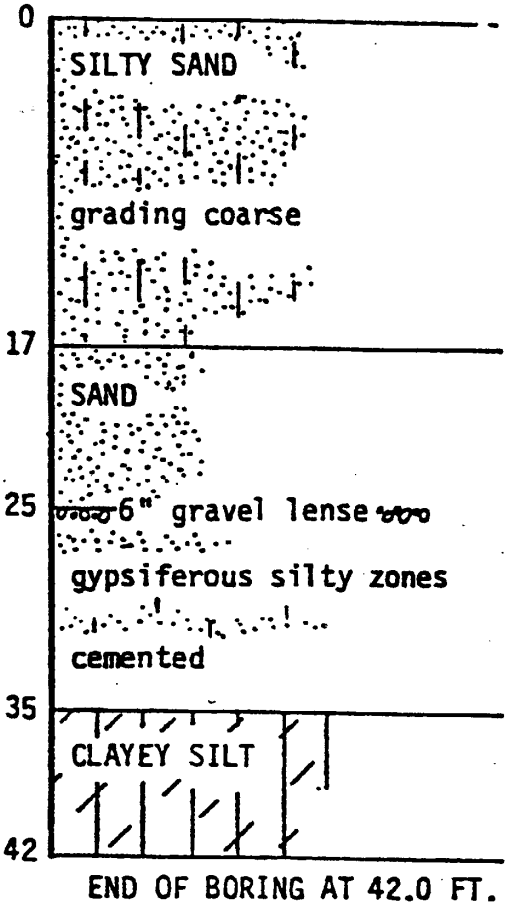
WELL M-16

Project No.
83-3168

Figure No.



LOG OF PILOT HOLE AND WELL BORING



END OF BORING AT 42.0 FT.

Note: Water level not measured.

Casing: 2" I.D. PVC, No. 200 with cemented joints
Perforations: .020 slots, factory cut
Centralizers: Two, one each near top and bottom of perforated section.

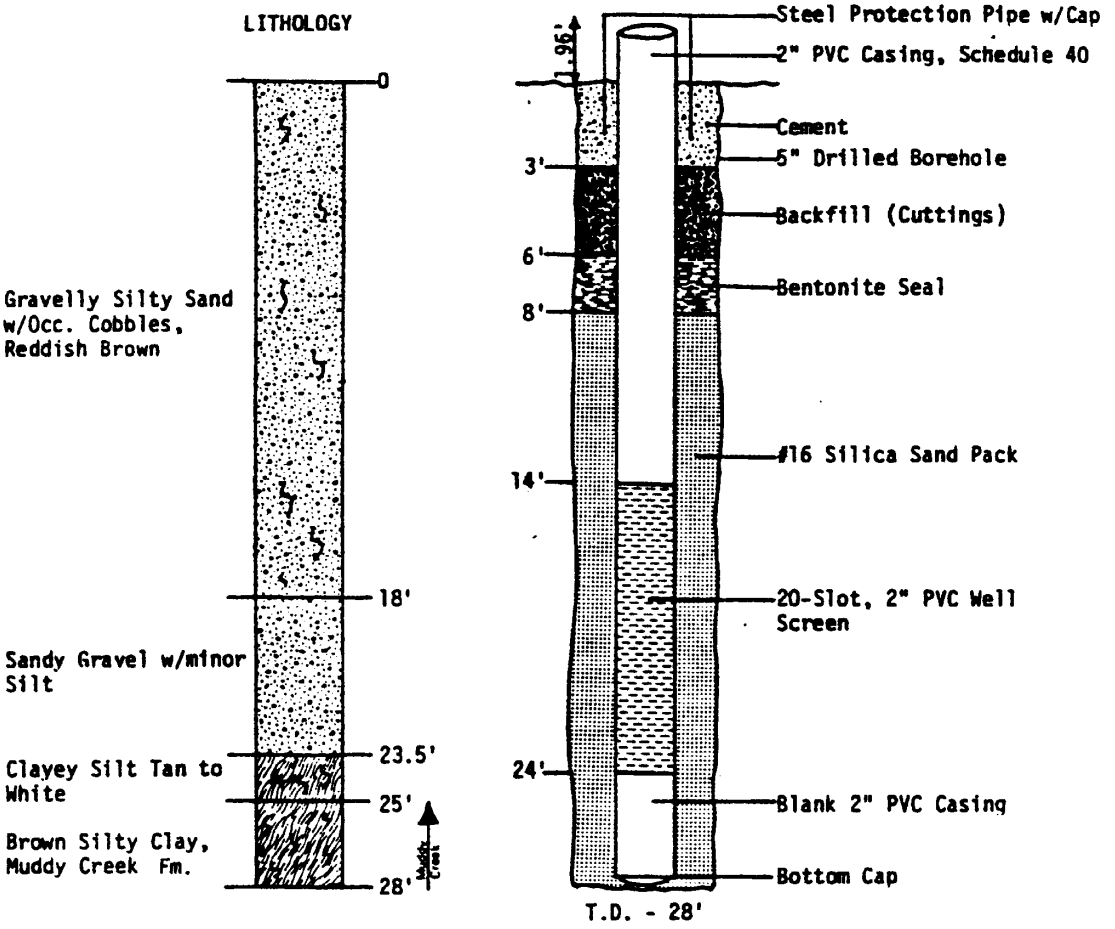
WELL M-17

Project No.
83-3168

Figure No.

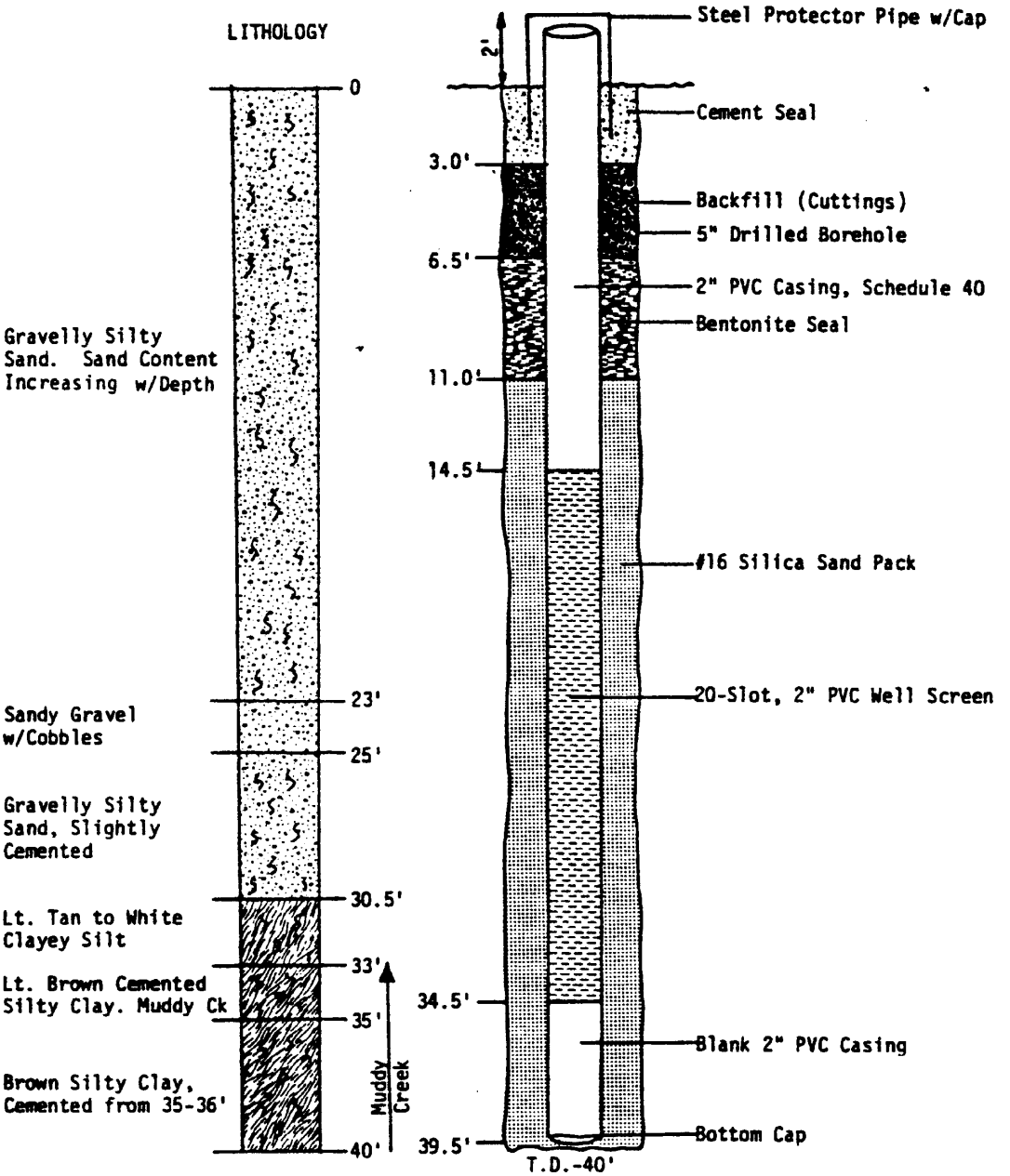
Converse Consultants Geotechnical Engineering

WELL CONSTRUCTION DIAGRAM
MONITOR WELL M-18
HENDERSON FACILITY



Note: Drilled 8-10-83

WELL CONSTRUCTION DIAGRAM
MONITOR WELL M-19
HENDERSON FACILITY

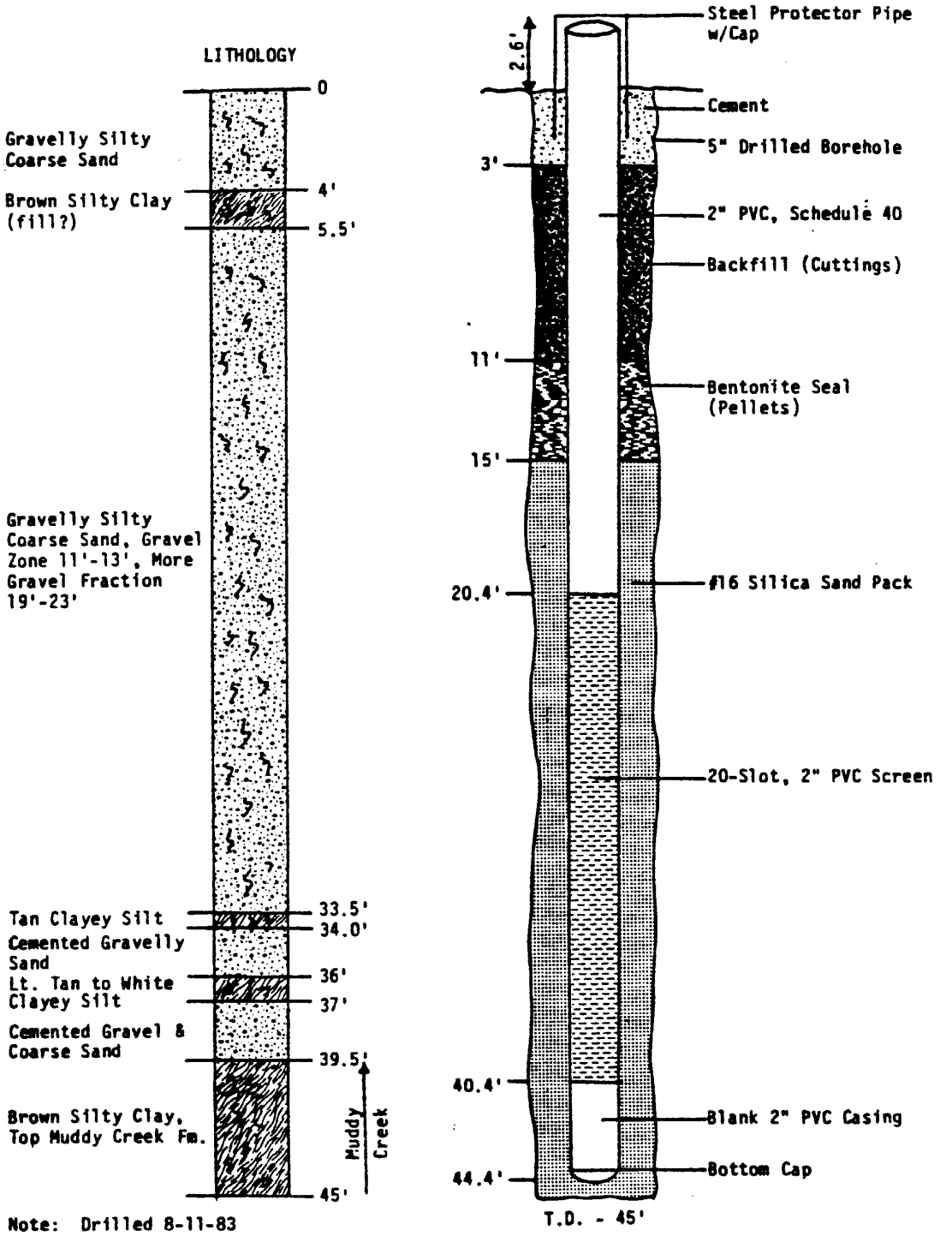


Note: Drilled 8-10-83

WELL CONSTRUCTION DIAGRAM

MONITOR WELL M-20

HENDERSON FACILITY

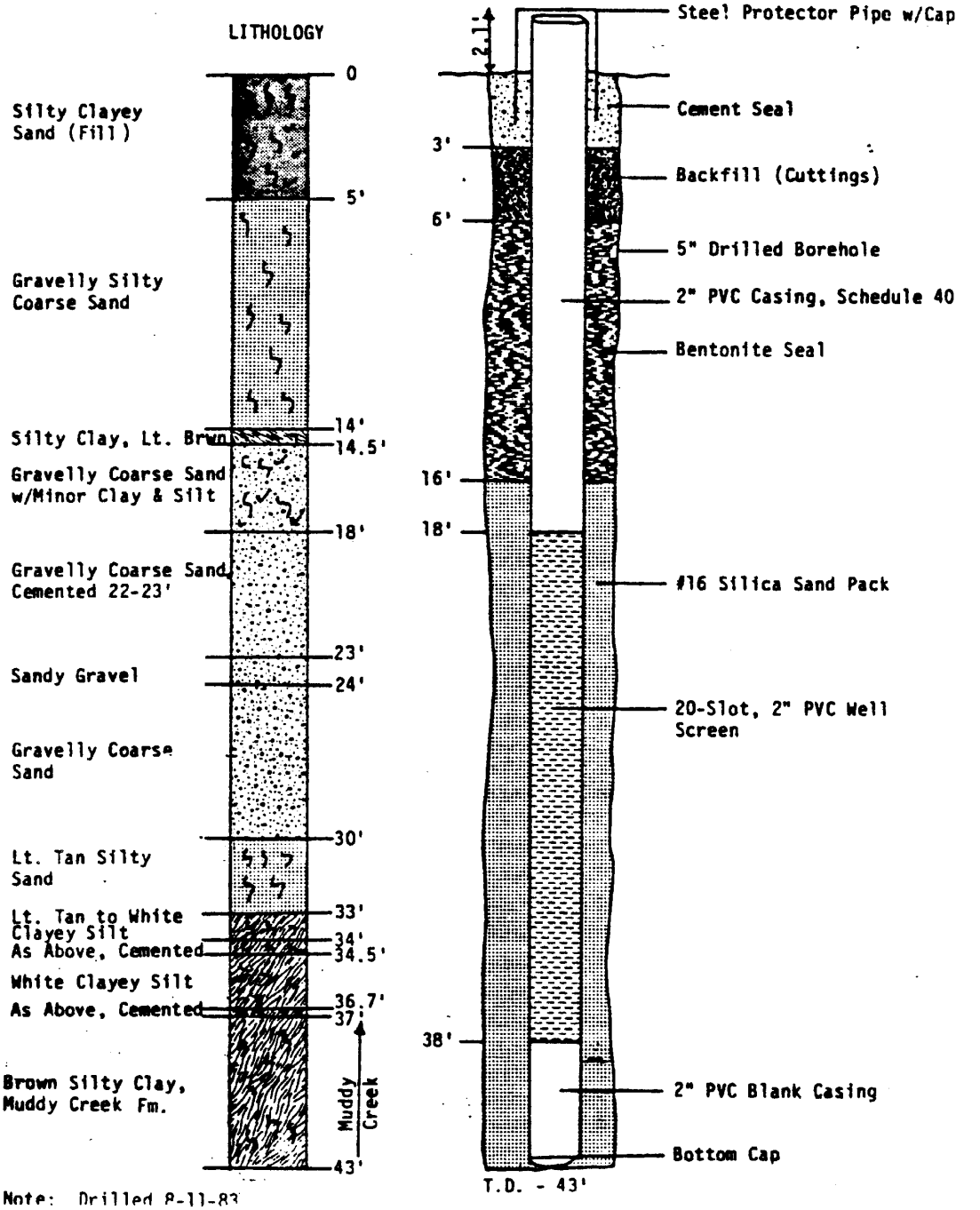


Note: Drilled 8-11-83

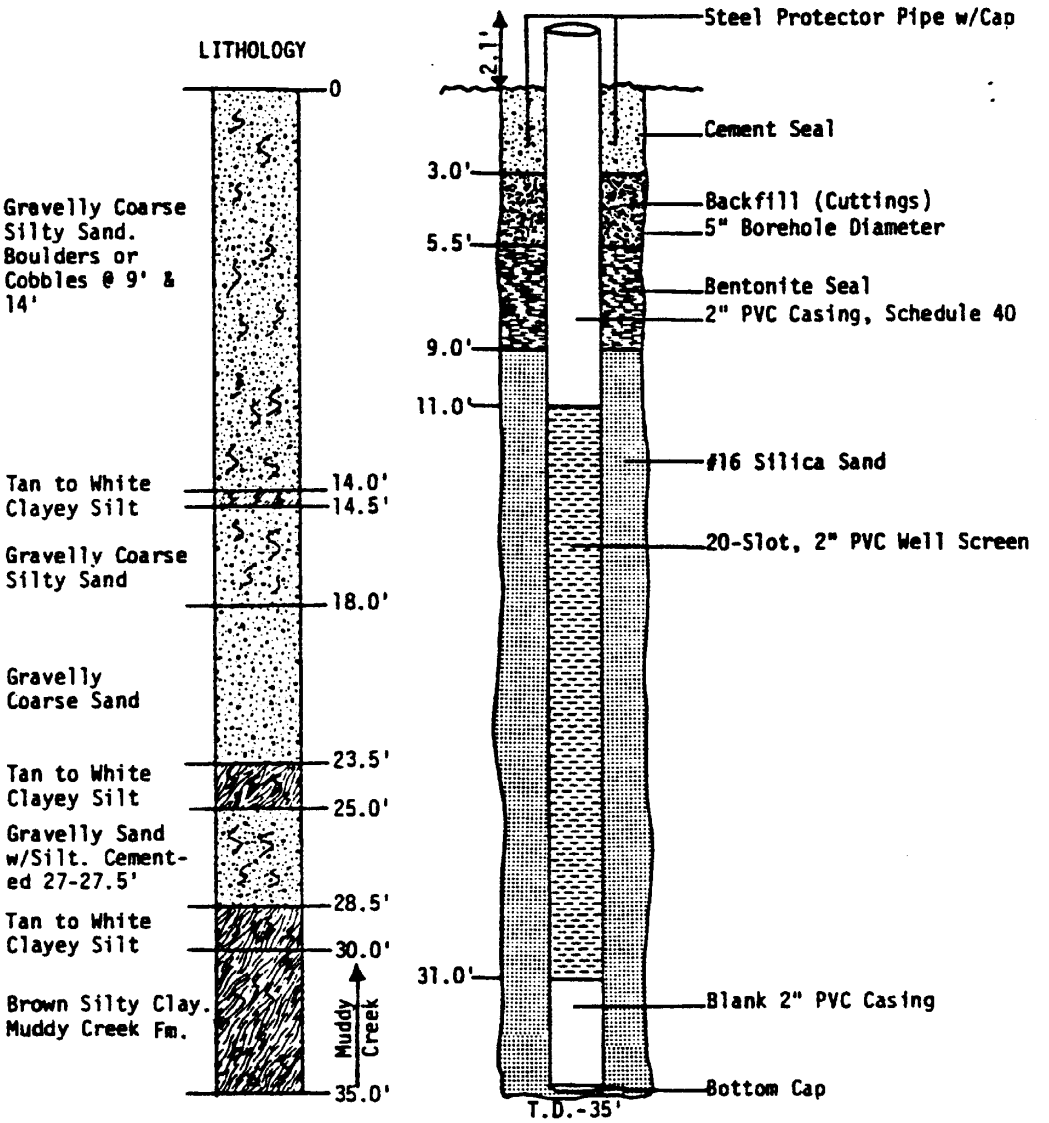
WELL CONSTRUCTION DIAGRAM

MONITOR WELL M-21

HENDERSON FACILITY

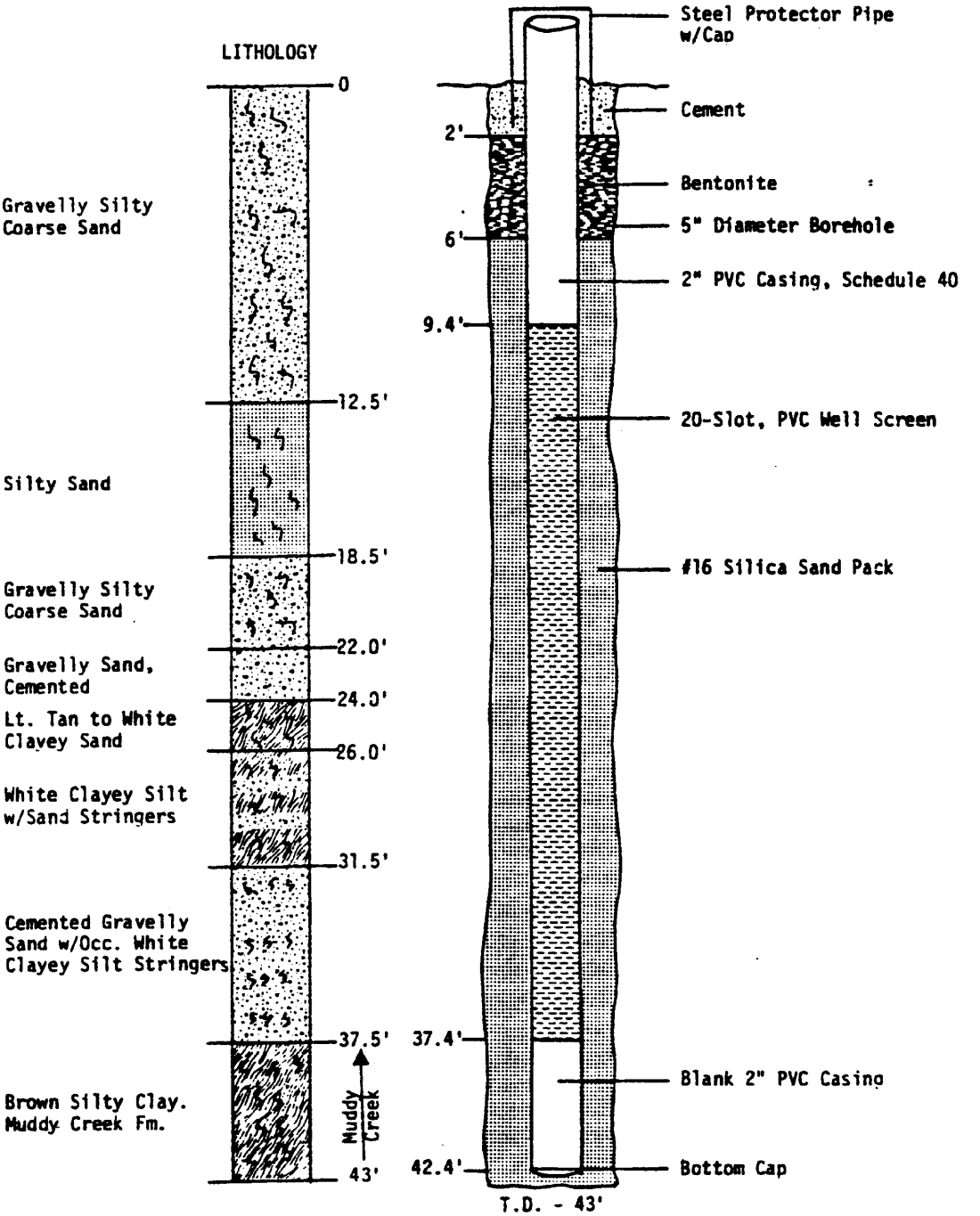


WELL CONSTRUCTION DIAGRAM
MONITOR WELL M-22
HENDERSON FACILITY



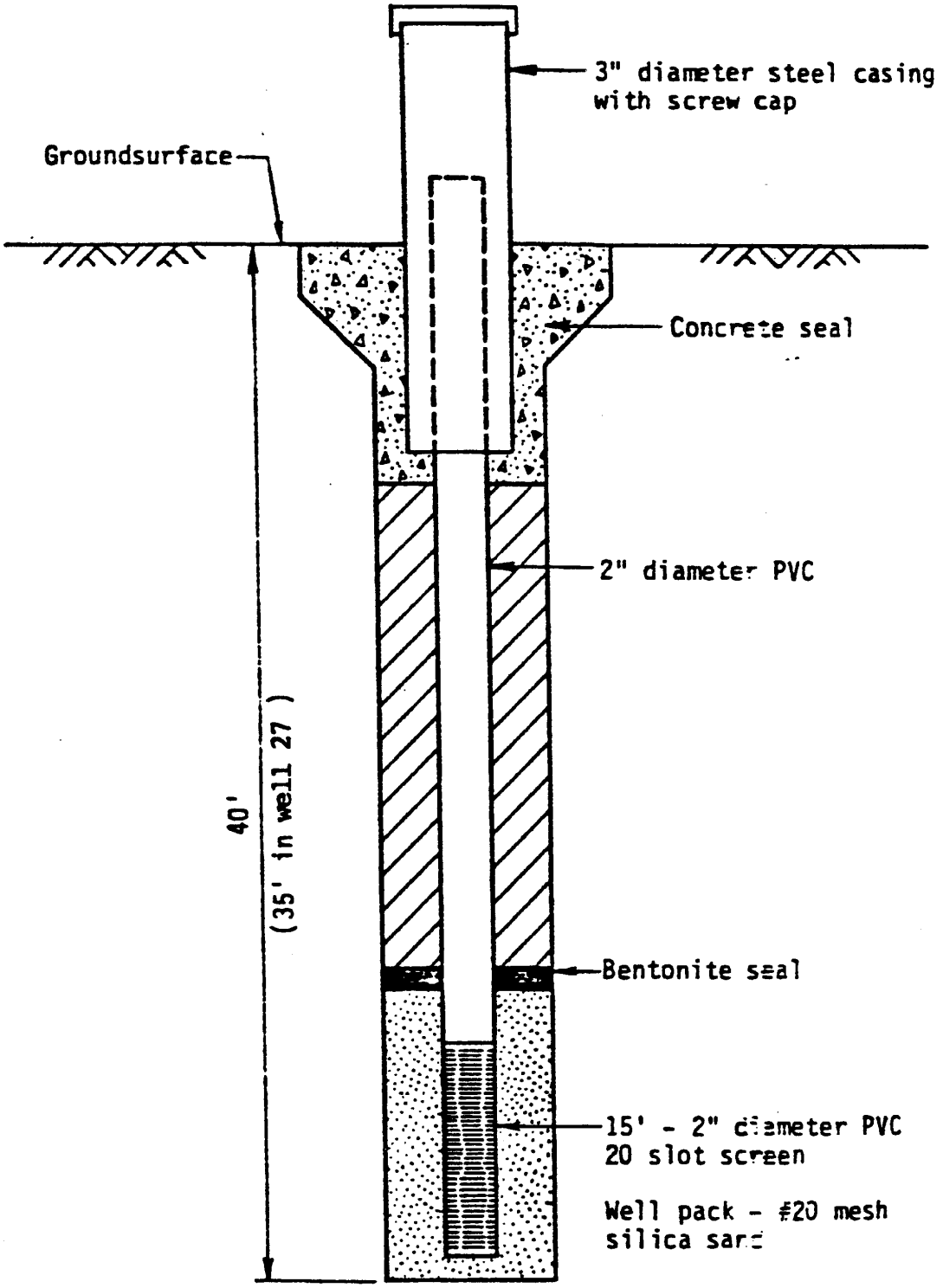
Note: Drilled 8-11-83

WELL CONSTRUCTION DIAGRAM
MONITOR WELL M-23
HENDERSON FACILITY



Note: Drilled 8-11-83

COMPLETION DIAGRAMS WELLS M-24 to M-27, KERR-McGEE HENDERSON FACILITY.



WATER SAMPLE WELL CONSTRUCTION

Project No

84-3223

Figure No

1

Converse Consultants Geotechnical Engineering and Applied Sciences

proved for publication ____ by ____

LOG OF WATER SAMPLE WELL 24

DATE 5/14/84

LOCATION KMCC, Henderson, NV

ELEVATION

DEPTH IN FEET	SAMPLES SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	REMARKS
0 – 16	SW	GRAVELLY SAND with silt	light brown	dry / slightly moist		
16 – 18	GW	SANDY GRAVEL				
18 – 24	SW/ GW	SAND & GRAVEL				
24 – 34	SW	GRAVELLY SAND				
34 – 36	SM	SILTY SAND				
36 – 40	ML	SILT				

End of well at 40.0 ft.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DRAWING NO

Consulting Engineers and Geologists

PROJ 84-3223-01

LOG OF WATER SAMPLE WELL 25

DATE 5/14/82

LOCATION KMCC, Henderson, NV

ELEVATION

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	REMARKS
0		SW	GRAVELLY SAND	light brown			
20		SW/ GW	SAND & GRAVEL	light brown & dark brown			
28		CL	SILT & CLAY				
40							

End of well at 40.0 ft.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DRAWING NO

Converse Consultants — Consulting Engineers and Geologists

PROJ NO 82-3223-01

APPROVED FOR PUBLICATION BY

FORM NO D

LOG OF WATER SAMPLE WELL 26

DATE 5/15/84

LOCATION KMCC, Henderson, NV

ELEVATION.

DEPTH IN FEET	SAMPLES SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	REMARKS
0	SW	GRAVELLY SAND with silt	light brown	dry		
2				slightly moist to moist		
4						
6						
8	GW	SANDY GRAVEL				
10	SW	GRAVELLY SAND				
12						
14						
16						
18						
20		---with trace silt, gravel varies, 15%-30% below 20'		moist		
22						
24						
26						
28				wet		
30						
32						
34						
36	CL	SILTY CLAY		very moist		
38						
40						

End of well at 40.0 ft.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DRAWING NO

Converse Consultants — Consulting Engineers and Geologists

PROJ NO 84-3223-01

APPROVED FOR PUBLICATION

DATE

LOG OF WATER SAMPLE WELL 27

DATE 5/14/84

LOCATION KMCC, Henderson, NV

ELEVATION

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	REMARKS
0		SW	GRAVELLY SAND with trace silt	light brown	dry	loose	
2					slightly moist to moist	loose to medium dense	
4							
6							
8							
10		SW/GW	SAND & GRAVEL 40%-60% gravel				
12							
14							
16							
18							
20		SW	GRAVELLY SAND				
22							
24							
26							
28			CALICHE	light tan			
30							
32		SW	GRAVELLY SAND	light brown			*See Note.
34							
36							
38							
40							

End of well at 40.0 ft.

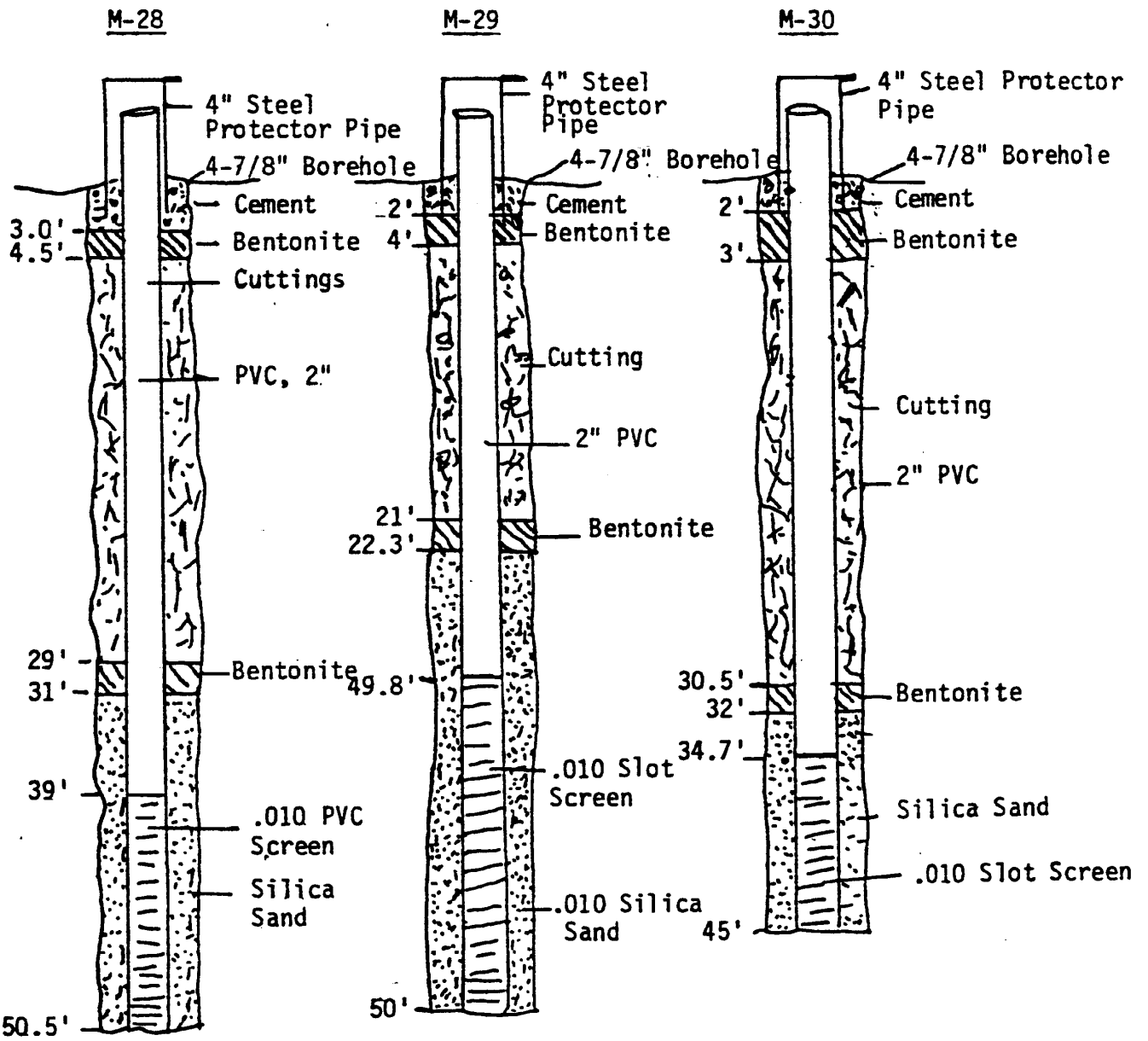
Note: Hole caved to 35' when PVC was installed. Okay per Kay Brothers.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DRAWING NO

Converse Consultants *Consulting Engineers and Geologists* PROJ NO 84-3223-01

WELL COMPLETION DIAGRAMS



MONITOR WELL M-28

LOG OF BORING NO. 84-6

Project Kerr McGee Job No. 4184J009

Elevation N/A Datum N/A

Type/Size Boring 7" Hollow Stem Rig Type B40L Date 7/23/84

Groundwater Conditions 42' at end of drilling

Depth, feet	Blows/6" C	Blows/6" N/R	Sample Type	Dry Density pcf	Moisture Content, %	Unified Classification	Description
							1.0' FILL, trash, sand, asphaltic concrete,
	Mod. Dense	8				SM	FILL, SAND, silty, dark brown, carbonate,
		8	R				moist, gravelly, some trash (glass)
		7					
		8					
5		10	R				
		12					
	Very Dense	17	R				
		35					
		20	R				
10		26					
							11.0'
							12.0' TILE
			A				CONCRETE
		40					
		35/3	R				
15							
							16.0'
	Dense	18				SM	SAND, gravelly, slightly silty, medium
		20					brown, slightly moist, calcium, chemical
	Very Dense	25					odor
		41	R				
20		34/4					
		26	R				
		42					
		30	R				
25		36					
		65	R				26.0' SLIGHTLY more fines, very hard drilling
		40	R				
30		35/4					

MONITOR WELL M-28

LOG OF BORING NO. 84-6 CONTINUED

Project Kerr McGee Job No. 4184J009

Depth, feet	Blows/6" C	Blows/6" N/R	Sample Type	Dry Density pcf	Moisture Content, %	Unified Classification	Description
	Very Dense	24	R			SM	MUDDY creek formation, sand, very silty, white crystals (gypsum), light brown, calcareous
							32.0'
						SC	SAND, clayey
35		24 51/5	R				
		9 25	R				SMALL crystals, water in sample
40		27					
		4 11	R				
45		21					
							48.5'
							SHELBY tube 48.5 to 50.5'
50			ST				50.5'
							Bottom of Boring 50.5'
55							Piezometer installed at 50.5'
60							

MONITOR WELL M-29
LOG OF BORING NO. 84-4

Project Kerr McGee Job No. 4184J009

Elevation N/A Datum N/A

Type/Size Boring 7" Hollow Stem Rig Type B40L Date 7/12/84

Groundwater Conditions 42' 8:00 a.m. 7/13/84

Depth, feet	Blows/6" C	Blows/6" N/R	Sample Type	Dry Density pcf	Moisture Content, %	Unified Classification	Description
							1.0' CONCRETE
5							TUNNEL AIR VOID
							7.5'
							8.5' CONCRETE
10	Very Dense	3 16 25/4	R			SP	FILL, sand, slightly silty, gravelly, slightly moist, white precipitates
							11.0'
15	Very Dense	50/8	R			SP	SAND, slightly silty, gravelly, slightly moist, white precipitates
		50/8	R				
		50/4	R				YELLOW
							17.5'
20	Very Dense	75/6	S			SM	SAND, silty to very silty, occasional gravel, reddish-brown to variable color, slightly moist
		50/8	S				
25		50/4	S				
		75/5	R				
							27.5'
30	Very Dense	75/5	R			SC	MUDDY creek formation, sand, clayey, reddish-brown, moist

MONITOR WELL M-29

LOG OF BORING NO. 84-4 CONTINUED

Project Kerr McGee Job No. 4184J009

Depth, feet	Blows/6" C	Blows/6" N/R	Sample Type	Dry Density pcf	Moisture Content, %	Unified Classification	Description
		50/8	R				33.5'
35	Very Stiff	11 26	R			CL/ML	SILT and clay, sandy, reddish-brown, slightly moist
		10 20 25/5	R				
40		8 16 22	R				
		6 18 30	R				
		25					44.0'
45		35	R			CL	CLAY, sandy, crystals, slightly moist, medium brown
		14 27	R				49.5'
50							Bottom of Boring 49.5'
							Piezometer set at 49.7
55							
60							

MONITOR WELL M-30

LOG OF BORING NO. 84-1 CONTINUED

Project Kerr McGee Job No. 4184J009

Depth, feet	Blows/6" C	Blows/6" N/R	Sample Type	Dry Density pcf	Moisture Content, %	Unified Classification	Description
		9				ML	MUDDY creek formation .
		15	R				
		23					
35							35.0'
	Very	7				CL	CLAY, very sandy, silty
	Stiff	14	R				
		21					
40		13					40.0'
		16	R				CLAY, silty
		17					
	Stiff						
		6					
		8					
45		9					45.0'
							Bottom of Boring 45.0'
50							Piezometer set at 44.7. 10' screen 32' sand fill Bentonite Plug at 30.5' and from 4 to 5'
55							
60							

MONITOR WELL M-30

LOG OF BORING NO. 84-1

Project Kerr McGee — Job No. 4184J009

Elevation N/A — Datum N/A

Type/Size Boring 7" Hollow Stem — Rig Type B40L — Date 7/16/84

Groundwater Conditions 40' at end of well installation

Depth, feet	Blows/6" C	Blows/6" N/R	Sample Type	Dry Density pcf	Moisture Content, %	Unified Classification	Description
	Very Dense	18 32	R			SM	FILL, sand, silty, black, slightly moist 1.2'
	Dense	11 11 14	R			SM	SAND, silty to very silty, brown, slightly moist, calcareous
5		60	R				5.5'
	Very Dense						LENSE of gravel and cobbles 7.0'
	Mod. Dense	7 9 13	R A			SP	SAND, slightly silty, gravelly, brown, slightly moist, calcareous No recovery
10		9 19	R				
	Very Dense	25/5					
15		58	R				16.0'
	Very Dense					GP	GRAVEL 17.3' CARBONATE coatings, variable color (grey, red, etc.), probably from chemicals
	Dense	25 21 22	R			SP	SAND, slightly silty, gravelly, slightly moist, brown, calcareous 19.5'
20	Dense	30 35	R			SM	SAND, very silty, occasional gravel, slightly moist, brown, slightly calcareous
		15 33	R				Muddy Creek Formation
25		21	R				25.0'
	Stiff	30				ML	SILT, very sandy, moist, medium brown, non-calcareous, muddy creek formation
		11 25	R				
30							

LOG OF BORING NO. 84-2 Sheet 1 of 2

Project Kerr McGee Job No. 4184J009

Elevation N/A Datum N/A

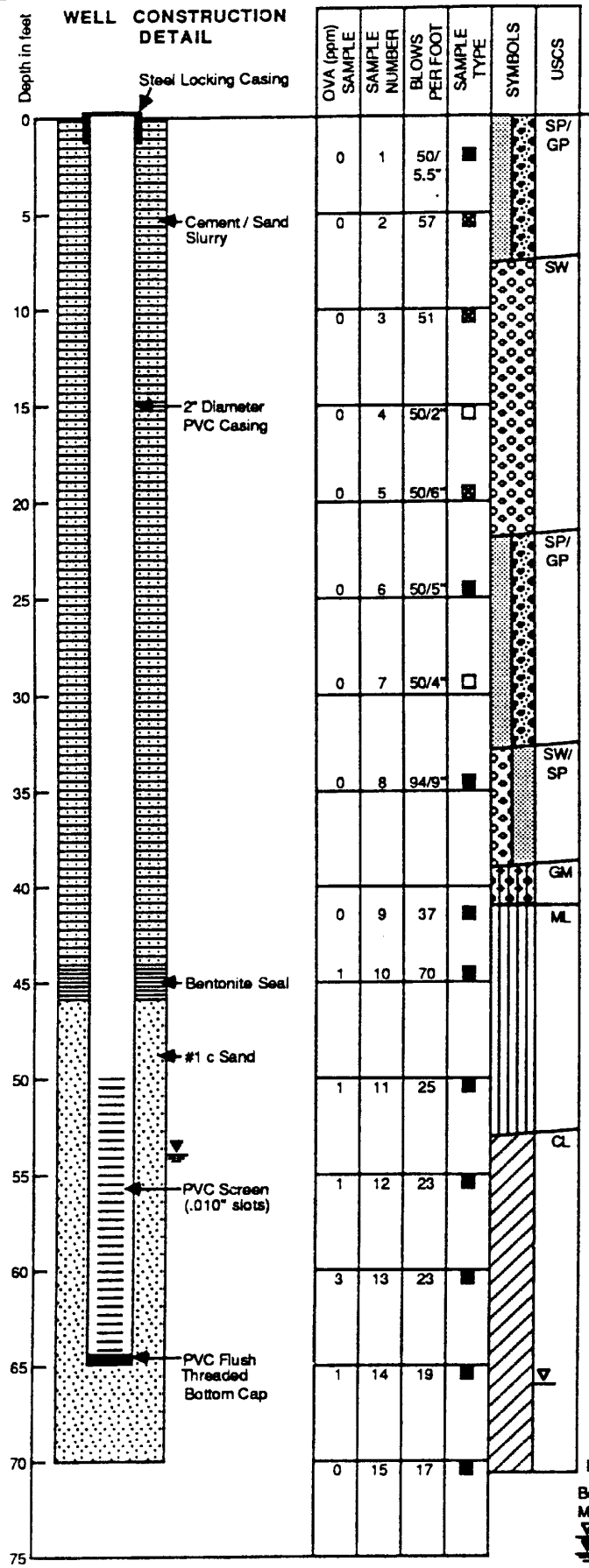
Type/Size Boring 7" Hollow Stem Rig Type B40L Date 7/16/84

Groundwater Conditions None Encountered

Depth, feet	Blows/6" C	Blows/6" N/R	Sample Type	Dry Density pcf	Moisture Content, %	Unified Classification	Description
							1.0' CONCRETE
5	Very Dense	18 33 35 40/8½ 21 24 30	R R R			SP	FILL, SAND, slightly gravelly, light brown, slightly moist, calcareous 8.5'
10	Dense	19 20 24	R			SP	SAND, slightly gravelly, medium brown, slightly moist, calcareous, occasional cobble
	Very Dense	22	R				12.0'
	Dense	31				GP	13.0' GRAVEL, cobbles, sandy, slightly moist
15	Dense	15 15 32	R			SP	SAND, slightly silty, gravelly, medium brown, slightly moist, calcareous
20	Very Dense	25 35 22 23 25/5 50 25/2½	R R				
25		28 32 17 17 25/3					28.0'
30	Very Dense	17 60	R			SM	MUDDY creek formation, caliche, sand, silty, brown, slightly moist, caliche lense at top

BORING MW-1

SAMPLING METHOD: Dames & Moore "U"-Type
DRILLING METHOD: 8-Inch Diameter Hollow Stem Auger



OVA (ppm) SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	SAMPLE TYPE	SYMBOLS	USCS	DESCRIPTION
					SP/ GP	Brown fine SAND and COBBLES
0	1	50/ 5.5"	■			Brown fine SAND and fine GRAVEL, dry, very dense
0	2	57	▩			As above with some coarse Gravel, disturbed sample
					SW	
0	3	51	▩			Brown fine to coarse SAND, trace fine to coarse Gravel, dry, dense, disturbed sample
0	4	50/2"	□			No recovery
						Occasional Cobbles
0	5	50/6"	▩			As above, disturbed sample
					SP/ GP	
0	6	50/5"	■			Brown fine SAND and coarse GRAVEL with some Cobbles, dry, very dense
0	7	50/4"	□			No recovery
					SW/ SP	
0	8	94/9"	■			Brown fine to coarse SAND with some fine Gravel, damp, very dense
					GM	Light brown coarse Gravelly SILT, damp, dense
0	9	37	■		ML	Light brown Clayey SILT with some fine to coarse Gravel, damp, dense
1	10	70	■			As above
1	11	25	■			As above
					CL	
1	12	23	■			Light brown Silty CLAY with some fine Sand, trace fine Gravel, moist, very stiff
3	13	23	■			As above, very moist
1	14	19	■			As above
						Hammer wet over a 5' length
0	15	17	■			Light brown CLAY with some Silt, wet, very stiff

Boring completed at a depth of 70-1/2 feet on February 7, 1990.
Monitoring well installed on February 7, 1990.
▽ Ground water first noted at a depth of 66 feet on February 7, 1990.
▼ Ground water sounded at a depth of 54 feet on February 13, 1990.

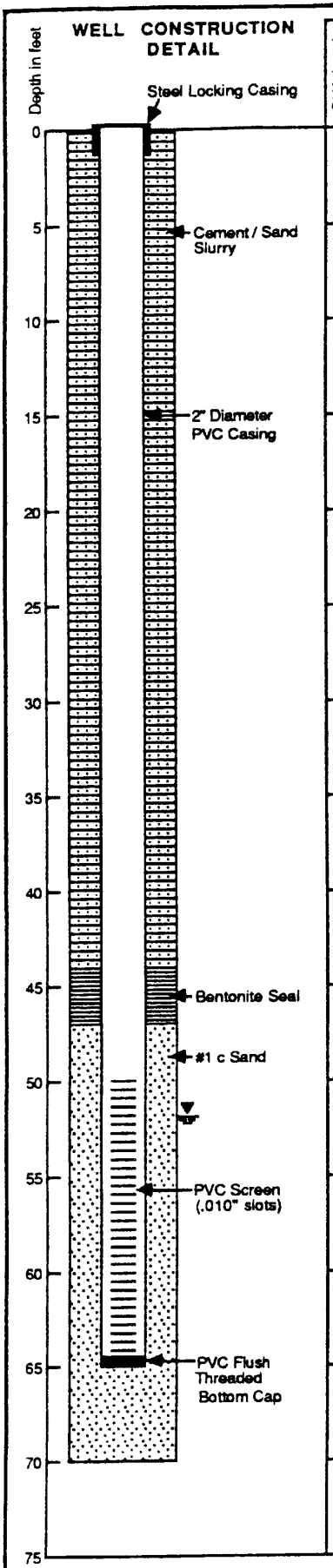
LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

Dames & Moore
FIGURE A-9

BORING MW-2

SAMPLING METHOD: Dames & Moore "U"-Type
DRILLING METHOD: 8-Inch Diameter Hollow Stem Auger



OVA (ppm) SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	SAMPLE TYPE	SYMBOLS	USCS	DESCRIPTION
0	1	50/3"	■		SW	Brown fine Gravelly fine to coarse SAND, dry, very dense
0	2	70	■			Brown fine to coarse SAND with some fine to coarse Gravel, dry, very dense
0	3	100	■			As above
0	4	50/3"	■			
0.5	5	52	■			As above
0	6	78	▩			As above, disturbed sample
0	7	81	■			As above
0	8	100/9"	■			As above
0.3	9	28	■		SP	Brown fine SAND with some medium to coarse Sand and trace fine to coarse Gravel, dry, dense
5.0	10	66	■		SM	Brown Silty fine SAND with some medium to coarse Sand and trace fine to coarse Gravel, damp,very dense
3.0	11	43	■		ML/CL	Brown Clayey SILT to Silty CLAY with trace fine to medium Sand, damp, very stiff
						Hammer wet at 54'
28	12	26	■		CL	Brown Silty CLAY with trace fine Sand, very moist, very stiff
42	13	31	■			As above with some fine to coarse Gravel
16	14	30	■			As above, wet

Boring completed at a depth of 70 feet on February 8, 1990.
Monitoring well installed on February 8, 1990.
▽ Ground water first noted at a depth of 54 feet on February 8, 1990.
▼ Ground water sounded at a depth of 52-1/2 feet on February 13, 1990.

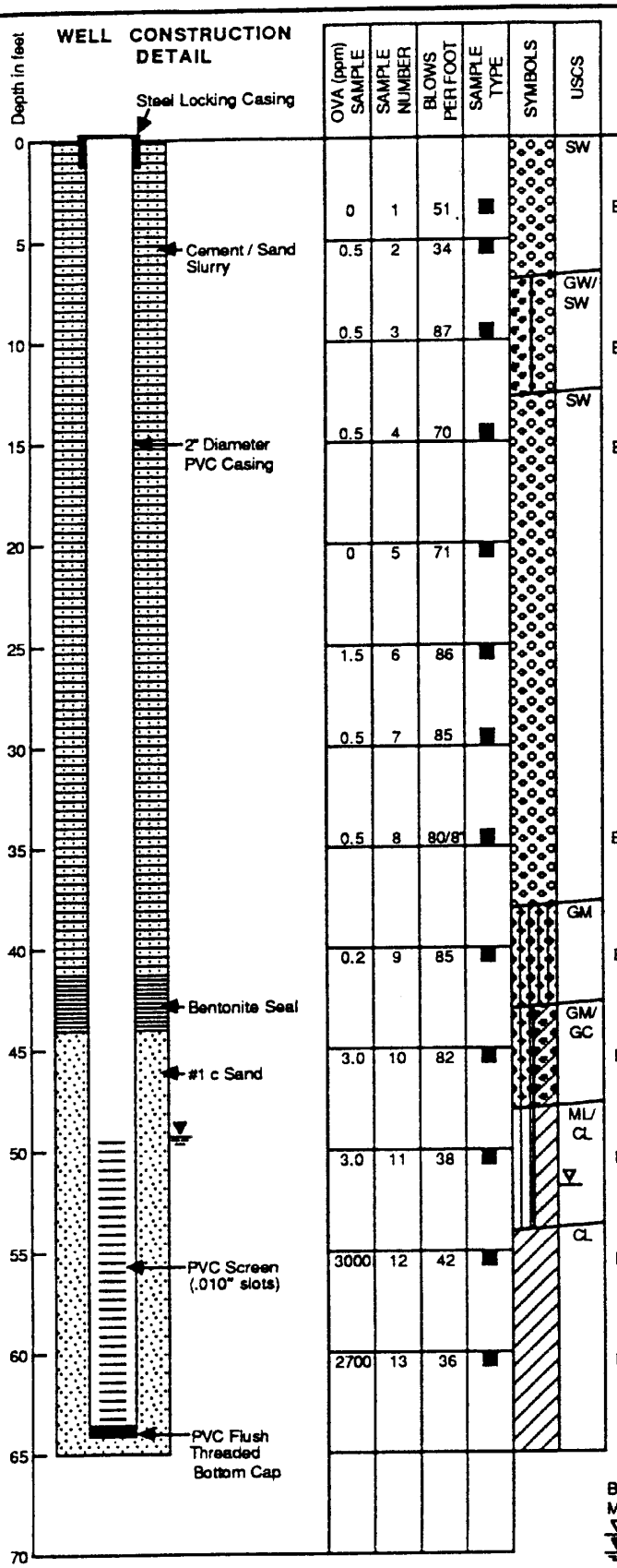
LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

Dames & Moore
FIGURE A-10

BORING MW-3

SAMPLING METHOD: Dames & Moore "U"-Type
DRILLING METHOD: 8-Inch Diameter Hollow Stem Auger



OVA (ppm) SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	SAMPLE TYPE	SYMBOLS	USCS	DESCRIPTION
0	1	51	■		SW	Brown fine to coarse SAND with some fine to coarse Gravel, damp, very dense
0.5	2	34	■			As above
0.5	3	87	■		GW/ SW	Cobbles Brown fine to coarse Sandy GRAVEL
0.5	4	70	■		SW	Brown fine to coarse SAND with some fine to coarse Gravel, occasional Cobbles, dry, very dense
0	5	71	■			As above
1.5	6	86	■			As above
0.5	7	85	■			As above, grading to increased Silt
0.5	8	80/8"	■			Brown fine to coarse SAND with some fine to coarse Gravel, occasional Cobbles, trace Silt and Clay, dry, very dense
0.2	9	85	■		GM	Brown Silty fine to coarse GRAVEL with some fine to coarse SAND, dry, very dense
3.0	10	82	■		GM/ GC	Brown Silty and Clayey GRAVEL with some fine to coarse Sand, dry, very dense
3.0	11	38	■		ML/ CL	Brown Clayey SILT to Silty CLAY, damp, very stiff Hammer wet at 52'
3000	12	42	■		CL	Brown Silty CLAY with some fine to coarse Gravel, wet, very stiff, sweet odor
2700	13	36	■			Brown Silty CLAY with some fine to coarse Gravel and fine to coarse Sand, wet, very dense sweet odor

Boring completed at a depth of 65 feet on February 9, 1990.
Monitoring well installed on February 9, 1990.
▽ Ground water first noted at a depth of 52 feet on February 7, 1990.
▼ Ground water sounded at a depth of 49-1/4 feet on February 13, 1990.

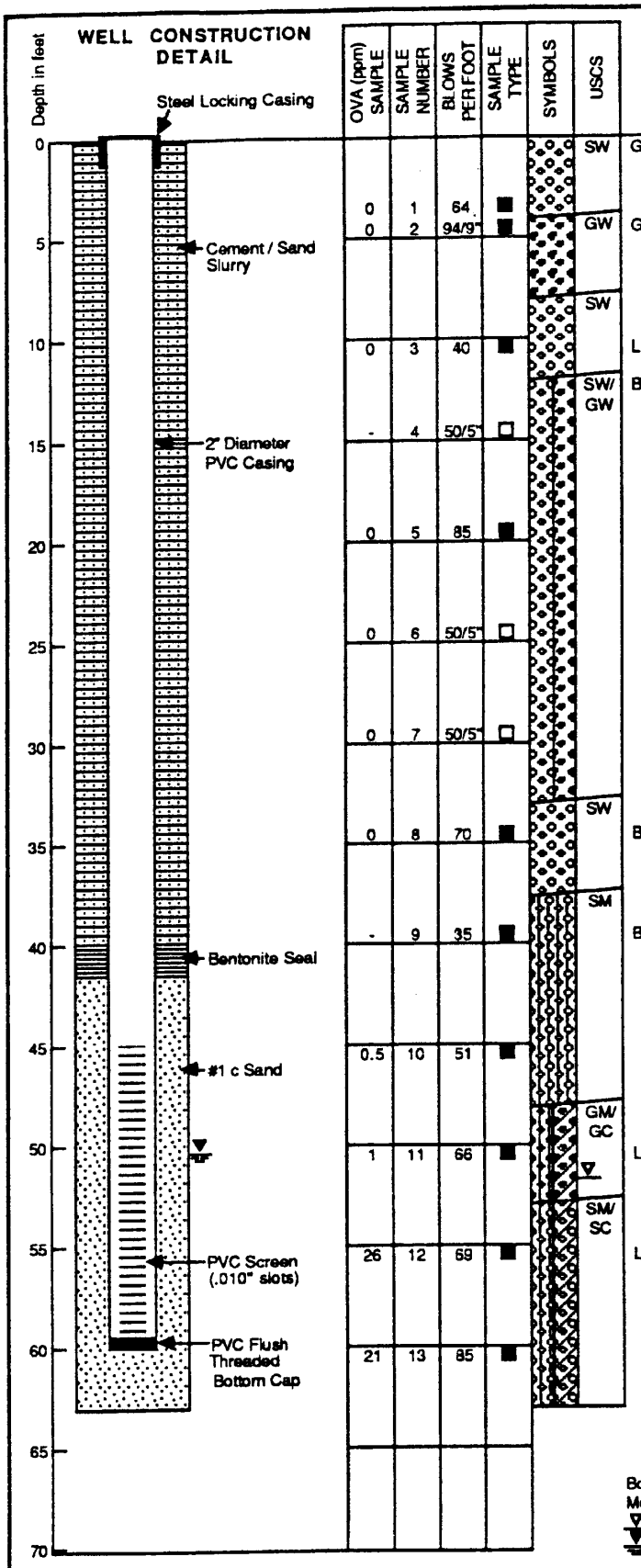
LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

Dames & Moore
FIGURE A-11

BORING MW-4

SAMPLING METHOD: Dames & Moore "U"-Type
DRILLING METHOD: 8-Inch Diameter Hollow Stem Auger



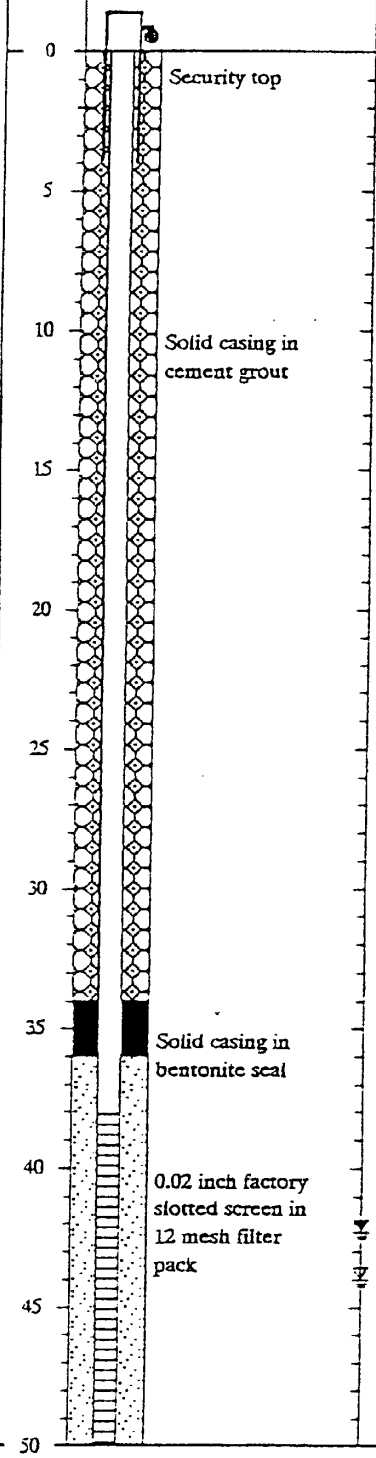
Depth in feet	OVA (ppm) SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	SAMPLE TYPE	SYMBOLS	USCS	DESCRIPTION
0	0	1	64	■		SW	Gray brown fine to coarse SAND and fine Gravel with some coarse Gravel, damp, very dense
	0	2	94/9"	■			
5						GW	Gray brown fine to coarse Sandy Gravel with some Cobbles, dry, very dense
						SW	
10	0	3	40	■			Light brown fine to coarse SAND with some fine to coarse Gravel, occasional Cobbles, dry dense
						SW/ GW	Brown fine to coarse GRAVEL and fine to coarse SAND, dry, very dense
15	-	4	50/5"	□			No recovery
	0	5	85	■			As above
20							
	0	6	50/5"	□			No recovery
25							
	0	7	50/5"	□			No recovery
30							
	0	8	70	■		SW	Brown fine to coarse SAND with some Silt and fine to coarse Gravel, dry, very dense
35							
	-	9	35	■		SM	Brown Silty fine to coarse SAND, dry, very dense
40							
	0.5	10	51	■			As above, grades to very moist with some Clay
45							
	1	11	66	■		GM/ GC	Light brown Silty Clayey fine to coarse GRAVEL, damp, very dense
50							
						SM/ SC	Hammer wet
55	26	12	69	■			Light brown Silty and Clayey fine SAND with trace medium Sand and fine Gravel, wet, very dense
60	21	13	85	■			As above, less Clay
65							
70							

Boring completed at a depth of 63 feet on February 12, 1990.
Monitoring well installed on February 12, 1990.
▽ Ground water first noted at a depth of 52 feet on February 12, 1990.
▼ Ground water sounded at a depth of 50-1/2 feet on February 13, 1990.

LOG OF BORING

PROPOSED COGENERATION PLANT SITE
PIONEER CHLOR- ALKALI
HENDERSON, NEVADA
For Saguaro Power Company

Dames & Moore
FIGURE A-12



DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY	CHEMICAL ANALYSES FIELD OVA PPM	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
								Compacted native soils, edge of elevated roadway, water levels measured from the top of casing
0							SP	Gravelly sand, (SP), dark brown, top 6 inches dry, moist below top 6 inches
5								cobbles weak cementation
10			0	27				approximate original grade, native soils below roadway/dike around pond black to brown soils, moist, medium dense gravelly sand with silt, trace clay and clasts up to 1.5 inches
15								
							SW	Sand (SW), brown to black, well graded
20							SP	Gravelly sand (SP), brown to black, moist, clasts up to 1 inch
							SW	Sand (SW), well graded brown to black sand, no clay, trace gravel, severe caving associated with sand unit, foam injected into borehole to mitigate caving problems
25								
30							SP	Gravelly sand (SP), brown to black, moist, trace silt, no clay
35								
40								Water Table, at 11:20 a.m., 06/26/91
45							CH	Water Table, at 10:50 a.m., 06/26/91 Clay (CH), tan, highly plastic, very moist
50								

DATE DRILLED: 6-26-91
LOGGED BY: Joseph J. Squire
REVIEWED BY: Todd J. Croft

SURFACE ELEVATION (feet):
TOTAL DEPTH (feet): 60.0
DIAMETER OF BORING: 6.0"

DRILLING METHOD: Air Rotary
SCREEN SIZE: 0.02"
CASING SIZE: 2.0"

KLEINFELDER

LOG OF BORING

HMW-10 MW-10

PLATE 5

PROJECT NUMBER 108521-001 June 1991

Waste Water Treatment Plants 1,2 & 3

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY	CHEMICAL ANALYSES FIELD OVA PPM	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
50			0				CH	clay, some gravel, wet
55	Solid casing with end cap, sediment trap in 12 mesh filter pack							
60	Borehole collapsed to 58 feet							borehole collapsed to 58 feet
65								
70								
75								
80								
85								
90								
95								
100								
105								

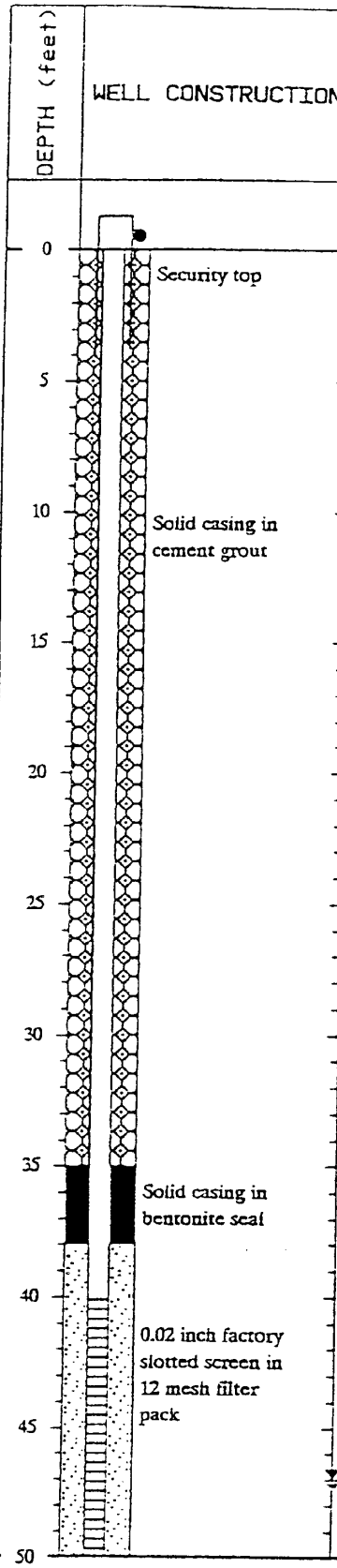
KLEINFELDER

LOG OF BORING
MW-10
(CONT.)

PLATE
5

PROJECT NUMBER 108521-001 June 1991

Waste Water Treatment Plants 1,2 & 3



DEPTH (feet)	CHEMICAL ANALYSES LABORATORY	CHEMICAL ANALYSES FIELD OVA PPM	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
							Compacted native soils, edge of elevated roadway, water levels measured fromtop of casing
0						SP	Gravelly sand, (SP), dark brown, top 6 inches dry, moist below top 6 inches drilled with foam to mitigate caving of the borehole some silt
5							darker sand, black to brown
10		0	10			SW	Sand (SW), black to brown coarse sand, some gravel, no clay, no odor, moist, loose
						GM	Gravel (GP/GM), cobbles and boulders with sand
15						SP	Gravelly sand (SP), brown to black, moist, trace silt, clasts up to 0.75 inches
20							brown to black, moist, medium dense, clasts up to 1 inch caving
25							
30							brown to black, moist, trace silt, no clay
35							
40							
45							Water Table at 1:10 p.m., 06/26/91
50							gravelly sand, some silt, wet

DATE DRILLED: 6-27-91
LOGGED BY: Joseph J. Squire
REVIEWED BY: Todd J. Croft

SURFACE ELEVATION (feet):
TOTAL DEPTH (feet): 70.0
DIAMETER OF BORING: 6.0"

DRILLING METHOD: Air Rotary
SCREEN SIZE: 0.02"
CASING SIZE: 2.0"

KLEINFELDER

PROJECT NUMBER 108521-001 June 1991

LOG OF BORING

A MW-11 MW-11

Waste Water Treatment Plants 1,2 & 3

PLATE 6

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY FIELD OVA PPM	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
50		0				SP	gravelly sand, some silt, wet lenses of cobbles from 52 feet to 70 feet
55	Solid casing with end cap, sediment trap in 12 mesh filter pack						
60							borehole collapsed to 60 feet
65	Borehole collapsed to 60 feet						
70							
75							
80							
85							
90							
95							
100							
105							

KLEINFELDER

LOG OF BORING
MW-11
(CONT.)

PLATE
6

PROJECT NUMBER 108521-001

June 1991

Waste Water Treatment Plants 1,2 & 3

Henderson, NV

BEGUN 6/?/82 FINISHED 6/8/82 LOGGED BY CAD DRILLED BY Converse, Ward, Davis, Dixon DRILL HOLE MC-1

ELEV. 1730.68 TOTAL DEPTH 40' LOCATION along Stauffer-Kerr Mc fence, ~~____~~ between wells 21 +

Drilled w/ Mayhew 1000 - attempted to go w/ air, then redrilled w/ bentonite m

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	20			sand & gravel - fine sand to silt, ½" to 1½" gravel, becomes more moist @ 7' then noncemented caliche @ 17½'	
20	35			sand & gravel - brown to tan sand, less silty, more moist; partially cemented caliche @ 25-30', also contains uncoated gravel	odor @ 21'
35				Muddy Creek Fm : clay - tan in top 1' reddish brown below	
				water level 6/8/82 : 30.3'	
				Water Level 7/8/82 30.2	

BEGUN 3/82 FINISHED 6/8/82 LOGGED BY CAC DRILLED BY Conwise, Ward ... DR. HOLE MC

ELEV. 1728.86 TOTAL DEPTH 35' LOCATION Stauffer-KM fence line, 100' N of MC-1

Mayhew 1000, dual w/ mud

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	10			sand & gravel - local caliche coating	drilled w/ hamt.
10	33			sand & gravel - none to very little caliche coating	faint odor @ 2
33				Muddy Creek: clay, tan to reddish browns	
				water level 6/8/82 : 32.0'	
				Water Level 7/8/82 31.4'	

BEGUN 8/82 FINISHED 6/8/82 LOGGED BY CAD DRILLED BY Converse Well... DRILL HOLE MC

ELEV. 1725.23 TOTAL DEPTH 43' LOCATION along Stauffer-KM fence, 200' N of MC-2

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	15			sand & gravel local light tan caliche castings @ 12'	drilled w/ heat.
15	20			sand & gravel - silty, local lt tan coatings	
20	35			sand & gravel - local agate, local platy basalt cuttings, local lt tan coatings	
35	40			reworked Muddy Creek Fm - gyp @ 35', gravelly, clean (non clayey) gravel from 35-39', becoming more clayey @ 39'	
40'				Muddy Creek Fm - clay, reddish brown	
				6/8/82 water level: 31.3'	

BEGUN 5/3/82 FINISHED 6/8/82 LOGGED BY CAL DRILLED BY Converse, Ward ... DRILL HOLE MC4

ELEV. 1720.14 TOTAL DEPTH 42' LOCATION 250' N of MC-3, ~ 200' S of well 36

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	5			sand & gravel - tan sand, tan to black gravel, local lt tan coating on gravel	drilled w/ bent. m
5	10			sand & gravel - as above, local cobble sized gravel	
10	20			sand & gravel - as above	slight odor @ 2
20	30			sand & gravel - as above, local large sized gravel	water level 6/9/82: 28.7'
30	37			sand & gravel - incl lt tan coating, gyp @ 30'±	Water level 7/8/82 29.7
37	40			Muddy Creek - reworked, large sized gravel present	
40	42			Muddy Creek - clay, reddish brown	

STAUFFER CHEMICAL COMPANY DRILL LOG, Henderson, NV

BEGUN 6/6/82 FINISHED 6/8/82 LOGGED BY CAD DRILLED BY Converse Ward... DRILL HOLE MC5

ELEV. 1715.16 TOTAL DEPTH 40 LOCATION along SCC-KM fence, ~100' N of well 36
310' N of MC-4

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	30 ±5			sand & gravel - thin caliche w/ slight cementation between 8-12, @ 27'. caliche (?) - non continuous	drilled w/ hem mud
					slight odor @ 22
30	34			sand & gravel - local lt tan coating slight cementation @ 33'	definite odor @ 2
34	36			Muddy creek - becoming clayey @ 34' still w gravel	
					water level
36	40			Muddy creek - clay, reddish brown	6/9/82 : 25.2

BEGUN 6/82 FINISHED 6/8/82 LOGGED BY CAD DRILLED BY Converse, Ward... DRILL HOLE MC-6

ELEV. 1711 TOTAL DEPTH 42 LOCATION 300' N of well 36, 200' N of MC-5

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	10			sand & gravel - tan sand, tan to black gravel; possible slight caliche cementation @ 10'	drilled w/ bent mud
10	15			sand & gravel - as above, abundant dk tan coating @ 10-12'	
15	38			sand & gravel - local dk. tan coating Local large size gravel @ 25-30'	odor @ 23'
38	40			Muddy Creek w/ gravel (reworked M.C)	water level 6/9/82: 25.5
40				Muddy Creek - clay, reddish brown	

BEGUN 9/82 FINISHED 6/9/82 LOGGED BY CAL DRILLED BY Converse Ward... / Henderson, NV DRILL HOLE MC-7

ELEV. 1717.58 TOTAL DEPTH 39 LOCATION 250' W of well 36

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	10			sand & gravel - brown to tan to black, local lt tan coating	drilled w/ bentonite mud
10	25			sand & gravel - as above, incl. black gravel @ 20' - lt tan silty to clayey mud - possibly low grade caliche cementation	
25	33½			sand & gravel - as above, partially cemented caliche @ 27' local loose sand & gravel between 25-30'	
33½				Muddy Creek - clay, reddish brown	

Henderson, NV

BEGUN _/82 FINISHED 6/9/82 LOGGED BY CAD DRILLED BY Converse Well ... DRILL HOLE MC-8

ELEV. 1718.61 TOTAL DEPTH 40' LOCATION 500' W of well 36 (250' W of MC-7)

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	10			sand & gravel - brown to black, local large size gravel (drilled on gravel boulder @ 8'), local lt tan coating	drilled w/ bentonite mud
10	20			sand & gravel - local lt tan coating	
20	36			sand & gravel - more lt tan coating @ 27' - harder drilling, caliche coatings but not cemented gravel boulder @ 33', ggp @ 35'	
36				Muddy Creek - clay, reddish brown	

..., Henderson, NV MC-9

BEGUN 9/82 FINISHED 6/9/82 LOGGED BY CAD DRILLED BY Converse, Wrid... DRILL HOLE MC

ELEV. 1715.76 TOTAL DEPTH 55' LOCATION 250' East of well 36, on KM property

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	5			sand & gravel - brown to black	drilled w/ bentonite mud
5	10			sand & gravel - as above, local lt tan coating	
10	20			sand & gravel - as above, local lt tan coating, local clayey interval rare gyp between 15-20'	odor @ 20'
					water level 7/8/82 25.1 ft.
20	40			sand & gravel - local tan coating @ 31-32' rare gyp @ 35' & 38' @ 39' local tan coating	
40	50			sand & gravel - black to brown, rare tan coating local thin harder dusky layer @ 41' & 43' @ 45-47' - caliche clasts interspersed w/ gravel	
50				Muddy Creek - clay, reddish brown	

BEGUN 6-[illegible] 82 FINISHED 6-22-82 LOGGED BY G. Lind, L. Hall DRILLED BY Converse Consultants DRILL HOLE M-C-10

ELEV. 1660.96 TOTAL DEPTH 20 LOCATION Gravel pit. Approx 600 ft west of Eastern pit wall, on line with E-W fence by well H-48

@ Surface

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	0.5			Loose silt & Sand	Drilled by Air Rotary
0.5	2.5			Silty Sand & Gravel	
2.5	3.2			Decomposed to Moderately Hard Caliche	
3.2	6.2			Cemented, very hard Caliche	
6.2	9.0			Brown Silty Clay - Muddy Creek Fm	
9.0	20			Medium Brown Silty Clay	
				Set temporary PVC casing. Hand slotted, No water in hole after drilling, but cuttings were very wet. Stickup = 33", some caving in of hole. Depth to water on 6-23-82 was 68" below surface	

BEGUN 6-22-82 FINISHED 6-22-82 LOGGED BY G. Lindsey DRILLED BY Converse Consultants DRILL HOLE MC-11

ELEV. 1664.78 @ Surface TOTAL DEPTH 15 LOCATION Gravel Pit Approx ½ way between E-W lines running by HALL through wells H-10 & H-48, 67 ft IN from Eastern pit wall

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
					Drilled by Air Rotary
0	0.5			loose sand	
0.5	3.0			not noted	
3.0	10.5			Cemented hard caliche uncemented lens at 4.0→4.2 & 6.0→6.2 & @ 8.0 Very moist at 6 ft. water w/ odor at 9 ft	
10.5	15			Red-brown clay - Muddy Creek Fm.	
				Well was blowing ≈ 20 gpm by air	
				Set temporary PVC casing Hand slotted, 2" dia. 46" stick up. some caving in bottom of hole, Dtw in hole 6½ ft.	
				Depth to water below surface on 6-23-82 was 73"	

BEGUN 6-22-82 FINISHED 6-22-82 LOGGED BY G. Lindsey L. Hall DRILLED BY Converse Consultants DRIL. HOLE MC-12

ELEV. 1670.54 @ Surface TOTAL DEPTH 20 LOCATION 333 ft West of MC-11, 400 ft west of Gravel pit wall. Approximately 600 ft. North of South Pitwall

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	2			Silty sand and Gravel, Cemented at Surface	Drilled by Air Rotary
2	8			Cemented sand and gravel	
8	20			Red-brown silty clay Muddy Creek Fm Very moist @ 10 ft	
				Set temporary 2" PVC casing, hand slotted, in hole, only bottom of hole is wet. 6" Stickup	
				Depth to water on 6-23-82 was 96" below surface	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 6-2-82 FINISHED 6-22-82 LOGGED BY G. Lindsey L. Hall DRILLED BY Converse Consultants DRILL HOLE M-C-13

ELEV. 1672.64 @ Surface TOTAL DEPTH 20 LOCATION 200 ft west of MW-12, 600 ft west of Eastwall of Gravel P.

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	1			Sand & Gravel - Cemented at surface, some loose material	Drilled by Air Rotary
1	9			Cemented gravel & sand, caliche wet un cemented zone at 5.0 → 5.2 ft	
9	20			Red-brown silty clay Muddy Creek Fm. odor at 10 ft.	
				Set temporary 2" PVC casing, hand slotted in dry hole. A few minutes after casing was set, water could be heard cascading into hole water level rose to 8 ft below surface, top of casing at level of surface. Depth to water on 6-23-82 was 89" below surface	

BEGUN 6-2-82 FINISHED 6-22-82 LOGGED BY G. Linder, I. Hall DRILLED BY Converse Consultants DRIL. HOLE MC-14

ELEV. 1659.27 @ Surface TOTAL DEPTH 35 LOCATION At base of ramp to floor of Gravel Pit - north end of Pit, 30 ft from east wall of pit.

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	2			Loose Silty Sand	Drilled by Air Rotary
2	27			sand and gravel	
				wet at 8 ft.	
				odor at 20 ft	
27	35			Cemented gravel.	
				well producing 100 gpm (estimated)	
				unable to keep bottom of hole open	
				top of hole enlarged to 15";	
				pulled out of hole & hole caved to 13.5 feet.	
				Set temporary 2" PVC casing	
				Depth to water on 6-23-82 was 8.2 ft.	
				See log of MC-14B which was drilled 6-23-82	
				Muddy Breccia in MC-14B wet at 34.5 ft.	

BEGUN 6-2-82 FINISHED 6-23-82 LOGGED BY G. Ludbey DRILLED BY Converse Consultants DRILL HOLE MC-14B

ELEV. 1659 @ Surface TOTAL DEPTH 40.5 LOCATION 8 ft North of MC-14.

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	2			Silty sand	Drilled by Mud Rotary
2	26			gravel and Sand	
26	34.5			Cemented gravel & caliche uncemented zone at 28.5 to 29.2	
34.5	40.5			Red Brown Silty Clay	

BEGUN 6-2-82 FINISHED 6-2382 LOGGED BY G. Lindsey C Dickerson DRILLED BY Converse Consultants DRILL HOLE MC 15 MC 15B

ELEV. 1682 TOTAL DEPTH 65 LOCATION 25 ft east well H-48

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	51.5			Gravel & sand, thin caliche @ 46 ft.	Drilled w/ mud Rotary
51.5	58			Cemented sand & gravel (Note C. Dickerson had cemented zone at 53'11)	
				Void at 54 ft - lost circulation	
				drilled to 58 ft with air circulation	
				upper part of hole caving in	
				Pulled from hole & backfilled	
				Moved to MC-15B 25 ft NNW of H-48	
0	51.5			Gravel & Sand	Drilled with Mud Rotary
51.5	58.8			Cemented Gravel and Sand	
58.8	65			Red-brown silty Clay - Muddy Creek Fm	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 6-7, 82 FINISHED 6-23-82 LOGGED BY C. Dickerson DRILLED BY Converse Consultants DRILL HOLE MC-16

ELEV. 1686 TOTAL DEPTH 48+ LOCATION Near Well H-49 - 20ft SE

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	48			Sand & Gravel	Drilled w Mud Rotary
				slight cementation at 34 ft	
				thin caliche at 39 ft.	
48				Muddy Creek Formation	

BEGUN 6-03-82 FINISHED 6-24-82 LOGGED BY C. Dickerson DRILLED BY Converse Consultants DRILL HOLE MC-17

ELEV. 1691.74 @ Surface TOTAL DEPTH 61.5+ LOCATION Halfway between H-48 & H-50

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
					Drilled with Mud Rotary
0	43			Sand & gravel Thin Caliche at 34 ft.	
43	53			Cemented sand & gravel Slow Drilling local gypsum at 45 ft.	
53	61.5			Uncemented Sand & Gravel strong odor at 53 ft.	
61.5				Muddy Creek Formation	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 6-2, 82 FINISHED 6-24-82 LOGGED BY G. Hulbey DRILLED BY Converse Consultant DRILL HOLE MC-18

ELEV. 1699 TOTAL DEPTH 62 LOCATION Near H-51 · Approx 25ft. West.

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
					Drilled w/ mud Rotary
0	43			Gravel & Sand	
43	48			Partly Cemented Gravel and Sand	
48	54			Gravel and Sand w/o cementation	
54	56.5			Cemented Gravel and Sand	
56.5	57.5			Gravel and Sand w/o cementation	
57.5	62			Red-brown Silty Clay - Muddy Creek Fm.	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 6-2-82 FINISHED 6-24-82 LOGGED BY G. Lindsey DRILLED BY Converse Consultant DRILL HOLE MC-19

ELEV. 1697 TOTAL DEPTH 47 LOCATION Near well PC-102 - 20 ft west.

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
					Drilled w/Mud Rotary
0	42			Gravel & Sand - NO cementation	
42	47			Rd-Brown Silty Clay - Moodly Creek Fm.	

BEGUN 6-82 FINISHED 6-24-82 LOGGED BY G. Lindsey DRILLED BY Converse Consultant. DRILL HOLE MC-20

ELEV. 1711.53 TOTAL DEPTH 34 LOCATION At Base of Berm - due south of H-51 - Approx 700 ft. Old road into ditch on S of Berm ± 50' to West of MC-20

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	29			Gravel and Sand w/o cementation	
29	34			Muddy Creek Fm.	

BEGUN 9-2 82 FINISHED same LOGGED BY [illegible] DRILLED BY Converse Consultants DRILL HOLE MC-21

ELEV. ______ TOTAL DEPTH ______ LOCATION ______

FOOTAGE		THICK-NESS	RECOV-ERY	LITHOLOGY	REMARKS
FROM	TO				
0	19			COBBLES and GRAVEL	
19	24			CEMENTED Gravel	
24	26			Clayey CEMENTED Gravel	Sampled 24-26
26	29			Brn CLAY	
					Cased w/2" PVC
					Perf ~~29~~ 9' to 29'
					Blank +2' to 9'
				Depth to water on 29 Sept 82 was 22.8 ft from	
				top of casing. Stickup is 1.8 ft.	

BEGUN 9-2-82 FINISHED Same LOGGED BY GPP DRILLED BY Converse Consul DRILL HOLE MC-2

ELEV. _____ TOTAL DEPTH _____ LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	26			Sandy GRAVEL occ. Cobbles, occ.	
				Thin streaks Cemented	Sampled 24-25
26	36			CEMENTED sandy Gravel, Hard	Sampled 26-28
36	37½			silty GRAVEL	
37½	39			brn CLAY	
					Cased w/ 2" PVC
					Perforated 18½-38
				Depth to water on 29 September 1982 was 25.11 ft.	Blank +1½ -18½
				From top of Casing + 5 Inches = 1.6 ft.	

BEGUN 9- -82 FINISHED Same LOGGED BY GR DRILLED BY Converse Consul DRIL. HOLE MC-23

ELEV. _____ TOTAL DEPTH _____ LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY.	REMARKS
0	29½			Sandy GRAVEL occ boulders @ 1.0, and 10' Very dense below 25	Sampled 27-29½
29½	37			CEMENTED Gravel	
37-43				Uncemented Sandy GRAVEL	
43-46				brn. CLAY	
					Cased w 2" PVC
					Perf. 25 to 45
				Depth to water on 29 Sept. 82 = 26.36 ft from top	Blank + 1½ to 25
			of Casing.	Stickup = 1.87 ft	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 9-21-82 FINISHED Same LOGGED BY GKJ DRILLED BY Converse Consultants DRILL HOLE MC-24

ELEV. _____ TOTAL DEPTH 37 LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	8			Sandy GRAVEL with Cobbles	
8	12			Cobbles	
12	31			Sandy GRAVEL	
31	34			CEMENTED Sandy Gravel w/ Tennate w/ UnCEMENTED lenses Sandy Gravel	
34	37			CEMENTED Sandy Gravel	
37	39			CLAY	
					Cased w/ 2" Pl
					Perf 19-39
				Depth to water on 29 Sept 82 was 26.17 ft from top of casing. Casing stickup = 1.2 ft.	B/Sand +1 -19

BEGUN 9-22-82 FINISHED Same LOGGED BY GPL DRILLED BY Converse Consul DRIL. HOLE MC-25

ELEV. _____ TOTAL DEPTH _____ LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	30½			Sandy GRAVEL	
30½	32			CEMENTED Sandy Gravel, Hard	
32	32½			Clayey GRAVEL	
32½	35			Brn CLAY	
					Cased w/ 2" PVC
					Perf. 22-35
					Blank +2 - 22
				Depth to water on 29 Sept 82 = 28.99 ft. from	
				top of casing. Stickup = 1.6 ft.	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN ______ FINISHED ______ LOGGED BY JPJ ______ DRILLED BY Converse Consul ______ DRILL HOLE MC-26

ELEV. ______ TOTAL DEPTH ______ LOCATION ______

FOOTAGE		THICK-NESS	RECOV-ERY	LITHOLOGY	REMARKS
FROM	TO				
0	29			Sandy GRAVEL	
29	31			CEMENTED Sandy Gravel	
31	33			~6" Black organic CLAY into lt. brn CLAY	
					Cased w 2" ID P
					Perf 22 to 32
				Depth to water on 28 Sept 82 was ~~[illegible]~~ 28.92 ft from	Pack +1% to 22'
				top of Casing Casing stickup = 1.6 ft.	

BEGUN 9. 2-82 FINISHED _____ LOGGED BY GBL DRILLED BY Converse Consol. DRIL HOLE MC-27

ELEV. _____ TOTAL DEPTH _____ LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	25			SAND and GRAVEL	
25	27			Partially Cemented Si f Gv w/Cobbles	
27	38			Sandy GRAVEL	
38	39			CEMENTED gravel	
39	43½			Sandy GRAVEL	
43½	45			CEMENTED gravel	
45	46			lt red brn CLAY	
					Cased w/2" PV
					Perf. 36 to 4
					Blank 1½' to 3
				Depth to water 28 Sept 82 = 30.22 ft.	
				from Top of Casing Stickup = 1.6 ft.	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 9-22-82 FINISHED _____ LOGGED BY GBF DRILLED BY Converse Ward DRILL HOLE MC-28

ELEV. _____ TOTAL DEPTH _____ LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	30			gravelly SAND	
30	39½			Sandy GRAVEL	
39½	40			CEMENTED Gravel	
40	49			Sandy GRAVEL	
49	50			Red Brn CLAY	
					Cased w/2" PVC
					Perf. 30 - 50
					12/20 K +1½ - 30
				Depth to water on 28 Sept 82 30.34 ft.,	
				from top of Casing. Stickup = 1.6 ft.	

BEGUN 9-1-82 FINISHED _____ LOGGED BY [illegible] DRILLED BY Converse Consol DRILL HOLE MC-29

ELEV. _____ TOTAL DEPTH _____ LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	47			Sandy GRAVEL	
47	49			Clayey GRAVEL	
49	50			Red brn CLAY	
					Cased w/2" PV
					Perf 37½ - 50
					Blank + 1½ to 50
				Depth to water on 28 Sept 82 31.09 ft, from top of Casing	
				Stickup = 1.71 ft	

BEGUN 9-2-82 FINISHED ______ LOGGED BY [illegible] DRILLED BY Converse Consul. DRIL. HOLE MC-8

ELEV. ______ TOTAL DEPTH ______ LOCATION ______ 30

FOOTAGE		THICK-NESS	RECOV-ERY	LITHOLOGY	REMARKS
FROM	TO				
0	45			Sandy GRAVEL	
45	47			dry Clay	
					Cased w/2" PVC
					Perforated 36-46
					Blank +1' -36
				Depth to water on 28 Sept. 82 was 31.49 ft. from top of Casing	
				Stickup = 1.2 ft.	

BEGUN 9-3-82 FINISHED _____ LOGGED BY [illegible] DRILLED BY Converse Consul DRILL HOLE MC-31

ELEV. _____ TOTAL DEPTH _____ LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	20			silty SAND and GRAVEL	
20	41			SAND and GRAVEL	
41	42			ft. Brn CLAY	
					Cased w/2" PVC
					Perf 21'-41'
					Blank +½ - 21'
				Depth to water on 28 Sept 82 was 31.18 ft. from top of casing	
				stickup = 1.6 ft	

BEGUN 9-23-82 FINISHED — LOGGED BY GRJ DRILLED BY Converse Consol DRIL. HOLE MC-8

ELEV. _____ TOTAL DEPTH _____ LOCATION East end OF Cut-off line 32

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	20			silty SAND w/ gravel	
20	30			gravelly SAND	
30	33½			SAND & GRAVEL w/ Gypsum	
33½	35			Dry CLAY.	
					Cased w/ 2" PVC
					Perforated 23½-33
					Blank 4' to 23½
				Depth to water on 28 Sept 82 was 29.87 from top of Casing	
				Stickup = 1.2 ft.	

BEGUN 9-28-82 FINISHED — LOGGED BY GRE DRILLED BY Converse DRILL HOLE MC-8

ELEV. _____ TOTAL DEPTH _____ LOCATION _____ 33

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	29			Sandy GRAVEL Freq. Cobbles	
29	32			SAND & GRAVEL with gypsum	
32	37			CEMENTED	
37	39			Clayey GRAVEL	
39	40			brn CLAY	
				Depth to water on 28 Sept 82 was 28.79 ft. from top of Casing. Casing stickup = 1.6 ft.	

BEGUN 9-__-82 FINISHED same LOGGED BY SRA DRILLED BY Converse Consol. DRILL HOLE 36-C

ELEV. _____ TOTAL DEPTH _____ LOCATION 10' North of H-36

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	38			Sandy GRAVEL	
38	39			Firm CLAY	
					Cased w 2" PVC
					Perforated 18 to 3
					Blank +2' to 18

BEGUN 9-2-82 FINISHED Same LOGGED BY GK DRILLED BY Converse Consul DRIL. HOLE 36-B

ELEV. _____ TOTAL DEPTH _____ LOCATION 30' North of H-36

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	38			Sandy GRAVEL	
				Trace Cementation below 33 scattered, Thin	
38	39			Brn CLAY	
					Cased W 2" PVC
					Perforated 18-38
					Blank +2" to 18

BEGUN 9-_0-82 FINISHED Same LOGGED BY GRF DRILLED BY Converse Consul DRILL HOLE MW-36

ELEV. _____ TOTAL DEPTH _____ LOCATION 10.5' East OF W-36

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	38.5			Sandy GRAVEL	odor @ 32
38.5	39.0			Clayey GRAVEL	
39	42			Brn CLAY	
					Cased w 2" PVC
					Scr'd 20.5 - 40.5
					Sump +2' to 20.5

STAUFFER CHEMICAL COMPANY DRILL LOG

5/83

BEGUN 5/17/83 FINISHED 5/17/83 LOGGED BY CAD DRILLED BY Converse Hender DRILL HOLE MC-47

ELEV. _____ TOTAL DEPTH 45' LOCATION Betwen MC-34 and H-17

Stauffer Well Logs

Box 1

'83 VIT

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	29			Coarse sand and gravel, rare cobbles, medium size gravel	
29	43			Gravel and soft white silty sand (calcareous?), partial cementation	Lost circulation @ 33.5-34' (regained beneath)
				A void (lost circulation) @ 34'; interbedded cemented intervals throughout section.	
				Brittle tan cement @ 35'	
				Odor @~40'. Gray silty and clayey sand @ 40'; individual grains cemented together; appears to be altered white silty clay from above.	
				Back to white silty sand @ 41-42'.	
43	45			Muddy Creek	Muddy Creek @ 43'
				T.D. - 45'	

DIAMOND CHEMICAL COMPANY DRILL LOG

BEGUN 5/17/83 FINISHED 5/17/83 LOGGED BY LEH, CA. DRILLED BY Converse Hend on DRILL HOLE MC-48

ELEV. _____ TOTAL DEPTH 38' LOCATION SW of H-10, between MC-47 and MC-49

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	7			Coarse sand with cobbles	
7	13			Fine gravel with cobbles.	
				Minor cementation to 11'	
13	20			Coarse sand	Running sand
				Thin caliche @ 16'	
20	36			Coarse sand and gravel	
				Odor @ 32'	
				Minor cementation @ 33'	
36	38			Muddy Creek	Muddy Creek @ 36'
				T.D. 38'	

BEGUN ./18/83 FINISHED 5/18/83 LOGGED BY CAD DRILLED BY Converse Hende n DRILL HOLE MC-49

ELEV. _____ TOTAL DEPTH 41' LOCATION South of H-10

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	5			Tan, silty, fine gravel, local cobbles, sand, trace clayey	
5	10			Silty sand and gravel; calcareous coatings on gravel	
10	19			Silty sand and fine to medium gravel	
19	25			Coarse sand and gravel	
25	34			Gravel and sand; white silty sand @ 28', odor @ 28'	
34	35			White silty sand and gravel	
35	38			Gravel	
38	41			Muddy Creek	Muddy Creek @ 38'
				T.D. 41'	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 5/18/83 FINISHED 5/18/83 LOGGED BY CAD DRILLED BY Converse DRILL HOLE MC-50

ELEV. _____ TOTAL DEPTH 50' LOCATION 150' NNE of MC-9

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	5			Silty sand and fine gravel	
5	20			Coarse sand and gravel; local cobbles	
20	26			Coarse sand and gravel; calcareous coatings on gravel	
26	28			Silty sand and gravel	
28	44			Coarse sand and gravel; partial cementation @ 33'	
44	49			Silty sand and fine gravel	
49	50			Muddy Creek	Muddy Creek @ 49'
				T.D. 50'	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 5/18/83 FINISHED 5/18/83 LOGGED BY CAD DRILLED BY Converse Henc on DRILL HOLE MC-51

ELEV. _____ TOTAL DEPTH 48' LOCATION ~ 150' east of MC-9

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	5			Sand and gravel, slightly silty @ 3 to 5'	
5	10			Silty sand and fine gravel	
10	28			Sand and gravel, local cobbles, siltier at depth.	
				Partial cementation @ 25'	
28	37			Gravel and coarse sand	
37	42			Silty sand and fine gravel	
42	47			Soarse sand and gravel	
47	48			Muddy Creek	Muddy Creek @ 47'
				T.D. 48'	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 5/18/83 FINISHED 5/18/83 LOGGED BY CAD DRILLED BY Converse DRILL HOLE MC-52

ELEV. _____ TOTAL DEPTH 48' LOCATION East of MC-51

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	7			Fine gravel and coarse sand	
7	20			Silty sand, local gravel	
20	29			Coarse sand and gravel	
				@ 22' soft white silty sand, partial cementation	
29	42			Gravel and coarse sand	
				Cobbles @ 29-30'	
				Partial cementation @ 35'	
42	43			Silty sand	
43	46			Coarse sand and gravel	
46	48			Muddy Creek	Muddy Creek @ 46'
				T.D. 46'	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 19/83 FINISHED 5/19/83 LOGGED BY CAD DRILLED BY Converse Henc on DRILL HOLE MC-53

ELEV. _____ TOTAL DEPTH 40' LOCATION East of MC-52

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	5			Coarse sand and fine gravel	
5	16			Coarse sand and gravel; local cobbles	
16	20			Silty sand and fine gravel	
20	30			Gravel and sand; minor cementation @ 25'	
30	36			Coarse sand and fine to medium gravel	
36	37			Silty sand	
37	40			Muddy Creek	Muddy Creek @ 37'
				T.D. 37'	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 19/83 FINISHED 5/19/83 LOGGED BY CAD DRILLED BY Converse Hend on DRILL HOLE MC-54

ELEV. _____ TOTAL DEPTH 38' LOCATION ~200' south of MC-53

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	10			Sand and gravel	
10	11			White silty sand	
11	17			Brown silty sand and fine gravel	
17	37.5			Sand and gravel	
				Minor cementation and coarser gravel @ 29'	
				Partial grain cementation @ 33-37.5'	
37.5	38			Muddy Creek	Muddy Creek @ 37.5'
				T.D. 38'	

BEGUN /19/83 FINISHED 5/19/83 LOGGED BY CAD DRILLED BY Converse Hend on DRILL HOLE MC-55

ELEV. _____ TOTAL DEPTH 22' LOCATION 215' north of powerline junction

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	3			Silty sand, local cobbles	
3	5			Sand and fine gravel, trace silt	
5	21			Tan silty sand and fine gravel; local cobbles	
21	22			Muddy Creek; light red-brown silt/clay	Muddy Creek @ 21'
				T.D. 22'	

BEGUN 5/19/83 FINISHED 5/19/83 LOGGED BY CAD DRILLED BY Converse DRILL HOLE M-56

ELEV. _____ TOTAL DEPTH 50' LOCATION 127' south of MC-51

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	5			Sand and fine gravel, local cobbles grading coarser with depth	
5	16			Coarse sand and gravel, local cobbles; abundant calcareous	
				coatings on gravel	
16	20			Silty sand and fine gravel	
20	30			Medium to coarse sand and fine gravel	
				Trace silt @ 22'	
				Minor cementation @ 28'	
30	34			Coarse sand and gravel, local cobbles	
34	35			White silty sand and fine gravel, partial cementation	
35	40			Gravel and coarse sand	
40	49.5			Fine gravel, trace silty sand; increased silt with depth	
49.5	50			Muddy Creek, light brown clay	Muddy Creek @ 49.5'
				T.D. 50'	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN /20/83 FINISHED 5/20/83 LOGGED BY GH, CAD DRILLED BY Converse DRILL HOLE Hend on MC-57

ELEV. _____ TOTAL DEPTH 40' LOCATION Between MC-47 and MC-48, along road

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	17			Sand and gravel	
17	27			Silty sand with gravel	
				Odor @ 25'	
27	30			Coarse sand	
30	32.5			Caliche, hard	
32.5	33.5			Clayey sand, white	
33.5	35			Caliche	
35	37.5			White clayey sand	
37.5	38.5			Caliche	
38.5	40			Muddy Creek, light red-brown clay	Muddy Creek @ 38.5'
				T.D. 40'	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 5/20/83 FINISHED 5/20/83 LOGGED BY GH DRILLED BY Converse Hende n
DRILL HOLE MC-58

ELEV. _____ TOTAL DEPTH 35' LOCATION Between MC-48 and MC-49, along road

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	11			Sand with silt, local fine gravel	
11	14			Gravelly sand; coarse sand and fine gravel	
14	20			Silty sand, light brown; local gravel	
20	24			Silty sand and gravelly sand	
				Minor caliche @ 24'	
24	28			Gravelly sand; fine gravel and coarse sand	
28	31			Clayey sand, minor caliche	
31	32			White caliche, moderately hard to hard	
32	33			Gray silty sand	
33	34.5			Caliche	
34.5	35			Muddy Creek, light brown silty clay	Muddy Creek @ 34.5
				T.D. 35'	

KAISER CHEMICAL COMPANY DRILL LOG

BEGUN 5/20/83 FINISHED 5/20/83 LOGGED BY GH (Converse) DRILLED BY Converse Hendern DRILL HOLE MC-59

ELEV. _____ TOTAL DEPTH 22' LOCATION East of powerline junction

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	10			Sand with silt and gravel	
10	17			Coarse sand and fine gravel	
17	19.5			White sandy silt with gravel	
19.5	22			Muddy Creek, light brown sandy silt, fine sand	Muddy Creek @ 19.5'
				T.D. 22'	

BEGUN 23/83 FINISHED 5/23/83 LOGGED BY GH, CAD DRILLED BY Converse Hend on DRILL HOLE MC-60

ELEV. _____ TOTAL DEPTH 32' LOCATION West of H-50

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	17			Coarse sand and gravel, increasing gravel with depth	
				Silty zone @ 14.5-15.5'	
17	30.5			Silty sand with gravel, local cobbles	
				Black gravel @ 29-30'	
30.5	32			Muddy Creek, light red-brown clayey silt	Muddy Creek @ 30.5'
				T.D. 32'	

[illegible] CHEMICAL COMPANY DRILL LOG

BEGUN 5/23/83 FINISHED 5/23/83 LOGGED BY GH, CAD DRILLED BY Converse Hende n DRILL HOLE MC-61

ELEV. _____ TOTAL DEPTH 47' LOCATION 300' south of H-50

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	16			Sand with fine gravel	
				Gravelly zone @ 9-10'	
				Grading silty @ 10'	
16	27			Silty sand, local fine gravel	
27	46			Coarse sand and fine gravel	
				Interbedded silty layers @ 34'	
				Increasing gravel near bottom	
46	47			Muddy Creek, light red-brown silty clay	Muddy Creek @ 46'
				T.D. 47'	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 5 /83 FINISHED 5/23/83 LOGGED BY GH, CAD DRILLED BY Converse H[illegible]erson DRILL HOLE MC-62

ELEV. _____ TOTAL DEPTH 50' LOCATION Between H-50 and H-51

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	13			Coarse sand with silt and gravel	
13	17			Coarse sand and fine gravel	
17	31			Silty sand, light gray to brown grading coarser @ 25'; interbedded	
				silty sand and fine to coarse sand	
31	35			Coarse sand, gravel	
35	47			Interbedded coarse sand, silty sand, and gravelly sand,	
				Dominantly coarse sand grading coarser @ 44'	
47	48.5			Sandy silt, grayish white	
48.5	50			Muddy Creek, light red-brown silty clay	Muddy Creek @ 48.5'
				T.D. - 48.5'	

BEGUN 24/83 FINISHED 5/24/83 LOGGED BY GH, CAD DRILLED BY Converse Hend son DRILL HOLE MC-63

ELEV. _____ TOTAL DEPTH 52' LOCATION ~300' West of P-102

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	10			Coarse sand and fine gravel	
10	15			Medium sand with gravel	
15	20			Silty sand, rare gravel	
20	21			Gravelly zone	
21	32			Fine to coarse sand with silt, fine gravel, local silty sand	
				stringers	
32	46			Medium to coarse sand and gravel	
46	50.5			Sand with local silty and gravelly interbeds	
50.5	52			Muddy Creek, light red-brown, silty clay	Muddy Creek @ 50.5'
				T.D. 52'	

BEGUN 5/24/83 FINISHED 5/24/83 LOGGED BY GH, CAD DRILLED BY Converse DRILL HOLE MC-64

ELEV. _____ TOTAL DEPTH 43' LOCATION At P-102, fence corner

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	16			Sand with silt, rare gravel, grading siltier	
16	23			Silty sand	
23	41			Medium to coarse sand	
41	43			Muddy Creek, light red-brown silty clay	Muddy Creek @ 41'
				T.D. 43'	

BEGUN 5 /83 FINISHED 5/24/83 LOGGED BY GH DRILLED BY Converse Hend on DRILL LE MC-65

ELEV. _____ TOTAL DEPTH 41' LOCATION 300' South of H-51

FOOTAGE FROM	FOOTAGE TO	THICK-NESS	RECOV-ERY	LITHOLOGY	REMARKS
0	14			Coarse sand and fine gravel	
				Silty @ 10'	
14	40			Sand with silt, medium to coarse sand, local fine gravel	
40	41			Muddy Creek, light red-brown clay	Muddy Creek @ 40'
				T.D. 41'	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN -4/83 FINISHED 5/24/83 LOGGED BY GH DRILLED BY Converse Hen' 'son

ELEV. _____ TOTAL DEPTH 48' LOCATION Midway bezween MC-65 and MC-63, Southeast of H-51 DRILL HOLE MC-66

FOOTAGE FROM	FOOTAGE TO	THICK-NESS	RECOV-ERY	LITHOLOGY	REMARKS
0	13			Medium to coarse sand, local fine gravel, calcareous cement	
				on gravel	
13	30			Interbedded gravelly and silty zones	
30	40			Medium to coarse sand	
40	45			Light gray clayey sand	
45	45.5			Caliche layer	
45.5	48			Muddy Creek, light red-brown silty clay	Muddy Creek @ 45.5
				T.D. 48'	

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 5/25/83 FINISHED 5.26.73 LOGGED BY CAD DRILLED BY Converse DRILL HOLE Henderson MC-67

ELEV. _____ TOTAL DEPTH 60' LOCATION At MC-17 site

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	34			Medium to coarse sand, fine gravel, local silty intervals	
34	42			Partial cementation @ 34' (slower drilling), finer sandy material	Drill with 10" bit to
42	57			Caliche, very slow drilling	47'
				Void @ 47', lost circulation; drill blind with 4-3/4" bit	Drilled with 4-3/4" bit
				Softer @ 53-54'	47' to T.D.
				Hard @ 54-55'	
57	60			Muddy Creek	Muddy Creek @ 57'
				T.D. 60'	
				After removing rods, slough to 58'; bottom of PVC @ 58'	

BEGUN 7-12-83 FINISHED _____ LOGGED BY JPR DRILLED BY CCI DR. HOLE MC-71

ELEV. _____ TOTAL DEPTH _____ LOCATION Near Infiltration Test Trench

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	4			Silty Gravel	Water level in 2di
4	11½			Gravelly SAND	well @ 34'
11½	20			Gravel w Cobbles	
20	29.5			Sandy GRAVEL	
29.5	36			Cemented Gravel w lenses partially Cemented	set 2" Class 20 P
36	36.5	TD		Void (lost circulation	screen 36½-31½
					Gravel Pack 36½-3
					Bentonite Pellet Seal
					31½-30
					Sand 5' Raw Bentoni
					30-17

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 7-12-83 FINISHED _____ LOGGED BY GPB DRILLED BY CCI DRILL HOLE MC-

ELEV. _____ TOTAL DEPTH _____ LOCATION Near Infiltration Test Trench (W'ly end of MC-71)

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	14			Sandy GRAVEL	
14	20			Sandy GRAVEL w/ Cobbles	
20	28.5			Sandy GRAVEL	
28.5	29.5 (TD)			Cemented gravel	
					SCT 2" Class 200 PV
					Bottom of Screen @ 28.
					To 23½.
					Gravel Pack 28½-2
					Bentonite Pellets 21½
					Mixed Sand & Bentonit
					19 To 11

BEGUN 7-2-83 FINISHED _____ LOGGED BY GRP DRILLED BY CCI DRIL. HOLE MC-7 78

ELEV. _____ TOTAL DEPTH _____ LOCATION ~25' NE OF MC-71

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	8			Sandy GRAVEL	
8	20			Gravel w/ Cobbles	
20	28.2			Sandy GRAVEL	
28.2	28.7			Gravelly CLAY	
28.7	30.0 (TD)			Cemented Sandy GRAVEL	Set 2" Class 20 PV
					Screen at 29.5-24.5
					Gravel Pack 29.5-23.5
					Bent. Pellets 23.5-21
					Sand & Bent Mix 21-20.

BEGUN 7-2-93 FINISHED _____ LOGGED BY GB DRILLED BY CCI DRIL HOLE MC-74

ELEV. _____ TOTAL DEPTH _____ LOCATION ~100' SW OF MW 36

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	8			Gravelly SAND	
8	13			Gravelly SAND, occ small cobbles . .	
(	28			Sandy Gravel	
28	31.8			Silty GRAVEL Trace Cemented lense	
31.8	32.2			Gravelly SILT (?) SOFT	
32.2	33			Partially Cemented Clayey Gravel	
33	33.5			Brown CLAY (Muddy Creek)	No Casing Set
(					

BEGUN 7-14-83 FINISHED _____ LOGGED BY RTP DRILLED BY CCF DRILL HOLE MC-25

ELEV. _____ TOTAL DEPTH _____ LOCATION Pilot Hole For Intercept Well 'A'

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	14			Gravelly SAND	4½" Tricone w/Rever
14	18			Gravelly SAND w occasional Cobbles	
18	26			Gravelly SAND	
26	31.5			Cemented Sand & Gravel hard to V. hard	
31.5	33			GREY Clayey Silt	
33	35			LT. brn Silty CLAY	

ATTACHMENT #1

BEGUN 8-4-83 FINISHED 8-8-83 LOGGED BY GPL DRILLED BY Converse Consultants DRILL HOLE MC-7

ELEV. _____ TOTAL DEPTH 31.5' LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	22			Gravelly SAND, occ Cobbles	
22	29			CEMENTED Sand & Gravel	
29	30.5			interbedded Silt and silty Clay lenses	
30.5	31.5			brn CLAY (Muddy Creek)	
					installed 2" PVC
				.020 s/ot Perforations	21.5 to 31.5
				Gravel Pack	20 to 31.5
				Bentonite Pellets	19 to 20

BEGUN 8-6-83 FINISHED 8-8-83 LOGGED BY SG DRILLED BY Converse Consultants DRILL HOLE MW-77

ELEV. _____ TOTAL DEPTH 40 LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	6			Sandy GRAVEL with Cobbles	
6	9.5			Sandy GRAVEL	
9.5	21.5			Silty GRAVEL	
21.5	24.0			Partially CEMENTED Sand & Gravel	
24.0	27.0			Clayey GRAVEL	
27.0	29.			Partially CEMENTED Sand & Gravel	
29	32			CEMENTED Sand & Gravel	
32	40			M. Grey Silty CLAY Calcareous	
					Installed 2" PVC
				.020 Perforated	30 to 40
				Gravel Pack	23 to 40
				Bentonite Pellets	22 to 23

BEGUN 8-8 3 FINISHED 8-8-83 LOGGED BY SG DRILLED BY Converse Consultants DRILL . OLE MW-78

ELEV. _____ TOTAL DEPTH 44 LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	25			Sandy GRAVEL occ Cobbles	
25	33			Partially CEMENTED Sand & Gravel	
33	43			CEMENTED Sand & Gravel	
43	44			brn CLAY (Muddy Green)	
					Installed 2" PVC
				.020 Perforated	34 to 44
				Gravel Pack	31 to 44
				Bentonite Pellets	30 to 31

BEGUN 8-83 FINISHED 8-8-83 LOGGED BY SG DRILLED BY Converse Consultants DRIL. HOLE MC-7

ELEV. _____ TOTAL DEPTH _____ LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	24			Sandy GRAVEL occ. Cobbles	
24	28			partially CEMENTED Sandy Gravel	
28	33			CEMENTED Sand & Gravel	
33	35			brn CLAY (Muddy Creek)	
					Installed 2" PVC
				.020 Perforated	25 to 35
				Gravel Pack	23 to 35
				Bentonite Pellets	22 to 23

BEGUN 8-[illegible]-83 FINISHED 8-9-83 LOGGED BY S. G DRILLED BY Converse Consultants DRILL LE MC-80

ELEV. _____ TOTAL DEPTH 48' LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	25			Sandy GRAVEL	
25	37			Partially CEMENTED Sand & Gravel	
37	40			CEMENTED Sand & Gravel	
40	46			Partially CEMENTED Sand & Gravel	
46	48			Brn CLAY (Muddy Creek)	
					Installed 2" PVC
				.020 Perforation	= 38 TO 48
				Gravel Pack	= 35 TO 48
				Bentonite Pellets	34 TO 35

GUN 8-9-83 FINISHED 8-9-83 LOGGED BY SG DRILLED BY Converse Consultants DRILL HOLE MC-81

LEV. _____ TOTAL DEPTH 35 LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	9			silty GRAVEL	
9	12.5			GRAVEL with Cobbles	
2.5	19.5			Sandy GRAVEL	
9.5	20.5			GRAVEL with Cobbles	
0.5	33.5			Sandy GRAVEL	
3.5	35.0			Brn CLAY (Muddy Creek)	
					2" PVC installed
				.020 Perforated	25.0 TO 35.0
				Gravel Pack	23.0 TO 35.0
				Bentonite Pellets	22.0 TO 23.0

STAUFFER CHEMICAL COMPANY DRILL LOG

BEGUN 8-9-83 FINISHED 8-9-83 LOGGED BY SG DRILLED BY Converse Consultants DRILL HOLE MC-82

ELEV. _____ TOTAL DEPTH 52 LOCATION _____

FOOTAGE FROM	FOOTAGE TO	THICKNESS	RECOVERY	LITHOLOGY	REMARKS
0	13			Sand & Gravel occ. Cobbles below 6'	
13	17			GRAVEL with Cobbles	
17	38			Sandy GRAVEL	
38	43			CEMENTED SAND & Gravel	
43	50			Gravelly grey Clay, Calcareous	
50	52			brn CLAY (Muddy Creek)	
					Installed 2" PVC
				.020 Perforations	42-52
				GRAVEL PACK	39-52
				Bentonite Pellets	38-39