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OHIO ENVIRONMENTAL PROTECTION AGENCY DIRECTOR'S FINDINGS AND ORDERS AND SECTION IV CONSENT DECREE REPORT - TECHNICAL PROGRESS REPORT FOR OCTOBER 1, 1994, THROUGH DECEMBER 31, 1994

01/19/95

DOE-0444-95
DOE-FN OEPA
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REPORT

Department of Energy
Fernald Environmental Management Project
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6357

JAN 19 1995

DOE-0444-95

Mr. Thomas A. Winston, District Chief
Ohio Environmental Protection Agency
Southwest District Office
40 South Main Street
Dayton, OH 45402-2086

Dear Mr. Winston:

OHIO ENVIRONMENTAL PROTECTION AGENCY DIRECTOR'S FINDINGS AND ORDERS AND SECTION IV CONSENT DECREE REPORT - TECHNICAL PROGRESS REPORT FOR OCTOBER 1, 1994, THROUGH DECEMBER 31, 1994

Enclosed is the quarterly technical progress report describing Fernald Environmental Management Project (FEMP) progress, with respect to compliance with the Stipulated Amended Consent Decree and the Ohio Environmental Protection Agency (OEPA) Director's Findings and Orders.

In addition to this report, the following are enclosed:

- Revised Table C-4, which provides a list of all waste streams identified under the Stipulated Amended Consent Decree, as well as waste streams identified as a result of routine Resource Conservation and Recovery Act (RCRA) determinations,
- The revised 1993 RCRA Facility Annual Hazardous Waste Report,
- Copies of Soil Boring Logs for the reporting period.

If your have any questions, please contact Ed Skintik at (513) 648-3151.

Sincerely,

Glenn Griffith
for Jack R. Craig
Director

Enclosures: As stated

Recycled and Recyclable

cc w/enc (Progress Summary Only):

J. E Baublitz, EM-40, FORS
K. A. Chaney, EM-423, QO
J. Van Kley, Ohio AGO
J. S. Rogers, DOJ
G. E. Mitchell, OEPA-Dayton
P. Pardi, OEPA-Dayton
J. A. Saric, USEPA-V
L. M. Clauss, FERMCO, MS80-1
J. W. Thiesing, FERMCO, MS1
R. L. Glenn, Parsons
AR Coordinator — you are receiving all of the enclosures.

OHIO ENVIRONMENTAL PROTECTION AGENCY
DIRECTOR'S FINDINGS AND ORDERS AND SECTION IV CONSENT DECREE
QUARTERLY TECHNICAL PROGRESS REPORT

October 1, 1994 - December 31, 1994

Introduction

Section 4.13 of the Stipulated Amended Consent Decree requires that beginning October 20, 1990, and continuing on the twentieth day of every third month thereafter, DOE shall submit a quarterly technical progress report to Ohio EPA. In accordance with this section, the option of combining this report with ongoing reports being submitted pursuant to the Director's Findings and Orders issued June 4, 1987, is exercised.

This report describes activities at the Fernald Environmental Management Project (FEMP) from October 1, 1994 through December 31, 1994, and status as of December 31, 1994. The report contains two sections. Section I addresses outstanding commitments contained within the Stipulated Amended Consent Decree. Section II pertains to compliance with Section IV of the Consent Decree, and incorporates remaining outstanding items from the Ohio EPA Director's Findings and Orders that have not been addressed within the Consent Decree.

OHIO ENVIRONMENTAL PROTECTION AGENCY
DIRECTOR'S FINDINGS AND ORDERS AND SECTION IV CONSENT DECREE
QUARTERLY TECHNICAL PROGRESS REPORT

October 1, 1994 - December 31, 1994

Section I - Stipulated Amended Consent Decree

Section	Activity	Status
3.5.1.(D)(I)	Submit report on results and analysis for remaining drums identified under the Stipulated Amended Consent Decree by September 30, 1992.	**COMPLETE**. Sampling and analysis report was submitted to the Ohio EPA on September 25, 1992.
3.8(B)	Daily/weekly inspection of Plant 1 Pad.	**ONGOING**. Inspections are performed as required to meet the proposed requirements.
3.11	Report all Hazardous Waste Management Units (HWMU).	**ONGOING**. Investigation of the following HWMUs to change their status to Solid Waste Management Units (SWMUs) is ongoing for the Hilco Oil Recovery Unit and Wheelabrator Shot Blaster. The Primary Calciner and Biosurge Lagoon requests for reclassification to SWMUs have been submitted to Ohio EPA for review.

OHIO ENVIRONMENTAL PROTECTION AGENCY
DIRECTOR'S FINDINGS AND ORDERS AND SECTION IV CONSENT DECREE
QUARTERLY TECHNICAL PROGRESS REPORT

October 1, 1994 - December 31, 1994

Section II - Consent Decree

Section	Activity	Due Date	Status
4.9	Perform cleanout of SWRB (when approximately 150,000 gallons of sediment is accumulated) at 24-month intervals on maintenance schedules approved in the SWRB PTI.		AS REQUIRED. The SWRB west chamber was inspected in July 1993 and several leaks in the liner were noted. The integrity of the entire liner system is not in jeopardy. As part of the Federal Atomic Trades and Labor Council (FATLC) agreement, the solids removal and liner repair were completed by the existing FEMP labor force. The solids were transported to Plant 8 via the FEMP "Super Sucker" vacuum truck. Use of the new line constructed for the SPIT Project, as previously reported in the Quarterly Report, proved to be less efficient. The solids were stored in dedicated tankage and processed through the existing EIMCO vacuum filter. Approximately 1650 drums of solids have been shipped to NTS. Approximately 60 drums remain to be shipped. Repair of the last few leaks (holes) in the liner were completed during the first week of July 1994. Re-evaluation of the leak detection system should be completed within the next quarter. The East basin continues to show no indication of leaking. The sediment level in the East basin has been revised from the Mid-March indication of a maximum 6-inch depth and average depth of 4-inches. The revised readings based on actual grid measurements indicate an average depth of 2-3/4 inches over the bottom of the basin (Nominally 190' x 190'). This equates to approximately 62,000 gallons of sediment accumulation. Visited an existing off-site sludge removal operating facility that uses solids removal equipment that will remove solids without draining the basin. This type of equipment will be considered for use at the FEMP in conjunction with the solids dewatering equipment or system at the AWWT.

OHIO ENVIRONMENTAL PROTECTION AGENCY
DIRECTOR'S FINDINGS AND ORDERS AND SECTION IV CONSENT DECREE
QUARTERLY TECHNICAL PROGRESS REPORT

October 1, 1994 - December 31, 1994

Section	Activity	Due Date	Status
4.9	Perform cleanout of BSL (when approximately 500,000 gallons of sediment is accumulated, but no more than once per year, as stated in the BSL PTI).	7/30/95	**AS REQUIRED**. The lagoon was evaluated for cleanout in July 1994. The volume of sediment was below the level requiring cleanout. The next survey is scheduled for July 1995.
4.11(A)	Implement a Best Management Practices (BMP) Plan after approval by Ohio EPA for control of wastes that may be discharged from the FEMP.	4/18/88	**ONGOING**. The Ohio EPA approved the BMP Plan on 7/10/89. Documentation for required actions is being reviewed to assure that all requirements of the plan have been satisfied. Follow-up actions are being identified based on this review.
4.11(B) DFO11	Maintain BMP Plan.		**ONGOING**. See previous item.
4.11(C)	Amend BMP whenever there is a change in the facility which has the potential to affect the discharging of waste.		**AS REQUIRED**. No amendments were required during the reporting period. The BMP committee has reviewed the plan to determine what modifications are needed. A comprehensive revision of the BMP Plan is presently in preparation. Issue of this revision to the Ohio EPA for approval is anticipated during CY1995.
4.11(D) DFO 13	If requested by Ohio EPA, modify the BMP Plan within 45 days.		**AS REQUIRED**. No requests for modifications were received during the reporting period.

OHIO ENVIRONMENTAL PROTECTION AGENCY
DIRECTOR'S FINDINGS AND ORDERS AND SECTION IV CONSENT DECREE
QUARTERLY TECHNICAL PROGRESS REPORT

October 1, 1994 - December 31, 1994

Section	Activity	Due Date	Status
4.12	Modify the Zone of Influence Study Report within 30 days of Ohio EPA request.		**AS REQUIRED**. No requests for changes and/or additions to the report were received during the reporting period.
(DFO) 14(A)	Study the integrity of the FEMP outfall.		**COMPLETE**. A new effluent/outfall line was installed as part of Removal Action 3 - South Groundwater Contamination Plume. This task was identified as part of the work plan for Part 2 of the South Plume Removal Action submitted to the Ohio EPA. The new outfall line was designed to handle future FEMP remediation flows. The line was placed into operation on May 1, 1993. The existing line was subsequently removed from service and will be remediated in the future. Investigation of past possible leakage of the original outfall line was completed as a work plan addendum for Operable Unit 5 and results incorporated in the OU5 RI report.
4.14	Comply with any permits issued to DOE pursuant to ORC 6111.03 (J) with regard to sewage, industrial wastes or other wastes, and to comply with OAC 3745-31-02 and any permits issued pursuant to OAC 3745-31-02.		**ONGOING**. Compliance with issued permits is ongoing. No exceedances of the discharge limits specified by the NPDES permit occurred during this reporting period.

OHIO ENVIRONMENTAL PROTECTION AGENCY
DIRECTOR'S FINDINGS AND ORDERS AND SECTION IV CONSENT DECREE
QUARTERLY TECHNICAL PROGRESS REPORT

October 1, 1994 - December 31, 1994

1993 RCRA ANNUAL REPORT

The 1993 RCRA Annual Report must be modified to incorporate information developed during ongoing characterization efforts. Attached is the revised 1993 Facility Annual Hazardous Waste Report section. There was one inventory revision this quarter to report for waste streams generated prior to 1994. There were no waste streams generated prior to 1994 added to the report.

The following is a list of corrections and additions to this section:

- Page 41, Line 319, corrected the amount to 30,700 lbs.

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information

IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

Street: 7400 Willey Road

City: Fernald

State: Ohio

Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
1	ACETONITRILE IN WATER	S01	D001		1	P
2	CLEAR DISPERSANT, TYPE H BLACK, CYAN, ETC.	S01	D001		77	P
3	CLEAR DISPERSANT, TYPE H CONCENTRATE	S01	D001		60	P
4	CONTAMINATED NON-BURNABLE	S01	D001		3,183	P
5	CURING COMPOUND	S01	D001		383	P
6	DISCARD PROCESS RESIDUE	S01	D001		395	P
7	DISCARD PROCESS RESIDUE	S01	D001		8,095	P
8	FLAMMABLE PAINTS AND RELATED PRODUCTS	S01	D001		1,092	P
9	FLOOR COATING BASE	S01	D001		783	P
10	FURNACE SALT NON-CHLORIDE	S01	D001		169	P
11	GREASE AND WATER	S01	D001		249	P

XIII. Comments:

Ohio Environmental Protection Agency
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12	HYDROGEN PEROXIDE SOLN.	S01	D001		2,002	P
13	KEROSENE	S01	D001		202	P
14	NON-CHLORIDE CONTAMINATED WATER	S01	D001		1,914	P
15	NON-OILY SLUDGE FOR ROASTING	S01	D001		30,815	P
16	NONRECOVERABLE TRASH	S01	D001		212	P
17	OILY SLUDGE FOR OXIDATION	S01	D001		643	P
18	OILY SLUDGES, HIGH FREE METAL	S01	D001		931	P
19	SUMP CAKE - COPPER CONTAMINATED	S01	D001		81,128	P
20	UNFIRED REDUCTION CHARGES PLUS CaF2	S01	D001		2	P
21	UNSPECIFIED IGNITABLE LIQUID	S01	D001		373	P

XIII. Comments:

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Ohio Environmental Protection Agency

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22	VARNISH – UNUSED	S01	D001		197	P
23	LAB GERATED WASTE, FLAMMABLE ORGANICS	S01	D001	D002	3,530	P
24	LABORATORY ACIDS (NITRIC AND CYCLOHEXANE)	S01	D001	D002	1,211	P
25	CONTAMINATED MAGNESIUM	S01	D001	D003	29,400	P
26	CONTAMINATED MAGNESIUM	S01	D001	D003	2,125	P
27	NON–METALLIC MIS–CELLANEOUS SAMPLES	S01	D001	D003	16	P
28	LAB GENERATED WASTE OIL FROM TCLP EXTRACTS	S01	D001 D006 D010	D004 D008	113	P
29	FURNACE SALT, NON–CHLORIDE	S01	D001 D008	D004	1,838	P

XIII. Comments:

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
30	CONTAMINATED SOLVENT, PAINT SHOP	S01	D001 D007 D009 D011 F002 F005	D005 D008 D010 D019 F003	479	P
31	PAINT, GRAY EPOXY	S01	D001	D006	287	P
32	USED OIL	S01	D001 D008 D039 F002	D006 D009 F001	437	P
33	CONTAMINATED ORGANIC CHEMICAL OR SOLVENT	S01	D001 D008 F002	D006 F001	413	P
34	1,1,1-TRICHLOROETHANE	S01	D001 F001	D006 F002	23	P
35	SOLVENT SLUDGE	S01	D001	D007	428	P
36	IMPURE THORIUM NITRATE (SOLID)	S01	D001 D008	D007	1,845	P

XIII. Comments:

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37	IMPURE THORIUM NITRATE (SOLID)	S01	D001 D008	D007	4,405	P
38	FLAMMABLE AEROSOLS	S01	D001 D008 D019 D039	D007 D018 D035	25	P
39	PAINT WASTE FROM PAINTING BOOTH	S01	D001 D008 F003	D007 F002 F005	1,260	P
40	NONRECOVERABLE TRASH	S01	D001 F003	D007	337	P
41	OIL AND FUEL FROM GARAGE	S01	D001	D008	784	P
42	USED PAINT THINNER	S01	D001 D009 F003	D008 D035 F005	960	P
43	GASOLINE	S01	D001 D018	D008	2,388	P
44	WATER/GAS MIXTURE (TANK 8)	S01	D001 D018	D008	4,420	P

XIII. Comments:

Ohio Environmental Protection Agency
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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
45	CONTAMINATED SUMP WATER	S01	D001 D018 D039 F002	D008 D019 D040 F003	13,258	P
46	CONTAMINATED SUMP WATER AND HYDRAULIC OIL	S01	D001 D019 D040 F003	D008 D039 F002 F005	1,478	P
47	SOLVENT SLUDGES (1,1,1-TRICHLOROETHANE, PERCHLOROETHYLENE)	S01	D001 D035	D008 F005	292	P
48	USED OIL, MAINTENANCE	S01	D001 F001	D008	231	P
49	USED AGITENE	S01	D001 F001	D008 F002	814	P
50	CONTAMINATED WATER NON-CHLORIDE	S01	D001 F003	D008 F005	124	P
51	OILY SLUDGE FOR OXIDATION	S01	D001	D010	194	P
52	OILY SLUDGE FOR OXIDATION	S01	D001	D010	336	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
53	SPENT FUELS	S01	D001	D018	820	P
54	WATER AND GAS MIXTURE, TANK #9	S01	D001	D018	8,680	P
55	PAINT BITUMASTIC 300M A & B COLD TAR COATING	S01	D001 D026	D018	73	P
56	BENZENE (LABPACKED)	S01	D001 U019	D018	6	P
57	DEGREASING SOLVENT	S01	D001 D022 D029 D039 F001 F005	D019 D028 D035 D040 F003	125,181	P
58	CONTAMINATED TBP-KEROSENE	S01	D001 D022 F002	D019 D039 F003	32	P
59	OILY SLUDGES	S01	D001 D039 F001 F005	D019 D040 F003	34,232	P

XIII. Comments:

Ohio Environmental Protection Agency
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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
60	EPOXY PRIME COAT	S01	D001	D035	163	P
61	UNUSED PAINT THINNER	S01	D001	D035	484	P
62	CONTAMINATED METHYL ETHYL KETONE	S01	D001 F005	D035	249	P
63	OILY OXIDATION SLUDGES WITH HIGH FREE METAL	S01	D001 F001	D039	5,705	P
64	U CONTAMINATED SOLVENT – (1,1,1–TRICHLOROETHANE, PERCHLOROETHYLENE)	S01	D001 F003	D039 F005	5,603	P
65	1,1,1–TRICHLOROETHANE STILL BOTTOMS	S01	D001	F001	17,142	P
66	DRUM CONTAINING 1,1,1–TRICHLOROETHANE	S01	D001	F001	245	P
67	OILY SLUDGE FOR OXIDATION	S01	D001	F001	198	P
68	OILY SLUDGE FOR OXIDATION HIGH FREE METAL	S01	D001 F002	F001	6,538	P

XIII. Comments:

Ohio Environmental Protection Agency

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FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
69	PAINT	S01	D001 F002	F001	450	P
70	PAINT THINNERS AND PAINT RESIDUES	S01	D001 F003	F002 F005	316	P
71	WET CAKE, NON-OILY/HALIDE	S01	D001 F003	F002 F005	124	P
72	CONTAMINATED SOLVENTS (METHANOL)	S01	D001	F003	181	P
73	CONTAMINATED WATER	S01	D001	F003	24	P
74	METHANOL	S01	D001	F003	319	P
75	METHANOL & CYCLOHEXANE	S01	D001	F003	248	P
76	METHANOL & CYCLOHEXANE MIXTURE	S01	D001	F003	6,151	P
77	SPENT ACETONE	S01	D001	F003	1,817	P
78	XYLENE	S01	D001	F003	729	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
79	NON-RECOVERABLE TRASH	S01	D001 F005	F003	132	P
80	CONTAMINATED WATER, PIT 2	S01	D002		876	P
81	DISCARD PROCESS RESIDUES	S01	D002		851	P
82	LAB GENERATED WASTE, TCLP EXTRACTS	S01	D002		341	P
83	U CONTAMINATED SOIL, ROCKS, ETC.	S01	D002 D007 D011	D004 D008	503	P
84	URANYL NITRATE SOLUTION IN TANKS	S02	D002 D007	D005	2,286,349	P
85	THORIUM TRAILER CAKES WASTE SLURRIES	S01	D002 D009	D005	402	P
86	NITRIC ACID	T34	D002	D007	319	P
87	WET SUMP OR FILTER CAKE OIL CONTAMINATED	S01	D002	D007	596	P

XIII. Comments:
Line 86: T34 is for dilution and recovery for use in chemical cleaning.

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
88	THORIUM NITRATE SOLUTION	S01	D002 D008	D007	5,022	P
89	LAB GENERATED WASTE ACID DIGESTATES	S01	D002 D008 D028 F001	D007 D019 D039 F002	2,878	P
90	NESSLER REAGENT, COD SOLUTION, ROCHELLE SALT	S01	D002 D009	D007 D011	10	P
91	LEAD ACID BATTERIES (BROKEN)	S01	D002	D008	7,433	P
92	METALS EXTRACTS AND DIGESTS	S01	D002 D009 F001 F005	D008 D010 F002	4,443	P
93	CAUSTIC SOLUTION FROM PLANT 8 PROCESSING	S01	D002	D019	643	P
94	CTC CORROSIVE WASTE	S01	D002 F002	F001 F005	437	P

XIII. Comments:

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
95	HYDROFLUORIC ACID	S02	D002	U134	36,736	P
96	MAGNESIUM FLAKE AND OILY RAGS	S01	D003		165	P
97	URANIUM HEXAFLUORIDE AND URANIUM TETRAFLUORIDE	S01	D003		16	P
98	CONTAMINATED INSOLUBLE OIL	S01	D003 D009 D040 F002 F005	D008 D039 F001 F003	375	P
99	SCRAP U3O8 HIGH F	S01	D004		242,466	P
100	SOLIDIFIED FURNACE SALTS, NON-CHLORIDE	S01	D004		246,357	P
101	U3O8 FOR REOXIDATION	S01	D004		7,841	P
102	BORING # 1511	S01	D004 D006	D005 D007	670	P

XIII. Comments:

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Ohio Environmental Protection Agency

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XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
103	BORING # 1514	S01	D004 D006 D008	D005 D007	670	P
104	BORING #1515, FROM THE FIRE TRAINING GROUNDS	S01	D004 D006 D008	D005 D007	570	P
105	LIQUID AND SOLID WASTE SAMPLES	S01	D004 D006 D008 D018	D005 D007 D010 F002	25	P
106	BORING # 1512	S01	D004 D006 D008	D005 D007 D011	728	P
107	SOLIDS CONTAMINATED BY LAB SAMPLES AND MATERIALS	S01	D004 D006 D008 F002	D005 D007 D022 F003	901	P
108	CONTAMINATED SOIL, ROCKS, BRICKS AND CERAMICS	S01	D004 D007 D010	D005 D008 D011	6,314	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information
IX. Generator's EPA I.D. No. OH6890008976
X. Generator Name USDOE FERNALD ENV. MGT. PROJECT
XI. Generator Address
Street: 7400 Willey Road
City: Fernald
State: Ohio
Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
109	BORING # 1509	S01	D004 D007	D006 D008	1,522	P
110	SCRAP SALTS, HIGH FLUORIDE	S01	D004 D008	D007 D010	4,153	P
111	DUST COLLECTOR RESIDUES, PYROPHORIC	S01	D004	D008	138	P
112	DUST COLLECTOR RESIDUES, HIGH FLUORIDE	S01	D004	D008	588	P
113	ROASTED MgF2, OTHER MATERIAL	S01	D004	D008	5,174	P
114	SCRAP SALTS AND FLOOR SWEEPINGS, LOW FLUORIDE	S01	D004	D008	507	P
115	CONTACT WASTE (LAB)	S01	D004 D010	D008	1,137	P
116	CONTAMINATED BRICKS, SOIL, ROCKS, SAND, ETC.	S01	D004 D011	D008	1,026	P
117	DUST COLLECTOR RESIDUES, HIGH FLUORIDE	S01	D004	D011	539	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

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XI. Generator Address
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XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
118	FURNACE SALT, CHLORIDE	S01	D004	D011	6,486	P
119	SALT SLUDGE FOR PLANT 8	S01	D004 D039	D019 F002	1,325	P
120	BARIUM CARBONATE	S01	D005		4,121	P
121	CONTAMINATED BURNABLES	S01	D005		113	P
122	CONTAMINATED SOIL AND ROCKS	S01	D005		76,387	P
123	SALT SLUDGE, CHLORIDE	S01	D005		713	P
124	SAMPLES, NON-METALLIC	S01	D005		185	P
125	SCRAP ThO2 - HIGH F	S01	D005		128	P
126	WET SUMP OR FILTER CAKE NON-OILY, NON-HALIDE	S01	D005		542	P
127	BORING # 1513	S01	D005 D007	D006 D008	1,254	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

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IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

Street: 7400 Willey Road

City: Fernald

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XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
128	CONTAMINATED SOIL AND ROCKS	S01	D005 D007 D009	D006 D008	1,854	P
129	USED OIL FROM GEAR BOXES LATHES AND MOTORS	S01	D005 D008	D006 F001	322	P
130	SUMP CAKE	S01	D005	D007	14,423	P
131	SCRAP SALTS	S01	D005	D008	16,494	P
132	SOLIDIFIED FURNACE SALT	S01	D005	D008	2,651	P
133	OILY SEMI-SOLID	S01	D005 F001	D008 F002	1,033	P
134	CONTAMINATED RAGS, PAPER	S01	D005	F001	294	P
135	CADMIUM SPRINGS	S01	D006		58	P
136	NI-CD BATTERIES	S01	D006		309	P
137	NONRECOVERABLE TRASH	S01	D006	D007	656	P
138	BORING # 1508	S01	D006 D008	D007	652	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

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Generator Information

IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

Street: 7400 Willey Road

City: Fernald

State: Ohio

Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
139	PROCESS RESIDUES, TRAILER CAKES, SLURRIES	S01	D006 D008 D040 F005	D007 D018 F002	172	P
140	CONTAMINATED INSOLUBLE OIL	S01	D006 D008 D029 F001	D007 D019 D040	3,056	P
141	DUST COLLECTOR RESIDUES, HIGH FLUORIDE	S01	D006	D008	6	P
142	DUST COLLECTOR RESIDUES, HIGH FLUORIDE	S01	D006	D008	1,213	P
143	PROCESS RESIDUES, TRAILER CAKES, SLURRIES	S01	D006	D008	118	P
144	MERCURY THERMOMETER SPILL CLEANUP	S01	D006 D009	D008	721	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information

IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

Street: 7400 Willey Road

City: Fernald

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Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
145	CONTAMINATED INSOLUBLE OIL	S01	D006 D018 D028 D039 F002	D008 D019 D029 D040 F005	634	P
146	CONTAMINATED INSOLUBLE OIL	S01	D007		370	P
147	DUST COLLECTOR BAGS	S01	D007		418	P
148	DUST COLLECTOR BAGS	S01	D007		26	P
149	DUST COLLECTOR RESIDUES, HIGH FLUORIDE	S01	D007		1,231	P
150	NON-METALLIC MISCEL-LANEOUS SAMPLES	S01	D007		78	P
151	NON-OILY SLUDGE FOR ROASTIING	S01	D007		445	P
152	ROASTED OFF-SITE SUMP CAKE	S01	D007		32,917	P
153	SALT SLUDGE, CHLORIDE	S01	D007		10,570	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

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Generator Information
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X. Generator Name USDOE FERNALD ENV. MGT. PROJECT
XI. Generator Address
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XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
154	SALT SLUDGE, CHLORIDE	S01	D007		20,041	P
155	SCRAP SALTS AND FLOOR SWEEPINGS, LOW FLUORIDE	S01	D007		6,305	P
156	SLUDGES FOR BLENDING	S01	D007		457	P
157	OIL DRY CONTAMINATED WITH OIL FROM BALER	S01	D007	D008	1,950	P
158	SCRAP SALTS AND FLOOR SWEEPINGS, HIGH FLUORIDE	S01	D007	D008	2,233	P
159	LAB CONTACT WASTE	S01	D007 D009 F001 F005	D008 D039 F002	68	P
160	OIL UNKNOWN GENERATION	S01	D007 D009	D008 F002	3,335	P
161	FURNACE SALT, NON-CHLORIDE	S01	D007 D010	D008	24,102	P
162	LIQUID SOLVENT WASTE	S01	D007 D010	D008 F005	373	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information

IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

Street: 7400 Willey Road

City: Fernald

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Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
163	LINERS, GLOVES AND OILY RAGS	S01	D007	D010	170	P
164	SOLVENT SLUDGE, (1,1,1-TRICHLOROETHANE, PERCHLOROETHYLENE)	S01	D007	D011	79	P
165	CONTAMINATED SOLVENT (1,1,1-TRICHLOROETHANE, PERCHLOROETHYLENE)	S01	D007 D019 D029 D040	D018 D021 D039 F001	7,663	P
166	SOLVENT WASTE	S01	D007 D040 F002	D039 F001	1,118	P
167	OILY SLUDGES	S01	D007	F001	947	P
168	U3O8, LOW FLUORIDE	S01	D007 F002	F001	1,411	P
169	CONTAMINATED BURNABLE	S01	D007	F002	1,169	P
170	GROUNDWATER FROM WELL #2649	S01	D007	F002	1,657	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information

IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

Street: 7400 Willey Road

City: Fernald

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Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
171	CONTAMINATED NON-BURNABLES	S01	D008		601	P
172	CONTAMINATED NON-BURNABLES	S01	D008		15,081	P
173	CONTAMINATED SOIL, ROCKS BRICKS AND CERAMICS	S01	D008		5,265	P
174	CONTAMINATED SOIL, ROCKS BRICKS AND CERAMICS	S01	D008		78,584	P
175	DUST COLLECTOR BAGS	S01	D008		110	P
176	DUST COLLECTOR RESIDUES HIGH FLUORIDE	S01	D008		192	P
177	GRIT BLAST	S01	D008		626,904	P
178	LEAD	S01	D008		168	P
179	LEAD AND WOOD SHAVINGS,	S01	D008		19	P
180	LEAD BRICKS	S01	D008		741	P
181	LEAD SOLDER JOINTS	S01	D008		15,196	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

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Generator Information
IX. Generator's EPA I.D. No. OH6890008976
X. Generator Name USDOE FERNALD ENV. MGT. PROJECT
XI. Generator Address
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XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
182	LEAD/LEAD SEALS	S01	D008		22,818	P
183	LUBRICATING OIL	S01	D008		697	P
184	MISCELLANEOUS LEAD TOOLS, PIPING	S01	D008		974	P
185	NON-RECOVERABLE TRASH	S01	D008		428	P
186	OILY RAGS, PADS, GLOVES	S01	D008		266	P
187	PAINT CHIPS FROM SAND FILTERS AT WATER PLANT	S01	D008		928	P
188	DISCARD PROCESS RESIDUES	S01	D008		845	P
189	SCRAP SALTS AND FLOOR SWEEPINGS, HIGH FLUORIDE	S01	D008		16,878	P
190	THORIUM OXIDE POWDER REFINERY FEED	S01	D008		68	P
191	OILY RAGS	S01	D008 D010	D009	55	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information

IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

Street: 7400 Willey Road

City: Fernald

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Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
192	CONTAMINATED INSOLUBLE OIL	S01	D008 D039	D009 F001	269	P
193	NON-RECOVERABLE TRASH ABSORBANT PADS	S01	D008 F001	D009	42	P
194	CONTAMINATED METALLIC FILTER ELEMENTS	S01	D008	D010	2,848	P
195	FURNACE SALT, NON-CHLORIDE	S01	D008	D010	4,486	P
196	TRASH, PADS, RAGS, WATER	S01	D008	D010	768	P
197	CONTAMINATED BURNABLES, RAGS, FILTER, CLOTH	S01	D008 F001	D011	869	P
198	WATER/GAS MIXTURE TANK NO. 10	S01	D008	D018	2,015	P
199	CONTAMINATED INSOLUBLE OIL, GEAR OIL	S01	D008 D019 D029 D040	D018 D028 D039 F002	2,781	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information
IX. Generator's EPA I.D. No. OH6890008976
X. Generator Name USDOE FERNALD ENV. MGT. PROJECT
XI. Generator Address
Street: 7400 Willey Road
City: Fernald
State: Ohio
Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
200	SPENT 1,1,1-TRICHLORO-ETHANE	S01	D008 F001	D018 F002	169	P
201	USED OIL	S01	D008 F001	D018 F002	889	P
202	OILY RAGS	S01	D008 F002	D018	129	P
203	OILY RAGS AND ABSORBANTS, WD-40 AND VARIOUS OILS	S01	D008 F002	D018	79	P
204	SLUDGES, OILY	S01	D008 D040	D039 F001	685	P
205	OILY RAGS, PADS AND TRASH	S01	D008 F001	D039	108	P
206	CONTAMINATED INSOLUBLE OIL	S01	D008	F001	1,124	P
207	CONTAMINATED INSOLUBLE OIL	S01	D008	F001	4,148	P
208	NON-RECOVERABLE TRASH	S01	D008	F001	6,703	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

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Generator Information

IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

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XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
209	SLUDGES, OILY	S01	D008	F001	3,252	P
210	NON-OILY SLUDGE FOR ROASTING	S01	D008 F002	F001	732	P
211	ELEMENTAL MERCURY	S01	D009		45	P
212	MERCURY BATTERY	S01	D009		1,470	P
213	MERCURY CONTAMINATED FLOOR TILE AND INSULATION	S01	D009		2,444	P
214	MERCURY BATTARIES AND MERCURY SPILL CLEANUP	S01	D009		62	P
215	MERCURY SPILL CLEAN-UP, SPENT MERCURY BATTERIES	S01	D009		236	P
216	NONRECOVERABLE TRASH	S01	D009		605	P
217	SCRAP SALT, HIGH FLUORIDE	S01	D009		12	P
218	USED MERCURY FROM EQUIPMENT	S01	D009		404	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

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Generator Information
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X. Generator Name USDOE FERNALD ENV. MGT. PROJECT
XI. Generator Address
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XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
219	TCLP LEACHATE	S01	D009 F002	F001	420	P
220	SCRAP SALTS AND FLOOR SWEEPINGS, HIGH FLUORIDE	S01	D010		251	P
221	STEEL SHOT	S01	D010		2,122	P
222	VOLITILE SOLID WASTE	S01	D010		167	P
223	OIL SOAKED RAGS	S01	D010 F002	D018	591	P
224	USED OIL	S01	D010 F002	D018	11,703	P
225	OILY SLUDGE	S01	D010 F001	D035	2,977	P
226	LAB GENERATED WASTE, ORGANIC LIQUID	S01	D010	F002	3,847	P
227	CONCENTRATE FIXER	S01	D011		216	P
228	CONTAMINATED ROCKS, SOIL, WITH NO FREE LIQUIDS	S01	D011		989	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

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X. Generator Name USDOE FERNALD ENV. MGT. PROJECT
XI. Generator Address
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XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
229	OIL CONTAMINATED WET SUMP OR FILTER CAKE	S01	D011		69,866	P
230	SPENT FIXER	S01	D011		1,347	P
231	X-RAY FIXER & DEVELOPER	S01	D011		271	P
232	CONTAMINATED BURNABLES, RAGS, PAPER, POLYETHYLENE	S01	D011 F005	F001	631	P
233	CODED AS OIL	S01	D018		89	P
234	CRANKCASE OIL	S01	D018		2,106	P
235	HYDRAULIC OIL FROM BALER IN DRUM RECONDITIONING	S01	D018		1,089	P
236	KEROSENE, SLUDGE, WATER FROM UST	S01	D018		2,457	P
237	LUBRICATING OILS	S01	D018		4,495	P
238	SPILL CLEANUPS OF OIL AND GAS	S01	D018		5,120	P
239	USED OIL	S01	D018		313	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

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X. Generator Name USDOE FERNALD ENV. MGT. PROJECT
XI. Generator Address
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XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
240	LAB WASTE, TCLP EXTRACT	S01	D018 D035 D039 F002	D021 D038 D040 F005	4,483	P
241	BIODENITRIFICATION SURGE LAGOON SLUDGE	S01	D018	D039	852,680	P
242	OIL CONTAMINATED WITH SOLVENTS (TANK5)	S01	D018	F001	27,458	P
243	TRASH CONTAMINATED WITH SOLVENT	S01	D018	F001	219	P
244	1,1,1-TRICHLOROETHANE (CLEANING SOLVENT)	S01	D018 F002	F001	227	P
245	SPENT SOLVENTS	S01	D018 F002	F001	238	P
246	USED OIL	S01	D018	F002	2,583	P
247	CONTAMINATED SOLVENT, 1,1,1-TRICHLOROETHANE PERCLHOROETHYLENE	S01	D019 D028 D039 F005	D022 D029 F001	376	P

XIII. Comments:

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Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information

IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
248	CONTAMINATED TBP AND/OR KEROSENE MIXTURES	S01	D019 D039	D022 F002	111	P
249	CONTAMINATED INSLOUBLE OIL	S01	D019 D039 F001	D029 D040	5,808	P
250	FLOOR SUMP CLEANOUT SLUDGE	S01	D019 F001	D039 F002	1,393	P
251	NON-OILY CLEANOUT SLUDGES FOR ROASTING	S01	D019	F001	4,105	P
252	NON-RECOVERABLE TRASH	S01	D019	F002	1,002	P
253	CARBON TETRACHLORIDE (LABPACKED)	S01	D019	U211	43	P
254	PROCESS RESIDUES	S01	D029		798	P
255	CONTAMINATED BURNABLES	S01	D029 D040	D039 F001	5,873	P
256	OILY SLUDGES	S01	D029 D040	D039 F001	171,073	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
257	FLOOR SUMP CLEANOUT SLUDGE	S01	D029 F001	D039	1,308	P
258	CONTAMINATED INSOLUBLE OIL	S01	D029 F002	D039	413	P
259	U3O8, LOW FLUORIDE	S01	D039		990	P
260	U-CONTAMINATED WATER	S01	D039		5,817	P
261	CONTAMINATED INSOLUBLE OIL	S01	D039 F001	D040	2,743	P
262	CONTAMINATED INSOLUBLE OIL	S01	D039 F001	D040	5,511	P
263	WET SUMP OR FILTER CAKE, OIL CONTAMINATED	S01	D039 F002	D040	23,372	P
264	NON-OILY CLEANOUT SLUDGES FOR ROASTING	S01	D039	F002	8,741	P
265	PROCESS RESIDUES, TRAILER CAKES, SLURRIES	S01	D039	F002	1,001	P
266	SOLVENT SEMISOLD	S01	D039	F002	88	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information
IX. Generator's EPA I.D. No. OH6890008976
X. Generator Name USDOE FERNALD ENV. MGT. PROJECT
XI. Generator Address
Street: 7400 Willey Road
City: Fernald
State: Ohio
Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
267	WET SUMP OR FILTER CAKE NON-OILY, NON-HALIDE	S01	D039	F002	7,116	P
268	WET SUMP OR FILTER CAKE NON-OILY, NON-HALIDE	S01	D039	F002	1,305	P
269	OIL FROM TCLP EXTRACTS	S01	D040 F002	F001 F005	71	P
270	SPILL CLEANOUT MATERIAL	S01	F001		13	P
271	BORING #1594	S01	F001		475	P
272	BORING #1251	S01	F001		911	P
273	BORING #1261	S01	F001		550	P
274	BORING # 1674	S01	F001		340	P
275	PUMP OIL AND RAGS	S01	F001		39	P
276	CONTAMINATED BURNABLES	S01	F001		406	P
277	CONTAMINATED INSOLUBLE OIL	S01	F001		610	P

XIII. Comments:

Ohio Environmental Protection Agency
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For the calendar year ending December 31, 1993

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
278	COPPER CONTAMINATED SUMP CAKE, LOW U	S01	F001		1,155	P
279	INCINERATOR CINDERS	S01	F001		146,124	P
280	ROASTED CALCIUM PRECIPITATED SUMP CAKE	S01	F001		3,275	P
281	ROASTED CALCIUM PRECIPITATED SUMP CAKE	S01	F001		46,403	P
282	SCRAP SALTS AND FLOOR SWEEPINGS, LOW FLUORIDE	S01	F001		853	P
283	SCRAP SALTS, LOW FLUORIDE	S01	F001		476	P
284	SCRAP U3O8, LOW FLUORIDE	S01	F001		13,549	P
285	SPILL CLEAN-UP MATERIALS	S01	F001		144	P
286	U3O8 ROTEXED PLANT 8 FURNACE PRODUCT	S01	F001		166,372	P
287	CONTAMINATED GRAPHITE	S01	F001	F002	910	P

XIII. Comments:

Ohio Environmental Protection Agency

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For the calendar year ending December 31, 1993

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
288	FILTER MATERIAL, SAND, GRAVEL, FLYASH	S01	F001	F002	410,382	P
289	GRASS ON THE SOIL	S01	F001	F002	42	P
290	SPILL CLEANUP FROM RCRA STORAGE PAD	S01	F001	F002	189	P
291	OILY RAGS	S01	F001	F002	285	P
292	RAINWATER AND RINSATES FROM DECONTAMINATION	S01	F001	F002	66,248	P
293	SOIL	S01	F001	F002	3,330	P
294	U3O8 FROM BOX FURNACE	S01	F001	F002	89,675	P
295	CONTAMINATED PROTECTIVE CLOTHING	S01	F001 F005	F002	154	P
296	LAB GENEREATED WASTE, CONTACT SOLID WASTE	S01	F001 F005	F002	1,367	P
297	BORING #1412	S01	F002		517	P

XIII. Comments:

Ohio Environmental Protection Agency

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
298	CONTAMINATED NON-BURNABLES	S01	F002		2,508	P
299	CONTAMINATED NON-BURNABLES	S01	F002		31	P
300	GROUNDWATER FROM WELL # 1031	S01	F002		505	P
301	INCINERATOR CINDERS	S01	F002		6,096	P
302	LAB GENERATED WASTE, METHYLENE CHLORIDE	S01	F002		542	P
303	MOP HEADS AND PADS	S01	F002		91	P
304	NON RECOVERABLE TRASH	S01	F002		495	P
305	MERCO DRY AND OILY MERCO DRY	S01	F002		3,430	P
306	OIL CONTAMINATED WET SUMP OR FILTER CAKE	S01	F002		36,117	P
307	OILY RAGS	S01	F002		100	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
308	OILY SLUDGE FOR OXIDATION HIGH FREE METAL	S01	F002		3,527	P
309	SALT SLUDGE,CHLORIDE	S01	F002		1,101	P
310	SCRAP U3O8 – LOW F	S01	F002		123	P
311	SCRAP U3O8 OR THO2 HIGH FLUORIDE	S01	F002		30,058	P
312	SPENT METHYLENE CHLORIDE	S01	F002		55	P
313	SOLVENT RAGS	S01	F002		54	P
314	PAINT THINNER RAGS	S01	F002 F005	F003	169	P
315	NON–RECOVERABLE TRASH	S01	F002	F005	449	P
316	PROCESS RESIDUES, TRAILER CAKES, SLURRIES	S01	F005		19	P
317	HF TANK CLEANOUT MATERIAL	S01	U134		9,593	P

XIII. Comments:

Ohio Environmental Protection Agency

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
318	MERCURY SPILL CLEANUP RESIDUE	S01	U151		382	P
319	CONTAMINATED KEROSENE	S01	D001	D018	30,700	P
320	CONTAMINATED WATER	S01	D001		283	P
321	CONTAMINATED SOIL	S01	F001	F002	423	P
322	CONCRETE, CERAMICS, SOIL	S01	D004 D008 D011	D006 D010	2,200	P
323	CONTAMINAED OIL	S01	D001	D008	1,042	P
324	MIX PAINT	S01	D001 F002	D035 F003	529	P
325	BABBITT HAMMER, LEAD BRICKS & LEAD WINDOW SASHINGS	S01	D008		572	P
326	CONTAMINATED LIQUID	S01	D001	D009	749	P
327	MERCURY CONTAMINATED WATER	S01	D007 D009	D008	72	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

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XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
328	CONTAMINATED LIQUID	S01	D001	D008	429	P
329	OILY SLUDGES	S01	D005 D007 D009	D006 D008	1,224	P
330	DISCARDED PROCESS RESIDUES, SLURRIES, ECT.,	S01	D010		3,033	P
331	NON-OILY SLUDGES, FOR ROASTING	S01	D039		5,488	P
332	DRAW TEMP 275	S01	D001		203	P
333	TRASH GENERATED FROM SAMPLING IN BLDG. 79	S01	F001 F003	F002 F005	440	P
334	TRASH	S01	D009		259	P
335	NON RECOVERABLE TRASH	S01	D008		345	P
336	CONTAMINATED LIQUID	S01	D001 D008	D007 D010	426	P
337	NON-BURNABLE METAL WITH U CONTENT	S01	D004 D008	D006	6,883	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
338	OIL	S01	D039		1758	P
339	NON-OILY CLEANOUT SLUDGE	S01	D007	D008	1853	P
340	DIRT, ROCKS AND WOOD WITH LIQUID	S01	D001		244	P
341	CONCRETE, ABANDONED PILOT PLANT SUMP	S01	F002	F003	2568	P

XIII. Comments:

As discussed with the Ohio EPA in the past, there are a number of waste streams onsite that are not fully characterized.The following wastes are part of that population. They are included in the Materials Control and Accounability Department Hazardous Waste Inventory, however, their characterization status is listed as pending by the Waste Characterization Department. The EPA waste codes should therefore be considered preliminary.

319	CONTAMINATED INSOLUBLE OIL	S01	D008	F002	737	P
320	BORING #1148	S01	U228		399	P
321	BORING # 1193	S01	U220		1,515	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
322	BORING # 1260	S01	F002		250	P
323	BORING # 1283	S01	F002		618	P
324	BORING # 1287	S01	F002		326	P
325	BORING # 1294	S01	F002		645	P
326	BORING # 1307	S01	F002		384	P
327	BORING # 1308	S01	U228		1,280	P
328	BORING # 1317	S01	U080		938	P
329	BORING # 1324	S01 S01	F002		1,309	P P
330	BORING # 1327	S01	U044		873	P
331	BORING # 1345	S01	U044		784	P
332	BORING # 1346	S01	U228		1,010	P
333	BORING # 1363	S01	F002		966	P
334	BORING # 1411	S01	U228		903	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
335	CONTAMINATED INSOLUBLE OIL	S01	D010 F003	F002	6,495	P
336	BORING # 1149	S01	F001		1,578	P
337	CONTAMINATED SOLVENTS	S01	F001		401	P
338	COBALT TRIFLUORIDE	S01	D001	D003	3	P
339	AEROSOL PAINT	S01	D001		132	P
340	HYDRAULIC OIL	S01	D018		242	P
341	OIL DRY CONTAMINATED WITH OIL	S01	D018		1,439	P
342	BARIUM	S01	D005		515	P
343	CONTAMINATED INSOLUBLE OIL	S01	D008	D018	2,487	P
344	OILY SLUDGE	S01	F001		1,205	P
345	NONRECOVERABLE TRASH	S01	D008 F002	D018	1,222	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
346	SOLIDIFIED LAB WASTE	S01	F001 F005	F002	102,598	P
347	CLEARWELL TREATABILITY STUDY WASTE	S01	F001	F002	53	P
348	PIT 5 TREATABILITY STUDY WASTE	S01	D004 F001	D005 F002	28	P
349	ENGINEERED WASTE MANAGE MENT FACILITY STUDY	S01	F001 F005	F002	1,769	P
350	PAPER, PLASTIC AND GLASS	S01	F001	F002	1,608	P
351	NONRECOVERABLE TRASH	S01	D008 F001	D018 F002	505	P
352	NONRECOVERABLE TRASH	S01	D005 F001 F003	D008 F002	1,400	P
353	NONRECOVERABLE TRASH	S01	D008	F002	128	P
354	NONRECOVERABLE TRASH	S01	D008 F002	D018	132	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
355	NONRECOVERABLE TRASH	S01	F001		176	P
356	NONRECOVERABLE TRASH	S01	F002		164	P
357	NONRECOVERABLE TRASH	S01	D002 D007 D018 U210	D005 D008 F002	18,578	P
358	NONRECOVERABLE TRASH	S01	D001		967	P
359	NONRECOVERABLE TRASH	S01	D002 D006 D008 F002	D005 D007 D022 F003	220	P
360	NONRECOVERABLE TRASH	S01	D005 F002	D008	140	P
361	NONRECOVERABLE TRASH	S01	D010 F001	D018 F002	1,265	P
362	NONRECOVERABLE TRASH	S01	D010 F002	F001 F005	1,441	P

XIII. Comments:

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
363	NONRECOVERABLE TRASH	S01	D010 F002	F001 F005	4,722	P
364	NONRECOVERABLE TRASH	S01	D002 D008 F001 U159	D005 D018 F002	13,140	P
365	NONRECOVERABLE TRASH	S01	D001		836	P
366	NONRECOVERABLE TRASH	S01	D008	F002	636	P
367	NONRECOVERABLE TRASH	S01	D008	F002	1,001	P
368	NONRECOVERABLE TRASH	S01	D008	F002	535	P
369	CONTAMINATED OIL, SOLUBLE	S01	D001 F002	F001 F003	272	P
370	CONTAMINATED WATER	S01	D007		806	P
371	CONTAMINATED SOIL, ROCKS, ETC.	S01	F001		13,934	P
372	BARIUM CHLORIDE, CHROMIUM RESIDUES	S01	D007		30,325	P

XIII. Comments:

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
373	CONTAMINATED WATER	S01	D010 F005	F002	979	P
374	GROUNDWATER FROM WELL # 1149	S01	F001		217	P
375	CONTAMINATED SOLVENT	S01	D001	F001	931	P
376	CONTAMINATED SOLVENT	S01	D001	F001	312	P
377	CONTAMINATED SOLVENT	S01	F002		545	P
378	CONTAMINATED SOLVENT	S01	D001	F001	264	P
379	CONTAMINATED SOLVENT	S01	D001	F001	438	P
380	CONTAMINATED SOLVENT	S01	F002		933	P
381	CONTAMINATED SOLVENT	S01	F001	F002	6,335	P
382	CONTAMINATED SOLVENT	S01	D001	F001	336	P
383	CONTAMINATED SOLVENT	S01	D001	F001	43	P

XIII. Comments:

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384	CONTAMINATED SOLVENT	S01	D001 D018 D035	D008 D028	5,230	P
385	CONTAMINATED SOLVENT	S01	D001 F002	F001 F003	10,144	P
386	ROOFING TAR, NO LIQUIDS	S01	D001 F003	F002 F005	24,288	P
387	CONTAMINATED SOLVENT	S01	D001	F002	3,910	P
388	CONTAMINATED SOLVENT	S01	D001	F001	419	P
389	CONTAMINATED SOLVENT	S01	D001		317	P
390	CONTAMINATED INSOLUBLE OIL	S01	D008	F002	2,538	P
391	CONTAMINATED INSOLUBLE OIL	S01	D008	F002	1,841	P
392	CONTAMINATED INSOLUBLE OIL	S01	F002		402	P

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393	CONTAMINATED INSOLUBLE OIL	S01	D008	F002	112	P
394	CONTAMINATED INSOLUBLE OIL	S01	F002		341	P
395	CONTAMINATED INSOLUBLE OIL	S01	F002		16,238	P
396	CONTAMINATED INSOLUBLE OIL	S01	D008	F002	1,283	P
397	CONTAMINATED INSOLUBLE OIL	S01	D008	F002	214	P
398	CONTAMINATED INSOLUBLE OIL	S01	F002		894	P
399	CONTAMINATED INSOLUBLE OIL	S01	F002		812	P
400	CONTAMINATED INSOLUBLE OIL	S01	D010	F002	5	P
401	CONTAMINATED INSOLUBLE OIL	S01	D008	F002	9,214	P

XIII. Comments:

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402	CONTAMINATED INSOLUBLE OIL	S01	D008 F002	D018	1,264	P
403	CONTAMINATED INSOLUBLE OIL	S01	D008	F002	12,040	P
404	CONTAMINATED INSOLUBLE OIL	S01	D008	F002	17,148	P
405	CONTAMINATED INSOLUBLE OIL	S01	D008	F002	326	P
406	CONTAMINATED INSOLUBLE OIL	S01	D008	F002	4,371	P
407	CONTAMINATED ALUMINA-SODA LIME	S01	D005		22,489	P
408	MERCO-DRI AND HILCO CAKE	S01	D001		447	P
409	OIL ABSORBANT	S01	D008	F002	1,504	P
410	MERCO-DRI AND HILCO CAKE	S01	D001	D018	10,804	P
411	MERCO-DRI AND HILCO CAKE	S01	D008 F003	F002	4,380	P

XIII. Comments:

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LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
412	TRIBUTYL PHOSPHATE, KEROSENE	S01	D001 D007	D002 D008	2,771	P
413	TRIBUTYL PHOSPHATE, KEROSENE	S01	D001 D007	D002	3,445	P
414	TRIBUTYL PHOSPHATE, KEROSENE	S01	D001 D007	D002	1,430	P
415	CONTAMINATED BURNABLES	S01	D001 F002	F001 F003	77	P
416	CONTAMINATED BURNABLES	S01	D005 F002	D008	327	P
417	CONTAMINATED BURNABLES	S01	U210		124	P
418	CONTAMINATED BURNABLES	S01	F002		155	P
419	CONTAMINATED BURNABLES	S01	F002		120	P
420	CONTAMINATED BURNABLES	S01	D008	F002	95	P
421	CONTAMINATED BURNABLES	S01	F002	F003	209	P
422	CONTAMINATED BURNABLES	S01	D008		4,870	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information
IX. Generator's EPA I.D. No. OH6890008976
X. Generator Name USDOE FERNALD ENV. MGT. PROJECT
XI. Generator Address
Street: 7400 Willey Road
City: Fernald
State: Ohio
Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
423	CONTAMINATED NONBURNABLES	S01	D008		67	P
424	NONRECOVERABLE TRASH	S01	F002		374	P
425	OILY SEMISOLIDS	S01	F002		388	P
426	OILY SEMISOLIDS	S01	F002		80	P
427	OILY SEMISOLIDS	S01	F002		444	P
428	OILY SEMISOLIDS	S01	D010	F002	12	P
429	OILY SEMISOLIDS	S01	D010	F002	3,046	P
430	OILY SEMISOLIDS	S01	D008	F002	1,022	P
431	OILY SEMISOLIDS	S01	D008 F002	F001 F003	531	P
432	NONOILY SEMISOLIDS	S01	F002		3,146	P
433	SOLVENT SEMISOLID	S01	F001 F003	F002	724	P
434	SOLVENT SEMISOLID	S01	D001	F001	29	P

XIII. Comments:

Ohio Environmental Protection Agency
FACILITY ANNUAL HAZARDOUS WASTE REPORT
For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information
IX. Generator's EPA I.D. No. OH6890008976
X. Generator Name USDOE FERNALD ENV. MGT. PROJECT
XI. Generator Address
Street: 7400 Willey Road
City: Fernald
State: Ohio
Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
435	MERCURY CONTAMINATED MATERIAL	S01	D009		94	P
436	MERCURY CONTAMINATED MATERIAL	S01	D009		34	P
437	FURNACE SALT	S01	D005		664	P
438	FURNACE SALT	S01	D005		832	P
439	FURNACE SALT	S01	D004 D008	D006 D010	35,848	P
440	WET SUMP OR FILTER CAKE	S01	D008	F002	242	P
441	USED OIL	S01	D008		27,049	P
442	CONTAMINATED BURNABLES	S01	D005		3,820	P
443	OILY SEMISOLID	S01	D008		5,808	P
444	OILY SEMISOLID	S01	D005	D008	7,998	P
445	SALT SEMISOLID, CHLORIDE	S01	D005		5,126	P
446	SOLIDIFIED FURNACE SALT	S01	D005		92,311	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information

IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

Street: 7400 Willey Road

City: Fernald

State: Ohio

Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
447	WET SUMP OR FILTER CAKE, NONOILY, NONHALIDE	S01	D004 D008	D006	67,402	P
448	MISCELLANEOUS MATERIAL	S01	D005		6,323	P
449	OILY SEMISOLID	S01	D029 D040	D039 F001	8,658	P
450	SOLVENT SEMISOLID	S01	D018 F002	F001	1,055	P
451	BURNABLE TRASH	S01	D029 D040	D039 F001	159	P
452	CONTAMINATED BRICKS, ETC.	S01	D008		170	P
453	CONTAMINATED WATER	S01	D007	D039	3,464	P
454	NONRECOVERABLE TRASH	S01	D007	D010	272	P
455	USED OIL, CONTAMINATED WATER	S01	F001		4,682	P
456	OILY RAGS	S01	D018	F002	67	P

XIII. Comments:

Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information

IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

Street: 7400 Willey Road

City: Fernald

State: Ohio

Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
457	SCRAP METAL, METAL SHAVINGS, DICALITE	S01	D008	F002	489	P
458	OILY RAGS, GLOVES	S01	D008 F002	D018	260	P
459	CONTAMINATED WATER	S01	F002 F005	F003	421	P
460	TETRACHLOROETHYLENE	S01	F001	F002	848	P
461	MAGNUSPRAY, SURPLUS CHEMICALS	S01	D002		550	P
462	PAINT THINNER	S01	D001	F002	1,272	P
463	SOLVENT	S01	D001 D003 U056	D002 F001	227	P
464	METHANOL ACETATE	S01	D001	D002	32	P
465	ETHYL ACETATE	S01	D001	D002	41	P

XIII. Comments:

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Ohio Environmental Protection Agency

FACILITY ANNUAL HAZARDOUS WASTE REPORT

For the calendar year ending December 31, 1993

VIII. Facility's EPA I.D. No. OH6890008976

Generator Information

IX. Generator's EPA I.D. No. OH6890008976

X. Generator Name USDOE FERNALD ENV. MGT. PROJECT

XI. Generator Address

Street: 7400 Willey Road

City: Fernald

State: Ohio

Zip Code: 45030

XII. Waste Identification

LINE	A. DESCRIPTION	B. HANDLING METHOD	C. EPA HAZARDOUS WASTE CODE		D. AMOUNT OF WASTE	E. UNITS
466	LAB PACKS	S01	D001 D008 D018	D007 D010 F002	1	P
467	ASBESTOS	S01	D008	F002	73	P

XIII. Comments:

OHIO ENVIRONMENTAL PROTECTION AGENCY
DIRECTOR'S FINDINGS AND ORDERS AND SECTION IV CONSENT DECREE
QUARTERLY TECHNICAL PROGRESS REPORT

October 1, 1994 - December 31, 1994

TABLE C-4

RCRA REGULATED HAZARDOUS WASTE STREAMS

TABLE C-4

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RCRA REGULATED HAZARDOUS WASTE STREAMS

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
12	16	AEROSOL PAINT CANS	D001	PK
46	4	BARIUM CHLORIDE LIQUID HEAT 980	D005	PK
47	4	BARIUM CHLORIDE (LIQUID HEAT 800)	D005	PK
89	9	BORING #1412	F002	PK
119	2	BARIUM CHLORIDE SOLUTION	D005	PK
157	16	WD-40 SPRAY CAN	D001	MSDS
160	16	SPEED E NAMEL SPRAY PAINT	D001	MSDS
162	16	KRYLON CAR COLOR SPRAY PAINT	D001	MSDS
163	16	AEROSOL PAINT	D001	MSDS
177	6	RAGS, GLOVES, PROTECTIVE COVERALLS, DOP, FORMULA 401	U107	MSDS
180	6	RAGS SOLVENT	F002	PK,8
183	99	WATER\GAS MIXTURE TANK #8	D001 D018 D035	1,4,7,8,9
201	1	CRANKCASE OIL	D018	PK,MSDS
344	2	ITEK DEVELOPER (LIQUID)	D011	MSDS
345	1	KEROSENE FROM ABANDONED UNDERGROUND STORAGE TANKS 11 & 13	D001 D018	PK,MSDS,1,3,8,9
358	2	CAUSTIC SOLUTION (NaOH) FROM PLANT 8 RAFFINATE PROCESSING	D002 D019	PK,1,3,5,7,8,9
376	8	OILY RAGS, ABSORBENT PADS	F002	PK,1,3,5,9
379	1	SPENT 1,1,1-TRICHLOROETHANE	D008 D018 F001 F002	PK,MSDS
380	8	ABSORBENT PADS, RAGS AND GLOVES	D039 F002 F003	PK,1,3,5,6,9
381	16	AEROSOL PAINT CANS	D001	MSDS
383	2	X-RAY FIXER & DEVELOPER, CLEAR LIQUID MODERATE ACIDIC	D011	MSDS
385	1	SPENT SOLVENTS	D018 F001 F002	PK,MSDS,7,8
386	1	FLOOR SUMP CLEANOUT SLUDGE	D019 D039 F001 F002	PK,1,3,7,8
387	8	OIL SOAKED RAGS	D010 D018 F002	PK,MSDS
389	7	OILY RAGS FROM WATER TREATMENT AREA	D008 D009 D010	PK,1,3,5,9
390	3	OILY SLUDGES FROM OIL COALESCING SYSTEM: PLT 6 WWTS	D005 D008	PK,1,4,7,8,9
391	16	WASTE AEROSOL PAINT CANS	D001	MSDS
392	20	DRY CELL ELECTRONIC STORAGE BATTERIES	D002 D006 D009	PK
393	1	LUBRICATING OIL FROM REDUCTION REMELT.	D008	1,3,8,9
395	1	PAINT THINNERS AND PAINT RESIDUES	D001 F002 F003 F005	PK
396	6	PAINT THINNER RAGS	F002 F003 F005	PK
398	8	NON-RECOVERABLE TRASH CONTAMINATED ABSORBANT PADS	D008 D009 F001	PK,MSDS,1,3,5,9
399	8	OILY RAGS, PADS AND TRASH FROM BOILER PLANT MACHINERY	D008 D039 F001	PK,1,3,5,9
400	1	USED OIL FROM MAINTENANCE	D001 D008 F001	PK,MSDS,1,4,8,9
403	6	1,1,1,-TRICHLOROETHANE RAGS	D018 F001 F002	PK
404	8	OILY RAGS	D008 D018 F002	PK
405	20	DRY CELL BATTERIES	D002 D009	PK
406	16	AEROSOL CANS	D001	MSDS
408	1	USED OIL FROM GEAR BOXES, LATHES, AND MOTORS	D005 D006 D008 F001	PK,1,3,7,8,9
410	8	OILY RAGS	F001 F002	PK,1,3,5,9
412	1	1,1,1-TRICHLOROETHANE	D001 D006 F001 F002	PK,MSDS,1,3,8,9
413	8	SPENT SOLVENT CONTAMINATED RAGS	D008 D039 F002	PK,1,3,5,9
414	1	USED OIL	D001 D006 D008 D009 D039 F001 F002	PK,1,3,8,9

See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

000000 6521

TABLE C-4

RCRA REGULATED HAZARDOUS WASTE STREAMS

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
415	8	OILY RAGS AND ABSORBENTS WD-40 AND VARIOUS OILS	D008 D018 F002	PK
416	1	CHLOROFORM	D022	PK
418	1	USED ACETONE AND WATER	D001	PK,MSDS
419	1	XYLENE	D001	PK,MSDS
421	1	METHANOL	D001 F003	PK,MSDS
423	17	ELEMENTAL MERCURY	D009	MSDS
425	1	DIGESTION WASTE (ANL-3002: NITRIC AND CYCLOHEXANE)	D001 D004 D005 D006 D007 D008 D010 D011	PK
426	1	METHANOL AND CYCLOHEXANE MIXTURE	D001	PK
427	20	NICKEL-CADMIUM BATTERIES	D002 D006	PK
428	1	ACETONITRILE IN WATER	D001	PK,MSDS
429	20	HG BATTERIES	D002 D009	PK
432	7	MERCURY THERMOMETER SPILL CLEAN-UP MATERIALS FROM LAB	D006 D008 D009	MSDS,PK,4,5,9
433	16	AEROSOL SPRAY CANS PROPELLANT	D001	MSDS
434	8	SOLIDS CONTAMINATED BY LAB SAMPLES & MATERIALS	D004 D005 D006 D007 D008 D022 F002 F003	PK
435	1	PAINT HYPALON COATING	D001	PK,MSDS
436	1	SEALANT POLYCHLOROPENE SOLUTION	D001	MSDS,PK
438	1	HYDRAULIC OIL FROM BALER IN DRUM RECONDITIONING	D018	PK,1,3,4,7,8,9
455	1	UNLABLED DRUM CONTAINING 1,1,1 TRICLOROETHANE.	D001 F001	PK,MSDS,1,3,7,8,9
456	3	SOLVENT WASTES STORED ON PLANT 1 PAD	D007 D039 D040 F001 F002	PK,1,3,4,7,8,9
459	1	PAINT	D001 F001 F002	PK,1,4,8,9
460	8	LIQUID & SOLID WASTE SAMPLES	D004 D005 D006 D007 D008 D010 D018 F002	PK,1,3,7,8,9
468	1	OIL AND SOLVENTS W/ ANALYSIS	D001 D007 D008 D010 D018 F002	PK,1,3,7,8,9
473	6	ANTI-C PAPER COVERALLS & BOOTIES W/ LIME SLURRY	F001 F005	PK
476	13	LAB PACKED WATER AND RESIDUE SAMPLES	D007	PK,2,4
479	1	USED PAINT THINNER	D001 D008 D009 D035 F003 F005	PK,1,3,8,9
480	1	USED OIL	D018 F002	PK,1,3,7,9
485	1	KEROSENE	D001	MSDS,PK,1,3,7,8,9
486	6	TETRACHLOROETHYLENE SPILL CLEANUP	U210	PK
487	2	RAIN WATER FROM UST #8 FORMERLY STORING GASOLINE	D008 D018	PK
507	1	CONTAMINATED SOLVENT GENERATED IN THE PILOT PLANT. (MEK)	D001 D035	PK,MSDS,1,3,7,8,9
508	1	UNUSED PAINT THINNER	D001 D035	PK,1,4,7,8,9
514	1	PAINT WASTE FROM PAINTING BOOTH	D001 D007 D008 F002 F003 F005	PK,1,4,7,8,9
517	6	OIL DRY CONTAMINATED WITH OIL FROM BALER	D007 D008	PK,1,3,4,6,7,8,9
520	1	PETROLEUM PRODUCT WITH RAIN WATER	D018	PK,MSDS
524	1	IGNITIBLE LIQUID, UNKNOWN ORIGIN	D001	1,4,7,8,9
526	9	CONTAMINATED SOIL FROM PIT 5 HWMU AREA	F001 F002	PK,1,4,6,9
533	1	PAINT: GRAY EPOXY	D001 D006	PK,1,3,8,9
534	1	MEK MARKED ON DRUM BLUEDRUM FLAMMABLE	U159	PK,MSDS
538	10	BORING # 1508	F002 F005	PK
547	18	MISCELLANEOUS LEAD TOOLS PIPING, ETC...	D008	PK
548	18	LEAD - COUNTERWEIGHTS, BEARINGS	D008	PK
584	1	KEROSENE (DIESEL FUEL)/SLUDGE/WATER FROM UST #3	D001 D018	PK,MSDS
585	16	ZINC COMPOUND (AEROSOL)	D001	MSDS

See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

TABLE C-4

01/03/95

RCRA REGULATED HAZARDOUS WASTE STREAMS

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
587	1	GREASE AND WATER	D001	1,3,7,8,9
588	3	MERCO DRY AND OILY MERCO DRY	F002	PK,1,2,4,9
627	8	5-GAL CAN W/ SPILL CLEANOUT MATERIAL	F001	5
628	8	SPILL CLEAN-UP MATERIALS	F001	PK
633	1	OIL FROM UNKNOWN GENERATION SOURCE	D007 D008 D009	PK,1,3,4,7,8,9
634	99	BUFFERED KCN SOLUTION (ABOUT 2 LITERS @ 30 G PER LITER)	P098	PK
635	99	MERCURY SPILL CLEAN-UP AND SPENT MERCURY BATTERIES	D009	PK
638	1	USED OIL	D018	PK
644	8	TRASH, PADS, RAGS, WATER	D008 D010	PK,1,3,5,7,8,9
659	99	LEAD AND WOOD SHAVINGS - UNKNOWN ORIGIN	D008	PK
661	10	BORING # 1594 - FROM NORTHWEST CORNER BLDG. 12	F001	PK,2,4,9,12
675	16	NON-EMPTY AEROSOL CANS, BUILDING 11	D001	MSDS
677	16	NON-EMPTY AEROSOL CANS, BUILDING 12	D001	MSDS
696	2	KODAK ROYALPRINT ACTIVATOR	D002	MSDS,PK
697	2	ROYALPRINT STOP BATH	D002	MSDS,PK
700	14	MAGNESIUM FLAKE AND OILY RAGS	D003	PK
720	10	BORING #1261	F001	PK,2,4,9,12
742	3	OILY SLUDGE	D018 D019 D021 D028 D039 D040 D043	PK,1,2,3,4,6,8,9
743	9	CONTAINER OF PUMP OIL AND RAGS	F001	PK
757	10	BROWN PARTICULATE SOLID (DIRT AND RUBBLE)	D004 D007 D008 D010 D011	PK,1,4,9,11
768	1	DAAP/SOLVESSO MIXTURE	D001	PK,1,4,8
769	3	PAINT	D001	MSDS
772	7	RESPIRATOR CANISTER	D007 D011	MSDS
776	10	BORING #1674, LOCATED INSIDE PILOT PLT ON NORTHWEST SIDE OF	F001	PK,2,4,9,12
777	1	USED AGITENE	D001 D008 F001 F002	PK,MSDS,1,4,7,8,9
817	6	PAINT CHIPS FROM SAND FILTERS AT WATER PLANT	D008	PK
818	1	OIL AND WATER FROM DRUM DECON. PAD	D001 D008	PK,1,3,7,8,9
819	10	BORING #1251	F001	PK,2,4,9,11,12
820	20	LEAD ACID BATTERIES	D002 D004 D008	MSDS
826	13	METHYL ISOBUTYL KETONE, LABPACKED	D001 U161	PK
827	13	SODIUM AMIDE, STABILIZED AND LABPACKED	D003	PK
828	13	1,4-DIOXANE, STABILIZED, LABPACKED	D001 U108	PK
844	2	URANYL NITRATE SOLUTION IN TANKS	D002 D005 D007	PK
850	1	PAINT WASTE FROM TANK FARM	D001 D035 F002 F003	PK,1,3,4,7,8,9
854	20	NI CD BATTERIES	D006	MSDS
855	20	MERCURY BATTERY	D009	MSDS
868	3	OILY WASTE AND SOLIDS, POSSIBLY FROM DRUM RECONDITIONING	D039	PK,1,3,4,7,8,9
870	1	VARNISH - UNUSED	D001	MSDS
873	2	SPENT FIXER	D011	MSDS
874	99	LEAD BRICKS, LEAD WINDOW SASHINGS, BABBIT HAMMER	D008	PK
876	7	METAL FRAMES FROM HEPA FILTERS	D006	PK
1058	2	DECANT WATER FROM NPR/AAF PRIMARY SEPARATOR	D001 D009	PK,1,3,7,8,9
1080	7	CADMIUM SPRINGS	D006	4

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See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

TABLE C-4

RCRA REGULATED HAZARDOUS WASTE STREAMS

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
1081	7	CADMIUM SPRINGS	D006	PK
1178	2	GROUNDWATER FROM WELL #2649	D007 F002	PK,2,4,7,9
1182	1	CLEAR DISPERSANT,TYPE (H) PREMIX-BLACK,CYAN,YELLOW & MAGENTA	D001	MSDS
1183	1	CLEAR DISPERSANT, TYPE (H) PREMIX, TYPE (H) CONCENTRATE	D001	MSDS
1184	1	CLEAR DISPERSANT, TYPE (H) PREMIX, TYPE (H) CONCENTRATE	D001	MSDS
1185	2	TYPE 028 FIX; CD-5 DEVELOPER	D011	MSDS
1187	3	SPENT ACTIVATED CARBON, FROM PERCHED WATER PROJECT	D040	PK,MSDS
1199	7	MERCURY CONTAMINATED FLOOR TILE & PIPE INSULATION	D009	PK,MSDS
1229	2	CONTAMINATED SUMP WATER	D001 D008 D018 D019 D039 D040 F002 F003	PK,2,4,7,8,9,11
1251	1	FREON 11	U121	PK,MSDS,5
1271	7	LEAD SOLDER JOINTS	D008	PK
1272	4	MERCURY CONTAMINATED MATERIALS FROM SINK TRAPS IN LAB	D007 D008 D009	PK,1,4,7,8,9,13
1273	2	CONTAMINATED WATER	D007 D008 D009	PK,1,3,7,8,9
1279	2	PLUTONIUM 239 SOLUTION	D002	PK
1281	7	LEAD BRICKS	D008	PK
1297	2	PC 49896 ITEK UNIVERSAL DEVELOPER	D011	MSDS,4
1298	2	ITEK PC 49907 ITEK INSTACOLOR ACTIVATOR	D002 D011	MSDS, 4
1306	10	SPILL CLEAN-UP FROM K-65 AREA.	D001 D008	PK,1,3,5,7,8,9
1337	1	UNSPECIFIED IGNITIBLE LIQUID	D001	1,3,7,8,9
1363	3	OILY SLUDGES FROM WWTS AREA	D005 D006 D007 D008 D009	PK,1,4,5,7,8,9
1380	4	NON OILY SUMP CLEANOUT MATERIAL FROM PLANT 8 OPERATIONS	D007 D008	PK,1,3,4,5,7,8,9
1389	4	SCRAP U308 FROM OXIDATION FURNACE #1	F002	PK,1,4,5,9
1404	11	EXCAVATED SOIL FROM SPILL UNDER BLDG 64 LATHES	D008	PK,MSDS,1,4,5,9
1405	4	CLEANING AND WASH BATH WASTE FROM DECON. PAD	D008	PK,MSDS,1,3,7,8,9
1411	1	CONTAMINATED SOLVENT FROM PAINT SHOP	D001 D005 D007 D008 D009 D010 D011 D019 F002 F003 F005	PK,1,3,6,7,8,9
1412	1	ARCHIVED COVERED BY MEF# 60059	D001 D006 D008 F001 F002	1,3,8,9
1414	1	OIL AND FUEL FROM GARAGE AREA	D001 D008	PK,1,3,8,9
1415	1	CONTAMINATED INSOLUBLE OIL	D001 F001 F002	PK,1,3,7,8,9
1421	8	OILY RAGS, PADS, GLOVES AND PLASTIC WITH GREASE	D008	PK,1,4,6,9
1423	1	CONTAMINATED INSOLUBLE OIL	D008 D009 D039 D040 F001 F002 F003 F005	PK,1,3,7,8,9
1425	8	CONTAMINATED RAGS PAPER POLYETHYLENE FROM RMI	D005 F001	PK,1,4,5,9
1427	8	MOP HEADS AND PADS CONTAMINATED WITH 1,1,1 - TRICHLOROETHANE	F002	PK,1,4,5,9
1428	8	SPILL CLEANUP MATERIAL FROM BLDG 79 RCRA STORAGE PAD	F001 F002	PK
1429	1	CONTAMINATED ORGANIC CHEMICAL SOLVENT	D001 D008 D018 D028 D035	PK,1,3,7,8,9
1430	8	PLASTIC SHEETING, GLOVES, FLOOR SWEEPINGS	D010	PK,1,3,4,5,7,8,9
1432	1	NON CHLORIDE CONTAMINATED SUMP LIQUOR (KEROSENE)	D001	1,3,7,8,9
1438	3	NON-OILY CLEANOUT SLUDGES FOR ROASTING	D039	PK,1,3,4,7,8,9
1447	1	SUMP WASTE FROM PLT 1 PAINTING BOOTH	D001 D008 F003 F005	PK,1,3,7,8,9
1462	2	CONTAMINATED WATER FROM CHEMICAL PIT #2 SURFACE CAP	D002	PK,1,3,7,8,9
1501	7	SPILL CLEANUPS OF OIL AND GAS FROM GASOLINE ENGINES	D018	MSDS
1504	3	FLAMMABLE PAINTS AND PAINT RELATED PRODUCTS	D001	MSDS
1536	2	RAINWATER FROM WASTE PIT AREA	F001 F002	PK
1537	7	FILTER MATERIAL - SAND, GRAVEL, FLYASH	F001 F002	PK

See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

TABLE C-4

01/03/95

RCRA REGULATED HAZARDOUS WASTE STREAMS

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
1544	14	MAGNESIUM	D001 D003	PK
1550	14	URANIUM HEXAFLUORIDE AND URANIUM TETRAFLUORIDE	D003	MSDS
1575	2	URANYL NITRATE (UNH)	D001	PK
1585	20	LEAD ACID BATTERY (BROKEN)	D002 D008	MSDS
1589	4	RAFFINATES - NON-NEUTRALIZED	D001 D002	MSDS
1613	2	123 PROCESSOR CLEANER	D002	MSDS
1617	8	CONTAMINATED PPE, PLASTIC, TRASH (CONTACT WASTE)	F001 F003 F005	PK
1620	3	VEGITATION FROM THE ETF CLOSURE	F001 F002	PK
1621	2	HYDROCHLORIC ACID	D002 D006 D007 D008	PK,4,7
1622	2	NITRIC ACID	D002 D006 D007 D008	4,9
1665	1	ELECTROSTATIC MASTER LIQUID DEVELOPER	D001	MSDS
1667	1	ISOPROPYL ALCOHOL	D001	MSDS
1691	2	HYDROFLUORIC ACID	D002	PK,MSDS
1692	2	NITRIC ACID	D002 D007	PK,MSDS
1694	2	QC WATER BLANKS	D006 D009 D010 D011 D018 D039 D040	PK,1,3
1705	1	LAB GENERATED WASTE, OIL FROM TCLP EXTRACTS	D001 D004 D006 D008 D010	1,3,7,8,9,11
1706	1	LAB WASTE, TCLP EXTRACT	D018 D021 D035 D038 D039 D040 D043 F002 F005	PK,1,4,7,8,9
1707	2	LAB GENERATED WASTE, ACID DIGESTATES	D002 D007 D008 D019 D028 D039 F001 F002	PK,2,4,7,8,9,11,12
1709	1	LAB GENERATED WASTE FLAMMABLE ORGANIC EXTRACTS	D001 D002	PK,2,4,7,8,9
1710	1	ORGANIC LIQUID WASTE	D001 D010 F002	PK,1,3,7,8,11,12
1711	2	METALS EXTRACTS AND DIGESTS	D002 D008 D009 D010 F001 F002 F005	PK,1,3,7,8,11,12
1712	2	DIGEST FROM MERCURY LAB WASTE	D002 D008 D010	1,3,7,8,11,12
1713	1	OIL FROM TCLP EXTRACTS	D040 F001 F002 F005	PK,1,3,8,11,12
1714	7	VOLATILE SOLID WASTE	D010	2,4,11,12
1715	7	CONTACT WASTE (LAB GENERATED WASTE)	D004 D008 D010 F001 F002 F005	2,4,7,11,12
1716	7	LAB GENERATED WASTE, CONTACT WASTE SOLID	F001 F002 F005	PK,1,4,11,12
1725	1	LUBRICATING OIL FROM GASOLINE ENGINES	D018	PK
1728	1	CRANKCASE OIL	D018	MSDS
1729	1	LEADED GASOLINE	D001 D008 D018	PK,1,3,8,9
1731	18	LEAD	D008	PK
1737	2	HARDENER	D002	MSDS
1740	8	(DOP) DI OCTYL PHTHALATE	U107	PK
1751	2	SPENT FIXER	D011	MSDS
1764	1	MULTILITH BLANKROLA SOLVENT	D039	MSDS
1773	2	CONCENTRATE FIXER	D011	PK
1775	1	DEGLAZING SOLVENT	F002	PK,MSDS
1789	4	UNH	D004 D006 D007 D008 D010	PK,4,7,9,13
1799	1	USED MINERAL SPIRITS	D001 D018	MSDS
1815	6	SPENT FUELS	D001 D018	MSDS
1819	16	WHATMAN RAD-CON	D001	MSDS
1822	16	SPRAY ADHESIVE	D001	MSDS
1829	16	AEROSOL PAINT	D001	MSDS
1841	11	SOIL	F001 F002	PK,1,9,11

See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

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TABLE C-4

RCRA REGULATED HAZARDOUS WASTE STREAMS

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
1842	9	GRASS ON THE SOIL	F001 F002	PK,1,9,11
1849	2	BUFFER SOLUTIONS PH 1 & 2	D002	MSDS
1856	1	SOLVENT CONTAINING MATERIAL, NON-SPECIFIC ORIGIN	F001 F002	PK,1,4,9
1895	7	PAINT BRUSHES WITH DRIED PAINT	D007 D008	PK
1904	16	CENOLLO E100 OVERNIGHT SPRAY	D001	MSDS
1906	7	HF TANK CLEAN-OUT MATERIAL	U134	PK,MSDS,5
1922	18	LEAD SHIELDING FROM X-RAY SYSTEM	D008	PK
1927	2	METALS EXTRACTS AND DIGESTS (IGNITABLE)(LAB GENERATED WASTE)	D001 D002 D008 D009 D010 F001 F002 F003 F005	PK,1,3,7,8,11,12
1928	1	COMPUBLEND CLEANING LIQUID (IGNITIBLE)	D001	MSDS
1937	2	COMPUBLEND CLEANING LIQUID (CORROSIVE)	D002	MSDS
1938	1	LIQUID SOLVENT WASTE FROM PAINT BOOTH SUMP	D007 D008 D010 F005	PK,1,3,7,8,9
1946	10	SOIL CUTTINGS FROM OUTDOOR FIRING RANGE	D008	1,4,9,11
1949	1	DRAW TEMP 275	D001	PK,MSDS,5
1952	1	TBP & KEROSENE DAAP & SOLVESSO	D001 D008	1,4,8
1969	16	FLAMMABLE AEROSOLS	D001 D007 D008 D018 D019 D035 D039	MSDS
1973	1	ETHOXYETHANEL, MIBK, METHOXYETHONAL 1,4 DIOXANE, ETHYL ETHER	D001 U108 U117 U161 U213 U359	PK
1974	1	ANYDROUS ETHER, STABILIZED	D001 U117	PK
1975	6	PVC PIPING FROM PLT 6 PERCHED WATER EXTRACTION PROJECT	F001	PK,2,4,9,10,11,12
1987	18	LEAD & DEBRIS	D008	PK
1998	1	METHANOL AND CYCLOHEXANE	D001 F003	PK,MSDS
1999	2	NESSLER, REAGENT, COD DIGESTION SOLUTION ROCHELLE SALT	D002 D007 D009 D011	PK,MSDS
2006	1	CURING COMPOUND	D001	MSDS
2014	3	EPOXY-PRIME COAT LDC-1000	D001 D035	MSDS
2016	3	PAINT BITUMASTIC 300 M A & B COLD TAR COATING	D001 D018 D026	MSDS
2021	7	BARIUM CARBONATE	D005	MSDS
2024	1	PAINT	D005	MSDS
2036	1	SAVIN PRODUCT CODE 4537 T-D PAK 4522 SAVIN 765 DISPERSANT	D001	MSDS
2037	1	SAVIN PRODUCT CODE 4536	D001	MSDS
2048	5	SOLIDIFIED LAB WASTE	F001 F002 F005	PK
2053	2	SILVER THIOSULFATE	D011	PK,MSDS
2063	1	TEXO CORP. TEXOL-7	D001	MSDS
2064	1	DIVERSEY SUPER MUL SOLVENT CLEANER	D001	MSDS
2066	2	VESTAL DOUBLE BARREL CLEANER	D002	MSDS
2067	2	STATE ACIDINE ACID SCALE AND RUST REMOVER	D002	PK,MSDS
2068	2	STATE NO. 810 ALUMINUM BRIGHTENER	D002	MSDS
2069	99	SKC OXIDIZER TUBES	D007	PK,MSDS
2085	1	CHLORINATED SOLVENTS	D007 F001 F002	PK,MSDS
2090	7	VARIOUS AA LAMPS	D005 D006 D008	PK,4
2120	14	LITHIUM BATTERIES	D003	PK,MSDS
2210	2	HYDROGEN PEROXIDE SOLUTION	D001	PK,MSDS
2211	17	USED MERCURY FROM MISC. EQUIPMENT	D009	PK,MSDS
2224	1	FLOOR COATING BASE	D001	PK,MSDS
2235	1	LAB GENERATED WASTE ORGANIC LIQUID WASTE	D010 F002	PK,1,3,7,8

See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

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RCRA REGULATED HAZARDOUS WASTE STREAMS

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
2257	2	TCLP EXTRACTS LAB GENERATED WASTE	D002	PK,3,7,8
2259	2	TCLP LEACHATE	D009 F001 F002	PK,5
2362	2	RADIOACTIVE ACIDIC LAB WASTE FROM THE ANALYSIS OF SAMPLES	D002 D007 D008 D018 D035 D039 D040	PK,1,3,7,8,9,11
2363	2	RADIOACTIVE CAUSTIC LAB WASTE FROM THE ANALYSIS OF SAMPLES	D001 D002 D006 D008 D009 D018 D035 D038 D039 D040	PK,1,3,7,8,9,11
2364	2	RADIOACTIVE NEUTRAL LAB WASTE FROM THE ANALYSAS OF SAMPLES	D001 D006 D007 D008 D018 D035 D039 D040	PK,1,3,7,8,9,11
2395	7	CONTACT WASTE FROM CTC LAB	D007 D008 D009 D039 F001 F002 F005	PK
2401	8	CONTACT WASTE FROM PACD SAMPLING	F001 F002 F003 F005	PK
2402	2	WATER USED TO CLEAN SAMPLING EQUIPMENT	F001 F002 F005	PK
2403	1	DIRT, ROCKS, AND WOOD WITH LIQUID; UNKNOWN SOURCE	D001	PK,1,3,4,5,7,8,9
2409	1	USED DEXSIL PCB SCREENING KIT (LIQUID)	D002 D009	PK,MSDS
2410	8	USED MILLIPORE PCB TEST KIT (LIQUID)	D002	PK,MSDS
2418	7	BROKEN GLASS AND OLD FLOURESCENT LIGHT BULBS	D009	PK,MSDS,5
2425	2	CTC CORROSIVE WASTE	D002 F001 F002 F005	PK
2443	8	TRASH AND DEBRIS FROM UNKNOWN SOURCE	D008	PK,1,4,5,9
2465	1	CONTAMINATED WATER/SUMP LIQUOR FROM UNKNOWN SOURCE	D001 D007 D008 D010	PK,1,3,7,8,9
2483	7	HEPA FILTERS FROM MAWS - CHROMIUM CONTAMINATED	D007 D011	PK
2489	12	LAB PACK	PLCS	PK
2498	1	SUMP LIQUOR	D008 D012 D039 F002 F003	MSDS,PK,1,3,7,8,9,12
2499	5	CONCRETE ABANDONED PILOT PLANT SUMP	F002 F003	PK,1,4,9,13
2500	7	METAL TANK ABANDONED PILOT PLANT SUMP	F002 F003	PK
2501	9	SOILS ABANDONED PILOT PLANT SUMP	F002 F003	PK,1,3,4,12
2507	4	PILOT PLANT SUMP (HWMU) BOTTOMS/SEDIMENT	D007 D008 D009 D039 F002 F003	PK,MSDS,1,4,9
2524	2	ALKALINE CONTAMINATED SUMP WATER FROM DECON. PAD	D002	PK,1,3,4,7,8
2527	8	PAPER, PLASTIC, PPE (TYVEK, SARANEX) ABSORBENT PADS	F002 F003	PK
2530	1	MAGNAFLUX CLEANER	F002	PK,MSDS
2547	8	GASOLINE/DIESEL FUEL FILTERS	D018	PK,MSDS
2554	2	ACID WASTE	D002	PK
2556	1	ETHYL ACETATE	D001	PK,MSDS
2559	1	USED HEPTANE MIXTURE	D001	PK,MSDS
2578	12	LAB PACKS	PLCS	PK
2581	6	CONTAMINATED PALLETS	D039 F001	MSDS,PK
2594	2	THORIUM NITRATE SOLUTION	D002 D006 D007	PK,3,7,9,13
2599	12	LAB PACKS, NON-RAD CONTAMINATED	PLCS	PK,MSDS
2605	1	ACCUMULATED LIQUIDS FROM AEROSOL PUNCTURING FACILITY	D001	PK
2612	7	PPE/CONTACT WASTE FROM DETREX STILL CLOSURE	F001 F002	PK
2614	8	SCRAP WOOD, STRAW, ASHES, TIRES, PLASTIC, SOOT, METAL &	F002 F005	PK
2618	7	DETREX STILL TANK(INCLUDING ASBESTOS COVER), ASSOC. PIPING	F001 F002	PK
2620	2	WASTEWATER FROM FTF CLOSURE	F002 F005	PK,1,3,11
2621	7	SCRAP METAL CONTAMINATED WITH F-LISTED SOLVENTS (OPEN TOP	F002 F005	PK
2622	7	SCABBLED CONCRETE FROM FTF, CONTAMINATED WITH SOLVENTS	F002 F005	PK
2624	8	CONTACT WASTE CONTAMINATED WITH F-LISTED SOLVENTS	F002 F005	PK
2625	8	CONTACT WASTE CONTAMINATED WITH F-LISTED SOLVENTS AND PCB	F002 F005	PK
2627	1	NEGATIVE FILM HAND DEVELOPER	D001	PK,MSDS

See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

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TABLE C-4

RCRA REGULATED HAZARDOUS WASTE STREAMS

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
2632	1	ELECTROSTATIC PLOTTER TONER	D001	PK,MSDS
2640	7	ASPHALT/GRAVEL FROM FTF	F002 F005	PK
10002	7	SCRAP SALTS	D005 D008	1,4,9
10003	3	OILY OXIDATION SLUDGES WITH HIGH FREE METAL	D001 D039 F001	1,4,7,8,9
10004	1	CONTAMINATED SOLVENT - TRICHLOR, PERCHLOR	D007 D018 D019 D021 D029 D039 D040 F001	PK,1,4,7,8,9
10005	7	CONTAMINATED SOIL, ROCKS, BRICKS AND CERAMICS	D008	1,4,9
10006	1	CONTAMINATED OIL - INSOLUBLE	D008 D009 D039 F002 F003 F005	PK,1,2,4,7,8,9
10007	3	OILY SLUDGES	D007 F001	1,4,7,8,9
10009	3	SLUDGES - SOLVENT (TRICHLOR, PERCHLOR, ETC.)	D001 D008 D035 F005	1,4,7,8,9
10010	3	SLUDGES, OILY	D029 D039 D040 F001	PK,1,4,7,8,9
10011	8	CONTAMINATED BURNABLES	D005	PK,1,4,9
10012	8	CONTAMINATED BURNABLES	D029 D039 D040 F001	PK,1,4,9
10013	4	SUMP CAKE	D005 D007	1,4,9
10014	2	U-CONTAMINATED WATER	D039	1,4,9
10015	2	U-CONTAMINATED WATER FROM PILOT PLANT EXTRACTION AREA	D039	1,4,7,8,9
10016	3	OILY SLUDGE	D010 D035 F001	PK,1,4,7,8,9
10021	3	SLUDGES, OILY	D008 D018 D019 F002	PK,1,4,7,8,9
10022	4	GRIT BLAST	D008	4,9
10023	8	NON-RECOVERABLE TRASH	D008 F001	PK,1,3,10
10024	6	TRASH CONT. TO SOLVENT	D018 F001	PK,1,4,5,9
10025	7	CONTAMINATED SOIL AND ROCKS	D005	PK
10026	1	1,1,1-TRICHLOROETHANE STILL BOTTOMS	D009 F001 F002	PK,2,4,7,8,9
10027	1	CONTAMINATED OIL, INSOLUBLE	D039 D040 F001	PK,MSDS,1,4,7,8,9
10028	3	SLUDGES, OILY	D008 D028	PK,2,4
10029	1	CONTAMINATED INSOLUBLE OIL	D006 D007 D008 D019 D029 D040 F001	PK,1,4,7,8,9
10030	1	CONTAMINATED SOLVENTS (METHANOL)	D001 F003	PK
10031	3	FLOOR SUMP CLEANOUT SLUDGE	D029 D039 F001	PK,1,4,7,8,9
10032	1	CONTAMINATED OIL, INSOLUBLE	F001	PK,2,4
10034	12	BENZENE (LABPACKED)	D001 D018 U019	PK
10035	12	CARBON TETRACHLORIDE (LABPACKED)	D019 U211	PK
10036	12	ETHYL ETHER (LABPACKED)	D001 U117	PK
20003	1	DEGREASING SOLVENT	D001 D019 D022 D028 D029 D035 D039 D040 F001 F003 F005	PK,1,2,9,11
20006	3	OIL CONTAMINATED WET SUMP OR FILTER CAKE	F002	1,4,7,8,9
20007	3	OIL CONTAMINATED WET SUMP OR FILTER CAKE	D011	1,4,7,8,9
20015	4	SCRAP SALTS AND FLOOR SWEEPINGS - LOW FLUORIDE	D007	PK,1,4,5,9
20021	1	CONTAMINATED INSOLUBLE OIL	D019 D029 D039 D040 F001	PK,1,2,4,7,8,9
20024	4	SCRAP SALTS AND FLOOR SWEEPINGS - HIGH FLUORIDE	D007 D008	1,4,9
20027	4	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	D004 D011	2,4,9,11
20028	1	CONTAMINATED OIL - INSOLUBLE	D039 D040 F001	1,2,4,7,8,9
20031	1	CONTAMINATED OIL, INSOLUBLE GEAR OIL, LUBRICATING OIL	D008 D018 D019 D028 D029 D039 D040 F002	1,2,4,7,8,9
20033	4	DRY DUST COLLECTOR POWDER	D008	1,4,9,11
20035	4	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	D007	4,9
20036	7	SCRAP SALTS AND FLOOR SWEEPINGS - LOW FLUORIDE	F001	PK,2,4,9,11

See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

TABLE C-4

RCRA REGULATED HAZARDOUS WASTE STREAMS

01/03/95

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
20037	3	PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	D029	2,4,9,11
20038	1	USED OIL FROM PILOT PLANT MAINTENANCE	D006 D008 D018 D019 D028 D029 F002	PK,1,2,4,7,8,9,11
20041	4	NON-METALLIC MISCELLANEOUS SAMPLES	D007	PK,4,7,8,9
20045	3	CONTAMINATED TBP AND/OR KEROSENE MIXTURES AND SLUDGES	D019 D022 D039 F002	PK,1,2,4,7,8,9,11
20046	4	NON-METALLIC MISCELLANEOUS SAMPLES	D007	3,9
20047	4	SCRAP SALTS AND FLOOR SWEEPINGS - LOW FLUORIDE	D004 D008	2,4,9,11
20048	3	PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	F005	PK,1,4,9
20054	1	CONTAMINATED SOLVENT - TRICHLOR, PERCHLOR	D019 D022 D028 D029 D039 F001 F005	PK,1,2,4,7,8,9
20055	1	CONTAMINATED OIL - INSOLUBLE	D029 D039 F002	PK,1,2,4,7,8,9,11
20058	4	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	D006 D008	PK,4,9
20094	8	CONTAMINATED BURNABLES, RAGS, FILTER, CLOTH	D008 D011 F001	PK,1,4,7,8,9
20095	8	RAGS CONTAMINATED, TETRACHLOROETHYLENE SILVER	D011 D039	PK,1,4,9
20107	8	GRIT-BLAST RESIDUE FROM LEAD PAINT REMOVAL ON EAST TOWER	D008	PK,1,4,5,9
20109	7	DUST COLLECTOR BAGS	D004 D006 D008	1,4,9
20114	8	CONTAMINATED BURNABLES	F001	PK,1,4,7,8,9
20120	7	DUST COLLECTOR BAGS	D007	4,9
20139	7	SAMPLES, NON-METALLIC	D005	1,4,7,8,9
20142	3	CONTAMINATED TBP-KEROSENE	D001 D019 D022 D039 F002 F003	PK,1,2,4,7,8,9,11
20143	8	NON-RECOVERABLE TRASH	D011	1,4,5,7,8,9
20145	4	DECANTED WATER FROM SUMP/FILTER CAKES	D002 D007	PK,1,3,4,7,8,9
30005	3	OILY SLUDGES	D001 D019 F002	PK,1,4,7,8,9
30010	3	WET SUMP OR FILTER CAKE - OIL CONTAMINATED	D039 D040 F002	PK,1,7,8,9
30018	3	WET SUMP OR FILTER CAKE - NON-OILY, NON-HALIDE	D039 F002	PK,1,4,7,9
30027	10	CONTAMINATED SOIL, ROCKS, BRICKS AND CERAMICS	D004 D005 D007 D008 D010 D011	1,2,4,5,7,8,9
30033	1	CONTAMINATED SOLVENT - TRICHLOR, PERCHLOR	D001 D039 F003 F005	PK,1,4,5,7,8,9
30034	1	OIL CONTAMINATED WITH SOLVENTS (TANK 5)	D018 F001	PK,2,4,7,8,9
30036	4	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	D006 D008	1,4,9
30037	3	PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	F002	PK,1,4,9
30039	7	CONTAMINATED ROCKS, SOIL, ETC., WITH NO FREE LIQUIDS	D011	1,2,4,7,8,9
30042	3	WET SUMP OR FILTER CAKE - NON-OILY, NON-HALIDE	D039	PK,1,4,9
30045	3	OILY SLUDGES, HIGH FREE METAL	D001	1,4,7,8,9
30046	3	NON-OILY CLEANOUT SLUDGES FOR ROASTING	D019 F001	1,4,7,8,9
30047	4	SOLVENT SLUDGE, TRICHLOR, PERCHLOR, ETC...	D007 D011	1,4,9
30053	8	PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	D006 D007 D008 D018 D040 F002 F005	PK,1,4,9
30060	4	WET SUMP OR FILTER CAKE - NON-OILY, NON-HALIDE	D005	1,4,9
30074	8	CONTAMINATED NON-BURNABLES	F002	PK,1,4,5,9
30075	7	CONTAMINATED NON-BURNABLES	F002	PK,1,4,5,9
30080	2	CONTAMINATED SOIL, ROCKS, DEBRIS, W/ FREE LIQUIDS 'CONTAINS	D002 D004 D007 D008 D011	1,2,4,7,8,9
30081	3	DISCARD PROCESS RESIDUES, TRAILER CAKES, SLURRIES,RAFFINATES	D002	1,4,7,8,9
30174	6	CONTAMINATED NON-BURNABLES	D004 D008 D011 F005	PK,1,4,5,6,9
40122	4	THORIUM TRAILER CAKES; WASTE SLURRIES	D002 D005 D009	1,3,8
40137	7	UNFIRED REDUCTION CHARGES PLUS CaF2	D001	PK,MSDS
40152	7	SCRAP THO2 -HIGH F	D005	4,5

See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

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TABLE C-4

RCRA REGULATED HAZARDOUS WASTE STREAMS

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
40181	2	THORIUM NITRATE SOLUTION	D002 D007 D008	PK
40182	2	THORIUM NITRATE SOLUTION	D002 D007 D008	PK
40185	7	IMPURE THORIUM NITRATE (SOLID)	D001 D007 D008	PK
40186	7	IMPURE THORIUM NITRATE (SOLID)	D001 D007 D008	PK
40187	7	IMPURE THORIUM NITRATE (SOLID)	D001 D007 D008	PK
40188	7	IMPURE THORIUM NITRATE (SOLID)	D001 D007 D008	PK
40189	7	IMPURE THORIUM NITRATE (SOLID)	D001 D007 D008	PK
40192	4	THO2 POWDER REFINERY FEED	D008	PK,7
50002	6	NON-RECOVERABLE TRASH	D001	1,4,5,7,8,9
50008	3	SUMP CAKE - COPPER CONTAMINATED	D001	1,4,7,8,9
50010	1	NON-RECOVERABLE TRASH	F002 F005	PK,1,4,5,7,8,9
50014	8	NON-RECOVERABLE TRASH	D019	PK,1,4,5,7,8,9
50022	1	CONTAMINATED WATER	D001 F003	PK,1,4,7,8,9
50025	7	CONTAMINATED GRAPHITE	F001 F002	PK,9
50031	7	CONTAMINATED METALLIC FILTER ELEMENTS AND OIL	D008 D010	1,4,5,8,9
50036	8	CONTAMINATED BURNABLE	D007 F002	PK,1,4,9
50058	7	DUST COLLECTOR BAGS	D007	PK,1,4,9
50063	4	ROASTED MG F2/OTHER MATERIAL	D004 D008	4,9
50068	3	NON-OILY SLUDGE FOR ROASTING	D001	1,4,7,8,9
50070	3	NON-OILY SLUDGE FOR ROASTING	D008 F001 F002	PK,1,4,7,8,9
50071	3	SOLVENT SLUDGE	D001 D007	1,4,8,9
50072	1	CONTAMINATED SUMP WATER AND HYDRAULIC OIL	D001 D008 D019 D039 D040 F002 F003 F005	PK,1,4,7,8,9
50085	3	WET CAKE, NON-OILY/HALIDE	D001 F002 F003 F005	PK,1,4,7,8,9
50089	4	MAGNESIUM POWDER AND TURNINGS	D001	PK,MSDS
50090	14	CONTAMINATED MAGNESIUM	D001 D003	PK,9
50095	1	CONTAMINATED INSOLUBLE OIL	D007	1,4,7,8,9
50096	1	CONTAMINATED SOLVENTS FROM WATER TREATMENT	D001 D007	PK,1,4,5,7,8,9
50102	4	PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	D008 D008	1,4,9
50113	3	ROASTED CALCIUM-PRECIPITATED SUMP AND FILTER CAKES	F001	PK,1,4,9
50129	4	SCRAP U3O8 - LOW F	F001	PK,4,9
50131	4	SCRAP U3O8 - LOW F	F002	PK,9
50148	4	SCRAP U3O8 HIGH F	D004	1,4,6,7,8,9
50152	4	SCRAP U3O8 OR THO2, HIGH FLUORIDE	F002	PK,9
50154	4	ROASTED CALCIUM-PRECIPITATED SUMP OR FILTER CAKES	F001	PK,1,4,9
50165	4	ROASTED OFF-SITE SUMP CAKE	D007	4,9
50169	4	NON-OILY SLUDGE FOR ROASTING	D007	1,4,9
50170	4	SALT SLUDGE FOR PLANT 8	D004 D019 D039 F002	PK,1,4,9
50173	4	SALT SLUDGE, CHLORIDE	D007	1,4,7,8,9
50174	4	SALT SLUDGE, CHLORIDE	D007	PK,MSDS,4,6,7,8,9
50175	4	SALT SLUDGE,CHLORIDE	F002	PK,1,4,7,8,9
50177	4	FURNACE SALT,NON CHLORIDE	D001 D004 D008	4,7,8,9
50178	4	FURNACE SALT,NON-CHLORIDE	D001	4,7,8,9
50180	4	FURNACE SALT,NON-CHLORIDE	D007 D008 D010	1,4,9

See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

TABLE C-4

RCRA REGULATED HAZARDOUS WASTE STREAMS

01/03/95

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
50183	4	SCRAP SALTS,LOW F	F001	PK,1,4,9
50185	4	SCRAP SALT,HIGH F	D009	4,5,9
50197	4	SLUDGES FOR BLENDING	D007	1,2,6,7,8,9
50200	3	OILY SLUDGE FOR OXIDATION	D001 F001	1,4,7,8,9
50202	3	OILY SLUDGE FOR OXIDATION	D001 D010	1,4,7,8,9
50203	4	OILY SLUDGE FOR OXIDATION	D008	1,4,9
50204	3	OILY SLUDGE FOR OXIDATION	D001 D010	1,4,7,8,9
50293	4	U3O8 FOR REOXIDATION	D004	4,9
50339	3	SLUDGES, OILY, FOR OXIDATION, HIGH FREE METAL	F002	PK,1,4,7,8,9
50346	3	OILY SLUDGE FOR OXIDATION	D001	1,4,7,8,9
50347	3	DISCARD PROCESS RESIDUE	D001	1,4,7,8,9
50349	4	DUST COLLECTOR RESIDUES - HIGH FLORIDE	D008	PK,1,4,9
50351	4	DUST COLLECTOR RESIDUES-HIGH FLOURIDE	D004 D008	4,7,8,9
50355	3	DISCARD PROCESS RESIDUE	D001	1,4,7,8,9
50358	6	CONTAMINATED NON-BURNABLE	D001	1,4,5,7,8,9
50359	6	NON-RECOVERABLE TRASH	F002	PK,1,4,6,9
50361	7	NON-RECOVERABLE TRASH	D009	5
50364	4	U3O8, +8MESH, LOWF	D007 F001 F002	PK,4,5,9
50367	7	NON-RECOVERABLE TRASH	D008	PK,9
50387	4	SALT SLUDGE, CHLORIDE	D005	PK,4,9
50405	4	NON-RECOVERABLE TRASH	D006 D007	4,5,7,8,9
50406	4	FURNACE SALT, CHLORIDE	D004 D011	4,5,9
50407	6	NON-RECOVERABLE TRASH	D001	1,3,5,6,7,8,9
50408	4	FURNACE SALT NON-CHLORIDE	D008 D010	4,7,8,9
60013	1	OFF SPEC. PAINT	D001	PK
60017	8	OILY RAGS AND CLOTHING	D039	PK,2,3,4,9
60039	1	CONTAMINATED SOLVENTS	D001 D018	PK,1,3,7,8,9
60040	1	SOLVENT MIXTURE; UNSPECIFIED ORIGIN	D001 D008 D035	PK,1,4,7,8,9
60042	1	CONTAMINATED SOLVENTS	D001 D006 D008 D009 D019 F002	PK,1,3,7,8,9
60044	1	CONTAMINATED SOLVENT MIXTURE, (TCA & CCL4)	D001 F001	PK,1,3,7,8,9
60046	1	SOLVENT MIXTURE WITH ABSORBENT PADS	D001 D018 D019 D021 D035 D039 D040	PK,1,3,7,8,9
60049	1	MIXED ORGANICS FROM BLDG 15 PROCESS DEVELOPMENT	D001 D004 D008 D010	PK,1,3,7,8,9
60051	1	SOLVENTS & FILTER MATERIAL	D039 F002	PK,1,2,3,4,6,7,8,9
60052	1	USED SOLVENT FROM GARAGE	D001 D007 D008 F002	PK,1,3,8,9
60055	1	LEADED GASOLINE FROM TANK # 12	D001 D008 D018	PK,MSDS,1,3,8,9
60056	1	USED CHLORINATED SOLVENT MIXTURE	D001 D007 D008 D009 D039 F002	PK,MSDS,1,3,7,8,9
60058	1	WASTE SOLVENT FROM BOILER PLANT	D001 D008 F002	PK,1,2,3,4,7,8,9
60059	1	USED 1,1,1 TRICHLOROETHANE MIXTURE	D001 D008 F002	PK,MSDS,1,3,8,9
60060	1	ORGANIC SOLVENT MIXTURE FROM PLANT 8 MAINTENANCE	D001 D008 D009 F002	PK,1,3,7,8,9
60062	1	CONTAMINATED INSOLUBLE OIL	D001 D008 D009 F002	PK,1,3,7,8,9
60064	1	SOLVENT CONTAMINATED OIL FROM PLANT 2/3	D001 D008 D035 F002	PK,1,3,7,8,9
60065	1	CONTAMINATED INSOLUBLE OIL	D001 D008 D019 F002	1,2,3,4,7,8,9
60066	1	USED OIL FROM PLANT 4 MAINTENANCE SHOP	D001 D008 D019 D035 F002	PK,1,3,8,9

6521

See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

TABLE C-4

RCRA REGULATED HAZARDOUS WASTE STREAMS

WASTE ID#	DOE TYPE	WASTE NAME	US EPA HAZARDOUS WASTE #	DETERMINATION BASIS
60067	1	USED OIL WITH 1,1,1 TRICHLOROETHANE	D008 F002	PK,1,4,7,8,9
60068	1	MACHINE AND CUTTING OILS WITH SOLVENT CONTAMINATION	D008 F002	1,4,8,9
60069	1	CONTAMINATED INSOLUBLE OIL	D008 F001	1,4,8,9
60070	1	CONTAMINATED INSOLUBLE OIL	D001 D018 D039	PK,MSDS,1,4,7,8,9
60072	3	SOLVENT CONTAMINATED WASTE OIL	D008 F002	PK,1,4,7,8,9
60073	1	CONTAMINATED INSOLUBLE OIL	D008	PK,1,4,7,8,9
60074	1	WASTE FROM PLANT 6 MACHINERY	D001 D008 D009 F002	PK,1,3,7,8,9
60076	1	CONTAMINATED INSOLUBLE OIL	D001 D008 D009 F002	PK,1,3,7,8,9
60078	1	USED OIL AND SOLVENTS FROM GARAGE	D001 D006 D008 F002 F005	PK,1,3,5,8,9
60080	1	CONTAMINATED INSOLUBLE OIL FROM MAINTENANCE - GENERAL	D001 D007 D008 D019 D040 F002	PK,1,3,7,8,9
60081	1	USED OIL/SOLVENT FROM PLANT 7 MAINTENANCE	D001 D006 D008 D010 F002	PK,1,3,8,9
60083	1	CONTAMINATED INSOLUBLE OIL FROM BOILER PLANT STORAGE	D001 D008 D019 F002	1,4,7,8,9
60084	1	USED, CONTAMINATED MACHINE AND ENGINE OIL	D001 D008 D010 F002	PK,1,3,7,8,9
60085	1	WASTE OIL FROM PLANT 8 MAINTENACE	D001 D005 D006 D007 D008 D010 F002	1,3,4,7,8,9
60087	1	USED OIL CONTAMINATED WITH SOLVENTS	D001 D008 D039 F002	PK,1,3,8,9
60090	1	USED MERCO-DRI AND HYDRAULIC OIL	D001 D039	PK,1,3,4,8,9
60099	8	RAGS, SCREEN, PLASTIC AND PAPER	D008	PK,1,2,3,4,6,9
60100	8	CONTAMINATED BURNABLE TRASH	D039 U210	PK,MSDS,5
60105	1	CONTAMINATED BURNABLE TRASH	D006 D007	PK,4,6,9
60107	8	ASBESTOS ABATEMENT DEBRIS	D008	PK
60110	3	OILY SLUDGES FROM PLANT 5 METAL REDUCTION	D001	PK,1,3,7,8,9
60112	3	DRY RESIDUE FROM PLANT 5 CASTING AREA	D039	PK,1,4,9
60113	1	DARK GREEN OILY LIQUID FROM WASTE MANAGMENT-GENERAL	D007	1,3,7,8,9
60115	3	SUMP SLUDGES FROM GARAGE (NON-WWTS)	D001 F002	PK,1,4,5,7,8,9
60119	3	SLUDGES, OILY, FOR OXIDATION HIGH FREE METAL	D001 F001 F002	PK,1,2,4,7,8,9
60123	3	SOLVENT SEMISOLID	D039 F002	PK,1,2,4,5,6,7,8,9
60124	3	PAINT THINNERS AND PAINT RESIDUES	D009 D018 D035	PK,MSDS,1,4,9
60140	4	STEEL SHOT	D010	PK,MSDS,1,4,9
60149	4	U3O8 FROM BOX FURNACE	F001 F002	PK,1,4,9
60152	4	U3O8 ROTEXED PLANT 8 FURNACE PRODUCT	F001	PK,1,4,9
60160	4	IMPURE UNH	D001	PK,MSDS
60193	2	PURE UNH SOLUTION	D001 D002	PK,MSDS
60306	4	HARDENED SALT BATH SLUDGE FROM RMI	D005	PK
60307	4	FURNACE SALT, SOLIDIFIED, CHLORIDE (PLANT 8 RECOVERY)	D005 D008	PK
60331	1	WATER\GAS MIXTURE TANK #9	D001 D018	1,4,7,8,9
60342	2	CONTAMINATED RAINWATER FROM UST # 5	D008 F002	PK
60450	4	CRUCIBLE COATING POWERS	D007	PK,MSDS

See final page for keys to DETERMINATION BASIS codes and DOE WASTE STREAM TYPES

Key to "Determination Basis" Codes :

PK Process Knowledge
MSDS Material Safety Data Sheet

ANALYSES:
1 Total Volatile Organic
2 TCLP Volatile Organic
3 Total (TC) Metals
4 TCLP Metals
5 Visual Inspection of Waste
6 Paint Filter Liquids Test (PFLT)
7 pH
8 Flash Point
9 U-Total, % U235
10 PCBs
11 Total Semivolatile Organic
12 Total Pesticides
13 Total Thorium

Key to "DOE Waste Stream Type" Codes :

1 Organic Liquids
2 Aqueous Liquids
3 Organic Sludges/particulates
4 Inorganic Sludges/particulates
5 Cemented Solids
6 Organic Debris
7 Inorganic Debris
8 Heterogeneous Debris
9 Soil with Organics
10 Soil with Inorganics
11 Soil with Organics and Inorganics
12 Labpacks with Organics
13 LabPacks without Organics
14 Reactive Metals
15 Explosives
16 Compressed Gases
17 Liquid Mercury
18 Elemental Lead
19 Beryllium Dust
20 Batteries
99 Other

000073

6521

OHIO ENVIRONMENTAL PROTECTION AGENCY
DIRECTOR'S FINDINGS AND ORDERS AND SECTION IV CONSENT DECREE
QUARTERLY TECHNICAL PROGRESS REPORT

October 1, 1994 - December 31, 1994

BORING LOGS

6521

CONTROL NO.: EFO- 200307-EFO-0006

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11469

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: Dry

DATE: 12-21-94

TIME: 0758

DATE STARTED: 12-20-94

GEOLOGIST: A. Couch

GROUNDWATER LEVEL:

DATE:

TIME:

DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: NO

DRILLING CONTRACTOR: ALLIANCE ENV., INC.

DRILLING EQUIPMENT: HSA MOBILE DRILL B-59 (1993)

DRILLER / HELPER: BOB ERICKSON / DAVE

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	1033 12-20-94 402819	2		PRELIMINARY.			2" O.D. SPLIT-SPOON
0.5		4	3	STIFF, (10YR 3/2) VERY DARK GRAYISH BROWN SILTY CLAY, ROOTS AND GRASS, LOW PLASTICITY, SLIGHTLY MOIST	CL	1.5	MT_B = 4.7 PPM MT_S = 5.3 PPM BK_B = 70 CPM BK_S = 80 CPM
1.0		4	6	VERY STIFF, (10YR 5/4) YELLOWISH BROWN SILTY CLAY, TRACE COARSE SAND, LOW PLASTICITY, SLIGHTLY MOIST, TRACE ORANGE NODULES (5YR 5/8) YELLOWISH RED, 1/8"	CL	2.25	# 402819 is FEMP Archive Sample
1.5	1037 12-20-94 402820	1	3	MED STIFF, (7.5YR 4/2) BROWN CLAY, ROOTS, GRASS, TRACE FINE SAND, MEDIUM PLASTICITY, MOIST	CL	0.75	
2.0	402852	AC 2 2 6	5	VERY STIFF, (7.5YR 4/2) BROWN CLAY WITH (7.5YR 5/6) STONG BROWN SILT CLAY, TRACE BLACK CONCRETIONS (ORGANIC), ROOTS, MEDIUM PLASTICITY, MOIST	CL	2.0	MT_B = 4.4 PPM MT_S = 5.4 PPM BK_S = 60 CPM
2.5		6	5	SAA		2.5	# 402852 is FEMP Archive Sample # 402820 is Geotech Lab Sample
3.0	1052 12-20-94 402821		33.5				3" O.D. SHELBY TUBE PUSH 800 PSI
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 PPM	12-20-94	0855
ALPHA	N/A	N/A	N/A
BETA / GAMMA	50 CPM	12-20-94	0855

NOTES:
MT_B = Micratip background reading
MT_S = Micratip reading on sample
BK_S = Beta-gamma friskar reading on sample
Colors identified using (cont)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3581

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:	
PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION	PROJECT NO.: 20.03.07
BORING NUMBER: 11469	COORDINATES: / RELATED FAL NO.:
SURFACE ELEVATION: —	GROUNDWATER LEVEL: / DATE: / TIME: / DATE STARTED:
GEOLOGIST:	GROUNDWATER LEVEL: SEE / DATE: / TIME: / DATE COMPLETED:
WATER USED DURING DRILLING:	DRILLING CONTRACTOR: / DRILLING EQUIPMENT: / DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5				PRELIMINARY			Mr_B = 4.1 PPM Mr_S = 4.8 PPM BG_S = 70 CPM
4.0							BOTTOM OF TUBE SLIGHTY CRIMPED
4.5							SAMPLE 402822 FOR FEMP ARCHIVE #402821 is Geotech Lab Sample
5.0				(10 YR 5/4) YELLOWISH BROWN CLAYEY SILT, WITH SAND, TRACE FINE SUBROUND GRAVEL (1/2" MAX DIAMETER), LOW PLASTICITY, DRY	ML		DESCRIPTION FROM BOTTOM FACE OF SHELBY-TUBE
5.5				~~(10 YR 5/4) YELLOWISH BROWN CLAYEY SILT WITH SAND, TRACE FINE SUBROUND GRAVEL (1/2" MAX DIAMETER), LOW PLASTICITY, DRY~~			AUGERED INTERVAL ONLY - NO SAMP
6.0	1104 12-20-94 402823	8	6	HARD, (10YR 6/4) ~~SILTY CLAY~~ AC LIGHT Yellowish Brown SILTY CLAY, TRACE FINE SAND, MEDIUM PLASTICITY, MOIST	CL	4.5	2" O.D SPLIT-SPOON #402823 is FEMP Archive Sample
6.5		10	6	VERY STIFF, (10YR 5/4) Yellowish Brown SILTY CLAY WITH FINE SUBROUNDED GRAVEL (1/2" MAX), TRACE FINE SAND, MEDIUM PLASTICITY, SLIGHTY MOIST	CL	3.75	Mr_B = 4.9 PPM Mr_S 6.5 PPM BG = 70 CPM
7.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: Munsell® color chart for soils. Consistency measured using SoilTest® pocket penetrometer unless otherwise noted. Density from SPT blow count.

(cont)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3691

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11469

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0	~~1110~~ AC	13	2.0 6	SAA PRELIMINARY		2.0	BULK SAMPLE 3-7.5 FT 402824 for Geotech Lab
7.5	1109 12-20-94 402825	8	6	STIFF, (10 YR 5/4) Yellowish Brown SILTY CLAY WITH SUBANGULAR TO ANGULAR FINE (1/2") TO COARSE (1 3/4") GRAVEL, LOW PLASTICITY, SLIGHTLY MOIST	CL	1.75	SPLIT SPOON 2" O.D. GRAVEL ZONE BOTTOM 1 INCH
8.0		12	6	VERY STIFF (10 YR 5/4) Yellowish Brown SILTY CLAY, MOTTLED, TRACE SUBANGULAR FINE (1/4") GRAVEL, IRON STAINING, LOW PLASTICITY, SLIGHTLY MOIST	CL	4.0	MTB = 5.7 PPM MTS 6.2 PPM BP = 60 CPM
8.5		15	6	VERY STIFF, (10 YR 5/4) Yellowish Brown SILTY CLAY, MOTTLED, SLIGHT IRON STAINING, TRACE FINE SUBANGULAR GRAVEL (1/8") LOW to MOD. PLASTICITY, SLIGHTLY MOIST	CL	3.5	# 402825 is FEMP Archive Sample
9.0	1127 12-20-94 402926	10	6	VERY STIFF, (10 YR 5/3) BROWN SILTY CLAY, SLIGHTLY MOTTLED WITH SUBROUND FINE (3/4") GRAVEL, TRACE FINE SAND, LOW PLASTICITY, SLIGHTLY MOIST	CL	2.5	2" OD SPLIT SPOON
9.5	402853	15	6	SAA MEDIUM DENSE,		AC ~~4.0~~ 4.5 AC	MTB = 5.5 PPM MTS = 7.5 PPM BP = 60 CPM
10.0		22	6	~~11 AC~~ 16 (10 YR 5/6) Yellowish Brown SILTY SAND, WITH CLAY, SAND - FINE, POORLY GRADED, NO to LOW PLASTICITY, SLIGHTLY MOIST	SM	4.5	# 402826 is Geotech lab sample # 402853 is FEMP Archive Sample
10.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: Soil description and USCS symbol per ASTM D 2488 guidelines. Samples collected per ASTM D 1586 and D 1587 Split spoon samplers equipped (cont.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3691

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11469

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

PRELIMINARY

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 – 11.0	1135 12-20-94 402827	10	6	VERY STIFF, (10 YR 3/4) YELLOWISH BROWN SANDY CLAY, MOTTLED, IRON STAINING LOW PLASTICITY (SAND-FINE, POORLY GRADED, TRACE COARSE SUBANGULAR GRAVEL 3/4" DIAMETER), MOIST	CL	3.25	2" OD SPLIT SPOON MT_B = 7.0 PPM MT_S = 8.5 PPM BH_S = 68 CPM
11.5		14	6	VERY STIFF, (2.5 Y 5/3) LIGHT OLIVE BROWN GRAVELLY CLAY, GRAVEL-SUBANGULAR TO ANGULAR, COARSE (1.4") TO FINE (3/4") TRACE SAND, MOTTLED IRON STAINING, LOW PLASTICITY, SLIGHTLY MOIST	CL	3.5	BULK SAMPLE 402829 (7.5 YR 2/4) is for Geochem Lab GRAVEL IN BOTTOM 3 INCHES
12.0		15	6	VERY STIFF, (10 YR 4/4) DARK YELLOWISH BROWN to (2.5 Y 5/1) GRAY SILTY CLAY WITH FINE (1/2") SUBANGULAR TO SUBROUND GRAVEL, TRACE FINE SAND LOW to MEDIUM PLASTICITY, MOIST	CL	3.5	BROWN/GRAY CLAY INTER-FINGERING #402827 = FEMP Archive
12.5	1145 12-20-94 402829	5	6	VERY STIFF (2.5 Y 5/1) GRAY SILTY CLAY WITH SUBROUND TO SUBANGULAR COARSE (1.25") GRAVEL, MOTTLED IRON STAINING LOW PLASTICITY, MOIST	CL	3.5	2" OD SPLIT SPOON BROWN/GRAY CLAY INTERFINGERING
13.0		14	6	VERY STIFF (2.5 Y 5/2) GRAYISH BROWN SILTY CLAY WITH SUBROUND FINE (1/4") GRAVEL, TRACE FINE SAND, MOTTLED IRON STAINING, LOW PLASTICITY, MOIST	CL	2.75	MT_B = 0 MT_S = 1.8 BH_S = 60
13.5		26	6	MEDIUM STIFF (2.5 Y 5/3) LIGHT OLIVE BROWN SANDY CLAY, (SAND-FINE, POORLY SORTED), TRACE FINE (1/8") SUBANGULAR GRAVEL, MOTTLED IRON STAINING, LOW PLASTICITY, MOIST	CL	0.75	#402829 is FEMP Archive sample
14.0	1152 12-20-94 402830	11	0				SPLIT SPOON 2" O.D. #402830 is FEMP Archive Sample

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: with basket retainers, 2" O.D standard split barrel (spoon) samplers used for SPT. Barrels without liners. Additional general notes on Field operations

(Cont)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PREDESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11469

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

See PAGE

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

PRELIMINARY

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0		9	6	MEDIUM DENSE (2.5Y 5/4) LIGHT OLIVE BROWN SANDY GRAVEL WITH CLAY, GRAVEL - FINE (1/8") to COARSE (1") SUBROUND TO SUBANGULAR, SAND - FINE to Medium, POORLY GRADED, LOW PLASTICITY	GP-GC	Ø.5	MTB = Ø.2 PPM MTS = 2.4 PPM Wet GRAVEL ZONE
14.5		13	6	STIFF, (2.5Y 4/1) DARK GRAY CLAY, FEW FINE SUBROUND GRAVEL (1/4"), MEDIUM PLASTICITY, MOIST TO wet	CL	1.25	BG = 60 cpm BRYAZOAN FRAGMENTS
15.0							
15.5							AUGERED INTERVAL ONLY - NO SAMPLE COLLECTED
16.0	1300 12-20-94 402831		23				3" OD Shelby-Tube 450 PSI PUSH
16.5							MTB = 0 PPM MTS = 0 PPM BG = 60 CPM #402831 = Geo. Lab Sample
17.0							Shelby tube SLIGHTLY crimped at Bottom
17.5							SAMPLE #402832 FOR ARCHIVE (FROM Bottom)

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: Contained in PARSONS Field Book PO122-1. Consistency, USCS symbol, sample assignments (i.e. archive or lab) performed by K. Grust, P.E., on 12-21-94. KG (Grust)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11469

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 2 | DATE: | TIME: | DATE COMPLETED:

WATER USED DURING DRILLING: | DRILLING CONTRACTOR: | DRILLING EQUIPMENT: | DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart) PRELIMINARY	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0				(2.5Y 4/1) DARK GRAY CLAY, TRACE COARSE SAND, TRACE FINE (1/8") SUBROUND GRAVEL, MEDIUM PLASTICITY, MOIST	CL		DESCRIPTION FROM BOTTOM FACE OF Shelby-Tube
18.5	1310 12-12-94 402833 402834	5	5.5	STIFF (2.5Y 4/1) DARK GRAY CLAYEY SILT, MOTTLED, SLIGHT IRON STAINING, TRACE SUBANGULAR FINE (1/8") GRAVEL, MEDIUM PLASTICITY, MOIST	ML		2" O.D. SPLIT SPOON See note ①
19.0		10	6	STIFF (5Y 5/1) GRAY SILTY CLAY WITH SUBANGULAR to SUBROUND FINE (3/4") to COARSE (1.5") GRAVEL, SLIGHTLY MOTTLED, MEDIUM PLASTICITY, MOIST	CL		MT_B = 0 PPM MT_S = 0.6 PPM BG_S = 60 CPM
19.5		14	6	MED. DENSE (5Y 4/1) DARK GRAY CLAYEY SAND, SAND - FINE GRAINED, POORLY SORTED, NO to LOW PLASTICITY, WET	SC		#402834 is FEMP Archive Sample #402833 is Geo. Labs WET SAND ZONE
20.0							Augered interval ONLY NO SAMPLE COLLECTED
20.5	1320 12-20-94 ~~402834~~ 402835		18				3" OD Shelby-Tube UP TO 1200 PSI
21.0							Pushed ONLY 18 inches until hit Hard zone - Bucket crimped

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

① Consistency of silt and/or clay estimated from SPT blowcount

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3891

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11469

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST: GROUNDWATER LEVEL: SEE YR GC 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0				(5Y 5/1) GRAY SANDY GRAVEL, trace sandy clay, GRAVEL - SUBANGULAR COARSE (2") to FINE (3/4"), SAND - FINE poorly sorted, DRY	GP		MTB = 3 PPM MTS = 3.6 PPM BOS = 60 CPM DESCRIPTION FROM BOTTOM FACE OF Shelby TUBE. Archive #402836
21.5							
22.0				PRELIMINARY			AUGERED INTERVAL ONLY NO SAMPLE Collected
22.5							#402835 is a Geotech. Lab Sample
23.0	1330 12-20-94 402837	12	0				2" OD SPLIT SPOON
23.5		12	2	MED. STIFF, (5 Y 4/1) DARK GRAY SILTY CLAY, TRACE SUBROUND FINE (1/8") GRAVEL, Medium plasticity, MOIST to WET	CL	0.75	MTB = 0.8 PPM MTS = 2.0 PPM BOS = 50 CPM
24.0		12	6	MED. DENSE, (5 Y 4/1) DARK GRAY SANDY GRAVEL WITH SILTY CLAY, GRAVEL SUBROUND COARSE (1.75"), SAND FINE to MEDIUM, poorly sorted, LOW PLASTICITY, MOIST	GP-GC	0.75	
24.5	1338 12-20-94 402838	6	AC ~~0~~ 4.5	MED. STIFF (5 Y 5/1) GRAY ~~GRAVEL~~ AC SANDY CLAY, FEW FINE SUBROUND GRAVEL (1/4"), LOW to medium plasticity, MOIST	CL	0.6	2" OD SPLIT SPOON

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
SAA = Same as Above
N/A = Not applicable
OD = Outer Diameter
SPT = Standard Penetration Test
# = Number

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11469

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER ELEVATION: SEE DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5	402855	6	6	SAA PRELIMINARY		1.0	MTB = 1.1 PPM MTS = 2.2 PPM BKS = 50 CPM
25.0		7	~~6~~ 4	SAA, WET		Ø.25	#402855 is FEMP Archive sample. Wet SANDY CLAY ZONE
25.5	1342 12-20-94 402839	3	4.25	MED. STIFF, (5Y 4/1) DARK GRAY SILTY CLAY WITH FINE (1/4") SUBROUND GRAVEL, MEDIUM to HIGH PLASTICITY, WET	CL	Ø.25	2" OD SPLIT SPOON
26.0		6	6	MED STIFF, (5Y 4/1) DARK GRAY SILTY CLAY WITH FINE (3/4") SUBROUND GRAVEL, TRACE FINE SAND, MEDIUM PLASTICITY, MOIST	CL	Ø.75	MTB = 1.3 PPM MTS = 1.7 PPM BKS = 50 CPM
26.5		8	6	MED. STIFF, (5Y 4/1) DARK GRAY SILTY CLAY WITH FINE (1/4") SUBROUND GRAVEL, ~~WITH~~ ~~TRACE~~ FINE SAND, MEDIUM PLASTICITY, MOIST	CL	Ø.5	#402839 is a FEMP Archive sample
27.0	1350 12-20-94 402840	4	5	MED. STIFF, (5Y 4/1) DARK GRAY SILTY CLAY WITH FINE SUBROUND to SUBANGULAR GRAVEL (3/4"), MEDIUM PLASTICITY, MOIST ~~TRACE FINE SAND~~	CL	Ø.25	2" OD SPLIT SPOON
27.5		6	6	(5Y 4/1) SAA		Ø.5	MTB = 2 PPM MTS = 2.3 PPM BKS = 50 CPM
28.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11469

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST: SEE PAGE 2

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
28.1		7	6	MED. STIFF, (5Y 3/1) VERY DARK GRAY SILTY CLAY WITH FINE SUBANGULAR GRAVEL (1/8") AND FINE SAND, MEDIUM PLASTICITY, MOIST	CL	Ø.75	# 402840 is a FEMP Archive Sample
28.5							
29.0	1357 12-20-94 402841	3	1.5	STIFF, ~~GLEY~~ (2.5Y 4/1) DARK GRAY SILTY CLAY, WITH SUBROUND FINE (1/8") GRAVEL, TRACE FINE SAND, MEDIUM PLASTICITY, MOIST	CL		2" OD SPLIT SPOON SEE NOTE ①
29.5		5	6	STIFF, (~~7.5 GLEY 4/5GY~~) DARK GREENISH GRAY (5GY 4/1) SILTY CLAY WITH FINE (3/4") SUBANGULAR GRAVEL, TRACE FINE SAND, Medium Plasticity, MOIST	CL		MT_B = Ø.6 PPM MT_S = 1.0 PPM BS_3 = 40 CPM
30.0		5	6	SAA, WET			# 402841 is a FEMP Archive Sample
30.5	1404 12-20-94 402842	3	6	MED. STIFF, (5GY 4/1) Dark Greenish gray SILTY CLAY WITH COARSE (.25") to FINE (1/2") Subangular Gravel, Trace FINE SAND, Medium Plasticity MOIST	CL	Ø.5	2" OD SPLIT SPOON
31.0	402856	5	6	SAA		Ø.5	MT_B = Ø.3 PPM MT_S = 3.3 PPM BS_3 = 60 CPM
31.5		6	6	SAA		Ø.75	# 402856 is FEMP Archive Sample # 402842 is a Geotech Lab Sample

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11469

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 2

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

PRELIMINARY

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.5 – 32.0	1412 12-20-94 402843	3	6	STIFF, (10Y 4/1) DARK GREENISH gray SILTY CLAY WITH FINE (1/2") SUBANGULAR to SUBROUND GRAVEL, ~~[illegible]~~ WITH SAND FINE TO COARSE POORLY GRADED, MEDIUM PLASTICITY, MOIST	CL		2" OD SPLIT SPOON SAND AT 31.8 ft WET
32.5		4	6	STIFF, (5GY 4/1) DARK GREENISH GRAY SILTY CLAY WITH FINE SUBANGULAR to SUBROUND GRAVEL (3/4"), MEDIUM PLASTICITY, MOIST	CL		MT_B = 1.1 MT_S = 3.4 Br = 90
33.0		9	6	SAA			#402843 is a FEMP Archive Sample
33.5	1432 12-20-94 402844	21	0	SOFT, (10Y 4/1) DARK GREENISH gray sandy clay WITH FINE (1/8") to COARSE (1.25") SUBANGULAR GRAVEL SAND - FINE to COARSE, poorly graded, MEDIUM PLASTICITY, MOIST			2" OD SPLIT SPOON Note (2) #402844 : FEMP Arch
34.0		37	0				1.25 inch diameter gravel imbedded in bottom of SPOON
34.5		11	5	↳	CL	Ø.25	MT_B = 1.8 PPM MT_S = 4.3 PPM Br = 60 CPM
35.0	1439 12-20-94 402845	6	1.5	SOFT, (10Y 5/1) Greenish gray SILTY clay WITH FINE (1/4") SUBANGULAR GRAVEL, MEDIUM PLASTICITY, MOIST	CL	Ø.40	2" OD SPLIT SPOON

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
(2) Pocket Penetrometer reading on sample not consistent w/ consistency description from SPT blowcount. Consistency by SPT blowcount for 34 - 34.5' interval is ~ stiff "

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:	
PROJECT NAME:	OU-2 PRE-DESIGN FIELD INVESTIGATION
PROJECT NO.:	20.03.07
BORING NUMBER:	11469
COORDINATES:	
RELATED FAL NO.:	
SURFACE ELEVATION:	—
GROUNDWATER LEVEL:	
DATE:	
TIME:	
DATE STARTED:	
GEOLOGIST:	
GROUNDWATER LEVEL:	SEE PAGE 6
DATE:	
TIME:	
DATE COMPLETED:	
WATER USED DURING DRILLING:	
DRILLING CONTRACTOR:	
DRILLING EQUIPMENT:	
DRILLER / HELPER:	

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
35.0 – 35.5	402857	6	6	SAA PRELIMINARY		Ø.25	MT_B = 1.8 PPM MT_S = 4.5 PPM BP_S = 60 CPM Note (3)
36.0		10	6	MEDIUM STIFF 5GY 4/1) DARK GREENISH gray CLAY WITH FINE (1/4") to coarse (1.25") SUBANGULAR GRAVEL, TRACE FINE SAND Medium to high Plasticity, MOIST	CL/CH	Ø.75	#402857 is a FEMP Archive Sample #402845 is a Geotech Lab Sample
36.5	1448 12-20-94 402846	3	6	MED. STIFF, (10Y 4/1) Dark greenish gray sandy clay WITH FINE (1/2") SUBAROUND GRAVEL, (SAND-FINE, poorly sorted), medium plasticity, MOIST	CL	1.0	2" OD Split Spoon #402846 is a FEMP Archive Sample
37.0		5	6	MED. STIFF, (10GY4/1) Dark Greenish gray SILTY CLAY WITH GRAVEL SUBAROUND, COARSE (1.75"), Trace, Med to coarse sand, Medium to high plasticity, MOIST	CL/CH	1.0	MT_B = 2.0 PPM MT_S = 3.7 PPM BP_S = 50 CPM
37.5		9	6	MED. STIFF, (5GY4/1) Dark greenish gray sandy clay WITH COARSE (1.25") GRAVEL, (SAND-Fine to coarse), medium plasticity, moist to wet	CL	Ø.75	Wet sand
38.0	1454 12-20-94 402847	10	3	MED. STIFF, (10Y 4/1) Dark greenish gray sandy clay WITH FINE (1/4") SUBANGULAR GRAVEL, (SAND-FINE, POORLY SORTED) LOW Plasticity, MOIST	CL	Ø.5	2" OD SPLIT SPOON #402847 is a FEMP Archive Sample
38.5		11	6	SAA	CL	1.25	MT_B = 2.4 PPM MT_S = 6.2 PPM BP_S = 70 CPM

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
(3) Pocket Penetrometer reading on sample from interval 34.5-35.5' differs from consistency description by SPT blow count. Consistency by SPT blow count for 34.5-35.5 is approx. (~) "stiff"

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11469

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
38.5		11	6	SAA, PRELIMINARY POORLY FINE + COARSE (1.5") GRAVEL	GP	0.5	GRAVEL ZONE (1.5" LONG) at 38.5 ft.
39.0							
39.5	1451 12-20-94 402848	5	2.5	MED. STIFF, (10 Y 4/1) Dark greenish gray silty clay WITH FINE (1/4") SUBANGULAR GRAVEL, TRACE MEDIUM SAND, LOW to medium plasticity MOIST TO WET	CL	0.5	3" OD SPLIT SPOON
40.0	402858	6	6	MED. STIFF, (5 GY 4/1) DARK GREENISH GRAY SANDY CLAY WITH FINE (1/2") to COARSE (1.25") GRAVEL (subangular) (SAND-FINE, poorly sorted) med to low plasticity, moist	CL	0.5	MT_B = 3.1 PPM MT_S = 4.5 PPM BG_S = 60 CPM
40.5		9	6	SAA		0.5	#402858 is a FEMP Archive Sample #402848 is a Quanteck Lab Sample
41.0	1512 12-20-94 402849	5	6	MED STIFF, (5GY4/1) Dark greenish gray sandy clay, WITH FINE (1/4") subrounded to subangular gravel (sand-FINE, poorly sorted) medium plasticity MOIST TO WET	CL	0.5	2" OD SPLIT SPOON
41.5		7	6	SAA	CL	0.5	MT_B = 2.9 PPM MT_S = 6.3 PPM BG_S = 60 CPM
42.0		7	6	SAA	CL	0.5	#402849 is a FEMP Archive Sample

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11469

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: -

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 1 | DATE: | TIME: | DATE COMPLETED:

WATER USED DURING DRILLING: | DRILLING CONTRACTOR: | DRILLING EQUIPMENT: | DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
42.0	1521 12-20-94 402846 402855	7 AC	0	PRELIMINARY			2" OD SPLIT SPOON
42.5		12	6	STIFF, (5GY 5/1) greenish gray sand clay WITH FINE (1/2") SUB-ANGULAR GRAVEL (SAND-FINE poorly sorted) low to medium plasticity, MOIST TO WET	CL		MT_B = 2.5 PPM MT_S = 6.3 PPM BG_S = 60 CPM
43.0		10	6	SAA, SUBANGULAR COARSE (1.25") GRAVEL ...	CL		#402850 is a FEMP Archive Sample Note ③
43.5	1527 12-20-94 402851 402859	5	6	V. STIFF, (10Y 4/1) DARK Greenish gray Sandy Clay WITH FINE (1/2") TO COARSE (1.25") SUBANGULAR TO SUBROUND GRAVEL, (MEDIUM TO FINE SAND, poorly sorted) medium plasticity, MOIST	CL		2" OD SPLIT SPOON Note ③
44.0		8	6	SAA			MT_B = 2.5 PPM MT_S = 4.2 PPM BG_S = 60 CPM
44.5		10	6	SAA			TOTAL DEPTH 45FT. #402859 is a FEMP Archive Sample
45.0				BOTTOM OF BORING = 45.0'			#402852 is a Geotech Lab Sample

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: Note ③ Consistency description from SPT blowcount

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94

WELL NUMBER: B - 11469

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 PREDESIGN DISPOSAL FACILITY BORING

PROJECT NUMBER: 20.03.07

GEOLOGIST: CLIFF LEE 10257

DRILLING METHOD: AUGER

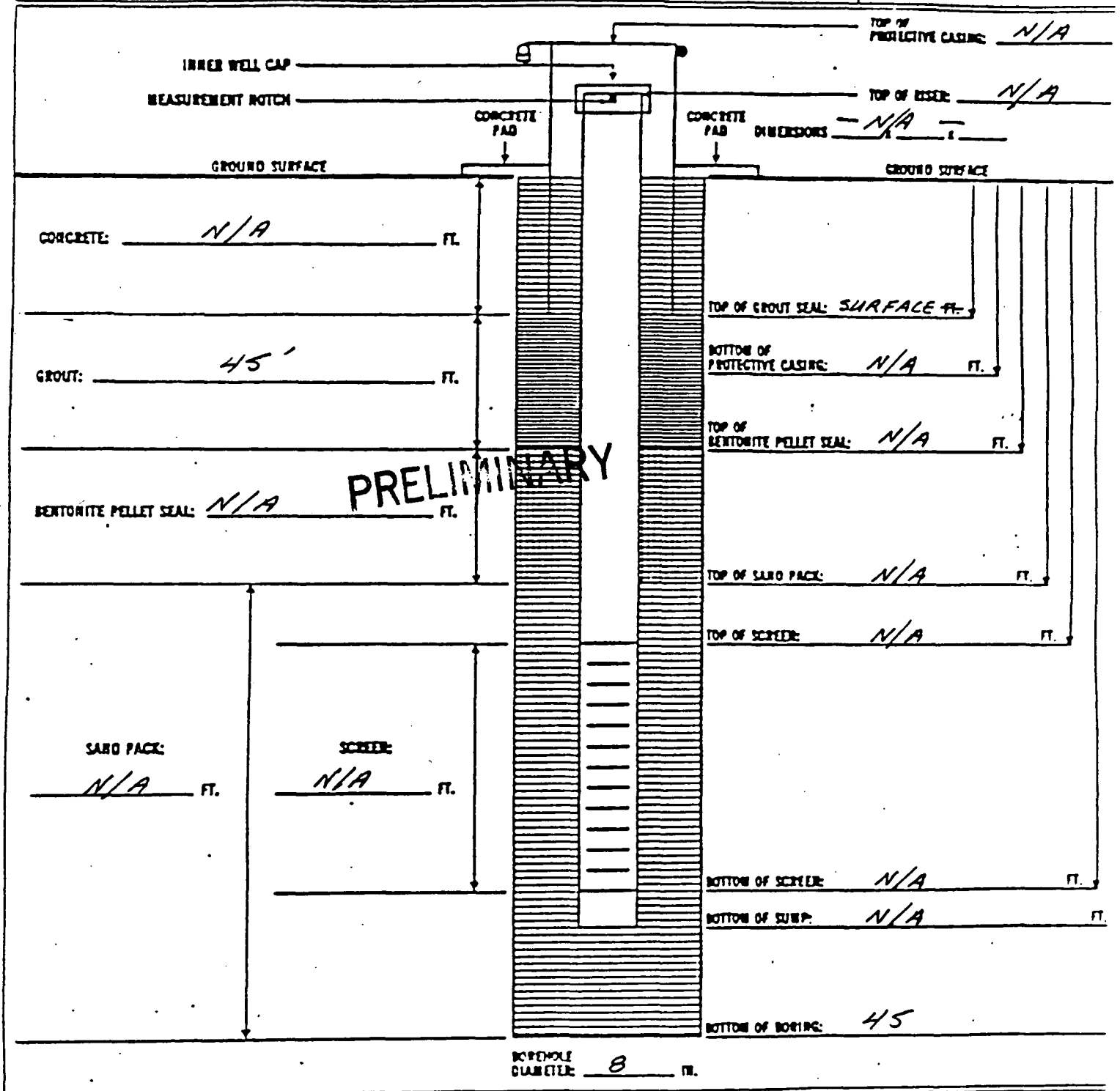
DATES OF INSTALLATION: 12/20 - 12/22/94

WATER LEVEL (ft): DRY

DATE: 12/21/94

RELATED FAL NUMBERS:

CHECKED BY:



PRELIMINARY

TYPE AND AMOUNT OF GROUT USED: TYPE E-I-K PORTLAND EXPANSIVE CEMENT 564 LB	BENTONITE PELLETS (5-GALLON BUCKETS): GRANULAR 6 LB		DEEPEST TEMPORARY DRILLING CASING PENET: N/A
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A		VOLUME OF WATER USED FOR GROUT HYDRAT: 42
RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A
RISER/SCREEN DIAMETER:	SCREEN SLOT SIZE: N/A	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A

000090

6521

PARSONS

FEMP
ASTM METHOD CONFORMANCE CHECKLIST

PROJECT NUMBER: 20.03.07	PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION			
BORING NUMBER: 11469	COORDINATES:			REPORT DATE: 12-20-94
GROUND SURFACE ELEVATION:	GROUNDWATER LEVEL:	DATE:	TIME:	DATE STARTED: 12-20-94
ENGINEER/GEOLOGIST: A. Couch	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED: 12-21-94
WATER USED DURING DRILLING: No	DRILLING CONTRACTOR: ALLIANCE ENV, INC.	DRILLING METHOD: HSA-MOBILE B-57		DRILLER/HELPER: BOB ERICKSON/D. Neuman

MAJOR SAMPLING/TESTING COMPONENT	CONFORMANCE (Y/N)	REMARKS OR DEVIATIONS
I. ASTM D 1586-84 SPT and Split-Barrel Sampling		
Nominal Hammer Weight (140 lb ± 2 lb)	Y	
Hammer Drop System Type/Method/Condition (Trip. Auto, Semi-auto) ~~CA Thread~~ Cathead/rope	Y	~100 RPM
Hammer Type (Safety, Donut)	Y	SAFETY
Drilling Method/Equipment (HSA, SA, Cable)	Y	Cont. flight hollow-stem augers
Fluid Level Maintenance	N/A	
Split-Barrel Sampler Type (Dimension compliance and usage)		ASKED DRILLERS NOT TO USE BADLY CHIPPED DRIVE SHOES
II. ASTM D 1587-83 Thin-Walled Tube Sampling		
Drilling Method/Equipment	Y	
Fluid Level Maintenance	N/A	
Thin-Walled Tube (Condition/Dimensions)	Y	3" x 36", SOME CRIMPING OF TUBE BOTTOMS ~~[illegible]~~ AFTER PUSHING
Sampler Advancement Method	Y	
Handling/Sealing of Tube Sample	Y	
III. ASTM D 4220-89 Preserving and Transporting Soil Samples		
Sample Group (A, B, C, D)	Y	JAR AND SHELBY-TUBE SAMPLES
Sealing Materials Usage	Y	WAX, TAPE
Labels/Marking Usage	Y	MARKED "UP" ARROW ON Shelby Tubes
Packing/Transport Container Usage	Y	
Sample Protection from Extreme Temperature	Y	

PRELIMINARY

NOTES:

CONTROL NO.: 200307-EFO-0014

FEMP
LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation	PROJECT NO.: 20.03.07
BORING NUMBER: 11471	COORDINATES:
RELATED FAL NO.s:	
SURFACE ELEVATION:	GROUNDWATER LEVEL: 3' bls; DATE: 12-30-94; TIME: 1344
DATE STARTED: 12-30-94	GEOLOGIST: K. Ernst
GROUNDWATER LEVEL:	DATE:
TIME:	DATE COMPLETED: 12-30-94
WATER USED DURING DRILLING: None	DRILLING CONTRACTOR: Alliance Env., Inc.
DRILLING EQUIPMENT: HSA Mobile Drill B-59	DRILLER/HELPER: B. Erickson / B. Montanye

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	0818, 12-30-94, #402961	3	6	Stiff, (10 YR 3/3) dark brown silt, roots and grass, low to no plasticity, moist	ML	1.75	SPLIT SPOON, 2" O.D. M_{TB} = 2.0 ppm
0.5		5	–	PRELIMINARY			M_{TS} = 6.0 ppm; B-γ = 70 cpm
1.0		9	–				#402961 is for FEMP Archive
1.5	0826, 12-30-94, #402962, #402984	5	–				SPLIT SPOON, 2" O.D. M_{TB} = 2.0 ppm
2.0		9	–				M_{TS} = 9.0 ppm; B-γ = 80 cpm
2.5		10	4	Stiff (10YR 3/3) dark brown silt, trace fine sand, low to no plasticity, moist	ML	1.5	#402962 is Geotech Lab Sample; #402984 is FEMP Archive Sample
3.0							Augered 3.0-3.5'
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	2.0 ppm	12-30-94	0818
ALPHA		N/A	
BETA/GAMMA	50-60 cpm	12-30-94	0818

NOTES: Colors identified using Munsell Color Chart for soils. Consistency measured using pocket penetrometer unless otherwise noted. (cont.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 Pre-Design Field Investigation	PROJECT NO.: 20.03.07
BORING NUMBER: 11471	COORDINATES:
RELATED FAL NO.:	
SURFACE ELEVATION:	GROUNDWATER LEVEL:
DATE:	TIME:
DATE STARTED:	
GEOLOGIST: K. Ernst	GROUNDWATER LEVEL: See Page 1
DATE:	TIME:
DATE COMPLETED:	
WATER USED DURING DRILLING:	DRILLING CONTRACTOR:
DRILLING EQUIPMENT:	DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5	0835, 12-30-94, #402963, #402964		17				SHELBY TUBE, 3" O.D. 30" push 575 psi
4.0				PRELIMINARY			MTB = 0.9 ppm MTS = 1.1 ppm B-γ = 70 cpm
4.5							#402963 is for Geotech Lab #402964 is Archive from
5.0							bottom face of tube
5.5				(10 YR 5/6) yellowish brown silty clay, medium plasticity, moist	CL		Description is from bottom face of tube
6.0	0845, 12-30-94, #402965	4	6	Stiff, (10 YR 5/6) yellowish brown silty clay, trace iron staining, medium plasticity, moist	CL	1.0	SPLIT SPOON, 2" O.D. MTB = 1.8 ppm
6.5		4	6	SAA	CL	0.75	MTS = 4.1 ppm B-γ = 70 cpm
7.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: Density described based on SPT blow count. Soil descriptions and USCS symbol per ASTM D 2488 guidelines. Samples collected per ASTM (cont')

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 3 OF 10

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11471

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0 – 7.5		7	6	SAA	CL	0.75	#402966 is a bulk sample of auger cuttings from 3 - 7.5'
8.0	0849, 12-30-94, #402967	3	–				SPLIT SPOON, 2" O.D. MT_B = 2.9 ppm
8.5		4	4	Stiff, (10 YR 5/6) yellowish brown silty clay, trace iron staining, medium plasticity, moist	CL	1.0	MT_S = 3.9 ppm B-γ = 50-70 cpm
9.0		4	6	Top 5" of this interval: SAA Bottom 1": (10 YR 5/6) yellowish brown fine to medium sand, wet, clayey	CL SC	1.0	#402967 is for FEMP Archive
9.5	0854, 12-30-94, #402968	2	–				SPLIT SPOON, 2" O.D. MT_B = 3.0 ppm MT_S = 5.0 ppm
10.0		3	3	Loose, (10 YR 5/6) yellowish brown clayey fine to coarse sand, wet	SC		B-γ = 50-100 cpm #402968 is for FEMP Archive
10.5		6	6	SAA	SC		#402978 is bulk sample of Auger cuttings from 7.5-10.5' for Geotech Lab

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: D-1586 and D 1587 split spoon samplers equipped with basket retainer. Two-inch O.D. standard split-barrel (spoon) samplers used.

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11471

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 – 11.0	0903, 12-30-94, #402969, #402970	5	6	Medium Dense, (10 YR 5/6) yellowish brown clayey, fine to coarse sand, wet	SC		SPLIT SPOON, 2" O.D. MTB = 3.1 ppm MTS = 14 ppm B-γ = 50-60 cpm
11.0 – 11.5		6	6	SPRELIMINARY	SC		#402969 (10.5-11.5') is for Geotechnical #402970 (11.5-12') is for FEMP Archive
11.5 – 12.0		10	6	Very Stiff, (10 YR 5/1) gray silty clay, trace fine sand, moist	CL	3.0	
12.0 – 12.5	0912, 12-30-94, #402971	11	6	Stiff, (10YR 5/1)) gray ~~clayey~~ silty clay, trace fine to medium sand, low plasticity, moist	CL	1.25	SPLIT SPOON, 2" O.D. MTB = 4.9 ppm MTS = 7.0 ppm B-γ = 50-100 cpm
12.5 – 13.0		17	6	Stiff (10 YR 5/1) gray clayey silt, trace fine subrounded gravel, low to no plasticity, moist	ML	2.0	
13.0 – 13.5		17	6	Medium Stiff, (10 YR 5/1) gray clayey silt, low to no plasticity, moist	ML	0.75	#402971 is for FEMP Archive
13.5 – 14.0	0917, 12-30-94, #402972	7	3	V. Stiff, (10 YR 5/1) gray clayey silt, low to no plasticity, moist	ML	2.0	SPLIT SPOON, 2" O.D.

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
MTB = Microtip (PID) background reading (ppm)
MTS = Microtip (PID) reading on the sample (ppm)
B-γ = Beta-Gamma radiation (cpm)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER:

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5		11	6	SAA	ML	2.5	M_{TB} = 4.3 ppm M_{TS} = 12.9 ppm B-γ = 60-100 cpm
14.5 – 15.0		14	6	SAA	ML	2.5	#402972 is for FEMP Archive
15.0 – 15.5	0925, 12-30-94, #402973	15	6	Stiff, (10YR 5/1) gray, clayey silt, low to no plasticity, moist, medium to rapid dilatancy	ML	1.5	SPLIT SPOON, 2" O.D. M_{TB} = 4.4 ppm
15.5 – 16.0		16	6	SAA	ML	1.5	M_{TS} = 8.0 ppm B-γ = 50-100 cpm #402973 is for ~~FEMP Archive~~ Lab
16.0 – 16.5		11	6	SAA	ML	1.5	
16.5 – 17.0							Augered 16.5 - 17'
17.0 – 17.5	1006, 12-30-94, #402974, #402975		20.5				SHELBY TUBE, 3" O.D.

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
reading on the sample (cpm)
N/A = Not Applicable
SAA = Same as Above
HSA = Hollow stem auger
b/s = below land surface

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

PRELIMINARY

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11471

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page A

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0							30° push 625 psi MTB = 3.5 ppm
18.5				PRELIMINARY			MTS = 7.8 ppm B-γ = 80 cpm #402974 is Shelby Tube sample for
19.0							Geotech. Lab #402975 is Jar Archive sample from end of tube
19.5				(5 BG 5/1) greenish gray gravelly clay with fine to medium sand, medium plasticity, moist (Gravel is fine to coarse (1¼" max.), subangular to subrounded)	CL		Description is from bottom face of Shelby Tube end
20.0	1015, 12-30-94 #402976	2	4	Medium stiff, (5 BG 5/1) greenish gray silty clay, trace fine to coarse sand, trace fine (1/8" max.) gravel, medium to high plasticity, moist	CL	0.5	SPLIT SPOON, 2" O.D. MTB = 3.6 ppm MTS = 12.4 ppm B-γ = 80-100 cpm
20.5		4	6	SAA	CL	0.5	Some brown sand on exterior of sample due to water in the borehole #402976 is for
21.0		6	6	SAA	CL	0.5	Geotech Lab #402985 is for FEMP Archive

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: O.D. = outer diameter

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11471

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0 – 21.5							Augered 21-21.5'
22.0	1027, 12-30-94, #402977		4	PRELIMINARY Early with 2 3/4" piece of subangular gravel in bottom of the tube	CL		Shelby Tube, 3" O.D. (See Note 1.)
22.5							Augered 22.0-22.5'
23.0	1041, 12-30-94			No Sample			Shelby Tube, 3" O.D. 500 - 1200 psi
23.5							variable press. 30" push. Lost tube in hole during
24.0							attempted wire line withdrawal. Overdrilled tube, removed augers
24.5							and recovered damaged tube. Advanced augers to 26' to recommence sampling

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
1. 6" push, 1200 psi for Shelby tube sample in 21.5-22.0' interval. MTB = 8.2 ppm MTS = 10.4 ppm, B-γ = 70 cpm
402977 is a jar sample from (cont'd)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11471

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5							
25.0							
25.5				PRELIMINARY			Augered 25-26'
26.0							
26.5	1245, 12-30-94	20	-	No Recovery			SPLIT-SPOON, 2" O.D.
27.0		20	-				Spoon is wet from water in borehole
27.5		20	-				
29.0	1250, 12-30-94, #402979, #402986	8	2	Very stiff, (5BG 6/1) greenish gray silty clay, trace medium to coarse sand, trace fine (3/8" max.) subangular to subrounded gravel, medium plasticity, moist	CL	2.5	SPLIT SPOON, 2" O.D.

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: (Note 1 cont'): the bottom of the lexan tube.

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11471

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 5 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
29.0 – 29.5		10	6	SAA	CL	2.5	MT_B = 1.8 ppm; MT_S = 4.2 ppm; B-γ = 20-50 cpm
29.5 – 29.0		14	6	SAA	CL	2.5	#402979 is for the Geotech Lab; #402986 is for FEMP Archive
29.0 – 29.5							~~SHELBY TUBE 3" O.D.~~ Augered 29-29.5'
29.5 – 30.0	1306, 12-30-94 #402980		3				SHELBY TUBE, 3" O.D. 30" push
30.0 – 30.5							600 psi; MT_B = 1.9 ppm; MT_S = 2.3 ppm
30.5 – 31.0							B-γ = 50-70 cpm; #402980 is a jar sample from
31.0 – 31.5							the bottom of the tube for FEMP Archive

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-23-94)

PRELIMINARY

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11471

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.5 – 32.0				SAA, with a 3" subangular to subround cobble in the bottom end of the tube	CL		Description is from bottom face of tube
32.5	1321, 12-30-94, #402981,	11	6	Med. stiff to stiff, greenish gray (5 BG 5/1) silty clay, trace fine gravel, medium plasticity, moist FREL/MEDIUM PLASTICITY	CL	0.75	SPLIT SPOON, 2" O.D. HTB = 1.8 ppm HTS = 2.1 ppm
33.0		9	6	SAA	CL	1.5	B-γ = 50-70 cpm #402981 (32-33.25') is FEMP Archive
33.5	33.25' #402992	38	6	SAA. V. Dense, (10 YR 4/2) grayish brown, well graded, fine to coarse sand, trace fine (¼" max.) subround gravel, moist to dry	CL / SW		#402992 (33.25-33.5') is FEMP Archive
34.0	1329, 12-30-94 #402993	40	2	Very Dense, (10 YR 4/2) grayish brown well graded, fine to coarse sand, trace fine (¼" max.) subround gravel, moist to dry	SW		SPLIT SPOON 2" O.D. HTB = 1.8 ppm HTS = 3.0 ppm
34.5		42	6	SAA	SW		B-γ = 50-70 cpm
35.0		50	6	SAA	SW		#402993 is for FEMP Archive

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

6521

WELL NUMBER: B - 11471

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

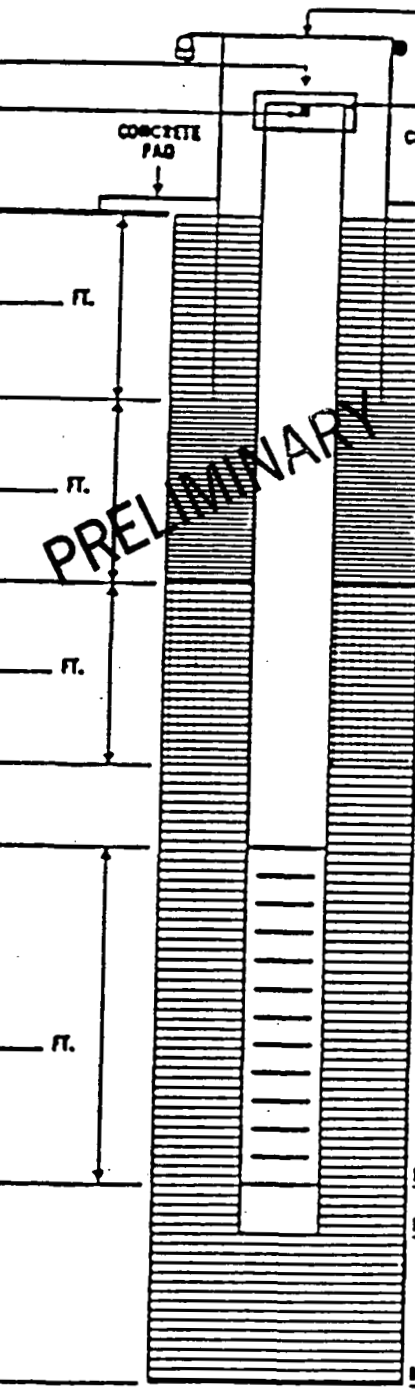
PROJECT NAME: OU2 PREDESIGN DISPOSAL FACILITY BORING

PROJECT NUMBER: 20.03.07

GEOLOGIST: [redacted] 10257

DRILLING METHOD: AUGER

DATES OF INSTALLATION:	WATER LEVEL (FL):	DATE:	RELATED FAL NUMBERS:	CHECKED BY:
12/30/94	3' BLS	12/30/94		



INNER WELL CAP

MEASUREMENT NOTCH

CONCRETE PAD

CONCRETE PAD

GROUND SURFACE

GROUND SURFACE

TOP OF PROTECTIVE CASING: N/A

TOP OF RISER: N/A

DIMENSIONS: N/A

CONCRETE: N/A FT.

GROUT: 35 FT.

BENTONITE PELLET SEAL: N/A FT.

SAND PACK: N/A FT.

SCREEN: N/A FT.

TOP OF GROUT SEAL: SURFACE FT.

BOTTOM OF PROTECTIVE CASING: N/A FT.

TOP OF BENTONITE PELLET SEAL: N/A FT.

TOP OF SAND PACK: N/A FT.

TOP OF SCREEN: N/A FT.

BOTTOM OF SCREEN: N/A FT.

BOTTOM OF SUMP: N/A FT.

BOTTOM OF BORING: 35

BOREHOLE DIAMETER: 8 IN.

TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS):	DEEPEST TEMPORARY DRILLING CASING PENETRATION:
TYPE E-I-K PORTLAND EXPANSIVE CEMENT ≤ 846 LB	GRANULAR 9 LB	N/A
VOLUME OF WATER USED DURING DRILLING:	**RISER MATERIAL:**	**VOLUME OF WATER USED FOR GROUT HYDRATION:**
N/A GAL	N/A	< 40

RISER WALL THICKNESS:	TYPE OF SAND PACK:	SCREEN MATERIAL:	DRILLING CASING DIAMETER:
N/A	N/A	N/A	N/A
RISER/SCREEN DIAMETER:	**SCREEN SLOT SIZE:**	**SCREEN TYPE:**	**DEPTH OF CENTRALIZER(S):**
		N/A	N/A

000102

PARSONS

FEMP
ASTM METHOD CONFORMANCE CHECKLIST

PROJECT NUMBER: 20.03.07	PROJECT NAME: OU-2 Pre-Design Field Investigation
BORING NUMBER: 11471	COORDINATES:
	REPORT DATE: 12-30-94

GROUND SURFACE ELEVATION:	GROUNDWATER LEVEL:	DATE:	TIME:	DATE STARTED:
	3' bls	12-30-94	1344	12-30-94
ENGINEER/GEOLOGIST: K. Ernst	**GROUNDWATER LEVEL:**	**DATE:**	**TIME:**	**DATE COMPLETED:** 12-30-94

WATER USED DURING DRILLING:	DRILLING CONTRACTOR:	DRILLING METHOD:	DRILLER/HELPER:
None	Alliance Env., Inc.	HSA, Mobile Drill B-59	B. Erickson / B. Montanye

MAJOR SAMPLING/TESTING COMPONENT	CONFORMANCE (Y/N)	REMARKS OR DEVIATIONS
I. ASTM D 1586-84 SPT and Split-Barrel Sampling		
Nominal Hammer Weight (140 lb ± 2 lb)	Y	
Hammer Drop System Type/Method/Condition (Trip. Auto, Semi-auto) CA Thread	Y	Rope and Cathead Release,
Hammer Type (Safety, Donut)	Y	Safety hammer used
Drilling Method/Equipment (HSA, SA, Cable)	Y	4 1/4" I.D. HSA used
Fluid Level Maintenance	NA	Not Applicable
Split-Barrel Sampler Type (Dimension compliance and usage)	Y	2" O.D. standard sampler, w/ no liners, basket retainers used
II. ASTM D 1587-83 Thin-Walled Tube Sampling		
Drilling Method/Equipment	Y	HSA
Fluid Level Maintenance	N/A	Not Applicable
Thin-Walled Tube (Condition/Dimensions)	Y	3" O.D, 36" long standard shelby tubes, good condition,
Sampler Advancement Method	Y	Hydraulic push in advance of augers
Handling/Sealing of Tube Sample	Y	
III. ASTM D 4220-89 Preserving and Transporting Soil Samples		
Sample Group (A, B, C, D)	Y	
Sealing Materials Usage	Y	Moisture proof jars with teflon seals.
Labels/Marking Usage	Y	Field marked with sample time, #, and depth,
Packing/Transport Container Usage	Y	
Sample Protection from Extreme Temperature	Y	

PRELIMINARY

NOTES: Recovered lost shelby tube at 22.5 - 25' by overdrilling and removing the augers. The damaged shelby tube came up with the augers - No sample. Upon recovery of the tube the augers were advanced to 26' and testing and sampling continued.

CONTROL NO.: 200307-EFO-0013

FEMP
LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11472

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: 13.7' bls | DATE: 12-29-94 | TIME: 1218 | DATE STARTED: 12-29-94

GEOLOGIST: K. Ernst

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: None

DRILLING CONTRACTOR: Alliance Environmental

DRILLING EQUIPMENT: HSA Mobile Drill B-59

DRILLER / HELPER: B. Erickson/B. Manta

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0 – 0.5	0805, 12-29-94, #402938	1	6	Medium stiff, (10 YR 3/2) Very dark grayish brown silt, grass and roots, low to no plasticity, moist	ML	1.0	M_{TB} = 14.5 ppm, M_{TS} = 21.9 ppm, B_γ = 80 cpm
0.5 – 1.0		2	4	Stiff, (10 YR 5/6) Yellowish brown silty clay, roots to no plasticity PRELIMINARY	CL	1.5	SPLIT SPOON 2" O.D.
1.0 – 1.5		3	–				#402938 is for FEMP Archive
1.5 – 2.0	0808, 12-29-94, #402939, #402960	5	6	Stiff, (10 YR 5/6) Yellowish brown silty clay, roots, trace iron staining, low to medium plasticity, moist	CL	1.75	SPLIT SPOON 2" O.D. M_{TB} = 15.0 ppm
2.0 – 2.5		7	6	Stiff, (10 YR 5/6) Yellowish brown silty clay, roots (2.0 - 2.3'), some black organic material (spots), low to medium plasticity, moist	CL	2.0	M_{TS} = 22.8, B_γ = 80 cpm, #402939 is Geotech Lab
2.5 – 3.0		8	3	Stiff, (10 YR 5/6) Yellowish brown silty clay, low to medium plasticity, moist	CL	1.5	#402960 is for FEMP Archive
3.0 – 3.5							Augered 3.0 - 3.5' - No Samples Collected

INSTRUMENT	BACKGROUND	DATE	TIME
PID	7.5 ppm	12-29-94	0807
ALPHA		N/A	
BETA / GAMMA	50 - 60 cpm	12-29-94	0807

NOTES: Colors identified using Munsell Color Chart for Soil. Consistency measured using pocket penetrometer unless otherwise noted. Density (cont)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 2 OF 8

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11472

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: See Page

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL:

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5	0820, 12-29-94 #402940, #402944		22.5	PRELIMINARY			SHELBY TUBE, 3" O.D. 30 in. push 400 to 800
4.0				(10 YR 5/6) Yellowish brown silty clay, trace fine gravel (Note: Description from bottom face of tube)	CL		psi (variable) MT_D = 15.9 ppm MT_S = 29.4 ppm B_γ = 50 cpm
4.5							
5.0							
5.5							#402940 is for Geotechnical Lab #402941 is Archive Sample
6.0							from bottom face of tube
6.5	0830, 12-29-94 #402942, #402943	11	6	Hard, (10 YR 5/4) yellowish brown silty clay, trace fine to medium sand, trace fine (1/4" max) gravel, low plasticity, moist	CL	4.5	SPLIT SPOON, 2" O.D. MT_D = 16.5 ppm
7.0		17	6	Very Stiff, (10 YR 5/4) yellowish brown silty clay, trace fine to medium sand, ~~silty~~ trace fine (1/4" max) gravel, low plasticity moist, trace iron staining	CL	3.5	MT_S = 19.7 ppm B_γ = 70 cpm #402958 is bulk sample of auger cuttings, 3.5 to 7.5'

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: described based on SPT blow count. Soil descriptions used USCS symbol per ASTM D 2488 guidelines. Samples collected per ASTM (cont')

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:	
PAGE	3 OF 8
PROJECT NAME:	OU-2 Pre-Design Field Investigation
PROJECT NO.:	20.03.07
BORING NUMBER:	11472
COORDINATES:	
RELATED FAL NO.s:	
SURFACE ELEVATION:	
GROUNDWATER LEVEL:	
DATE:	
TIME:	
DATE STARTED:	
GEOLOGIST:	
GROUNDWATER LEVEL:	See Page
DATE:	
TIME:	
DATE COMPLETED:	
WATER USED DURING DRILLING:	
DRILLING CONTRACTOR:	
DRILLING EQUIPMENT:	
DRILLER / HELPER:	

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0 – 7.5		21	6	Very Stiff, (10 YR 5/4) yellowish brown silty clay, trace fine to medium sand, trace fine (1/2" max.) angular to subangular gravel, low to med. plasticity, moist	CL	3.0	#402942 is for Envr. Lab #402943 is for FEMP Archive
7.5 – 9.0	0837, 12-29-94, 402944	11	6	Stiff, (10 YR 5/6) yellowish brown silty clay, trace fine ~~to coarse~~ subangular 1/2 (~~3/4~~" max.) gravel, medium plasticity, moist	CL	1.75	SPLIT SPOON, 2" O.D.
9.0 – 9.5		19	6	Very Stiff, (10 YR 5/6) yellowish brown silty clay, trace fine to coarse gravel (3/4" max.) medium plasticity, moist.	CL	3.0	
9.5 – 10.0		20	6	Very Stiff, (10 YR 5/6) yellowish brown silty clay, trace fine to med. sand, few fine (3/4" max) angular to subangular gravel, low plasticity, moist, trace organic material (black), trace iron staining, etc	CL	3.0	
10.0 – 10.5							Augered 9.0 to 9.5' interval
	0845, 12-29-94, #402945, #402946		12				SHELBY TUBE, 3" O.D. 30" push
							625 psi μr_b = 6.4 ppm μr_s = 25.1 ppm B-γ = 60 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: D 1586 and D 1587 Split spoon samplers equipped with basket retainers. Two-inch O.D. standard split-barrel (spoon) (cont)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3581

G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11472

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: see Page 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5				PRELIMINARY			#402945 is for Geotech. Lab #402946 is for FEMP Archive (from bottom of tube)
11.0							Tube is damaged on cutting end (bent in) and there is a buckling depression 18" from bottom of tube
11.5				(10 YR 5/6) yellowish brown silty clay with fine to coarse (1" max), subangular to subrand gravel, low plasticity, moist	CL		Description is from bottom face of tube
12.0	0855, 12-29-94, #402947, #402948	15	6	Very stiff, (10 YR 5/6) yellowish brown silty clay, trace fine (1/8" max) gravel, medium plasticity moist	CL	2.5	#402959 is a bulk sample of auger cuttings from 9-12'.
12.5		12	6	Very stiff, (10 YR 5/6) yellowish brown silty clay, medium to low plasticity, moist	CL	3.5	SPLIT SPOON, 2" O.D. MTD = 5.3 ppm MTS = 20.5 ppm B-8 = 90 cpm
13.0		16	6	Very stiff, (10 YR 5/6) yellowish brown silty clay, trace fine (1/4" max), medium to low plasticity, moist	CL	3.5	#402947 is for Environ. Lab #402948 is for FEMP Archive
13.5	0903, 12-29-94, #402949	11	20				SPLIT SPOON, 2" O.D.
14.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: used.

MTD = Microtip (PID) background reading (ppm)

MTS = Microtip (PID) reading (see page 7)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11472

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5		15	5	Stiff, (10 YR 5/6) yellowish brown silty clay, few fine (1/4" max.) subangular gravel, trace fine to medium sand, medium plasticity, moist	CL	1.25	M_{TB} = 5.1 ppm M_{TS} = 23.0 ppm B-γ = 70 cpm
		19	6	Very stiff, (10 YR 5/6) yellowish brown silty clay, few fine (1/2" max.) subround to subangular gravel, low plasticity, moist. (Bottom 1 to 2" of this sample appears to be (10 YR 5/1) gray in color)	CL	3.5	#402949 is for FEMP Archive
15.0 – 15.5	0910, 12-29-94, #402950	21	–	PRELIMINARY			SPLIT SPOON, 2" O.D. M_{TB} = 3.1 ppm M_{TS} = 10.0 ppm
		26	–				B-γ = 60 cpm #402950 is for FEMP Archive
16.0 – 16.5		32	6	Medium stiff, (10 YR 5/6) yellowish brown silty clay (--- possibly drill slough). Bottom 1" of split spoon had coarse, subangular gravel (1/4" max)	CL ~~GP~~ SC	1.0	Gravelly noise while augering through 15-16.5' interval
17.0	0922						Augered 16.5 to 17.0' interval
17.5	~~#402951~~, 12-29-94 #402951	SC	4	(10 YR 5/6) yellowish brown clayey medium to coarse sand with fine subangular to subround gravel (1/4" max.), wet	SC		Shelby Tube, 3" O.D. 6" push 900 psi, See Note 1

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
1. Encountered resistance to pushing after 6" of push. Description is from bottom of tube. Material removed from bottom of tube and placed in Jar #402951 for (cont'd)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11472

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0				PRELIMINARY			Augered 17.5 to 18'
18.5	0935, 12-29-94, #402952, ~~#402953~~	14	6	Very stiff, (10 GY 6/1) greenish gray silty clay, few fine (1/8" max.) subangular gravel, medium plasticity moist to wet	CL	2.0	SPLIT SPOON, 2" O.D. MT_B = ∅ ppm MT_S = ∅ ppm
19.0	#402953	21	6	Dense, (10 YR 5/4) yellowish brown clayey medium to coarse sand with fine (3/8" max) subangular to subround gravel, wet	SC		B-γ = 70 cpm #402952 (18-18.5') is FEMP Archive Sample
19.5		25	6	SAA	SC		#402953 (18.5-19.5') is for Geotechnical Lab.
20.0	0940, 12-29-94, #402954	14	–				SPLIT SPOON 2" O.D. MT_B = 0.0 ppm
20.5		7	–				MT_S = 0.0 ppm B-γ = 60 cpm
21.0		8	3	Top 1" of the 3" recovery: SAA Stiff, (10 GY 6/1) greenish gray silty clay, medium to high plasticity, wet. Subround coarse gravel Piece (2") in bottom of spoon	SC CL	1.0	#402954 is for FEMP Archive

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: (Note 1. cont): FEMP Archive, MT_B = 0 ppm, MT_S = 0 ppm, B-γ = 70 cpm.

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11472

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0	0950, ~~12-29-94~~ 12-29-94, #402955	8	–	PRELIMINARY			SPLIT SPOON, 2" O.D.
21.5							MT_B = 0.0 $MT_{1,2}$ = 0.0
		8	–				B-γ = .60
22.0							
		12	6	Stiff, (5B 4/1), dark bluish gray silty clay, trace fine to medium sand, trace fine (1/8" max.) subrounded gravel, medium to high plasticity, moist	CL	1.0	
22.5							
							Augered 22.5-23.0'
23.0							
	0958, 12-29-94, ~~#402956~~ #402957		30				SHELBY TUBE, 3" O.D.
23.5							30" push 600 psi
							#402956 is for Geotechnical lab #402952 is for FEMP Archive
24.0							
							(from bottom face of tube)
24.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
(cont' from Page 4):
on sample
B-γ = Beta - gamma reading
on sample cpm
N/A - Not Applicable
(cont')

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 8 OF 8

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11472

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 2

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5				PRELIMINARY			M_{TB} = 0.0 ppm M_{TS} = 0.0 ppm B-γ = 80 cpm
25.0				(5 B 4/1) dark bluish gray silty clay, trace fine (¼ max.) subround to subangular gravel, medium plasticity, moist	CL		
25.5				Bottom of Boring = 25.5 feet			
26.0							
26.5							
27.0							
27.5							
28.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
SAA = Same as Above
O.D. = Outer Diameter
HSA = Hollow Stem Auger
psi = pounds per square inch (drill rig hyd. pressure)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

WELL NUMBER: B - 11472

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 PREDESIGN DISPOSAL FACILITY BORING

PROJECT NUMBER: 20.03.07

[redacted] 10257

DRILLING METHOD: AUGER

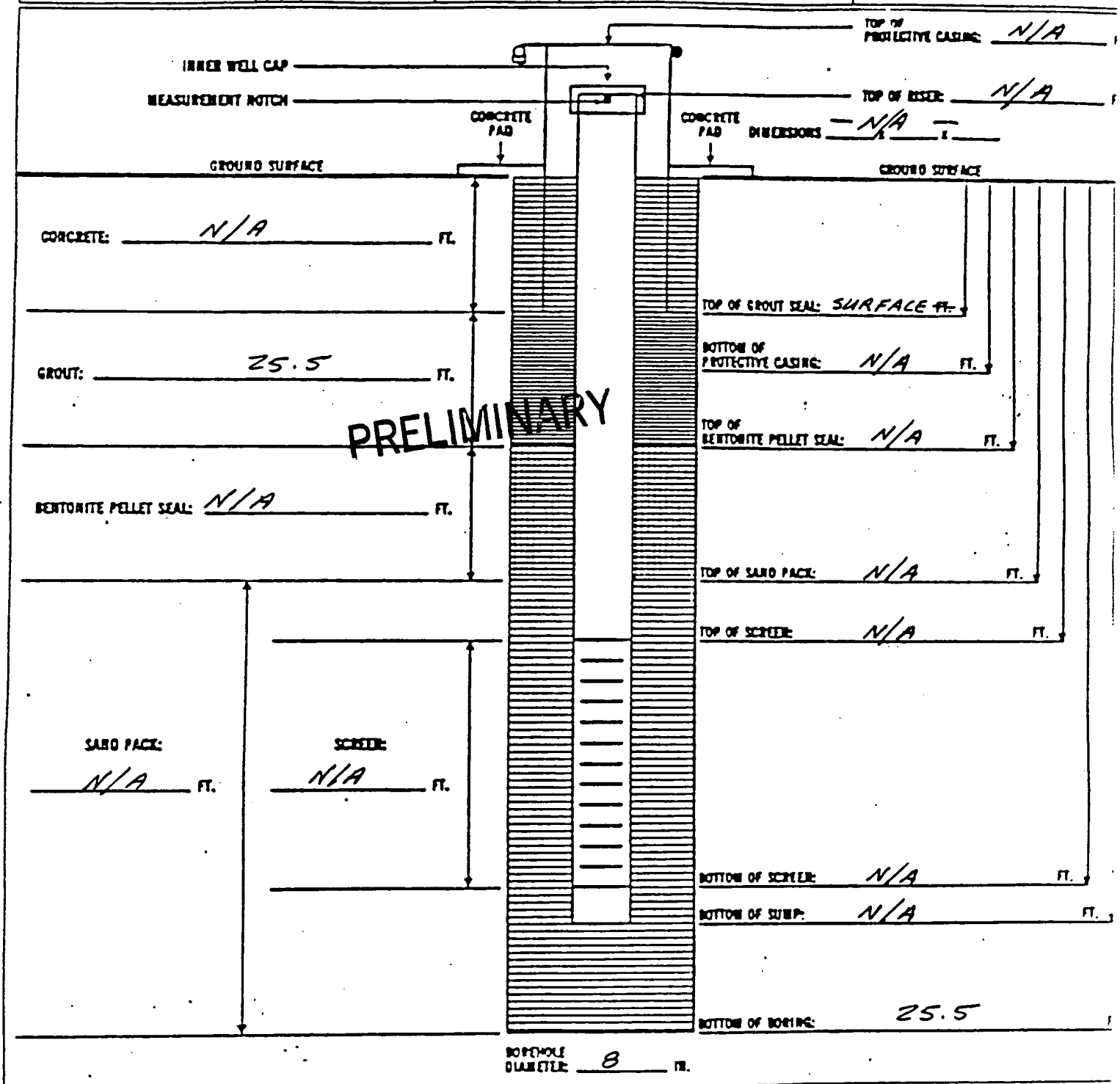
DATES OF INSTALLATION: 12/29/94

WATER LEVEL (R.): 13.7' BLS

DATE: 12/29/94

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: TYPE E-I-K PORTLAND EXPANSIVE CEMENT 282 LB	BENTONITE PELLETS (5-GALLON BUCKETS): GRANULAR 3 LB	DEEPEST TEMPORARY DRILLING CASING PENETRA N/A
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A	VOLUME OF WATER USED FOR GROUT HYDRATION 21

RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A
RISER/SCREEN DIAMETER:	SCREEN SLOT SIZE:	SCREEN TYPE:	DEPTH OF CENTRALIZER(S):

PARSONS

FEMP
ASTM METHOD CONFORMANCE CHECKLIST

PROJECT NUMBER: 20.03.07	PROJECT NAME: OU-2 Pre-Design Field Investigation			
BORING NUMBER: 11472	COORDINATES:			REPORT DATE: 12-29-94
GROUND SURFACE ELEVATION: —	GROUNDWATER LEVEL: 13.7' bls	DATE: 12-29-94	TIME: 1218	DATE STARTED: 12-29-94
ENGINEER/GEOLOGIST: K. Ernst	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED: 12-29-94
WATER USED DURING DRILLING: None	DRILLING CONTRACTOR: Alliance Env. Inc	DRILLING METHOD: HSA, Mobile Drill B-59		DRILLER/HELPER: R. Erickson/ B Montanye

MAJOR SAMPLING/TESTING COMPONENT	CONFORMANCE (Y/N)	REMARKS OR DEVIATIONS
I. ASTM D 1586-84 SPT and Split-Barrel Sampling		
Nominal Hammer Weight (140 lb ± 2 lb)	Y	
Hammer Drop System Type/Method/Condition (Trip. Auto, Semi-auto) CA Thread	Y	Safety hamar, rope and cathead release; condition good
Hammer Type (Safety, Donut)		Safety Hammer
Drilling Method/Equipment (HSA, SA, Cable)	Y	
Fluid Level Maintenance	N/A	Not Applicable
Split-Barrel Sampler Type (Dimension compliance and usage)	Y	2" O.D standard samplers used, no liners, plastic basket retainers
II. ASTM D 1587-83 Thin-Walled Tube Sampling		
Drilling Method/Equipment	Y	HSA
Fluid Level Maintenance	N/A	Not Applicable
Thin-Walled Tube (Condition/Dimensions)	Y	36", 3" standard Shelby Tubes
Sampler Advancement Method	Y	Hydraulically pushed in advance of augers
Handling/Sealing of Tube Sample	Y	
III. ASTM D 4220-89 Preserving and Transporting Soil Samples		
Sample Group (A, B, C, D)	Y	
Sealing Materials Usage	Y	Moisture proof jars for split barrel samples, wax w/end caps, tape and wax seal for shelby tubes
Labels/Marking Usage	Y	
Packing/Transport Container Usage	Y	cardboard boxes w/ dividers for jars, Tubes maintained upright and handled carefully
Sample Protection from Extreme Temperature	Y	

PRELIMINARY

NOTES:

FEMP

LITHOLOGIC LOG

CONTROL NO.: 200307-EFO-0008

PAGE 1 OF 8

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11473

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DRY | DATE: 12-28-94 | TIME: 1205 | DATE STARTED: 12-28-94

GEOLOGIST: A. COUCH

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: ALLIANCE ENV., INC

DRILLING EQUIPMENT: HSA MOBILE DRILL B-59

DRILLER / HELPER: BOB ERKSON / BEN MONT.

PRELIMINARY

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	0904 12-28-94 402916	2	2	VERY SOFT (10YR 3/3) DARK BROWN ~~SILTY~~ AC CLAYEY SILT, GRASS, ROOTS, LOW PLASTICITY, MOIST	ML	L 0.25	2" OD SPLIT-SPOON
0.5	0904 12-28-94 402936	2	6	STIFF (10YR 5/3) BROWN SILTY CLAY, GRASS, ROOTS, SLIGHT IRON STAINING, TRACE FINE SAND, LOW PLASTICITY, SLIGHTLY MOIST	CL	1.25	MTB = 4.65 MTS = 10.9 BR = 100
1.0		5	6	STIFF (2.5Y 5/3) LIGHT OLIVE BROWN SILTY CLAY, GRASS, ROOTS, SLIGHTLY MOTTLED, SLIGHT IRON STAINING, LOW to MED PLASTICITY, MOIST	CL	1.75	402916-LA 402936-Arc
1.5	0908 12-28-94 402917	3	0			1.75 AC	2" O.D. SPLIT SPOON
2.0		6	6	STIFF (10YR 5/4) YELLOWISH BROWN SILTY CLAY, TRACE BLACK ORGANIC MATTER, ROOTS, IRON-STAINING, SLIGHTLY MOTTLED, LOW PLASTICITY, SLIGHTLY MOIST	CL	1.25	MTB = 9.4 MTS = 11.4 BR = 80
2.5		9	6	VERY STIFF (10YR 5/4) YELLOWISH BROWN SILTY CLAY, TRACE FINE SAND, TRACE BLACK ORGANIC MATTER, ROOTS, SLIGHT IRON STAINING, SLIGHT MOTTLING, LOW PLASTICITY, SLIGHTLY MOIST	CL	2.25	402917 - Arc
3.0							AUGERED INTERVAL ONLY - NO SAMPLE
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12-28-94	0844
ALPHA	N/A	N/A	N/A
BETA / GAMMA	70	12-28-94	0844

NOTES: COLORS IDENTIFIED USING MU COLOR CHART FOR SOILS. CONSISTE MEASURED USING POCKET PE TROMETER UNLESS OTHERWISE NOTED. DENSITY DETERMINED (Cook)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3581

G:/WPSC/94-776.DRW (11

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11473

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS 402918-LAB 402919-Archive
3.5	0941 12-28-94 402918		32	PRELIMINARY			3" OD SHELBY-TUBE 24" PUSH@6 6" PUSH@9
4.0							MTB = 6.9, MTS = 11.2 Bd = 80
4.5							DESCRIPTION FROM TUBE SHEET. PROBABLE DRILL SLOUGH INTO TOP OF TUBE
5.0							
5.5							TUBE BOLTS SHEARED UPON PULLING. TUBE RECOVERY
	0941 12-28-94 402919			(2.5Y 5/4) LIGHT OLIVE BROWN SILTY CLAY, TRACE FINE SAND, SLIGHTLY MOTTLED, LOW PLASTICITY, DRY TO SLIGHTLY MOIST	CL		NOT POSSIBLE ~~NO SAMPLE~~ OVERDRILLED FROM 3.5 to 6
6.0							
6.5							AUGERED INTERVAL ONLY - NO SAMPLE
	~~0941AC~~ 0958 12-28-94 402920		23.75				3"OD SHELBY TUBE 24"@600P
7.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: SPT BLOW COUNT. SOIL DESCRIPTION AND USCS SYMBOL PER ASTM D-24 GUIDELINES. SAMPLES COLLECTED P ASTM D-1586 AND D-1587. SPLI SPOON SAMPLERS EQUIPPED WITH /cont

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11473

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0	1000 12-28-94 402923			PRELIMINARY			MTB = 6.3 pp MTS = 9.1 pp BS = 80 cp
8.0							402920 - LAB 402921 - ATCL 402923 - LAB #402923 is a b. sample of auger c
9.5	~~0950 AC 12-28-94 402921~~			(2.5Y 6/4) LIGHT YELLOWISH BROWN SILTY CLAY, WITH SUBROUND FINE (1/2") GRAVEL, TRACE FINE SAND, LOW PLASTICITY, SLIGHTLY MOIST	CL		DESCRIPTION FROM BOTTO OF TUBE 8.0 -
9.0	AC ~~12-28-94~~ AC ~~402922~~						AUGERED INTERVAL ONLY - NI SAMPLE
9.5	1010 12-28-94 402922	16	6	VERY STIFF (2.5Y 6/4) LIGHT YELLOWISH BROWN SILTY CLAY WITH SUBANGULAR to SUBROUND FINE (3/4") GRAVEL, TRACE FINE SAND LOW to MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	2.5	2" OD SPLIT SPOON GRAVEL FOR 9.2 to 9.5 FT
10.0		16	6	SAA, SLIGHT IRON STAINING.	CL	3.0	MTB = 2.7 MTS = 9.2 BS = 80 c
10.5		20	6	VERY STIFF (2.5Y 5/4) LIGHT OLIVE BROWN SANDY CLAY WITH SUB ROUND FINE (3/8") GRAVEL, (SAND - FINE POORLY GRADED), LOW PLASTICITY, SLIGHTLY MOIST	CL	3.75	402922 - LAB

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: BASKET RETAINERS (TRAPS). 2" O.D. STANDARD SPLIT-BARREL (SPO SAMPLERS USED.

(Cont.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11473

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1

DATE

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 – 11.0	1018 12-28-94 402924	16	Ø				2" OD SPLIT SPOON
11.5		18	Ø	PRELIMINARY			MT_B = 3.1 ppm MT_S = 5.6 ppm $B\gamma$ = 70 cpm
12.0	1025 12-28-94 402925	28	6	STIFF (2.5 Y 5/4) LIGHT OLIVE BROWN SANDY CLAY WITH SUBROUND FINE (3/8") TO COARSE (1") SUBANGULAR GRAVEL (SAND-FINE, POORLY GRADED), LOW PLASTICITY, SLIGHTLY MOIST	CL	1.5	402924-Archive 402925-LAB 402925 is a bulk sample of angular gravel from 7.5
12.5	1027 12-28-94 402926	11	6	VERY STIFF (2.5 Y 5/3) LIGHT OLIVE BROWN GRAVELLY CLAY WITH FINE SAND (GRAVEL - SUBROUND FINE (1/4"), LOW TO MEDIUM PLASTICITY) & MOIST	CL	2.75	2" OD SPLIT SPOON
13.0		18	6	HARD (2.5 Y 5/4) LIGHT OLIVE BROWN SILTY CLAY WITH FINE (1/4") SUBANGULAR & SUBROUND GRAVEL, IRON STAINING, LOW PLASTICITY, SLIGHTLY MOIST	CL	>4.5	MT_B = 3.3 ppm MT_S = 7.0 ppm $B\gamma$ = 60 cpm
13.5		21	6	SAA	CL	>4.5	402926-Archive
14.0	1041 12-28-94 402927	9	6	VERY STIFF (10 Y 5/1) GREENISH GRAY SILTY CLAY, FEW SUBANGULAR COARSE (1.5") TO FINE (3/8") SUBROUND GRAVEL, TRACE FINE SAND, MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	2.5	2" O.D SPLIT SPOON TOP OF GRAY CLAY AT 13.5 FT

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
MT_B = MICROTIP BACKGROUND READING
MT_S = MICROTIP READING ON SAMPLE
$B\gamma$ = BETA-GAMMA READING ON SAMPLE (CPM)
N/A = Not applicable
(CONT.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11473

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See 8.93 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0		14	6	VERY STIFF (5GY5/1) GREENISH GRAY SANDY CLAY WITH FINE (1/2") SUBROUND GRAVEL / SAND-FINE POORLY GRADED, MOTTLED IRON STAINING, LOW to MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	2.25	MTB = 3.0 ppm MTS = 19.4 ppm BG = 70 cpm
14.5		19	6	SAA	CL	2.75	402927 - ARCHIVE
15.0				PRELIMINARY			
15.5							AUGERED INTERVAL ONLY - NO SAMPLE
16.0	1055 12-28-94 402928		21				3" O.D. SHELBY-TUBE 30" PUSH @ 600 PSI
16.5							MTB = 4.2 ppm MTS = 6 ppm BG = 70 cpm
17.0							402928 - LAB 402929 - Archive
17.5							Bottom AS 1" OF TUBE CRIMPED IN.

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
SAA = SAME AS ABOVE
O.D. = OUTER DIAMETER
HSA = HOLLOW STEM AUGER
PSI = Pounds per SQUARE INCH

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11473

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: see Page 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5	1055 12-28-94 402929			(10 Y 5/1) GREENISH GRAY SANDY CLAY WITH SUBROUND FINE (3/8") GRAVEL (SAND-FINE, POORLY GRADED) LOW PLASTICITY, MOIST	CL		BOTTOM FACE OF TUBE DESCRIBED
18.0							
18.5	1106 12-28-94 402930	14	Ø	PRELIMINARY			2" OD SPLIT SPOON 1.75" LONG GRAVEL STUCK IN DRIVE SHOE
19.0		21	4	MED-STIFF (10Y 5/1) GREENISH GRAY SILTY CLAY WITH SUBANGULAR FINE (1/4") GRAVEL, TRACE FINE SAND, SLIGHTLY IRON STAINED, MEDIUM PLASTICITY, MOIST	CL	Ø.75	MTB = 2.Ø ppm MTS = 21.8 ppm BH = 60 cpm
19.5		29	6	MED-STIFF (10Y 4/1) DARK GREENISH GRAY SANDY CLAY WITH FINE (1/4") SUBROUND to COARSE (1.75") SUBANGULAR GRAVEL (SAND-FINE to COARSE) LOW to MED. PLASTICITY, MOIST	CL	Ø.75	402930-Archive
20.0							AUGERED INTERVAL ONLY - NO SAMPLE
20.5	1125 12-28-94 402931		21				3" O.D SHELBY TUBE-Pushed 24" 18" @ 600 PSI 6" @ 900 PSI
21.0							TUBE BADLY CRIMPED OVER BOTTOM 2". SLIGHTLY CRIMPED UP TO 20"

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: ALL "LAB" SAMPLES ARE FOR THE GEOTECHNICAL LABORATORY. NO ENVIRONMENTAL SAMPLES WERE REQUIRED FROM THIS BORE HOLE. ARCHIVE SAMPLES (CONT')

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11473

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 2 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0				PRELIMINARY			MT_B = 0 ppm MT_S = 7.8 ppm $B\gamma$ = 60 cpm
21.5							
22.0	1125 12-28-94 402932			(5Y 5/1) GRAY CLAYEY SAND (FINE, POORLY GRADED) WITH FINE (3/8") SUBANGULAR GRAVEL, NO TO LOW PLASTICITY, MOIST TO WET	SP-SC		DESCRIPTION FROM BOTTOM OF TUBE 402931-LAB, 402932
22.5	1138 12-28-94 402933	16	6	MED DENSE (5Y 5/1) GRAY CLAYEY SAND (FINE, POORLY GRADED) WITH COARSE (1.25") SUBANGULAR TO ANGULAR GRAVEL, NO TO LOW PLASTICITY, MOIST	SP-SC	2.5	2" OD SPLIT-SPOON GRAVEL ZONE @ 22.3 FT
23.0		14	6	VERY STIFF (10Y 5/1) GREENISH GRAY SANDY CLAY WITH FINE (1/2") SUB-ROUND TO SUBANGULAR GRAVEL (SAND - FINE TO COARSE) LOW PLASTICITY, MOIST	CL	3.5	MT_B = 0 ppm MT_S = 7.0 ppm $B\gamma$ = 60 cpm
23.5		18	6	HARD, SAA	CL	4.5	402933-Archive
24.0	1148 12-28-94 402934	21	6	STIFF (10Y 5/1) GREENISH GRAY SILTY CLAY WITH FINE (3/4") SUB-ANGULAR GRAVEL, TRACE FINE SAND, LOW PLASTICITY, MOIST	CL	1.5	2" OD SPLIT-SPOON GRAVEL ZONE (DRY) @ 24.0 FT
24.5	1148 12-28-94 402935	16	6	VERY STIFF (10Y 5/1) GREENISH GRAY SILTY CLAY WITH COARSE (1.25") TO FINE (1/4") SUBANGULAR & SUBROUND GRAVEL, TRACE FINE SAND, LOW PLASTICITY, MOIST	CL	2.5	MT_B = 0 ppm MT_S = 0 ppm $B\gamma$ = 70 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: ARE FOR ARCHIVE @ FEMP SITE.

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11473

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 1

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5	1148 12-28-94 402937	19	6	HARD (10 Y 5/1) GREENISH GRAY SANDY CLAY WITH FINE (¼") SUBROUND GRAVEL, LOW PLASTICITY, MOIST	CL	4.25	402934 - LAB 402935 - Archive 402937 - Archive
25.0				BOTTOM OF BORING 25 FT.			
25.5				PRELIMINARY			
26.0							
26.5							
27.0							
27.5							
28.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-23-94)

000121

6521

WELL NUMBER: B - 11473

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 PREDESIGN DISPOSAL FACILITY BORING

PROJECT NUMBER: 20.03.07

GEOLOGIST: [redacted] 10257

DRILLING METHOD: AUGER

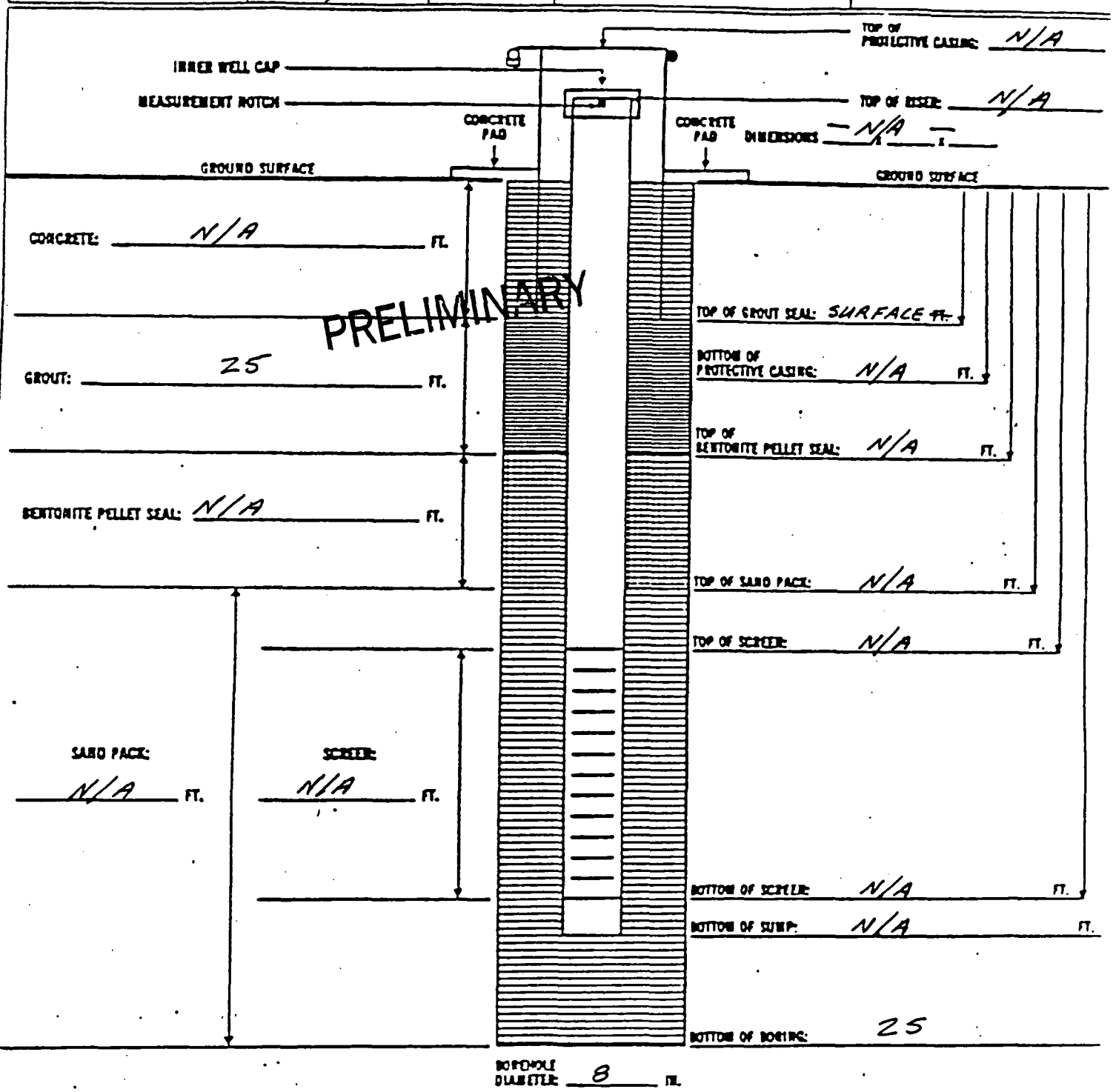
DATES OF INSTALLATION: 12/28/94

WATER-LEVEL (ft): N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: TYPE E-I-K PORTLAND EXPANSIVE CEMENT <423 LB	BENTONITE PELLETS (5-GALLON BUCKETS): GRANULAR < 4.5 LB	DEEPEST TEMPORARY DRILLING CASING PENETR: N/A
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A	VOLUME OF WATER USED FOR GROUT HYDRATIO: < 31.5

RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A
RISER/SCREEN DIAMETER:	SCREEN SLOT SIZE:	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A

000122

PARSONS	FEMP ASTM METHOD CONFORMANCE CHECKLIST	Page 1 of 1

PROJECT NUMBER: 20.03.07	PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION			
BORING NUMBER: 11473	COORDINATES:			REPORT DATE:
GROUND SURFACE ELEVATION: —	GROUNDWATER LEVEL: DRY	DATE: 12-28-94	TIME: 1205	DATE STARTED: 12-28-94
ENGINEER/GEOLOGIST: A. COUCH	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED: 12-28-94
WATER USED DURING DRILLING:	DRILLING CONTRACTOR: ALLIANCE ENV., INC.	DRILLING METHOD: HSA MOBILE DRILL B-59	DRILLER/HELPER: BOB ERICKSON / BILL MONTANYE	

MAJOR SAMPLING/TESTING COMPONENT	CONFORMANCE (Y/N)	REMARKS OR DEVIATIONS
I. ASTM D 1586-84 SPT and Split-Barrel Sampling		
Nominal Hammer Weight (140 lb ± 2 lb)	Y	
Hammer Drop System Type/Method/Condition (Trip. Auto, Semi-auto) ~~CA Thread~~ CATHEAD / ROPE	Y	APPROX 30" DROP
Hammer Type (Safety, Donut)	Y	
Drilling Method/Equipment (HSA, SA, Cable)	Y	HSA
Fluid Level Maintenance	N/A	
Split-Barrel Sampler Type (Dimension compliance and usage)	Y	2" O.D. STANDARD SPLIT-SPOON
II. ASTM D 1587-83 Thin-Walled Tube Sampling		
Drilling Method/Equipment	Y	3" O.D. SHELBY TUBE - See NOTE 2
Fluid Level Maintenance	N/A	
Thin-Walled Tube (Condition/Dimensions)	Y	
Sampler Advancement Method	Y	
Handling/Sealing of Tube Sample	Y	TUBES GENERALLY KEPT VERTICAL.
III. ASTM D 4220-89 Preserving and Transporting Soil Samples		
Sample Group (A, B, C, D)	Y	
Sealing Materials Usage	Y	
Labels/Marking Usage	Y	
Packing/Transport Container Usage	Y	
Sample Protection from Extreme Temperature	Y	

PRELIMINARY

NOTES: NOTE 1 - POPPED/SHEARED BOLTS FROM TUBE AT 3.5 & 6 FT UPON PULLING. TUBE WAS OVERDRILLED WITH AUGERS AND RECOVERED FROM INSIDE LOWER AUGER BIT + FLIGHT.

CONTROL NO.: 200307EFO-0009

FEMP
LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11474

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: –

GROUNDWATER LEVEL: Dry | DATE: 12-27-94 | TIME: 1533

DATE STARTED: 12-27-94

GEOLOGIST: K. Ernst

GROUNDWATER LEVEL: | DATE: | TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: None

DRILLING CONTRACTOR: Alliance Env. Inc

DRILLING EQUIPMENT: HSA Mobile Drill B-59 (1993)

DRILLER / HELPER: Bob Erickson / Bill Mon

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0 – 0.5	1245 12-27-94 #402890	3	6	Soft, (10 YR 4/2) Dark grayish brown silt with roots and grass, no to low plasticity, moist (Topsoil) PRELIMINARY	ML	0.5	MT_B = 0.0 pp MT_S = 0.1 pp B-γ = 80 cp
1.0		4	6	Medium Stiff, (10 YR 4/2) Dark grayish brown silt, some roots, trace iron staining, no to low plasticity, moist	ML	0.75	SPLIT SPOO 2" O.D.
1.5		5	6	Stiff, (10 YR 5/3) Brown silty clay, some roots, trace iron staining, low plasticity, moist	CL	1.5	#402890 is FEMP Archive Sample
3.0	1250 12-27-94 #402891	4	6	Stiff, (10 YR 5/3) Brown silty clay, some roots, iron staining, low to medium plasticity, moist	CL	2.0	SPLIT SPOON 2" 0.0 MT_B = 0.0 pp MT_S = 2.9 p
2.5	#402894 #402912	5	6	Stiff, (10 YR 5/3) Brown silty clay, trace medium to coarse sand, low to medium plasticity, moist, iron staining	CL	2.0	B-γ = 80 cp #402891 = Geot Lab Sample
3.0		9	3	Medium Stiff, (10 YR 5/6) Yellowish brown silty clay, few subrounded fine gravel (3/4" max.), low to medium plasticity, moist, iron staining	CL	0.5	#402894 = Lab Sample #402912 = Archive Sam
3.5							Augered 3.0 – 3.5' – No Samples

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 ppm	12-27-94	1250
ALPHA		N/A	
BETA / GAMMA	40 – 50 cpm		1250

NOTES: Colors identified using Munsell color chart for Soils. Consistenc measured using pocket penetrometer unless otherwise noted. Densit determined from SPT blow

(Cont

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-2

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11474

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5	1300 12-27-94 #402892		18				SHELBY TUBE, 3" O.D. 30" push
4.0	#402893			PRELIMINARY			600 psi
4.5							MT_D = 0.0 ppm MT_S = 3.5 ppm
5.0							B-γ = 70 cpm
5.5							#402892 is a Geotech Lab Sample #402893 is a FEMP Monitor sample from the Shelby tube
6.0				(10 YR 5/6) Yellowish brown silty clay, trace subrounded fine gravel (1/8" max.) medium plasticity, moist	CL		Description from bottom of sample tube
6.5	1312 12-27-94 #402895	5	6	Very stiff (10YR 5/4) Yellowish-brown silty clay, trace fine to medium sand, trace fine subrounded gravel (1/8" max.) medium plasticity, moist	CL	2.0	SPLIT SPOON, 2" O.D. 1" sand layer loc about 3" from top of this interval in coarse sand
7.0		8	6	Very stiff, (10 YR 5/4) Yellowish brown silty clay with sand, trace fine subrounded gravel (1/8" max.), medium to low plasticity, moist	CL	2.0	MT_D = 0.0 ppm MT_S = 5.0 ppm B-γ = 90 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: Const. Soil descriptions and USCS symbol per ASTM D-2488 Guidelines. Samples collected per ASTM D 1586 and D 1587 Split Spoon

(cont)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-2

000125

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11474

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 2 | DATE: | TIME: | DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0 – 7.5		10	6	Stiff, (10 YR 5/4) yellowish brown silty clay with sand, low to medium plasticity, moist	CL	1.5	#402896 is a Bulk Sample of Auger Cuttings 3-7.5' for Geol Lab.
8.0	1322 12-27-94 #402897	8	6	Very Stiff, (10 YR 5/6) yellowish brown silty clay, trace fine to medium sand, trace fine subrounded gravel (1/4") medium plasticity, moist	CL	2.0	MTB = 0.0 ppm MTS = 0.0 ppm B-γ = 80 cpm
9.5		16	6	SAA	CL	2.5	SPLIT SPOON, 2" O.D
9.0		17	6	SAA	CL	2.5	#402897 is a FEMP Archive Sample
9.5	1326 12-27-94 #402898 #402913	9	6	Very Stiff, (10YR 5/6) yellowish brown silty clay, trace fine to coarse sand, trace fine subrounded gravel (1/4" max.) medium plasticity, moist, some iron staining	CL	2.5	SPLIT SPOON 2" O.D.
10.0		16	6	SAA	CL	2.5	MTB = 0.0 ppm MTS = 0.0 ppm B-γ = 60-80 cpm
10.5		22	6	SAA	CL	3.0	#402898 is a Geotech Lab Sam #402913 is a FEMP Archive Sa

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: Samplers equipped with basket retainers (traps) 2" O.D. standard split barrel (spoon) samplers used.

(cont)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-2

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11474

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: See Page 2

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL:

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5	1330 12-27-94 #402899	6	6	Medium stiff, (10 YR 5/6) yellowish brown silty clay with fine to medium sand, trace subangular fine gravel (3/8" max), med. plasticity moist	CL	0.75	SPLIT SPOON 2" O.D. MTB = 0.0 pp MTS = 0.0 pp B-γ = 100 cpm
11.0	#402900	13	6	Top 3" of 11.0 to 11.5 interval: SAA. Bottom 3": mottled yellowish brown (10YR 5/4) and greenish gray (5GY 5/1) silty clay, trace fine to medium sand, low plasticity, moist, very stiff	CL – CL	— 3.0	#402899 = FEMP Archive Sample #402900 = FEMP Archive Sample 899 [illegible]
12.0		21	6	Hard (5GY 5/1) greenish gray silty clay, trace fine subangular gravel, low plasticity, moist	CL	7.5	#402901 = yellow brown silty clay #402902 = greenish gray silty clay
12.5	1337 12-27-94 #402902	11	6	Very stiff, (5GY 5/1) greenish gray silty clay with fine to coarse (1" max.) angular to subrounded gravel, low plasticity, moist	CL	2.5	#402901 = Bulk sample of Auger cuttings: 7.5'-12.0' for Geotech Lab
13.0	#402903	14	6	Very stiff, (5GY 5/1) greenish gray silty clay, trace fine to medium sand, trace subrounded to subangular fine (1/4" max.) gravel, low plasticity, moist	CL	2.5	SPLIT SPOON 2" O.D. MTB = 0.0 pp MTS = 0.0 pp
13.5		20	6	SAA	CL	2.5	B-γ = 60-70 c #402902 = FEMP Archive sample #402903 = Env. Lab sample
14.0							Augered 13.5-14.0' — No samples

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
MTB = Microtip Background Reading
MTS = Microtip Reading on Sample
B-γ = Beta gamma reading on sample
N/A = Not Applicable

(cont)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-2

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11474

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0	1400 12-27-94 #402904		19				SHELBY TUBE, 3" O.D. 30" push 700 psi
14.5	#402905						μR_D = 0.0 μR_S = 0.0 B,γ = 70-100 cpm
15.0				PRELIMINARY			#402904 = Geoc Lab sample #402905 = Fem Archive sample (from bottom of
15.5							Bottom cutting edge of tube crimped inw slightly (¼")
16.0							
16.5				(5 GY 5/1) Greenish gray silty clay, trace fine to medium sand, trace subrounded to subangular fine (3/8" max.) gravel low plasticity, moist.	CL		Sample descri from bottom of tube
17.0	1408 12-27-94 #402906	6	6	Stiff, (5GY 5/1) greenish gray silty clay, trace fine to medium sand, trace subrounded fine (¼" max) gravel, low plasticity, moist	CL	2.0	SPLIT SPOON, 2" O.D
17.5		10	6	SAA with thin (1/4") layer of coarse sand at 3" from the top of the 17.0 - 17.5' sample interval.	CL	1.75	μR_B = 0.0 ppm μR_S = 0.0 ppm B-γ = 50 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
SAA = Same as above
O.D = outer diameter
HSA = Hollow Stem Auger

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-

FEMP

LITHOLOGIC LOG

CONTROL NO.:	
PROJECT NAME:	OU-2 Pre Design Field Investigation
PROJECT NO.:	20.03.07
BORING NUMBER:	11474
COORDINATES:	
RELATED FAL NO.s:	
SURFACE ELEVATION:	—
GROUNDWATER LEVEL:	
DATE:	
TIME:	
DATE STARTED:	
GEOLOGIST:	
GROUNDWATER LEVEL:	see Page 1
DATE:	
TIME:	
DATE COMPLETED:	
WATER USED DURING DRILLING:	
DRILLING CONTRACTOR:	
DRILLING EQUIPMENT:	
DRILLER / HELPER:	

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0				Stiff, (5 GY 5/1) Greenish gray silty clay, trace fine to medium sand, trace subrounded fine (1/4" max) gravel, low to medium plasticity, moist	CL	2.0	#402906 = G. Lab Sample #402914 = FE Archive Sample
18.5							Augered 18.0 - 18.5' interval - No Samples
19.0	1413 12-27-94 #402907		20.5	PRELIMINARY			SHELBY TUBE 3" O.D. - 600 psi, push (- 875 psi for 6" of push)
19.5	#402908						MTB = 0.0 ppm MTS = 0.0 ppm BKG = 60 cpm
20.0							Bottom 3" crimped inward
20.5							#402907 = Geo. Lab Sample #402908 = PE Archive Sample (from bottom of
21.0				(5 GY 5/1) Greenish gray silty clay, trace fine to medium sand, trace fine (1/4" max.) subrounded gravel, low plasticity, moist	CL		Description from bottom of tube

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3861

G:/WPSC/94-778.DRW (11-2

6521

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11474

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: See Page 1

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL:

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0 – 21.5	1436 12-27-94 #402909	50/4"	3	(5 GY 5/1) greenish gray silty clay, trace fine to medium sand, trace angular fine to coarse gravel (max. 1½" elongated, flat gravel fragment,) low to medium plasticity, moist	CL		SPLIT SPOON, 2" O.D. MTB = 0.0 ppm MTS = 4.8 ppm
21.5 – 22.0			–	Remarks: #402909 = FEMP Archive Sample			B-8 = 50 cpm Not enough sam for packet per geol.
22.0 – 22.5	1445 12-27-94 #402910	17	6	Very stiff to hard, (5GY 5/1). greenish gray silty clay with gravel (fine to coarse, 1" max.), few fine to medium sand, low plasticity, moist	CL	3.0	SPLIT SPOON 2" O.D. MTB = 0.0 ppm MTS = 2.4
22.5 – 23.0		21	6	SAA		74.5	B-8 = 80 cpm
23.0 – 23.5		31	6	SAA		74.5	#402910 = FEMP Archive Sample
23.5 – 24.0	1449 12-27-94 #402911	20	6	Hard, (5 GY 5/1) greenish gray silty clay with fine to coarse (1" max.) gravel, low plasticity, moist, trace fine to medium sand	CL	74.5	SPLIT SPOON 2" O.D.
24.0 – 24.5	#402915	17	6	Very stiff, (5 GY 5/1) greenish gray silty clay, trace fine to medium sand, trace fine (3/8" max.) subrounded gravel, low plasticity, moist	CL	2.5	#402911 = Geoh Lab Sample #402915 = FEMP Archive Sample

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-23

PRELIMINARY

000130

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11474

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 2 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5 – 25.0		21		SAA		2.0	MT_B = 0.0 ppm MT_3 = 0.0 ppm B-γ = 40 cpm
25.5				Bottom of boring = 25.0 feet			
26.0				PRELIMINARY			
26.5							
27.0							
27.5							
28.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

000131

G:/WPSC/94-778.DRW (11-2

6521

WELL NUMBER: B - 11474

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 PREDESIGN DISPOSAL FACILITY BORING

PROJECT NUMBER: 20.03.07

GEOLOGIST: [redacted] 10257

DRILLING METHOD: AUGER

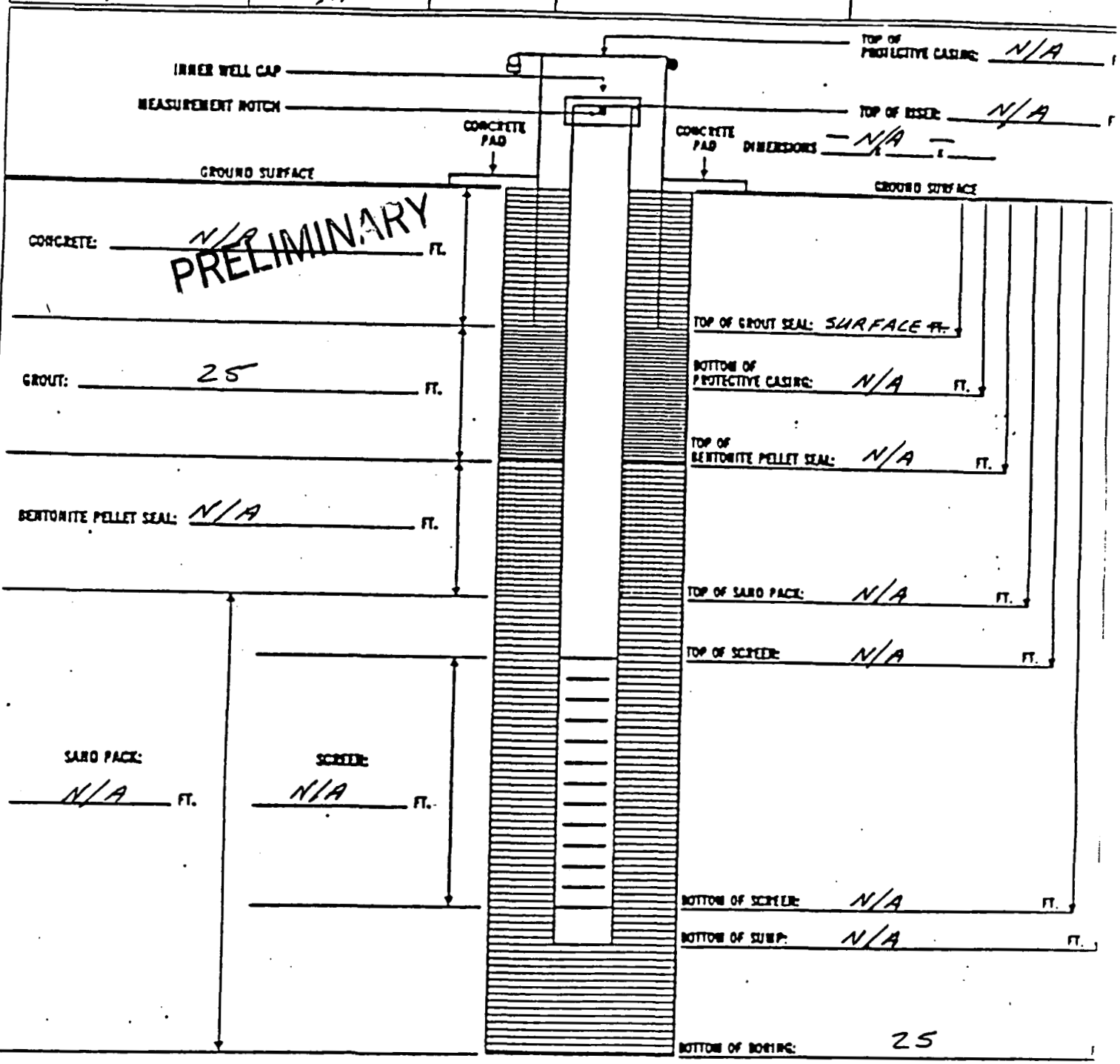
DATES OF INSTALLATION: 12/27/94

WATER LEVEL (FL): N/A

DATE: —

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: TYPE E-I-K PORTLAND EXPANSIVE CEMENT 282 LB	BENTONITE PELLETS (5-GALLON BUCKETS): GRANULAR 3 LB	DEEPEST TEMPORARY DRILLING CASING PENETRA: N/A
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A	VOLUME OF WATER USED FOR GROUT HYDRATION: 21
RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A
DRILLING CASING DIAMETER: N/A	SCREEN SLOT SIZE	SCREEN TYPE
DEPTH OF CENTRALIZER(S):		

000132

PARSONS

FEMP
ASTM METHOD CONFORMANCE CHECKLIST

PROJECT NUMBER: 20.05.07	PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION			
BORING NUMBER: 11474	COORDINATES:			REPORT DATE:
GROUND SURFACE ELEVATION: –	GROUNDWATER LEVEL: Dry	DATE: 12-27-94	TIME: 1533	DATE STARTED: 12-27-94
ENGINEER/GEOLOGIST: K. Ernst	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED: 12-27-94
WATER USED DURING DRILLING: None	DRILLING CONTRACTOR: Alliance, Env. Dre.	DRILLING METHOD: HSA		DRILLER/HELPER: Bob Erickson/Bill Montayne

MAJOR SAMPLING/TESTING COMPONENT	CONFORMANCE (Y/N)	REMARKS OR DEVIATIONS
I. ASTM D 1586-84 SPT and Split-Barrel Sampling		
Nominal Hammer Weight (140 lb ± 2 lb)		
Hammer Drop System Type/Method/Condition (Trip. Auto, Semi-auto) CA Thread	Y	
Hammer Type (Safety, Donut)	Y	
Drilling Method/Equipment (HSA, SA, Cable)	Y	
Fluid Level Maintenance	N/A	
Split-Barrel Sampler Type (Dimension compliance and usage)	Y	standard 2" O.D sampler, w/ basket retainers, no liners
II. ASTM D 1587-83 Thin-Walled Tube Sampling		
Drilling Method/Equipment	Y	HSA
Fluid Level Maintenance	N/A	
Thin-Walled Tube (Condition/Dimensions)	Y	3" O.D, 36" long good condition
Sampler Advancement Method	Y	
Handling/Sealing of Tube Sample	Y	good transportation to lab, strapped upright in vehicle, padded.
III. ASTM D 4220-89 Preserving and Transporting Soil Samples		
Sample Group (A, B, C, D)	Y	
Sealing Materials Usage	Y	wax, end caps and tape, tape wraped ends
Labels/Marking Usage	Y	
Packing/Transport Container Usage	Y	cardboard boxes w/ dividers for jars
Sample Protection from Extreme Temperature	Y	

PRELIMINARY

NOTES:

6521

200307-EFD-0010

CONTROL NO.: ~~200307-EFD-000~~

FEMP
LITHOLOGIC LOG

PAGE 1 OF 11

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11477

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: 23.54 (bls) DATE: 12-22-94 TIME: 1317

DATE STARTED: 12-22-94

GEOLOGIST: A. COUCH, K. ERNST

GROUNDWATER LEVEL:

DATE:

TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: NONE

DRILLING CONTRACTOR: ALLIANCE ENV., INC.

DRILLING EQUIPMENT: HSA MOBILE-DRILL B-59 (1993)

DRILLER / HELPER: Bob Erikson / Dave Von

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	0824 12-22-94 402862	2	0	PRELIMINARY			2" OD SPLIT SPOON
0.5		3	6	VERY STIFF, (10YR 4/6) Dark Yellowish Brown SILTY CLAY, GRASS, ROOTS MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	2.25	MT_B = 0 PPM MT_S = 0 PPM BR = 60 CPM
1.0		5	6	VERY STIFF, (10YR 5/4) Yellowish Brown SILTY CLAY, TRACE FINE (1/8") Subround gravel, Trace Black organic material, slightly mottled, roots, low to medium plasticity, slightly moist	CL	2.0	#402862 = FEMP Archive Sample
1.5	0829 12-22-94 402863	6	6 1.5	MEDIUM STIFF (10YR 5/4) Yellowish Brown SILTY CLAY, Trace Fine (1/4") SUB-ANGULAR GRAVEL, roots, MED. PLASTICITY, SLIGHTLY MOIST	CL	0.75	2" OD SPLIT SPOON
2.0	402888	6	6	VERY STIFF, (10YR 4/3) BROWN SILTY CLAY, SLIGHT IRONSTAINING, TRACE BLACK organic material, low Plasticity, SLIGHTLY MOIST	CL	2.5	MT_B = 0 PPM MT_S = 0 PPM BR = 60-80 c
2.5		9	6	VE STIFF, (10YR 4/3) BROWN SILTY CLAY, IRON STAINING, TRACE BLACK ORGANIC MATTER, SLIGHTLY MOTTLED MED. PLASTICITY, SLIGHTLY MOIST	CL	2.0	#402 888 = FEMP Archive Sa #402 863 = Geolo Lab Sample
3.0							Auger interval ONLY — NO SAMPLE
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 PPM	12-22-94	0824
ALPHA	N/A	N/A	N/A
BETA / GAMMA	60-80 CPM	12-22-94	0824

NOTES:
MT_B = MICROTIP BACKGROUND READING (P
MT_S = MICROTIP SAMPLE READING (PPM)
BR = Beta-Gamma Fisher Reading from Sample (CPM)
COLORS IDENTIFIED USING (Cont.

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-2

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11477

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST: GROUNDWATER LEVEL: SEE DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5	0925 12-22-94 402864		31.5	PRELIMINARY			3" OD SHELBY-TUBE PUSHED 30" AT 600 PSI
4.0	402865						SHELBY-TUBE BOLTS sheared OFF FROM SAMPLE ROD. TUBE WAS PULLED USING
4.5							WINCH AND CABLE. Probable Drill slough in TOP OF Tube SAMPLE 402865 Fr
5.0							MTB = 0.0 PPM MTS = 0.0 PPM Br = 80 CPM
5.5							#402864 = Geoch 6.93
6.0				(10 YR 6/6) Brownish yellow CLAYEY SAND, (SAND-FINE GRAINED, POORLY sorted), LOW to NO plasticity, wet	SC		Description from Bottom 6 cm of Shelby-Tube wet at bottom
6.5	0940 12-22-94 402867	2	2	STIFF, (10YR 4/4) Dark yellowish Brown SANDY CLAY, TRACE FINE (1/8") subround gravel, (SAND-FINE, poorly sorted), Low plasticity, wet	CL	1.5 tsf NC	2" O.D SPLIT SPOON
7.0		4	6	LOOSE, (10 YR 5/6) Yellowish Brown clayey sand, slightly mottled low plasticity, wet	SC	0.5	MTB = 0 PPM MTS = 0 PPM Br = 80 CPM

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: MUNSELL COLOR CHART FOR SOILS. CONSISTENCY MEASURED USING POCKET PENETROMETER, UNLESS OTHERWISE NOTED. DENSITY DETERMINED FROM SPT BLOW COUNT. SOIL (Cont.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-2

000135

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11477

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 2 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0							#402967 = FEMP Packed Sample
		5	6	SAA, Trace Fine (1/4") Subround gravel, Iron Staining PRELIMINARY		Ø.25	SAND ZONE AC FREE WATER #402866 is Bulk from 3.5-7.5'
7.5							
	0944 12-22-94 402870	3	6	SAA MEDIUM DENSE,		Ø.5	2" OD SPLIT SPOON #402870 = FEMP Pack #402868 = Grab
8.0	0944 12-22-94 402868	7	6	(10 YR 5/6) Yellowish Brown Clayey Sand with AC WITH GRAVEL Low to No Plasticity FINE (1/4") subangular to subround WET (SAND - FINE to coarse)	SC	0	Gravel zone 8.3-8.5 Ft. Free water MT1 = 0.0 PPM MT2 = 0.0 PPM B.F = 80 CPM
8.5							
	↓	7	6	SAA, Gravel throughout WET		0 *	Gravel zone Free water SAMPLE 402867
9.0							
	0949 12-22-94 402869	14	6	SAA		L Ø.25	2" OD SPLIT SPOON MT1 = 0.0 MT2 = 0.0 B.F = 40
9.5							
		46	6	DENSE, (10 YR 5/4) Yellowish Brown CLAYEY GRAVEL WITH SAND (FINE to COARSE), LOW PLASTICITY, WET (GRAVEL - FINE (1/2") SUBANGULAR to SUBROUND)	GC	L Ø.25	GRAVEL ZONE FREE WATER
10.0							
		14	6	MED DENSE, (10 YR 5/4) Yellowish Brown CLAYEY SAND (FINE to medium) WITH FINE (1/4") to COARSE (1 3/4") Sub-angular to subround Gravel, Low Plasticity.	SC	Ø.5	#402869 = FEMP Packed Sample FREE WATER
10.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: DESCRIPTIONS AND USCS SYMBOLS PER ASTM D-2488 GUIDELINES. SAMPLES COLLECTED PER ASTM D-1586 AND D-1587. SPLIT-SPOON SAMPLERS EQUIPPED WITH LC

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11477

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: ~~11477 AE~~

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 1 | DATE: | TIME: | DATE COMPLETED:

WATER USED DURING DRILLING: | DRILLING CONTRACTOR: | DRILLING EQUIPMENT: | DRILLER / HELPER:

PRELIMINARY

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 – 11.0	1001 12-22-94 402871	9	6	MED. DENSE (10 YR 5/6) YELLOWISH BROWN CLAYEY SAND (FINE TO MED) WITH FINE (1/2") subangular to subround gravel low plasticity, wet	SC	0.5	2" OD SPLIT SPOON
11.0 – 11.5		12	6	MED. DENSE (2.5Y 5/4) LIGHT OLIVE BROWN ~~SANDY~~ CLAYEY SAND (FINE) TRACE FINE (1/8") subround gravel, low plasticity, wet to MOIST	SC	1.5	0.0 ppm = HT_B 0.0 ppm = HT_S 60-100 = $\beta\gamma$
11.5 – 12.0		14	6	VERY STIFF (2.5Y 5/1) gray SILTY CLAY WITH FINE (1/8") sub angular gravel, low to MED. plasticity, MOIST	CL	3.75	← 402871 = PDMP Archive Sa
12.0 – 12.5	1009 12-22-94 402872	8	6	STIFF, (5Y 4/1) Dark gray SANDY CLAY WITH FINE (1/2") subround gravel (SAND-FINE); Low to MED plasticity MOIST	CL	1.0	2" OD SPLIT-SPOON
12.5 – 13.0		14	6	STIFF, (5Y 4/1) Dark gray SANDY CLAY WITH FINE (1/2") to Coarse (1 1/2") subangular gravel, Low plasticity SLIGHTLY MOIST	CL	1.75	HT_B: 0.0 ppm HT_S: 0.0 ppm $\beta\gamma$: 60 cpm
13.0 – 13.5		17	6	VERY STIFF (10Y 4/1) Dark gray SILTY CLAY WITH FINE SAND, TRACE FINE (1/4") subangular gravel, Med. Plasticity, SLIGHTLY MOIST	CL	2.5	← 402872 = PDMP Archive Sample
13.5 – 14.0							AUGERED INTERVAL ONLY – NO SAMPLE COLLECTED

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: BASKET RETAINERS (TRAPS). 2" O. STANDARD SPLIT-BARREL (SPOON) SAMPLERS USED.

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3581

G:/WPSC/94-778.DRW (11-2

000137

6521

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 5 OF 11

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11477

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0	1033 12-22-94 402873		28	PRELIMINARY			3" OD Shelby tub Pushed 30" At 600PS
14.5	402875						Wet brown Clayey sand Drill slough IN Top
15.0							H_2O = 0.0 ppm H_2S = 0.0 ppm β,γ = 60 cpm
15.5							# 402874 is bulk sample from 14-18' # 402875 is PE Ammonia from bot of shelby tube
16.0				(5Y 4/1) Dark GRAY SILTY CLAY, TRACE FINE (1/2") GRAVEL (subangular), MED Plasticity, SLIGHT MOIST	CL		DESCRIPTION FROM BOTTOM FACE OF shelb Tube
16.5	1047 12-22-94 402876	10	1.5	STIFF, (5Y 4/1) Dark GRAY SANDY (FINE) CLAY WITH FINE (1/4") SUBANGULAR to SUBROUND GRAVEL, LOW to MED PLASTICITY, MOIST	CL	0.5	2" OD SPLIT SPOON INSIDE OF SPO Wet-Free
17.0		10	6	SAA		1.25	WATER FROM ABOVE H_2O = 0.0 ppm H_2S = 0.0 ppm $\beta\gamma$ = 60 cpm
17.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-2

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.:

BORING NUMBER: 11477

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: SEE PAGE 1

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL:

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0		16	6	SAA		1.75	402876 = Perm. Archive Sample
18.0 – 18.5	1052 12-22-94 402877	6	6	STIFF, (5Y 4/1) Dark GRAY SANDY (FINE to MEDIUM) CLAY WITH FINE (1/2") subangular gravel, LOW PLASTICITY, MOIST PRELIMINARY	CL	0.75	2" OD SPLIT SPOON
18.5 – 19.0		9	6	SAA		1.5	INSIDE OF SPOON contain Free water th above
19.0 – 19.5		12	6	STIFF, (5Y 4/1) DARK GRAY SANDY (FINE) CLAY, TRACE FINE (1/8") Subangular gravel, LOW PLASTICITY, MOIST	CL	1.5	* 402877 is Perm. Archive Sam
19.5 – 20.0							AUGERED INTERVAL ON NO SAMPLE
20.0 – 20.5	1108 12-22-94			NO RECOVERY			3" OD SHELBY TUBE
20.5 – 21.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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6521

FEMP

LITHOLOGIC LOG

CONTROL NO.:	
PROJECT NAME:	OU-2 PREDESIGN FIELD INVESTIGATION
PROJECT NO.:	20.03.07
BORING NUMBER:	11477
COORDINATES:	
RELATED FAL NO.:	
SURFACE ELEVATION:	—
GROUNDWATER LEVEL:	
DATE:	
TIME:	
DATE STARTED:	
GEOLOGIST:	
GROUNDWATER LEVEL:	SEE PAGE 2
DATE:	
TIME:	
DATE COMPLETED:	
WATER USED DURING DRILLING:	
DRILLING CONTRACTOR:	
DRILLING EQUIPMENT:	
DRILLER / HELPER:	

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0							
21.5							
22				PRELIMINARY			
22.5	1121 12-22-94 878 402878	9	2.5	SOFT, (5Y 4/1) Dark gray SILTY CLAY, Trace FINE (1/8") subangular gravel, MED PLASTICITY, MOIST	CL	0.25	2" OD SPLIT SPOON MTC = 0.0 ppm MTS = 0.0 ppm BZ = 50 cpm
23.0	* 1121 12-22-94 879 402879	12	6	MED. DENSE (5Y 4/1) Dark gray CLAYEY SAND (FINE to MEDIUM), Trace Subangular Fine (1/8") gravel, NO to Low plasticity, MOIST TO WET	SC	1.25	* 402878 is sample from 22 to 22.5' for geotech lab 402879 is sample from 22.5 to 23.5'
23.5	*	8	6	MED. DENSE, (5Y 4/1) Dark gray SAND WITH CLAY (SAND-FINE, poorly sorted) NO to Low plasticity, WET	SP-SC	0.25	SAMPLE for geotech lab 402 SAND 879 WET SAND ZONE
24.0							Auscered interval ONLY - no sample COLLECTED
24.5	1130 12-22-94 880 402880		24				SHELBY-TUBE pushed 30" at 600 PSI

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-23-94)

000240

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11477

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: SEE PAGE 1

DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL:

DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5							Sample 881 402788 for Archive - both of tube
25.0							402890a Geoch lab sample
25.5				PRELIMINARY			
26.0							MTD=0.0 ppm MTS=0.0 ppm BG=80 cpm
26.5				(5GY 4/1) Dark Greenish gray SILTY CLAY WITH FINE SAND, MEDIUM PLASTICITY, SLIGHTLY MOIS	CL	~~2~~ 1.5	DESCRIPTION FROM BOTTOM FACE of SHELBY TUBE
27.0	1139 12-22-94 402882	6		STIFF (10Y 4/1) Dark greenish gray sandy (FINE) clay WITH FINE (1/8") subangular gravel, Low to MED. PLASTICITY, MOIST TO WET	CL	2 0.25	2" OD SPLIT SPOO
27.5		10		SAA		1.5	MTD=0 ppm MTS=0 ppm BG=80 cpm
28.0		14		SAA		2.0	402882 is FEMP Archive Sam

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME: OU-2 Predesign Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11477

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1 | DATE: | TIME: | DATE COMPLETED:

WATER USED DURING DRILLING: | DRILLING CONTRACTOR: | DRILLING EQUIPMENT: | DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
28.0	1150 12-22-94 402893	12	6	Stiff, (10 Y 4/1) Dark Greenish gray silty sandy clay with fine (1/8") subangular gravel, wet	CL	1.0	2" O.D. Split Sp
28.5		15	6			1.0	Hg_0 = 0.0 ppm Hg_2 = 0.0 ppm B_{γ} = 7.0 cpm
29.0		18	6	SAA		1.5	#402893 is FEMP Analysis
29.5	1155 12-22-94 402894	8	0	Med Stiff, (10 Y 4/1) Dark greenish gray, silty, sandy clay with trace fine subangular gravel (sand is medium to fine grained), medium plasticity, wet			SPLIT SPOO 2" O.D. WATER IN TOP BARREL
30.0		11	6		CL	0.5	#402894 is FEMP Analysis Hg_0 = 0.0 ppm Hg_2 = 0.0 ppm B_{γ} 80 cpm
30.5		15	5	SAA		1.0	
31.0							AUGERED THIS INTERV. NO SAMPLES
31.5							

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3661

G:/WPSC/94-778.DRW (11-2

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11477

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: -

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
							3" OD
31.5	1209		23*				Shelby Tube
	12-22-94						600 PSI
32.0	402835						30" pus
	402836						Bottom of tube slight crimped
32.5				PRELIMINARY			
							0.0 0.0 70
33.0							# 402835 is Geo Lab Sample
							# 402836 is RCRA Archive from bottom of the tube
33.5							
	~~1209~~			~~Gray~~ (10Y 4/1) Dark greenish gray, silty clay with trace of fine subangular gravel, moist to wet, few sand (sand is fine grained)	CL		Description from bottom of tube
34.0							
	1215			STIFF, (10Y 4/1) Dark greenish gray, silty clay with trace fine to coarse sand, trace subangular fine gravel (1/4" max), medium plasticity, moist			# 402837 is Geo Lab Sample
	402837	7	6		CL	1.5	
34.5	402839			Stiff, (10Y 4/1) Dark greenish gray silty clay with trace fine to coarse sand, few subangular fine gravel (3/4" max) medium plasticity, moist			# 402839 is RCRA Archive Sample
		11	6		CL	1.25	
35.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-2

FEMP

LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME: OU-2 PREDESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11477

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: SEE PAGE 2 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
35.0		14	6	Stiff (10 Y 4/1) Dark greenish gray, silty clay with medium to fine sand, trace fine subangular gravel (½" max), medium plasticity, moist	CL	1.25	
35.5				BOTTOM OF BORING = 35.5'			
36.0							
36.5							
37.0							
37.5							
38.0							
38.5							

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-2

WELL NUMBER: B - 11477

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 PREDESIGN DISPOSAL FACILITY BORING

PROJECT NUMBER: 20.03.07

[redacted] 10257

DRILLING METHOD: AUGER

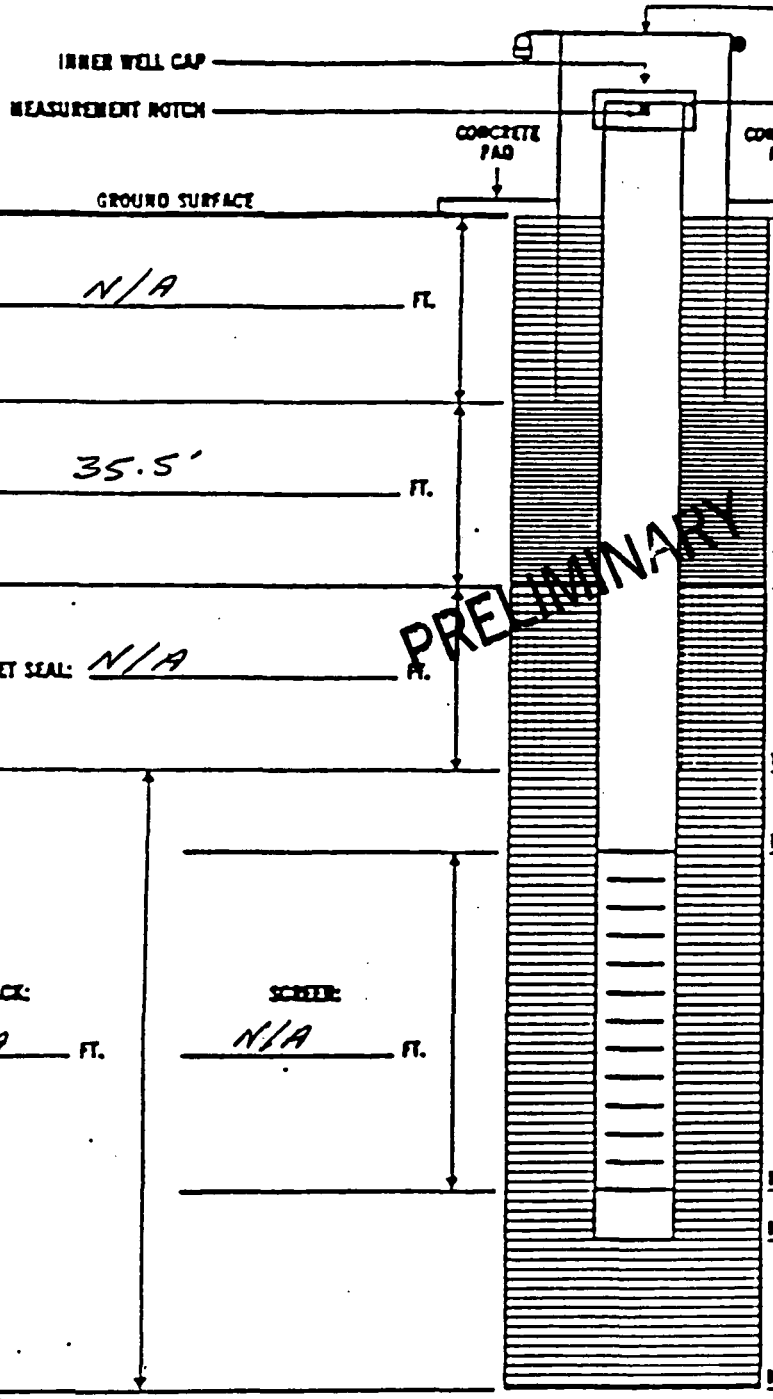
DATES OF INSTALLATION: 12/22/94

WATER LEVEL (FL): ~23.5' BLS

DATE: 12/22/94

RELATED FAL NUMBERS:

CHECKED BY:



TOP OF PROTECTIVE CASING: N/A FT.

TOP OF RISER: N/A FT.

DIMENSIONS: N/A

CONCRETE: N/A FT.

GROUT: 35.5' FT.

BENTONITE PELLET SEAL: N/A FT.

SAND PACK: N/A FT.

SCREEN: N/A FT.

TOP OF GROUT SEAL: SURFACE FT.

BOTTOM OF PROTECTIVE CASING: N/A FT.

TOP OF BENTONITE PELLET SEAL: N/A FT.

TOP OF SAND PACK: N/A FT.

TOP OF SCREEN: N/A FT.

BOTTOM OF SCREEN: N/A FT.

BOTTOM OF SUMP: N/A FT.

BOTTOM OF BORING: 35.5 FT.

BOREHOLE DIAMETER: 8 IN.

TYPE AND AMOUNT OF GROUT USED: TYPE E-I-K PORTLAND EXPANSIVE CEMENT 423 LB

BENTONITE PELLETS (5-GALLON BUCKETS): GRANULAR 4.5 LB

DEEPEST TEMPORARY DRILLING CASING PENETRA: N/A

VOLUME OF WATER USED DURING DRILLING: N/A GAL

RISER MATERIAL: N/A

VOLUME OF WATER USED FOR GROUT HYDRATION: 31.5

RISER WALL THICKNESS: N/A

TYPE OF SAND PACK: N/A

SCREEN MATERIAL: N/A

DRILLING CASING DIAMETER: N/A

RISER/SCREEN DIAMETER:

SCREEN SLOT SIZE: N/A

SCREEN TYPE: N/A

DEPTH OF CENTRALIZER(S): N/A

000145

PARSONS

FEMP
ASTM METHOD CONFORMANCE CHECKLIST

PROJECT NUMBER: 30.07.03	PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION			
BORING NUMBER: 11477	COORDINATES:			REPORT DATE: 12-22-94
GROUND SURFACE ELEVATION:	GROUNDWATER LEVEL: 23.5 ft (bls)	DATE: 12-22-94	TIME: 1317	DATE STARTED: 12-22-94
ENGINEER/GEOLOGIST: A. COUCH / K. ERNST	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED: 12-22-94
WATER USED DURING DRILLING:	DRILLING CONTRACTOR: ALLIANCE ENV., INC.	DRILLING METHOD: HSA MOBILE DRILL B-59 (1983)	DRILLER/HELPER: Bob Erickson / Dave Newman	

MAJOR SAMPLING/TESTING COMPONENT	CONFORMANCE (Y/N)	REMARKS OR DEVIATIONS
I. ASTM D 1586-84 SPT and Split-Barrel Sampling		
Nominal Hammer Weight (140 lb ± 2 lb)	Y	
Hammer Drop System Type/Method/Condition (Trip. Auto, Semi-auto) ~~SA Thread~~ Cathead/rope	Y	
Hammer Type (Safety, Donut)	Y	
Drilling Method/Equipment (HSA, SA, Cable)	Y	
Fluid Level Maintenance	N/A	
Split-Barrel Sampler Type (Dimension compliance and usage)	Y	Measured shoe diameter 3", sample barrel, (excluding shoe) measured 24".
II. ASTM D 1587-83 Thin-Walled Tube Sampling		
Drilling Method/Equipment	Y	
Fluid Level Maintenance	N/A	Fluid not used
Thin-Walled Tube (Condition/Dimensions)	Y	3" OD x 36" LONG
Sampler Advancement Method	Y	Push 30" at variable pressure
Handling/Sealing of Tube Sample	Y	Kept vertical except to prep, cap
III. ASTM D 4220-89 Preserving and Transporting Soil Samples		
Sample Group (A, B, C, D)	Y	
Sealing Materials Usage	Y	
Labels/Marking Usage	Y	
Packing/Transport Container Usage	Y	Using cardboard boxes with dividers to transport jars
Sample Protection from Extreme Temperature	Y	

PRELIMINARY

NOTES:

CONTROL NO.: 200307-EFO-0011

FEMP
LITHOLOGIC LOG

PROJECT NAME: OU-2 Predesign Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11478

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: Dry | DATE: 12-19-94 | TIME: 1300 | DATE STARTED: 12-16-94

GEOLOGIST: A. Couch (12-16-94)/K. Ernst (12-19-94)

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED: 12-19-94

WATER USED DURING DRILLING: None

DRILLING CONTRACTOR: Alliance Environmental

DRILLING EQUIPMENT: Mobile B-59 / HSA

DRILLER / HELPER: B. Erickson/D. Newman

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	0917 12-16-94 #402789	3	6	Medium stiff, (10YR 4/3) brown silty clay, roots, grass, iron staining, low to medium plasticity, slighty moist	CL	1.0	Split Spoon MTB = 1.7ppm MTS = 1.6ppm B-γ = 80cpm
0.5		4	2.5	Medium stiff, (10YR 4/3) brown silty clay, iron staining, low to medium plasticity, slightly moist	CL	1.0	
1.0		4	—				#402789 = FEMP Archive Sample
1.5	0922 12-16-94 #402790 #402791	3	6	Stiff, (10YR 5/6) yellowish brown clay, trace coarse sand, roots and organic material, mottled, low plasticity, slightly moist	CL	1.5	Split Spoon MTB = 2.2 ppm MTS = 3.5 ppm B-γ = 80 cpm
2.0		4	6	SAA		1.5	
2.5		5	—				#402790 = Geotech Lab Sample #402791 = FEMP Archive Sample
3.0							Augered Interval only - No Samples collected
3.5							

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	Fluctuating	12-16-94	0830
ALPHA	N/A	N/A	N/A
BETA / GAMMA	60-80 cpm	12-16-94	0830

NOTES:
MTB = Microtip background reading
MTS = Microtip sample reading
B-γ = Beta-gamma friskey reading from sample
Colors identified using (cont.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:	
PROJECT NAME:	OU-2 Predesign Field Investigation
PROJECT NO.:	20.03.07
BORING NUMBER:	11479
COORDINATES:	
RELATED FAL NO.s:	
SURFACE ELEVATION:	
GROUNDWATER LEVEL:	
DATE:	
TIME:	
DATE STARTED:	
GEOLOGIST:	See Page
GROUNDWATER LEVEL:	
DATE:	
TIME:	
DATE COMPLETED:	
WATER USED DURING DRILLING:	
DRILLING CONTRACTOR:	
DRILLING EQUIPMENT:	
DRILLER / HELPER:	

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5	0949 12-16-94 #402792		30				Shelby Tube MTB = 0.2 ppm MTS = 1.3 ppm B-γ = 80 cpm
4.0							slough at top of tube, bottom of tube bent slightly
4.5				PRELIMINARY			
							3" O.D. Shelby Tube - 30" push
5.0							
							#402792 = Geotech Lab Sample
5.5				(2.5 Y 5/4) Light olive brown silty clay with fine subangular gravel, trace sand, low plasticity	CL		Bottom of Shelby Tube was described
6.0	1000 12-16-94 #402793 #402794	7	3	Stiff, dark yellowish brown silty clay, trace fine gravel, low plasticity, moist (10 YR 4/4)	CL	1.75	Split Spoon MTB = 0.0 MTS = 90ppm Peak B-γ = 60-80cpm
6.5		11	6	Stiff (10 YR 4/4) dark yellowish brown silty clay with coarse angular gravel, low plasticity, moist	CL	1.75	#402793 = Environ Lab Sample #402794 = FEMP Archive Sample
7.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: Munsell color chart for soils. Consistency measured using pocket penetrometer, unless otherwise noted. Density determined from SPT blow (cont.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST. (SPT)

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G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 3 OF 10

PROJECT NAME: OU-2 Predesign Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11478

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST: See Page 1

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0 – 7.5		12	4	Stiff, (10 YR 4/4) dark yellowish brown silty clay, trace fine angular gravel, low plasticity, moist, red staining	CL	2.0	#402796 = Bulk Sample of Auger Cuttings from 3.5'-7.5' for Geotech Lab
8.0	1006 12-16-94 #402795	6	6	Very stiff (10YR 4/4) dark yellowish brown silty clay, trace fine angular gravel, low plasticity, moist PRELIMINARY	CL	2.0	Split Spoon MTB = 2.4 ppm MTS = 259 ppm B-γ = 60cpm
8.5		9	6	SAA		2.0	Shut down due to PID readings at 1016 Rain at 1025
9.0		20	6	SAA		2.0	#402795 = FEMP Archive Sample
9.5	1008 12-16-94 #402797	6	6	Very stiff (10 YR 4/4) dark yellowish brown silty clay, trace fine angular gravel, low plasticity, moist, some red staining	CL	2.0	Split Spoon MTB = 0.49 ppm MTS = 1.1 ppm B-γ = 60 cpm
10.0		8	6	SAA		2.0	
10.5		11	6	SAA		2.0	#402797 = FEMP Archive Sample

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.9 ppm	12-19-94	0800
ALPHA	—	—	—
BETA / GAMMA	50 cpm	12-19-94	0800

NOTES: cont. Soil description and USCS symbol per ASTM D 2488 guidelines. Samples collected per ASTM D 1586 and D 1587. Split spoon sampler equipped (cont.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Predesign Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11478

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST: See Page 1

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 – 11.0	0821 12-19-94 #402798 #402814	7	6	Very stiff, (10 YR 4/4) dark yellowish brown clay, trace fine angular gravel, medium plasticity, moist	CL	2.25	Split Spoon MTb = 18.2 ppm MTs = 22.3 ppm B-γ = 80 cpm
11.0 – 11.5		12	6	SAA		2.25	
11.5 – 12.0		16	6	SAA		2.25	#402798 = Geotech Lab Sample #402814 = FEMP Archive Sample
12.0 – 12.5	0836 12-19-94 #402799	4	6	Very stiff, (10 YR 5/4) yellowish brown clay, medium plasticity, moist	CL	2.0	Split Spoon MTb = 15.9 ppm MTs = 16.2 ppm B-γ = 60 cpm
12.5 – 13.0		7	6	SAA		2.0	
13.0 – 13.5		12	4	very stiff, (10 YR 5/4) yellowish brown clay with sand, trace fine angular gravel, wet	CL	2.0	#402799 = FEMP Archive Sample
13.5 – 14.0	0845 12-19-94 #402800	4	6	Medium stiff, (10 YR 5/4) yellowish brown clay, some fine angular gravel, medium to high plasticity, wet	CL/CH	0.5	Split Spoon MTb = 23.6 ppm MTs = 24.8 ppm B-γ = 60 cpm

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: with basket retainers, 2" O.D standard split barrel (spoon) samplers used for SPT without liners. Additional general notes on Field Operations (Cont.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:	
PROJECT NAME:	OU-2 Predesign Field Investigation
PROJECT NO.:	20.03.07
BORING NUMBER:	11478
COORDINATES:	
RELATED FAL NO.s:	
SURFACE ELEVATION:	—
GROUNDWATER LEVEL:	DATE: TIME:
DATE STARTED:	
GEOLOGIST:	See Page 4
GROUNDWATER LEVEL:	DATE: TIME:
DATE COMPLETED:	
WATER USED DURING DRILLING:	
DRILLING CONTRACTOR:	
DRILLING EQUIPMENT:	
DRILLER / HELPER:	

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0		30/2"	–				
14.5			–				# 402800 = FEMP Archive Sample
15.0	0855 12-19-94 # 402801	4 6	6	Medium stiff (2.5Y 5/6) yellowish brown clay, trace sand, trace fine angular gravel, low to medium plasticity, moist	CL	0.5	Split Spoon MT_D = 24.8 ppm MT_S = 25.0 ppm B-γ = 80 cpm
15.5		7	6	SAA		0.5	
16.0		10	3	Stiff, (2, 4/10B) dark bluish gray clay, medium plasticity, moist	CL	1.5	# 402801 = FEMP Archive Sample
16.5	0900 12-19-94 # 402802	4	6	Stiff, (2, 5/5BG) greenish gray clay, medium plasticity, trace fine angular gravel, moist	CL	1.75	Split Spoon # 402802 MT_D = 28.4 ppm MT_S = 30.1 ppm B-γ = 60 cpm
17.0		7	6	SAA		1.75	
17.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: is contained in PARSONS Field Book (PO 132-1)

SAA = Same as above

N/A = Not Applicable

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

PRELIMINARY

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 Predesign Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11478

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: –

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST: GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5							
		9	6	SAA			#402802 = FEMP Archive Sample
18.0							
				PRELIMINARY			Augered thru 18.- 18.5' interval
18.5							
	0920 12-19-94	50/2"	–	Bottom of attempted Shelby tube: (2, 5/5B) bluish gray clay, 2½" dia., subrounded piece of gravel, and few coarse gravel	CL GP		Pushed Shelby tube. After 2" of push, experienced resistance and rig began to lift
19.0							
							Attempted split spoon at depth 18.7'. Blows were 50/2" No sample recover. & inside of spoon was wet
19.5							
				Augered from 18.8' to 20'			No samples this interval
20.0							
	0934 12-19-94 #402803 #402804	9	6	Stiff, (2, 6/5B) bluish gray clay with gravel, medium plasticity, moist		1.5	Angular gravel, Max dimension ~ 3/4"
20.5							
		13	6	V. Stiff (2, 5/5BG) greenish gray sandy clay, medium to high plasticity, moist	CL/CH		Mrb = 0.9 ppm Mrs = 2.0 ppm B-γ = 50 cpm
21.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 Pre-design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11478

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1 | DATE: | TIME: | DATE COMPLETED:

WATER USED DURING DRILLING: | DRILLING CONTRACTOR: | DRILLING EQUIPMENT: | DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21 – 21.5		16	6	SAA			Thin sliver of sample along bottom 12" of split spoon, not enough for pocket pen. test. Note ①
22.0	0947 12-19-94 #402805 #402815	15	6	Stiff, (2.5/5BG) greenish gray silty clay, trace fine angular gravel and fine sand low to medium plasticity, moist	CL	1.5	Split Spoon MT_b = 7.3 ppm MT_s = 9.5 ppm B-γ = 50 cpm
22.5		14	6	Hard, (2.5/5BG) greenish gray silty clay, trace coarse sand and fine gravel, low to medium plasticity, moist	CL	>4.5	
23.0		17	6	SAA			#402805 = Geotech Lab Sample #402815 = FEMP Archive Sample
23.5	1007 12-19-94 #402806	19	6	Medium Stiff, (2, 4/10G) dark greenish gray silty clay with sand, medium to high plasticity, wet	CL/CH	0.25	Split Spoon MT_b = 8.6 ppm MT_s = 8.8 ppm B-γ = 60 cpm
24.0		14	6	Hard (2, 4/10G) dark greenish gray silty clay with sand and fine to coarse angular gravel, medium plasticity, ~~moist~~ & wet (max. gravel size 1")	CL	>4.5	
24.5		17	6	Hard, (2, 4/10G) dark greenish gray silty clay with sand, trace fine gravel, medium plasticity, moist	CL	>4.5	#402806 = FEMP Archive

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:
① #402803 = Environmental Lab Sample, #402804 is FEMP Archive Sample; consistency for bottom 12" of interval assigned by SPT blow count.

PRELIMINARY

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: OU-2 Pre-design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11478

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED:

See Page 1

WATER USED DURING DRILLING: | DRILLING CONTRACTOR: | DRILLING EQUIPMENT: | DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5							
25.0	1023 12-19-94 #402807 #402816	10	6	Very stiff, (2, 4/10G) dark greenish gray silty clay, trace to few coarse sand and fine gravel, low plasticity, wet	CL	4.0	Split Spoon HT$_b$ = 6.6 HT$_s$ = 6.8 B-γ = 60 cpm
25.5		10	6	Top 3": SAA Bottom 3": Medium dense, (10YR 4/1) dark gray, clayey, fine to medium, ~~Munsell gradat~~ sand, moist	SC		
26.0		17	-	PRELIMINARY			#402807 = Geotech Lab Sample #402816 = FEMP Archive Sample #402808 = Rinse Sample
26.5	1040 12-19-94 #402809	17	6	Top 4": Hard, (10YR 4/1) dark gray silt, trace fine gravel and coarse sand, no to low plasticity, moist Bottom 2": Hard, (10YR 3/1) very dark gray silt with ~~blotches of black~~, no to low plasticity, moist, trace fine to coarse gravel	ML	74.5	
27.0		15	6	Very stiff (10YR 3/1) very dark gray silt with blotches of black, no to low plasticity, moist	ML	3.0	
27.5		15	6	SAA		2.75	#402809 = FEMP Archive Sample
28.0							Augered this interval

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME: OU-2 Pre-design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11478

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: See Pg 5

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL:

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
28	1104 12-19-94						Shelby Tube (3" O.D) 30" push
28.5							MTb = 1.2 ppm MTS = 1.9 ppm B-γ = 60 cpm
29				PRELIMINARY			
29.5							Shelby tube flattened through entire length
30.0							pushed - No Sample
30.5							
31.0	1121 12-19-94 #402810 #402817	9	6	Top 3" of this interval: Medium stiff (10 YR 4/1) dark gray clayey silt with sand, low plasticity, moist. Bottom 3": Medium dense (10 YR 4/2) dark grayish brown clayey fine sand, moist	ML SC	0.5	Split Spoon MTb = 1.8 ppm MTS = 2.2 ppm B-γ = 60 cpm
31.5		10	6	SAA			

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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CONTROL NO.:

FEMP

LITHOLOGIC LOG

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PROJECT NAME: OU-2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11478

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See page 6 DATE: TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TBF)	REMARKS
31.5 – 32.0		11	6	SAA			#402810 = Geotech Lab Sample #402817 = FEMP Archive Sample
32.5	1132 12-19-94 #402811	11	6	Very stiff, (10 YR 4/1) dark gray sandy, silty clay, low plasticity, moist		2.5	Split Spoon MT$_D$ = 0.0 MT$_S$ = ~~0.4~~ 1.6 B-γ = 60 cpm
33.0		14	6	SAA		2.5	
33.5	1145	18	6	SAA		2.5	#402811 = FEMP Archive Sample
34.0	1148 12-19-94 #402812 #402818	7	6	Very stiff (10 YR 4/1) dark gray sandy, silty clay, low plasticity, some iron staining, some mottled green areas, moist	CL	3.0	
34.5		10	6	SAA		2.0	
35.0		14	6	SAA		2.5	#402812 = Geotech Lab Sample #402818 = FEMP Archive Sample

BOTTOM OF BORING = 35.0'

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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6521

WELL NUMBER: B - 11478

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 PREDESIGN DISPOSAL FACILITY BORING

PROJECT NUMBER: 20.03.07

[redacted] 10257

DRILLING METHOD: AUGER

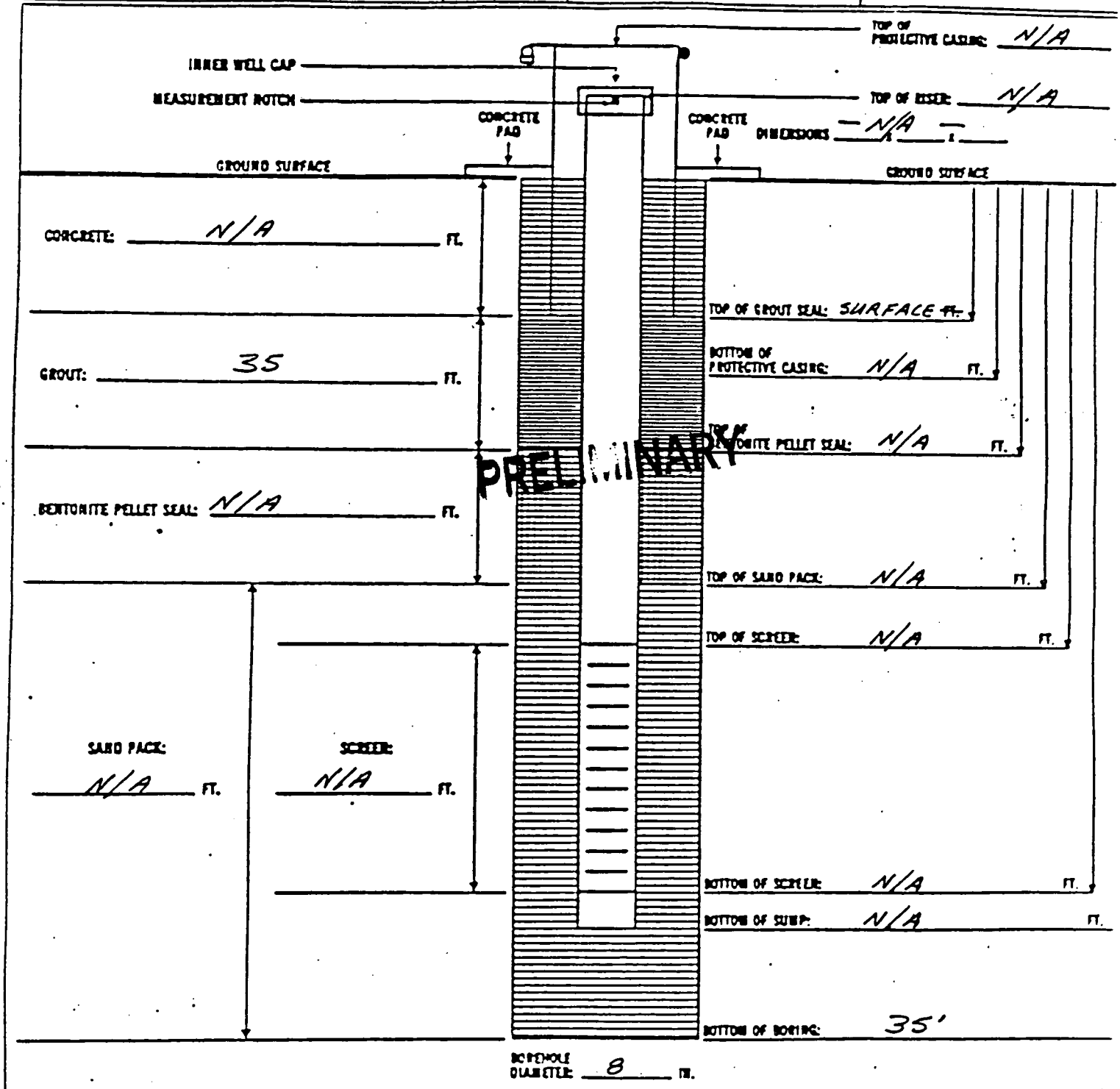
DATES OF INSTALLATION: 12/16 - 19/94

WATER LEVEL (ft): DRY

DATE: 12/19/94

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: TYPE E-I-K PORTLAND EXPANSIVE CEMENT 423 LB	BENTONITE PELLETS (5-GALLON BUCKETS): GRANULAR 4.5 LB	DEEPEST TEMPORARY DRILLING CASING PENETRA: N/A
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A	VOLUME OF WATER USED FOR GROUT HYDRATIO: 31.5

RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A
RISER/SCREEN DIAMETER:	SCREEN SLOT SIZE:	SCREEN TYPE:	DEPTH OF CENTRALIZER(S): N/A

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PARSONS	FEMP ASTM METHOD CONFORMANCE CHECKLIST	Page 1 of 1

PROJECT NUMBER: 20.03.07	PROJECT NAME: OU-2 Pre-Design Field Investigation			
BORING NUMBER: 11478	COORDINATES:			REPORT DATE: 12-19-94
GROUND SURFACE ELEVATION: —	GROUNDWATER LEVEL: Dry	DATE: 12-19-94	TIME: 1300	DATE STARTED: 12-16-94
ENGINEER/GEOLOGIST: K. Ernst	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED: 12-19-94
WATER USED DURING DRILLING: None	DRILLING CONTRACTOR: Alliance Env., Inc.	DRILLING METHOD: B-59 (Mobile) HSA	DRILLER/HELPER: B. Erickson/ D. Newman	

MAJOR SAMPLING/TESTING COMPONENT	CONFORMANCE (Y/N)	REMARKS OR DEVIATIONS
I. ASTM D 1586-84 SPT and Split-Barrel Sampling		
Nominal Hammer Weight (140 lb) ± 2 lb)	Y	
Hammer Drop System Type/Method/Condition (Trip. Auto, Semi-auto) CA Thread	Y	Rope and Cathead, manual Good condition, 30" drop
Hammer Type (Safety, Donut)	Y	
Drilling Method/Equipment (HSA, SA, Cable)	Y	4 1/4" I.D. 8" hole
Fluid Level Maintenance	N/A	Fluid not used
Split-Barrel Sampler Type (Dimension compliance and usage)	Y	2" O.D. standard, no liners, w/ plastic retainer basket,
II. ASTM D 1587-83 Thin-Walled Tube Sampling		
Drilling Method/Equipment	Y	HSA, Driller reaming borehole
Fluid Level Maintenance	N/A	with center stem bit to clean out prior to push
Thin-Walled Tube (Condition/Dimensions)	Y	3" ϕ O.D. std. good condition
Sampler Advancement Method	Y	
Handling/Sealing of Tube Sample	Y	Wax and end caps, tape
III. ASTM D 4220-89 Preserving and Transporting Soil Samples		
Sample Group (A, B, C, D)	Y	
Sealing Materials Usage	Y	
Labels/Marking Usage	Y	
Packing/Transport Container Usage	Y	
Sample Protection from Extreme Temperature	Y	

PRELIMINARY

NOTES:

FEMP

LITHOLOGIC LOG

CONTROL NO.: 200307-EFO-0012

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PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11480

COORDINATES:

RELATED FAL NO.: ~~20.03.07~~

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DRY | DATE: 12-15-94 | TIME: 1339

DATE STARTED: 12-14-94

GEOLOGIST: AMBER COUCH

GROUNDWATER LEVEL: | DATE: | TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: NO

DRILLING CONTRACTOR: ALLIANCE ENV., INC.

DRILLING EQUIPMENT: 1993 MOBILE DRILL B-59

DRILLER / HELPER: 12-14-94 BOB BRICKSON / BARRY FAR

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0							AUGERED INTERVAL ONLY NO SAMPLE COLLECTED
0.5							
	1406 12-14-94 402768		31				SHELBY TUBE (3" O.D.)
1.0				PRELIMINARY			
							NT_3 = 0.0 PPM C_{γ} = 60 CPM
1.5							
2.0							
2.5							
				(7.5 YR 4/2) BROWN CLAY, MEDIUM PLASTICITY, MOIST	CL		DESCRIPTION FROM BOTTOM OF SHELBY TUBE
3.0							
	1420 12-14-94 402769	12	Ø				SPLIT SPOON BASKET TRAP MISSIN
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 PPM	12-14-94	1335
ALPHA	N/A	N/A	N/A
BETA / GAMMA	50 CPM	12-14-94	1335

NOTES: COLORS IDENTIFIED USING MUNSELL COLOR CHART FOR SOILS. CONSISTENCY MEASURED USING PENETROMETER. SOIL DESCRIPTION AND CLASSIFICATION PER ASTM D-2488. (CONT.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-23-94

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PREDESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11480

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5 – 4.0		14	0.7	VERY STIFF (10YR 6/6) BROWNISH YELLOW SILTY CLAY, TRACE SUBANGULAR TO ANGULAR FINE GRAVEL, MEDIUM PLASTICITY, MOIST	CL	2.75	MT_S = 0.0 PPM Br = 50 CPM
4.0 – 4.5		20	6.0	SAA			
4.5 – 5.0				PRELIMINARY			AUGERED INTERVAL ONLY NO SAMPLE COLLECTED
5.0 – 5.5			19				3" O.D. SHELBY TUBE
5.5 – 6.0							MT_S = 0.0 PPM Br = 40 CPM
6.0 – 6.5							SHELBY TUBE BOTTOM DAMAGED BY COBBLE OR GRAVEL, TUBE
6.5 – 7.0							CRIMPED. ASSIGNED SAMPLE # 402771 TO BULK AUGER CUTTINGS / 3-7.5 ft

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: SAMPLES COLLECTED PER ASTM D-1586 AND D-1587. GENERAL NOTES ON FIELD OPERATIONS CONTAINED IN PARSONS FIELD BOOK. (CONT.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 PREDESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11480

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST: GROUNDWATER LEVEL: see Page 1 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0 – 7.5	1442 12-14-94 402770			(10 YR 6/4) LIGHT YELLOWISH BROWN CLAYEY SILT, TRACE FINE SAND, TRACE FINE SUBANGULAR GRAVEL, LOW PLASTICITY, MOIST	ML		DESCRIPTION FROM BOTTOM OF SHELBY TUBE
8.0	0805 12-15-94 402772	13	6	VERY STIFF (10 YR 5/6) YELLOWISH BROWN CLAY, TRACE SUBANGULAR TO ANGULAR FINE GRAVEL, MEDIUM PLASTICITY, MOIST	CL	2.75	SPLIT SPOON
8.5		10	6	VERY STIFF (10 YR 6/6) BROWNISH YELLOW CLAY, TRACE SUBANGULAR FINE GRAVEL, TRACE FINE SAND, MEDIUM PLASTICITY, MOIST	CL	1.75	MT_S = 0.0 PPM $B\gamma$ = 50-60 CPM
9.0		13	6	VERY STIFF (2.5 YR 5/4) LIGHT OLIVE BROWN CLAY, FEW SUBANGULAR FINE GRAVEL, MEDIUM PLASTICITY, MOIST (A TO SUBROUND)	CL	2.5	SAMPLE 402772 FOR ARCHIVE
9.5							AUGERED INTERVAL ONLY NO SAMPLE COLLECTED
10.0			9				3" O.D. SHELBY TUBE
10.5							MT_S = 10.6 PPM MT_B = 7 PPM $B\gamma$ = 60 CPM

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12-15-94	0800
ALPHA	N/A	N/A	N/A
BETA / GAMMA	40.0 CPM	12-15-94	0800

NOTES:
12-15-94 - NEW HELPER DAVE NEWMAN
MT_B = MICROTIP (PID) BACKGROUND
MT_S = MICROTIP-SAMPLE READING
$B\gamma$ = BETA-GAMMA - SAMPLE READING (CONT.)

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3891

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PREDESIGN FIELD INVESTIGATION

PROJECT NO.: 20.08.07

BORING NUMBER: 11480

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5							
11.0				PRELIMINARY			
	0903 12-15-94 402773						DESCRIPTION FROM BOTTOM FACE OF SHELBY TUBE
11.5							
	0913 12-15-94 402774			(10YR 5/6) YELLOWISH BROWN CLAY, TRACE COARSE SAND, MEDIUM TO HIGH PLASTICITY, MOIST	CL		BULK SAMPLE OF AUGER CUTTINGS SAMPLE 402774 25 to 12 ft.
12.0							
	0917 12-15-94 402775	6	5	MED. STIFF (10YR 5/4) YELLOWISH BROWN CLAY, TRACE SUBANGULAR FINE GRAVEL, MEDIUM PLASTICITY, MOIST	CL	Ø.75	SPLIT SPOON SAMPLE 402776 FOR ARCHIVE
12.5							
		8	6	VERY STIFF (5Y 4/1) DARK GRAY CLAY WITH SILT, TRACE SUBANGULAR FINE GRAVEL, LOW TO MEDIUM PLASTICITY, MOIST	CL	2.5	MT_B = 13.2 PPM MT_S = 13.4 PPM Cs^{137} = 60 CPM
13.0							
		13	6	VERY STIFF (5Y 5/1) GRAY SILTY CLAY, TRACE SUBANGULAR FINE GRAVEL, LOW PLASTICITY, MOIST	CL	2.75	BROWN CLAY/ GRAY CLAY INTERFACE AT ~12.5 FEET
13.5							
							AUGERED INTERVAL ONLY NO SAMPLE COLLECTED
14.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES: SAA = SAME AS ABOVE. SPLIT SPOONS EQUIPPED WITH PLASTIC BASKET TRAPS.

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11480

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: -

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0	0938 12-15-94 402777		23, 25				3" O.D. SHELBY TUBE
14.5				PRELIMINARY			MT_B = 11.4 PPM MT_S = 22.4 PPM $B\gamma$ = 60 CPM
15.0							
15.5							
16.0							BOTTOM OF SHELBY TUBE DAMAGED
16.5				(10YR 5/1) GRAY CLAYEY SILT, LOW PLASTICITY, WET	ML		DESCRIPTION FROM BOTTOM OF SHELBY TUBE
17.0	0943 12-15-94 402778	6	3	VERY STIFF (10YR 5/1) GRAY CLAYEY SILT WITH FINE SAND, LOW PLASTICITY, MOIST	ML	2.0	SPLIT SPOON SAMPLE 402778 FOR ARCHIVE
17.5		9	6	STIFF (5Y4/1) DARK GRAY CLAYEY SILT WITH FINE SUBANGULAR GRAVEL, TRACE FINE SAND, LOW PLASTICITY, MOIST	ML	1.5	MT_B = 13.7 PPM MT_S = 14.8 PPM $B\gamma$ = 40 CPM

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-23-94

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11480

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 2

DATE:

TIME:

DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5		50/4	4	STIFF (5Y4/1) DARK GRAY CLAYEY SILT, TRACE SUBANGULAR FINE GRAVEL, TRACE FINE SAND, MOIST TO WET 1.5" DIAMETER GRAVEL AT BOTTOM	ML GP		HIT GRAVEL ONLY 4" DRIVEN
18.0	1051 12-15-94 402779	21	6	STIFF (10YR 5/2) GRAYISH BROWN SILTY CLAY, TRACE FINE SAND, WITH SUBROUND COARSE GRAVEL, LOW PLASTICITY, MOIST	CL	1.0	SPLIT SPOON
18.5	1059 12-15-94 402780	12	6	VERY STIFF (2.5 Y 5/1) GRAY SANDY CLAY WITH SUBROUND COARSE GRAVEL, LOW PLASTICITY, MOIST	CL	3.0	MTB = 6.5 PPM MTS = 10.4 PPM BR = 40 CPM
19.0		14	6	VERY STIFF (2.5 Y 5/1) ~~HEAVY~~ GRAY SANDY CLAY, TRACE SUBANGULAR FINE GRAVEL, LOW PLASTICITY, SLIGHTLY MOIST	CL	2.5	SAMPLES 402779 AND 402780 COLLECTED OVER 24" INTERVAL.
19.5		18	6	STIFF (2.5 Y 4/1) DARK GRAY SILTY CLAY WITH FINE SAND, TRACE SUBANGULAR FINE GRAVEL, LOW PLASTICITY, SLIGHTLY MOIST	CL	1.25	SAMPLE 402779 FOR LAB SAMPLE 402780 FOR ARCHIVE
20.0	1113 12-15-94 402781						3" O.D. SHELBY-TUBE MTB = 10.8 PPM MTS = 11.4 PPM BR = 60 CPM
20.5							DAMAGED, CRIMPED TUBE
21.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

000164

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11480

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: see Page 1 | DATE: | TIME: | DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0							TUBE CONTENTS APPEAR TO BE DRILLING SLOUGH
21.5							
22.0				PRELIMINARY			NO LAB SAMPLE COLLECTED, SAMPLE 402781
22.5							FOR ARCHIVE
23.0	1127 12-15-94 402782	2	4	STIFF (2.5Y 5/1) GRAY SILTY CLAY WITH FINE TO COARSE SUB-ANGULAR TO SUBROUND GRAVEL, LOW PLASTICITY, MOIST	CL	1.5	SPLIT SPOON
23.5	1133 12-15-94 402783	3	6	STIFF (5Y 4/1) DARK GRAY SILTY CLAY WITH FINE SUBANGULAR TO SUBROUND GRAVEL, LOW TO MEDIUM PLASTICITY, MOIST	CL	1.25	MTB=10.2 PPM MTS=11.1 PPM BS=60 CPM
24.0		5	6	SAA		1.25	SAMPLE 402782 FOR ARCHIVE SAMPLE 402783 FOR LAB
24.5							AUGERED INTERVAL ONLY NO SAMPLE COLLECTED

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: OU-2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11480

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 1 | DATE: | TIME: | DATE COMPLETED:

WATER USED DURING DRILLING: | DRILLING CONTRACTOR: | DRILLING EQUIPMENT: | DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5	1152 12-15-94 402784		12				3" O.D. SHELBY TUBE
25.0							
25.5				PRELIMINARY			MTB = 10.8 PPM MTS = 11.2 PPM BS = 40 CPM
26.0							
26.5							
27.0							TUBE BADLY DAMAGED CRIMPED OVER LOWER 4 INCHES, NO DESCRIP.
27.5	1304 12-15-94 402785	3	Ø				SPLIT SPOON
28.0	1304 12-15-94 402786	24	6	STIFF (5 Y 4/1) DARK GRAY CLAY WITH ANGULAR to SUBROUND COARSE to FINE GRAVEL, TRACE FINE SAND, LOW PLASTICITY, MOIST	CL	1.5	MTB = 6.2 PPM MTS = 6.8 PPM BS = 40 CPM

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

000166

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 9 OF 9

PROJECT NAME: OU-2 PREDESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11480

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: See Page 2 DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: DRILLING CONTRACTOR: DRILLING EQUIPMENT: DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
28.0		9	5	~~SAMPLE~~ PRELIMINARY DRY ZONE OF COARSE SUBANGULAR TO ANGULAR GRAVEL 2.5" THICK IN BOTTOM 4 INCHES	GP	1.5	SAMPLE 402785 FOR LAB SAMPLE 402786 FOR ARCHIVE
28.5							AUGERED INTERVAL ONLY NO SAMPLE COLLECTED
29.0	1331 12-15-94 402787		28				3" O.D SHELBY TUBE
27.5							MTB = 10.2 PPM MTS = 10.8 PPM BH = 60 CPM
30.0							SHELBY TUBE BADLY CRIMPED ON LOWER 16 INCHES
30.5							SAMPLE 402788 IS RINSE SAMPLE
31.0				(5 GY 5/1) GREENISH GRAY SILTY CLAY ~~WITH~~ TRACE SUBANGULAR FINE GRAVEL, LOW PLASTICITY, SLIGHTLY MOIST	CL		DESCRIPTION FROM BOTTOM FACE OF SHELBY TUBE
31.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

000187

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST

WELL NUMBER: B - 11480

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 PREDESIGN DISPOSAL FACILITY BORING

PROJECT NUMBER: 20.03.07

GEOLOGIST: [redacted] 10257

DRILLING METHOD: AUGER

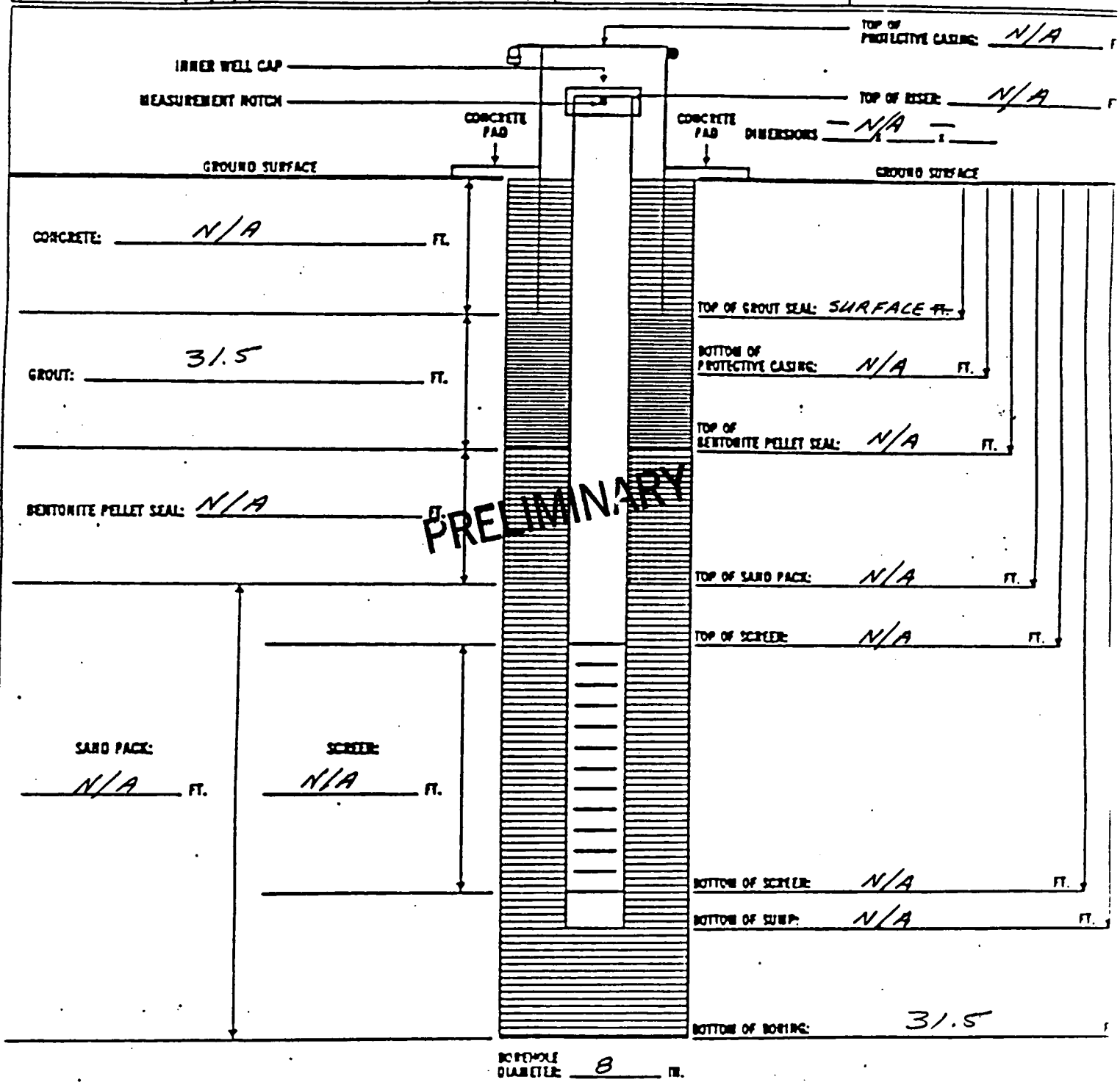
DATES OF INSTALLATION: 12-14 → 12/15/94

WATER LEVEL (FL): DRY

DATE: 12-15-94

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: TYPE E-I-K PORTLAND, EXPANSIVE CEMENT - 355 LB	BENTONITE PELLETS (5-GALLON BUCKETS): GRANULAR - 3.8 LB	DEEPEST TEMPORARY DRILLING CASING PENETRA N/A
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A	VOLUME OF WATER USED FOR GROUT HYDRATION ~26.5

RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A
RISER/SCREEN DIAMETER:	SCREEN SLOT SIZE:	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A

000168

PARSONS

FEMP
ASTM METHOD CONFORMANCE CHECKLIST

PROJECT NUMBER: 20.03.07	PROJECT NAME: OU-2 Predesign Field Investigation			
BORING NUMBER: 11480	COORDINATES:			REPORT DATE: 12-15-94
GROUND SURFACE ELEVATION:	GROUNDWATER LEVEL: Dry	DATE: 12-15-94	TIME: 1339	DATE STARTED: 12-14-94
ENGINEER/GEOLOGIST: K. Ernst	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED: 12-15-94
WATER USED DURING DRILLING: None	DRILLING CONTRACTOR: Alliance Env. Inc	DRILLING METHOD: Mobile B-59/HSA	DRILLER/HELPER: B. Erickson/ B. Fortney; D. Newman	

MAJOR SAMPLING/TESTING COMPONENT	CONFORMANCE (Y/N)	REMARKS OR DEVIATIONS
I. ASTM D 1586-84 SPT and Split-Barrel Sampling Nominal Hammer Weight (140 lb ± 2 lb)	Y	Used 140-lb hammer
Hammer Drop System Type/Method/Condition (Trip. Auto, Semi-auto) CA Thread	Y	Used rope and cathead release, rope in good condition, cathead is clean
Hammer Type (Safety, Donut)	Y	Used safety hammer
Drilling Method/Equipment (HSA, SA, Cable)	Y	Used hollow stem auger drilling method, 4 1/4" I.D., 8" hole ϕ
Fluid Level Maintenance	Not Applicable	No drilling fluid used
Split-Barrel Sampler Type (Dimension compliance and usage)	Y	Used 2" O.D. std samplers, no liners, plastic retainer baskets
II. ASTM D 1587-83 Thin-Walled Tube Sampling Drilling Method/Equipment	Y	
Fluid Level Maintenance	N/A	Not Applicable
Thin-Walled Tube (Condition/Dimensions)	Y	3"ϕ std., 36" long
Sampler Advancement Method	N	See note 1
Handling/Sealing of Tube Sample	Y	
III. ASTM D 4220-89 Preserving and Transporting Soil Samples Sample Group (A, B, C, D)	Y	Group B for Jar and Bulk Sample Group C for thin walled samples
Sealing Materials Usage	Y	Used Wax and end caps for Shelby Tubes, used moisture proof Jars
Labels/Marking Usage	Y	Used std FEMP labels
Packing/Transport Container Usage	Y	See Note 2
Sample Protection from Extreme Temperature	Y	

PRELIMINARY

NOTES: 1. (12/14/94) Driller was observed to be compensating for about 6" of slough material in the augers when pushing the sample tube to sample within the desired interval. This non-conformance was judged to not affect sample quality since the most recovery in the borehole was 31"; however this technique is not consistent with Section 6.6 of ASTM D 1587-83. (12/15/94) spoke w/ Pat Riley (PRWCW) about using a center stem to ream the borehole prior to pushing the tube, for future boreholes

2. Requested a temporary/transport drum for storage of tubes in the field prior to transport to FEMP Trailer 305.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page 1 of

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11508 G1-603

COORDINATES:

RELATED FAC NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-17-94

GEOLOGIST: Cliff Lee and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-17-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	1316 10-17-94	10	6"	LOOSE (2.5Y 5/6) LT OLIVE BROWN Clayey SiLT w/ rounded pebbles DRY		0.0	microtip = 0ppm Alpha = N/A βγ = 50 cpm
0.5		26	6"	VERY STIFF (2.5Y 6/2 – 6/3) LT BROWNISH GRAY TO LT YELLOWISH BROWN Silty CLAY w/ some rounded pebbles, trace med coarse grain sand ROOT MATERIAL FISSILE — DRY		2.0	microtip = Alpha = SAH βγ =
1.0		32	2"	SAH		2.0	microtip = Alpha = SAH βγ =
1.5				Piece of Limestone			
2.0				Driller augered through per instruction of CRU 1	N/A		microtip = Alpha N/A βγ =
2.5	1328 10-17-94	SHELBY		NO RECOVERY ON SHELBY TUBE	N/A		microtip = Alpha N/A βγ =
3.0		SHELBY		SHELBY TUBE DISENGAGED FROM SAMPLING RODS AND REMAINED AT DEPTH	N/A		microtip = Alpha N/A βγ =
3.5		SHELBY		NR	N/A		microtip = Alpha N/A βγ =

1-SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 ppm	10-17-94	1315
ALPHA	N/A	10-17-94	1315
BETA/GAMMA	50 cpm	10-17-94	1315

NOTES: Driller's Helper is Rick Beebe

USCS symbols to be filled in after analysis results of samples per CRU 1

* Samples collected per ASTM D1586 Standard Penetration Test. * Colors identified per Munsell

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11508 C1-L03

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-17-94

GEOLOGIST: Cliff Lee and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-17-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5							
4.0		SHELBY		NR	N/A		microtip = Alpha = N/A Bγ = N/A
4.5		SHELBY		NR	N/A		microtip = Alpha = N/A Bγ =
				BOTTOM OF BORING			microtip = Alpha = Bγ =
5.0							
5.5							microtip = Alpha = Bγ =
6.0							microtip = Alpha = Bγ =
6.5							microtip = Alpha = Bγ =
7.0							microtip = Alpha = Bγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: THIS BORING WAS ABANDONED AT 4.5 FT DUE TO LOSS OF SHELBY TUBE IN HOLE

6521

BORING NUMBER: 11508

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU 1 MODULAR PROCESS AREA GEOTECH INVESTIGATION

PROJECT NUMBER: 10.03.10

GEOLOGIST: A. Thea Layne, Cliff Lee

DRILLING METHOD: Hollow Stem Auger Mobile B59

DATES OF INSTALLATION: 10-17-94

WATER LEVEL (B.L.): N/A DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:

INNER WELL CAP: N/A

MEASUREMENT NOTCH: N/A

TOP OF PROTECTIVE CASING: N/A FT.

N/A

TOP OF RISER: N/A FT.

DIMENSIONS: ___ x ___ x ___

CONCRETE PAD

GROUND SURFACE

CONCRETE: N/A FT.

GROUT: N/A FT.

BENTONITE PELLET SEAL: N/A FT.

SAND PACK: N/A FT.

SCREEN: N/A FT.

TOP OF GROUT SEAL: N/A FT.

BOTTOM OF PROTECTIVE CASING: N/A FT.

TOP OF BENTONITE PELLET SEAL: N/A FT.

TOP OF SAND PACK: N/A FT.

TOP OF SCREEN: N/A FT.

Please note: Borehole was augered to 2.0 FT. - A Shelby Tube was then pushed from 2.0 to 4.5 FT. THE SHELBY TUBE WAS LOST IN HOLE AND BORING WAS ABANDONED. BOREHOLE WAS FILLED WITH DRILL CUTTINGS.

BOTTOM OF SCREEN: N/A FT.

BOTTOM OF SUMP: N/A FT.

BOTTOM OF BORING: 4.5 FT.

BOREHOLE DIAMETER: 8" to 2.0 FT 3" to 4.5 FT

SHELBY TUBE REMAINED IN HOLE

TYPE AND AMOUNT OF GROUT USED: N/A	BENTONITE PELLETS (5-GALLON BUCKETS): N/A	DEPTH OF TEMPORARY DRILLING CASING PENETRATION: N/A FT.	
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A	VOLUME OF WATER USED FOR GROUT HYDRATION: N/A GAL	
RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A IN.
RISER/SCREEN DIAMETER: N/A IN.	SCREEN SLOT SIZE: N/A IN.	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A FT

FS-F-3884 (8/10/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11508 GI-603

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-17-94

GEOLOGIST: Cliff Lee and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-17-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart) Adjacent BORING	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
0.0	1347	8	6"	VERY HARD (2.5Y 6/3) LT YELLOWISH BROWN Clayey Silt w/ rounded chert pebbles approx 3/8" and trace gravel and trace fine grain sand DRY		74.5	microtip = 0 ppm Alpha = N/A βγ = 50 cpm
0.5		26	0"	NR	N/A		microtip = Alpha N/A βγ =
1.0		24	0"	NR	N/A		microtip = Alpha N/A βγ =
1.5	1410	11	6"	2" SAA @ 0.0-0.5'		74.5	microtip = 0 ppm
				4" VERY HARD (2.5Y 5/3) LT OLIVE BROWN Silty Clay slightly mottled, iron Patkings non-low plasticity, brittle DRY		74.5	Alpha = N/A βγ = 50 cpm
2.0		15	4"	SAA but VERY STIFF DRY		3.25	microtip = Alpha = βγ =
2.5		15	0"	NR	N/A		microtip = Alpha N/A βγ =
3.0	1415	5	6"	SAA @ 2.0 - 2.5'		2.0	microtip = 0 ppm Alpha = N/A βγ = 50-60 cpm
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			DAILY

NOTES: This Boring was adjacent to the original 11508 — approximately 5 FT Southwest

Colors identified on Munsell Color Chart

000173

CONTROL NUMBER:

FEMP LITHOLOGIC LOG.

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11508 G1-603

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-17-94

GEOLOGIST: Cliff Lee and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-17-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
3.5		6	5"	STIFF (2.5Y 5/6) LT OLIVE BROWN Clay w/ silt IRON PARTINGS MED Plasticity Slightly Moist		1.75	microtip = Alpha = SAA By =
4.5		6	0"	NR	N/A		microtip = Alpha = N/A By =
5.0	1420 10-17-94	5	6"	SAA w/ subangular gravel and decayed feldspar clasts NON-LOW PLASTICITY DRY		NOT TAKEN	microtip = 0 ppm Alpha = N/A By = 50 cpm
5.5		5	6"	STIFF (2.5Y 4/3) OLIVE BROWN Clay IRON PARTINGS HIGH PLASTICITY Slightly Moist		1.0	microtip = Alpha = SAA By =
6.0		5	0"	NR	N/A		microtip = Alpha = N/A By =
6.5	1426 10-17-94	SHELBY		RECOVERY ON SHELBY TUBE	N/A		microtip = Alpha = N/A By =
7.0		SHELBY			N/A		microtip = Alpha = N/A By =

SHELBY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11508 G1-603

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-17-94

GEOLOGIST: Cliff Lee and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-17-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0							
7.5		SHELBY			N/A		microtip = / Alpha N/A / βγ =
8.0		SHELBY			N/A		microtip = / Alpha N/A / βγ =
8.5		SHELBY		BOTTOM OF TUBE HAS SAA @ 5.0-5.5' MOIST		NOT TAKEN	microtip = 0 ppm / Alpha = N/A / βγ = 50 cpm
9.0	1432 10-17-94	3	6"	VERY STIFF (2.5Y 6/1) GRAY and (2.5Y 5/4) LT OLIVE BROWN MOTTLED Clay IRON PARTINGS HIGH PLASTICITY MOIST		2.25	microtip = 0 ppm / Alpha = N/A / βγ = 50 cpm
9.5		6	6"	SAA, but VERY STIFF		3.25	microtip = / Alpha = SAA / βγ =
10.0		9	6"	SAA but cleaner and more of an OLIVE BROWN color		3.75	microtip = / Alpha = SAA / βγ =
10.5				Drillers instructed to drill through per CRU 1	N/A		microtip = / Alpha N/A / βγ =

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

000175 ... Standard Penetration test • All colors identified on Munsell ...

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11508 G1-603

COORDINATES:

RELATED FAE NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-17-94

GEOLOGIST: Cliff Lee and Thec Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-17-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
10.5	1442	SHELBY		SHELBY TUBE BENT SEVERELY AT BOTTOM — SAMPLE DISTURBED SHELBY TUBE ~~DISREGARD~~ DISCARDED — 10-17-94	N/A		Microtip = Alpha = N/A By =
11.0		SHELBY		↓	N/A		Microtip = Alpha = N/A By =
11.5		SHELBY		BOTTOM OF TUBE HAS VERY STIFF (2.5Y 5/4) LT OLIVE BROWN CLAY w/ subangular and subrounded gravel. Slightly Moist		3.0	Microtip = 0 ppm Alpha = N/A By = 50 cpm
12.0	1450	SHELBY	3"	SAA		2.5	Microtip = 0 ppm Alpha = N/A By = 50 cpm
		6	3"	VERY STIFF (2.5Y 5/2) GRAYISH BROWN Clay w/ abundant pebbles low-med plasticity - brittle - Slightly Moist		3.0	
12.5		25	6"	Also, iron partings, and angular limestone gravel. SAA		4.5	Microtip = Alpha = SAA By =
13.0		25	6"	SAA		NOT TAKEN	Microtip = Alpha = SAA By =
13.5	1455	SHELBY		SHELBY TUBE DISENGAGED FROM SAMPLING RODS AND REMAINED AT DEPTH — NO RECOVERY	N/A		Microtip = Alpha = N/A By =
14.0							

18" due to cobble

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA/GAMMA			

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified per Munsell

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRUI MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11508 G1-Loc 3

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-17-94

GEOLOGIST: Cliff Lee and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-17-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0							
14.5		SHELBY			N/A		Microtip = Alpha N/A = βγ =
15.0		SHELBY			N/A		Microtip = Alpha N/A = βγ =
15.5		SHELBY			N/A		Microtip = Alpha N/A = βγ =
16.0		SHELBY		BOTTOM OF BORING @ 16.0'	N/A		Microtip = Alpha N/A = βγ =
16.5							Microtip = Alpha = βγ =
17.0							Microtip = Alpha = βγ =
17.5							Microtip = Alpha = βγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA GAMMA			

NOTES: THIS BORING WAS ABANDONED DUE TO LOSS OF SHELBY TUBE DOWN HOLE

Samples collected per ASTM [illegible] Colors identified per Munsell [illegible]

BORING NUMBER: 11508 Adjacent

FEMP
WELL COMPLETION LOG

6521

CONTROL NUMBER:

PROJECT NAME: CRU1 MODULAR PROCESS AREA GEOTECH INVESTIGATION

PROJECT NUMBER: 10.03.10

GEOLOGIST: A. Thea Layne Cliff Lee

DRILLING METHOD: Hollow Stem Auger Mobile B-59

DATES OF INSTALLATION: 10-17-94

WATER LEVEL (ft): N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:

INNER WELL CAP: N/A

MEASUREMENT NOTCH: N/A

TOP OF PROTECTIVE CASING: N/A FT.

TOP OF RISER: N/A FT.

CONCRETE PAD DIMENSIONS: N/A

GROUND SURFACE

CONCRETE: N/A FT.

GROUT: 16 FT.

BENTONITE PELLET SEAL: N/A FT.

SAND PACK: N/A FT.

SCREEN: N/A FT.

TOP OF GROUT SEAL: 0.0 FT.

BOTTOM OF PROTECTIVE CASING: N/A FT.

TOP OF BENTONITE PELLET SEAL: N/A FT.

TOP OF SAND PACK: N/A FT.

TOP OF SCREEN: N/A FT.

NOTE: SHELBY TUBE WAS LOST IN BOREHOLE @ 13.5' to 16.0' FT DEPTH AND BOREHOLE WAS ABANDONED. TL

BOTTOM OF SCREEN: N/A FT.

BOTTOM OF SUMP: N/A FT.

BOTTOM OF BORING: 16.0 FT.

BOREHOLE DIAMETER: 8 IN.

SHELBY TUBE REMAINED IN HOLE TL

TYPE AND AMOUNT OF GROUT USED: Volclay 3/4 BAG (50 lb BAG)

BENTONITE PELLETS (5-GALLON BUCKETS): N/A

DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.

VOLUME OF WATER USED DURING DRILLING: N/A GAL

RISER MATERIAL: N/A

VOLUME OF WATER USED FOR GROUT HYDRATION: 23 Gal. per 50 lb bag GAL

RISER WALL THICKNESS: N/A

TYPE OF SAND PACK: N/A

SCREEN MATERIAL: N/A

DRILLING CASING DIAMETER: N/A IN.

RISER/SCREEN DIAMETER: N/A IN.

SCREEN SLOT SIZE: N/A IN.

SCREEN TYPE: N/A

DEPTH OF CENTRALIZER(S): N/A FT

FS-F-3684 (8/10/93)

NOTE: THIS BOREHOLE WAS ADJACENT TO THE ORIGINAL 11508 AND IS LOCATED APPROX. 5 FT SOUTHWEST OF ORIGINAL. TL

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page of

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation	PROJECT NUMBER: 10.03.10
BORING NUMBER: 11508	COORDINATES: / RELATED FAX NUMBERS:
SURFACE ELEVATION:	GROUNDWATER LEVEL: N/A; DATE: N/A; TIME: N/A; DATE STARTED: 10-19-94
GEOLOGIST: Thea Layne and Cliff Lee	GROUNDWATER LEVEL: N/A; DATE: N/A; TIME: N/A; DATE COMPLETED: 10-19-94
WATER USED DURING DRILLING: n/a	DRILLING CONTRACTOR: Alliance; DRILLING EQUIPMENT: Mobile B59 Auger; DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
				FOR SOIL DESCRIPTION TO 14.0' SEE BORING LOG OF ORIGINAL 11508			
				Adjacent Boring			
14.0	1044	11	6"	HARD (2.5Y 4/1) DARK GRAY Clay w/ some silt and well-graded angular to subangular gravel in various colors (various mineralogies) trace sand LOW PLASTICITY Slightly Moist		4.5	microtip = 0 ppm Alpha = N/A Bγ = 60 cpm
14.5		17	6"	SAA		4.5	microtip = 0 ppm Alpha = N/A Bγ = 90 cpm
15.0		19	6"	SAA		4.5	microtip = 0 ppm Alpha = N/A Bγ = 60 cpm
15.5		22	3"	SAA		NOT TAKEN	microtip = Alpha = SAA Bγ =
				NR			
16.0	1054	7	6"	VERY STIFF SAA, with some medium size sand grains and iron partings MED PLASTICITY Slightly Moist		2.0	microtip = 0 ppm Alpha = N/A Bγ = 40-80 cpm
16.5		11	6"	SAA BECOMING MORE PLASTIC		2.5	microtip = Alpha = SAA Bγ =
17.0		14	6"	SAA, but less gravel and STIFF		1.5	microtip = Alpha = SAA Bγ =
17.5							

SPOON POUNDED 2 FT

SPOON POUNDED 2 FT

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 ppm	10-19-94	1043
ALPHA	N/A	N/A	
BETA/GAMMA	40-70 cpm	10-19-94	1042

NOTES: This is an adjacent Boring to 11508 original located approx. 5 FT SW of surveyed location ~ auger advanced down to 14.0 and then began sampling

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

000179

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page of

PROJECT NAME: CRU1 MODULAR PROCESS AREA Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11508

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thec Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TYPE, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
17.5		20	2"	SAA, but MED STIFF Slightly Moist NR		1.0	microtip = Alpha = SAA β_γ =
18.0	1100	4	6"	SAA @ 17.0-17.5 w/ some fine gravel - slightly larger than coarse sand Slightly Moist		1.75	microtip = 0 ppm Alpha = N/A β_γ = 60 cpm
18.5		9	6"	SAA, except no gravel, some coarse sand HIGH PLASTICITY Slightly Moist		1.5	microtip = Alpha = SAA β_γ =
19.0		10	6"	SAA Moist		.75	microtip = Alpha = SAA β_γ =
19.5		18	5"	SAA Moist		.25	microtip = Alpha = SAA β_γ =
20.0	1105	6	6"	VERY SOFT (5GY 5/1) GREENISH GRAY CLAY w/ some coarse sand VERY HIGH PLASTICITY Moist		<.25	microtip = 0 ppm Alpha = N/A β_γ = 50-70 cpm
20.5		5	6"	SAA but MED STIFF		.75	microtip = Alpha = SAA β_γ =
21.0							

SPOON POUNDED 2 FT

SPOON POUNDED 2 FT

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		(FIKS)	
BETA/GAMMA			PALE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page of

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11508

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: n/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
21.0							
SPOON POUNDED 2 FT		8	4"	SAA		1.0	Microtip = Alpha = SAA Bg =
21.5			0"	N/R		N/A	
SPOON 2 FT		10	0"	NR		N/A	Microtip = Alpha = N/A Bg =
22.0	1112	3	6"	SAA @ 20.0-20.5 FT w/ fine to med size rounded gravel (PINK COLOR TINGE) TO CLAY HIGH PLASTICITY MOIST		TEST INACCURATE	Microtip = Alpha = Bg = READINGS NOT TAKEN
22.5							
SPOON POUNDED 2 FT		5	6"	SAA		HAS RENDERED THIS	Microtip = Alpha = SAA Bg =
23.0							
		8	6"	SAA, but coarse angular gravel			Microtip = Alpha = SAA Bg =
23.5							
		9	6"	SAA, w/ trace sand and angular to rounded gravels		— RAIN	Microtip = Alpha = SAA Bg =
24.0							
	1115	3	6"	SAA, VERY SOFT w/ mottling of (2.5Y 4/4) OLIVE BROWN CLAY gravel is angular and well-graded HIGH PLASTICITY VERY MOIST		.25	Microtip = TOO WET/HUMIDITY Alpha = N/A Bg = 50-60 cpm
24.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: Readings not taken on meters @ 22.0-24.0' due to Light Rain which rendered readings inaccurate. Reading on Microtip not taken @ 24.0-26.0' for same reason above. TL

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page of

PROJECT NAME: CRUI MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11508

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thec Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5							
		5	6"	SAA, but SOFT		.5	microtip = Alpha = SAA By =
25.5							
		6	6"	SAA, but VERY SOFT		.25	microtip = Alpha = SAA By =
25.5							
		8	6"	SAA		<.25	microtip = Alpha = SAA By =
26.0							
	1129	WEIGHT OF HAMMER ONLY	6"	SAA		<.25	microtip = TOO HUMID Alpha = N/A By = 50-60 cpm
26.5							
		10	6"	SAA		<.25	microtip = Alpha = SAA By =
27.0							
		35	3"	SAA but STIFF		1.5	microtip = Alpha = SAA By =
			3"	MED DENSE (5GY 5/1) GREENISH GRAY FINE TO MED GRADE SAND (.5-.75 mm) Angular to subangular shape VERY MOIST		0.0	
27.5							
		27	4"	SAA		0.0	microtip = Alpha = SAA By =
			2"	VERY STIFF (5GY 5/1) GREENISH GRAY CLAY w/ trace fine gravel Slightly MOIST		2.0	
28.0							

SPOON POUNDED 2 FT

SPOON POUNDED 2 FT

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: Microtip not functioning properly @ 26.0-30.0' due to humidity (LT RAIN) ?

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page of

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11508

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
28.0	1136	10	2"	VERY LOOSE (5GY 5/1) GREENISH GRAY MED TO COARSE SAND and fine GRAVEL WET		0.0	microtip = TOO
			4"	SAA BUT w/ pockets of CLAY MOIST		Variable	Alpha = N/A βγ = 80-60 cpm
28.5		20	4"	CLAY w/ trace sand Slightly Moist		4.5	microtip =
			2"	CLAY w/ well graded fine to coarse GRAVEL that is angular, some med. sand VERY MOIST		Variable	Alpha = SAA βγ =
29.0		43	4"	VERY SOFT (5GY 5/1) GREENISH GRAY Silty, sandy CLAY MOIST		0.0	microtip =
				VERY STIFF (5GY 5/1) GREENISH GRAY CLAY, trace sand MOIST		2.5	Alpha = SAA βγ =
29.5		50	2"	SAA Slightly MOIST		NOT TAKEN	microtip =
				NR			Alpha = SAA βγ =
30.0				BOTTOM OF BORING @ 30.0'			microtip =
							Alpha =
							βγ =
							microtip =
							Alpha =
							βγ =
							microtip =
							Alpha =
							βγ =

Spoon Pounded 2 FT

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

WELL NUMBER: 11508 Adjacent

FEMP
WELL COMPLETION LOG

6521
CONTROL NUMBER:

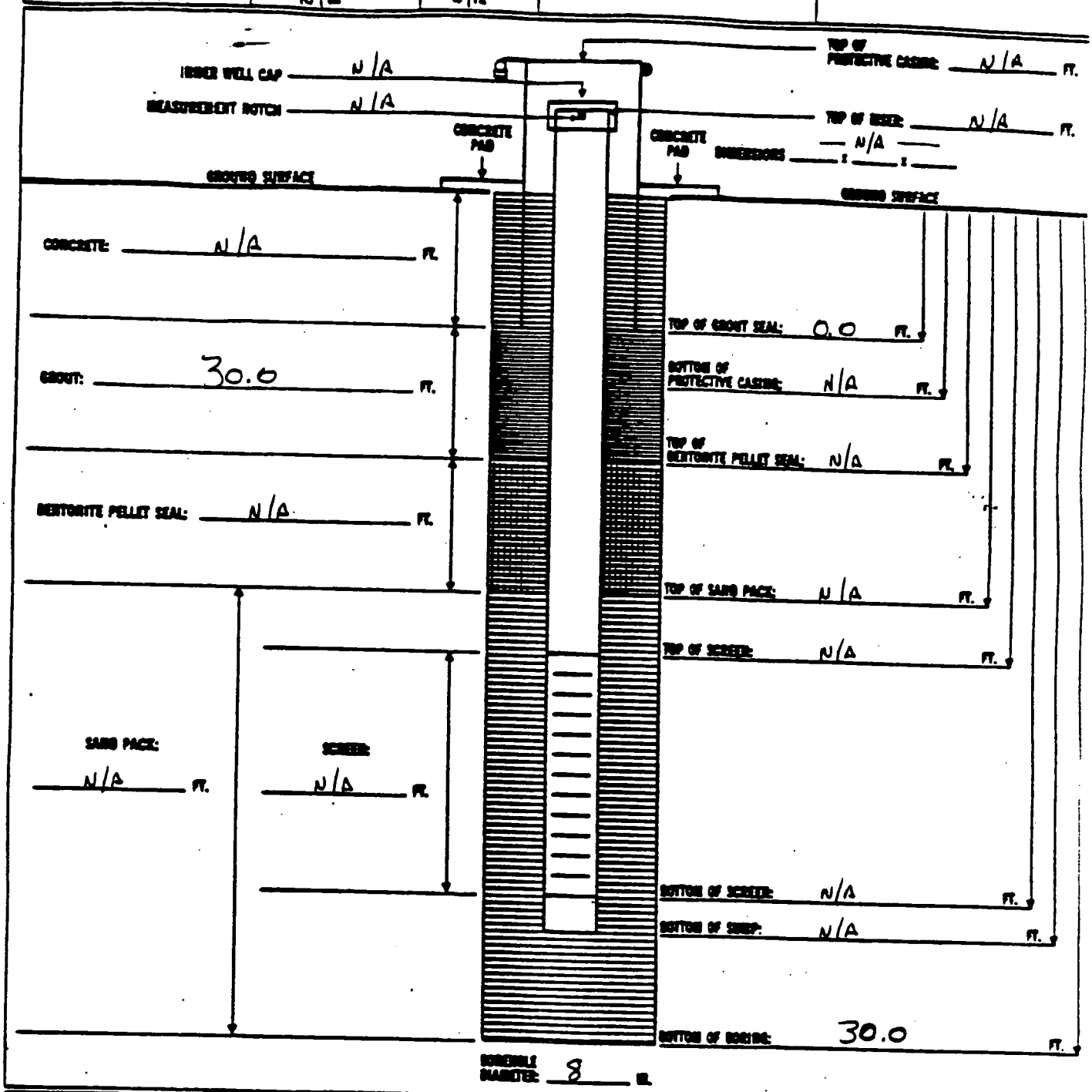
PROJECT NAME: CRU1 MODULAR PROCESS AREA GEOTECH INVESTIGATION

PROJECT NUMBER: 10.03.10

GEOLOGIST: A. Thea Layne and Cliff Lee

DRILLING METHOD: Hollow Stem Auger Mobile B59

DATES OF INSTALLATION:	WATER LEVEL (ft.):	DATE:	RELATED FAL NUMBERS:	CHECKED BY:
10-19-94	N/A	N/A		



TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS):	DEEPEST TEMPORARY DRILLING CASING PENETRATION
Volclay / 2 50lb Bags	N/A	N/A FT
VOLUME OF WATER USED DURING DRILLING:	**RISER MATERIAL:**	**VOLUME OF WATER USED FOR GROUT HYDRATION:**
N/A GAL	N/A	23 gal. to each 50lb BAG GAL

RISER WALL THICKNESS:	TYPE OF SAND PACK:	SCREEN MATERIAL:	DRILLING CASING DIAMETER:
N/A	N/A	N/A	N/A IN
RISER/SCREEN DIAMETER:	**SCREEN SLOT SIZE:**	**SCREEN TYPE:**	**DEPTH OF CENTRALIZER(S):**
N/A IN.	N/A IN.	N/A	N/A FT

FS-F-3684 (9/10/93) THIS BORING ADJACENT TO ORIGINAL 11508 (APPROX. 5 FT DISTANCE)

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

Page 1 of

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11506

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger, Thea Layne, Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
0.0	1425	8	6"	HARD (2.5Y 6/4) LT OLIVE BROWN Silty Clay w/ rock fragments LOW PLASTICITY DRY		4.5	microtip = 0 ppm Alpha = N/A βγ = 60-90 cpm
0.5		22	2"	SAA			microtip = Alpha = SAA βγ =
1.0		34	0"	NR			microtip = Alpha = βγ =
1.5	1435	13	6"	VERY STIFF (2.5Y 4/3) OLIVE BROWN Silty Clay w/ iron partings, rounded gravel LOW PLASTICITY DRY		3.5	microtip = 0 ppm Alpha = N/A βγ = 60 cpm
2.0		21	6"	SAA			microtip = Alpha = SAA βγ =
2.5		19	0"	NR	N/A		microtip = Alpha = N/A βγ =
3.0				Drillers instructed to auger through this interval per CRU 1	N/A		microtip = Alpha = N/A βγ =
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 ppm	10-18-94	1415
ALPHA	N/A	N/A	N/A
BETA/GAMMA	60 cpm	10-18-94	1415

NOTES: Drillers Helper is Rick Beeler.

USCS Symbols to be filled in after results are received from geotech analysis per CRU 1.

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11506

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiser, Thea Layne, Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLING MADE FOR: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONS STENCY (tsf)	REMARKS
3.5	1440			RECOVERY ON SHELBY 17"	N/A		microtip = / Alpha / βγ = N/A
4.0		SHELBY					
					N/A		microtip = / Alpha N/A / βγ =
4.5		SHELBY					
				VERY STIFF DARK GRAYS BROWN (2.5Y 4/2) Silty Clay with trace of gravel, iron partings		3.5	microtip = 0 ppm / Alpha = N/A / βγ = 50 cpm
5.0		SHELBY		LOW PLASTICITY DRY			
					N/A		microtip = / Alpha N/A / βγ =
5.5		SHELBY					
				BOTTOM OF SHELBY	N/A		Microtip = / Alpha N/A / βγ =
6.0		SHELBY					
	1445	5	6"	VERY SOFT (2.5Y 4/3) OLIVE BROWN Silty Clay w/ some rock fragments		.25	microtip = 0 ppm / Alpha = N/A / βγ = 60 cpm
6.5				LOW PLASTICITY DRY			
		6	0"	NR	N/A		microtip = / Alpha N/A / βγ =
7.0							

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

000186

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG.

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11506

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger, Thea Layne, Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	ASSUMED CONSISTENCY (TSF)	REMARKS
7.0							
		9	0"	NR	N/A		Microtip = Alpha N/A By =
7.5							
				Drillers instructed to auger through this interval per CRU 1	N/A		Microtip = Alpha N/A By =
8.0							
	1450			RECOVERY ON SHELBY 20"	N/A		Microtip = Alpha N/A By =
8.5		SHELBY					
					N/A		Microtip = Alpha N/A By =
9.0		SHELBY					
					N/A		Microtip = Alpha N/A By =
9.5		SHELBY					
				HARD (2.5Y 5/4) LT OLIVE BROWN CLAY w/ subrounded to subangular gravel, some fine to med. grain sand, trace silt, iron staining, LOW-MED PLASTICITY, slightly moist		45	Microtip = 0 ppm Alpha = N/A By = 50 cpm
10.0		SHELBY		BOTTOM OF SHELBY			
					N/A		Microtip = Alpha N/A By =
10.5		SHELBY					

TUBE — SHELBY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11506

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger, Thea Layne Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
10.5							
	1459	7 / 1	4"	SAA @ Bottom of SHELBY but VERY STIFF		2.75	microtip = 0 ppm Alpha = N/A βγ = 50-70 cpm
11.0			2"	VERY LOOSE (2.5Y 5/6) LT OLIVE BROWN sand and gravel MOIST		0.0	
		22	1"	SAA			microtip = Alpha = SAA βγ =
11.5			5"	MED STIFF (2.5Y 5/6) LT OLIVE BROWN Clay, Some iron parting MED TO HIGH PLASTICITY Slightly MOIST		.5	
12.0		16	6"			3.0	microtip = Alpha = SAA βγ =
12.5				Drillers instructed to auger through this interval per CRU1	N/A		microtip = Alpha N/A βγ =
13.0	1505	SHELBY		RECOVERY ON SHELBY TUBE 18"	N/A		microtip = Alpha N/A βγ =
13.5		SHELBY			N/A		microtip = Alpha N/A βγ =
14.0		SHELBY		HARD (2.5Y 4/1) DARK GRAY Silty Clay w/ angular to subrounded gravel LOW PLASTICITY DRY TO VERY Slightly MOIST BOTTOM OF SHELBY		74.5	microtip = 0 ppm Alpha = N/A βγ = 60 cpm

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

000188

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11506

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger, Thea Layne, Cliff Lee | GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/A | DRILLING CONTRACTOR: Alliance | DRILLING EQUIPMENT: Mobile B59 Auger | DRILLER/HELPER: Martin Proctor

(FEET)	SAMPLE DATE AND NUMBER	BLOWS (per 6 in.)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0					N/A		microtip = Alpha = N/A βγ =
SHELBY 14.5		SHELBY					
					N/A		microtip = Alpha = N/A βγ =
15.0		SHELBY					
	1540	11	6"	HARD (2.5Y 4/1) DARK GRAY Silty CLAY w/ some rounded gravel approx 1" diameter		>4.5	microtip = 0 ppm Alpha = N/A βγ = 60 cpm
15.5				MED PLASTICITY Slightly Moist			
		12	6"	SAA but, no large gravel		>4.5	microtip = Alpha = SAA βγ =
16.0							
		20	3"	SAA		>4.5	microtip = Alpha = SAA βγ =
16.5				Bryozoan Fossil			
				Drillers instructed to auger through this interval per CRU 1	N/A		microtip = Alpha = N/A βγ =
17.0							
SHELBY				NO RECOVERY ON SHELBY	N/A		microtip = Alpha = N/A βγ =
17.5		SHELBY					

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified on Munsell

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11506

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger · Thea Laure · Cliff Lee | GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/a | DRILLING CONTRACTOR: Alliance | DRILLING EQUIPMENT: Mobile B59 Auger | DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 in.)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
17.5							
18.0		SHELBY		SAMPLING ROD Disengaged from SHELBY TUBE FROM STRESS OF LODGED TUBE — PIN RIPPED THROUGH TOP INSERT HOLE OF SHELBY TUBE	N/A		microtip = Alpha = N/A Bγ =
18.5		SHELBY		DRILLERS AUGERED AROUND LODGED SHELBY TUBE AND RETRIEVED IN AUGER SHELBY TUBE DISCARDED	N/A		microtip = Alpha = N/A Bγ =
19.0		SHELBY			N/A		microtip = Alpha = N/A Bγ =
19.5		SHELBY			N/A		microtip = Alpha = N/A Bγ =
20.0	1633	4	6	SAA but with large angular gravel @ 15.0-15.5' and STIFF Moist		1.5	Microtip = 0 ppm Alpha = N/a Bγ = 60 cpm
20.5		6	6"			1.5	microtip = Alpha = SAA Bγ =
21.0		10	0"		N/A		microtip = Alpha = N/A ~~SAA~~ Bγ = TL 10-18-94

SPOON IS WET

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standards [illegible] Munsell Color Chart

000190

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11506

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger, Thea Layne, Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
21.0	1640	3	6"	SAA, but soft Moist		.25	microtip = 0 ppm Alpha = N/A βγ = 40-60 cpm
21.5		3	1"	SAA		.25	microtip = Alpha = SAA βγ =
22.0		7	0"	NR	N/A		microtip = Alpha N/A = βγ =
22.5	1642	3	6"	SAA		RAIN IS AIR GAPPED SAMPLE MEASUREMENTS NOT TAKEN	microtip = 0 ppm Alpha = N/A βγ = 60 cpm
23.0		8	6"	SAA			microtip = Alpha = SAA βγ =
23.5		12	6"	SAA			microtip = Alpha = SAA βγ =
24.0	1649	6	6"	SAA			microtip = 0 ppm Alpha = N/A βγ = 60 cpm
24.5							

SPOON IS WET

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11506

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger, Theo Layne, Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TYPE DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
24.5							
25.0		6		SAA		RAD IS DISTURBING SAMPLE MEASUREMENTS NOT TAKEN	microtip = Alpha = SAA Bγ =
25.5		8		SAA			microtip = Alpha = SAA Bγ =
26.0	1651	6	6"	SAA			microtip = 0 ppm Alpha = N/A Bγ = 60 cpm
26.5		18	6"	SAA			microtip = Alpha = SAA Bγ =
27.0		30	3"	SAA			microtip = Alpha = SAA Bγ =
			3"	MED DENSE (2.5Y 4/1) DARK GRAY Silty SAND w/ Some Clay, fine to coarse grain sand – Also some well-graded WET		0.0	
27.5	1705	14	6"	Subrounded to angular gravel SAA, but increased fine gravel WET		0.0	microtip = 0 ppm Alpha = N/A Bγ = 60 cpm
28.0		24	6"	SAA WET		0.0	microtip = Alpha = SAA Bγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

Samples collected [illegible] Standard Penetration [illegible] All colors identified [illegible]

000192

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11506

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger, Thea Layne Cliff Lee | GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/a | DRILLING CONTRACTOR: Alliance | DRILLING EQUIPMENT: Mobile B59 Augers | DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TYPE DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
28.0		37		NR	N/A		microtip = / Alpha = N/A / βγ =
28.5				BOTTOM OF BORING @ 28.5'			microtip = Alpha = βγ =
29.0							microtip = Alpha = βγ =
29.5							microtip = Alpha = βγ =
30.0							microtip = Alpha = βγ =
							Microtip = Alpha = βγ =
							microtip = Alpha = βγ =
							microtip = Alpha = βγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified on Munsell Color

BORING NUMBER: 11506

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU1 MODULAR PROCESS AREA GEOTECH INVESTIGATION

PROJECT NUMBER: 10.03.10

GEOLOGIST: A. Thea Layne, Ken Geiger, Cliff Lee

DRILLING METHOD: Hollow Stem Auger Mobile B-59

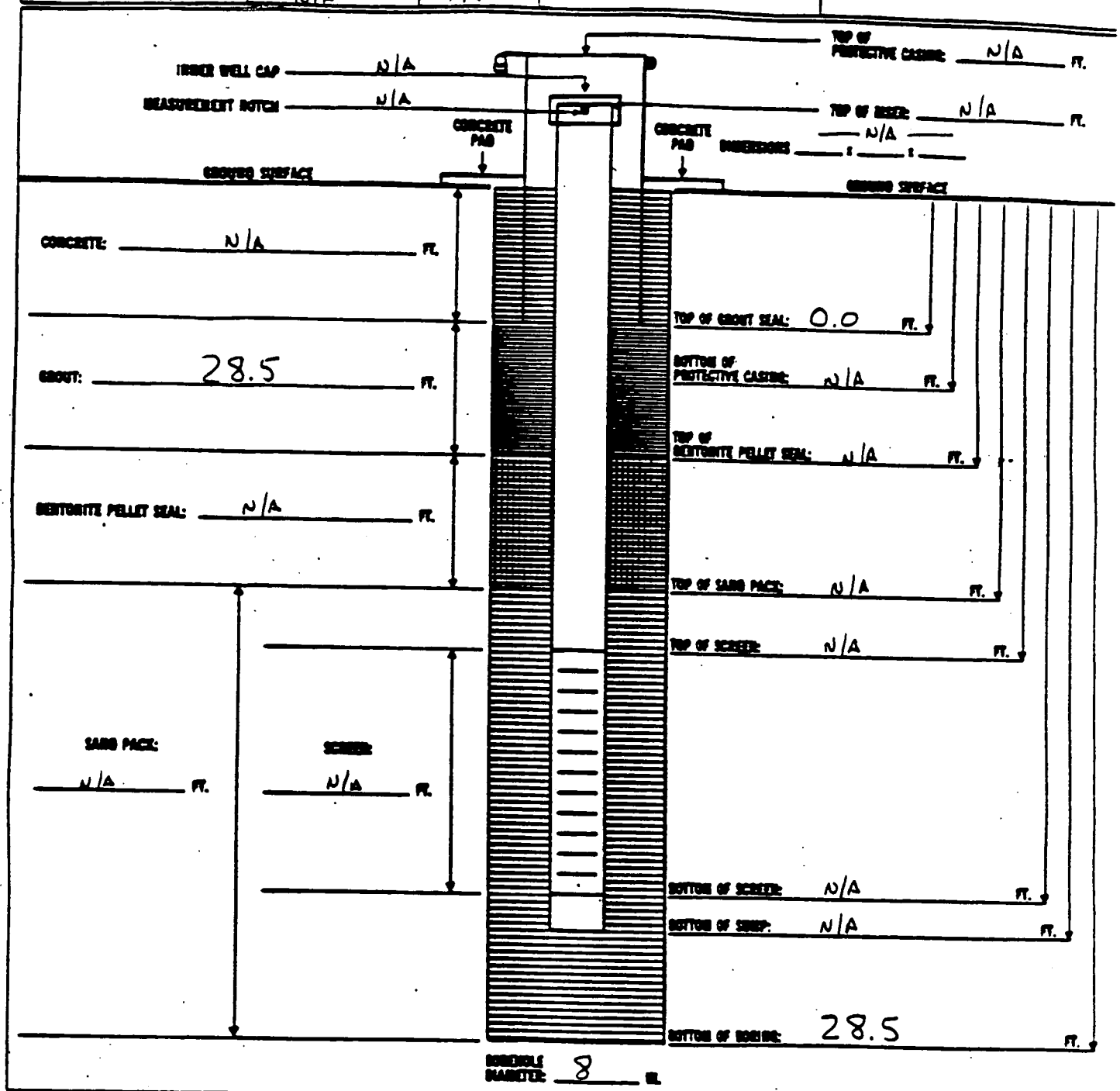
DATES OF INSTALLATION: 10-18-94

WATER LEVEL (B.L.): - N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay / 2 50lb BAGS APPROX.	BENTONITE PELLETS (5-GALLON BUCKETS): N/A	DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A	VOLUME OF WATER USED FOR GROUT HYDRATION: 23 gal. per 50 lb bag GAL

RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A IN.
RISER/SCREEN DIAMETER: N/A IN.	SCREEN SLOT SIZE: N/A IN.	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A FT.

FS-F-3884 (9/10/93)

CONTROL NUMBER:

FEMP LITHOLOGIC LOG.

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11510

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
0.0	0821	6	6"	(10YR 4/3) BROWN Silty clay w/ rock fragments roots low plasticity DRY		2.0	microtip = 0 Alpha = N/A βγ = 50
0.5		12	3"	SAA piece of tile (porcelain)		3.5	microtip = Alpha = SAA βγ =
1.0		22	0"				microtip = Alpha = βγ =
1.5	0825	11	6"	SAA and large rounded pebbles low plasticity slightly moist		4.5	microtip = 0 ppm Alpha = N/A βγ = 70 cpm
2.0		24	3"	SAA			microtip = Alpha = SAA βγ =
2.5				NR	N/A		
		19		NR	N/A		microtip = Alpha = N/A βγ =
3.0				Augered through this interval per instruction of CRU 1	N/A		microtip = Alpha = N/A βγ =
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	10-18-94	0820
ALPHA	N/A		N/A
BETA/GAMMA	60 cpm	10-18-94	0820

NOTES: Drillers Helper is Rick Beebe

USCS symbols to be filled in after analysis results are back per CRU 1

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11510

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
3.5	0833	SHELBY		RECOVERY ON SHELBY 13½"		N/A	Microtip = Alpha N/A βγ = N/A
4.0		SHELBY				N/A	Microtip = Alpha N/A βγ =
4.5		SHELBY				N/A	Microtip = Alpha N/A = βγ =
5.0		SHELBY				N/A	Microtip = Alpha N/A βγ =
5.5		SHELBY		BOTTOM OF SHELBY (2.5 ft) DARK GRAYISH BROWN Silty Clay w/ rock fragments trace fb sand MED PLASTICITY SLIGHTLY MOIST to MOIST		3.5	Microtip = 0 ppm Alpha = N/A βγ = 70 cpm
6.0	0841	9	6"	SAA w/ gray mottling (10YR 5/1) GRAY		3.5	Microtip = 0 ppm Alpha = βγ = 80 cpm
6.5		14	6"	SAA		4.5	Microtip = Alpha = SAA βγ =
7.0							

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

• Samples collected per ASTM Standard Penetration test • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP LITHOLOGIC LOG.

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11510

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
7.0							
		18	0"	NR	N/A		Microtip = Alpha N/A βγ =
7.5							
				Augered through this interval per direction of CRU1	N/A		Microtip = Alpha N/A βγ =
8.0	0848			RECOVERY ON SHELBY 25"	N/A		Microtip = Alpha N/A βγ =
8.5		SHELBY					
					N/A		Microtip = Alpha N/A βγ =
9.0		SHELBY					
					N/A		Microtip = Alpha N/A βγ =
9.5		SHELBY					
					N/A		Microtip = Alpha N/A βγ =
10.0		SHELBY					
				BOTTOM OF SHELBY TUBE SAR		74.5	Microtip = 0 ppm Alpha = N/A βγ = 60 cpm
10.5		SHELBY		LOW PLASTICITY Slightly MOIST			

PUSHED 25" SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11510

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger and Thea Layne | GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/a | DRILLING CONTRACTOR: Alliance | DRILLING EQUIPMENT: Mobile B59 Auger | DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
10.5	0854	10	6"	SAA iron partings low Plasticity Slightly moist		3.75	microtip = 0 ppm Alpha = N/A βγ = 70-90 cpm
11.0		18	6"	SAA		3.5	microtip = Alpha = SAA βγ =
11.5		21	9"	(10YR 4/1) DK GRAY Silty clay w/ some sand abundant iron partings some rock fragments Last 3" slightly moist - moist		1.75	microtip = Alpha = SAA βγ =
12.0				Augered through this interval per direction of CRU1	N/A		microtip = Alpha N/A βγ =
12.5	0903			RECOVERY IN SHELBY TUBE 24"	N/A		microtip = Alpha N/A βγ =
13.0		SHELBY			N/A		microtip = Alpha N/A βγ =
13.5		SHELBY			N/A		microtip = Alpha N/A βγ =
14.0		SHELBY			N/A		microtip = Alpha N/A βγ =

Pushed 24" SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

000198

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

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PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11510

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger and Thec Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: n/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
14.0				(5Y 4/1) DARK GRAY Silty clay w/ some rock fragment w/ trace sand		>4.5	microtip = 0 ppm Alpha = Bγ = 70 cpm
14.5		SHELBY		MED PLASTICITY Slightly moist to moist			
				BOTTOM OF SHELBY			
				NOTE: SHELBY TUBE BENT AT BOTTOM	N/A		microtip = Alpha N/A Bγ =
15.0		SHELBY					
	0912	7	6"	SAA		2.5	microtip = 0 ppm Alpha = Bγ = 70 cpm
15.5							
		9	6"	SAA		3.0	microtip = Alpha = N/A Bγ =
16.0							
		16	2"	SAA		3.5	microtip = Alpha = SAA Bγ =
				NR			
16.5							
				Augered through this interval per direction of CRU1	N/A		microtip = Alpha N/A Bγ =
17.0							
	0918			22" RECOVERY ON SHELBY	N/A		microtip = Alpha N/A Bγ =
17.5 SHELBY		SHELBY					

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

000199

* Samples collected per ASTM Standard Penetration Test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11510

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
17.5							
18.0		SHELBY			N/A		microtip = Alpha = β_γ = N/A
18.5		SHELBY			N/A		microtip = Alpha = N/A β_γ =
19.0		SHELBY			N/A		microtip = Alpha = N/A β_γ =
19.5		SHELBY		BOTTOM OF SHELBY Same color ~~Clayey Sand~~ w/ some gravel VERY sandy clay low PLASTICITY WET		0.0	microtip = 0 ppm Alpha = N/A β_γ = 60 cpm
20.0	0926	3	6"	SAA		0.0	microtip = 0 ppm Alpha = β_γ = 50 cpm
20.5		6	5"	Same color Silty clay w/ trace sand MED PLASTICITY WET		1.75	microtip = Alpha = SAA β_γ =
21.0		9	0"	NR		N/A	microtip = Alpha = N/A β_γ =

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11510

COORDINATES:

RELATED F&R NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
21.0							
				Augered through this interval per direction of CRU1	N/A		microtip = Alpha = βγ =
21.5							
	0942			NO RECOVERY	N/A		microtip = Alpha = βγ =
22.0		SHELBY		TUBE WAS WET INSIDE			
					N/A		microtip = Alpha = βγ =
22.5		SHELBY					
					N/A		microtip = Alpha = βγ =
23.0		SHELBY					
					N/A		microtip = Alpha = βγ =
23.5		SHELBY					
					N/A		microtip = Alpha = βγ =
24.0		SHELBY					
	1025	2	6	Very Dark Gray 5Y (3/1) Sand Poorly Graded with Some Small Gravel, wet		NA	microtip = 0ppm Alpha = NA βγ = 40-60 cpm
24.5							

TUBE - SHELBY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG.

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PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11510

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger and Thec Layne | GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/a | DRILLING CONTRACTOR: Alliance | DRILLING EQUIPMENT: Mobile B59 Auger | DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
24.5							
25.0	1025	1	6	SAA	for CG matrix	NA	microtip = 0 ppm Alpha = NA βγ = 40-60 cpm
25.5		1		NR	N/A		microtip = Alpha = N/A βγ =
26.0				NR Drilled out per direction of CRU 1	N/A		microtip = Alpha = N/A βγ =
26.5	1035	Shelby 15" Recovery		very stiff Dark Gray (5Y 4/1) silty clay with some sand + a trace of gravel, med plasticity, slightly moist to moist		3.0	microtip = 0 ppm Alpha = NR βγ = 40-60 cpm
27.0		SHELBY			N/A		microtip = Alpha N/A βγ =
27.5		SHELBY			N/A		microtip = Alpha N/A βγ =
28.0		SHELBY			N/A		microtip = Alpha N/A βγ =

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

000202

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11510

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-18-94

GEOLOGIST: Ken Geiger and Thee Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-18-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
28.0				This interval augered through per direction of CRU 1	N/A		microtip = Alpha = βγ =
28.5	1071	10	6	HARD (5Y 4/1) DK GRAY Silty Clay w Some Sand and Small Gravel MED PLASTICITY Slightly MOIST TO MOIST		4.5	microtip = 0 Alpha = N/A βγ = 60 cpm
29.0		20	6	SAA			microtip = Alpha = SAA βγ =
29.5		35	5	SAA			microtip = Alpha = SAA βγ =
30.0				BOTTOM OF BORING @ 30.0'			microtip = Alpha = βγ =
							microtip = Alpha = βγ =
							microtip = Alpha = βγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart

BORING

WELL NUMBER: 11510

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU1 MODULAR PROCESS AREA GEOTECH INVESTIGATION

PROJECT NUMBER: 10.03.10

GEOLOGIST: A. Thea Layne and Ken Geiger

DRILLING METHOD: Hollow Stem Auger Mobile B-59

DATES OF INSTALLATION: 10-18-94

WATER LEVEL (ft.): N/A DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:

INNER WELL CAP: N/A

MEASUREMENT NOTCH: N/A

TOP OF PROTECTIVE CASING: N/A FT.

TOP OF RISER: N/A FT.

DIMENSIONS: N/A

CONCRETE PAD

CONCRETE PAD

GROUND SURFACE

GROUND SURFACE

CONCRETE: N/A FT.

GROUT: 30.0 FT.

BENTONITE PELLET SEAL: N/A FT.

SAND PACK: N/A FT.

SCREEN: N/A FT.

TOP OF GROUT SEAL: 0.0 FT.

BOTTOM OF PROTECTIVE CASING: N/A FT.

TOP OF BENTONITE PELLET SEAL: N/A FT.

TOP OF SAND PACK: N/A FT.

TOP OF SCREEN: N/A FT.

BOTTOM OF SCREEN: N/A FT.

BOTTOM OF SUMP: N/A FT.

BOTTOM OF BORING: 30.0 FT.

BOREHOLE DIAMETER: 8 IN.

TYPE AND AMOUNT OF GROUT USED: Volclay / 2 50 lb BAGS	BENTONITE PELLETS (5-GALLON BUCKETS): N/A	DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A	VOLUME OF WATER USED FOR GROUT HYDRATION: 23 gal. per 50 lb BAG GAL

RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A IN.
RISER/SCREEN DIAMETER: N/A IN.	SCREEN SLOT SIZE: N/A IN.	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A FT.

FS-F-3684 (9/10/93)

000204

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page | of

PROJECT NAME: CRU1 MODULAR PROCESS AREA Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11509

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	1357	3	6"	(2.54 5/4) LT OLIVE BROWN Disturbed surface soil w/ gravel and vegetation DRY		TOO HARD BREAKS	microtip = 0 ppm Alpha = N/A βγ = 40-100 cpm
0.5		8		NR	N/A		microtip = Alpha N/A βγ =
1.0		16		NR	N/A		microtip = Alpha N/A βγ =
1.5	1404	19	6"	HARD (2.54 5/3) LT OLIVE BROWN CLAY w/ subangular to rounded gravel and trace silt NON PLASTIC DRY		4.5	microtip = 0.0 ppm Alpha = N/A βγ = 50 cpm
2.0		19	6"	HARD (2.54 5/4) LT OLIVE BROWN Increased silt, trace iron partings rootlets and well-graded gravel DRY		4.5	microtip = Alpha = SAN βγ =
2.5		21	0"	NR	N/A		microtip = Alpha N/A βγ =
3.0	1408	11		SAN @ 2.0-2.5' w/ small rounded gravel and white "dust" probably from impact of spoon ~~[illegible]~~ to gravel trace of iron staining DRY		4.5	microtip = 0 ppm Alpha = N/A βγ = 20-50 cpm
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 ppm	10-19-94	1355
ALPHA	N/A	N/A	
BETA/GAMMA	40-100 cpm	10-19-94	1355

NOTES: Beta Gamma Meter on FAST RESPONSE and swinging between count generation RAD TECH ED KENSLOW CHECKED METER AND IT IS WORKING PROPERLY.

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11509

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
3.5		12	6"	SAA		>4.5	microtip = Alpha = SAA By =
4.0		10	4"	SAA		>4.5	microtip = Alpha = SAA By =
				NR VERY Slightly Moist		N/A	
4.5	1414	8	2"	A COBBLE AND SOME SLOUGH		N/A	microtip = Alpha = N/A By =
				NR		N/A	
5.0		18		NR		N/A	microtip = Alpha = N/A By =
5.5		21		NR		N/A	microtip = Alpha = N/A By =
6.0				Drillers augered through this interval per instruction of CRU1 PSP		N/A	microtip = Alpha = N/A By =
6.5	1421	6	2"	LARGE GRAVEL AND SLOUGH w/ SAA CLAY		1.75	microtip = 0 ppm Alpha = N/A By = 40-110 cpm
			4"	STIFF (2.5Y 4/4) OLIVE BROWN Silty CLAY, trace iron particulates MED PLASTICITY Slighty Moist		1.75	
7.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: THE DECISION WAS MADE BY GEOLOGISTS NOT TO TAKE SHELBY AS PLANNED @ 6.5' due to previous Spoon Split Spoon was pounded instead. TL

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

6521

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11509

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thea Laynie and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
7.0		7	6"	SAA w/ more particulate hematite waxy Moist		1.25	microtip = Alpha = SAA By =
		1	1"	SAA Moist		1.5	microtip = Alpha = SAA By =
8.0				NR		N/A	
	1426			RECOVERY ON SHELBY Approx. 16"		N/A	microtip = Alpha = N/A By =
8.5		SHELBY					
9.0		SHELBY				N/A	microtip = Alpha = N/A By =
9.5		SHELBY				N/A	microtip = Alpha = N/A By =
10.0		SHELBY				N/A	microtip = Alpha = N/A By =
10.5		SHELBY		BOTTOM OF SHELBY is SAA Clay but, HARD LOW PLASTICITY Slightly Moist		>4.5	microtip = 0 ppm Alpha = N/A By = 40-100 cpm

TUBE — SHELBY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: Driller's Helper is Rick Beebe

USCS Symbols to be filled in after results rec'd from Geotech analysis per CRU 1, TL

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG.

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11509

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thea Lavine and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
10.5	1432	6	6"	VERY STIFF (2.5Y 4/4) OLIVE BROWN Silty Clay w/ iron specules and peatings. some well-graded gravel and some coarse sand. LOW PLASTICITY VERY Slightly MOIST		3.75	microtip = 0 ppm Alpha = N/A βγ = 50 cpm
11.0		7	6"	SAA, but HARD		4.25	microtip = Alpha = SAA βγ =
11.5		11	2"	SAA, but VERY STIFF		2.75	microtip = Alpha = SAA βγ =
12.0				NR		N/A	
	1438	14	6"	SAA @ 10.5-11.0' gravel is coarse and rounded to subangular, Some coarse sand. LOW PLASTICITY Slightly MOIST		2.25	microtip = 0 ppm Alpha = N/A βγ = 50 cpm
12.5		28	6"	SAA		Not Tested	microtip = Alpha = SAA βγ =
13.0		30	0"	NR		N/A	microtip = Alpha = N/A βγ =
13.5	1444	19	1"	SAA @ 12.0-12.5' but HARD		>4.5	microtip = 0 ppm Alpha = N/A βγ = 40-120 cpm
			3"	A cobble, and coarse gravel Slightly MOIST			
14.0			2"	HARD (2.5Y 4/4) OLIVE BROWN CLAY, iron peatings Slightly MOIST		>4.5	

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

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CONTACT NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11509

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
14.0		23	6"	HARD (2.5Y 5/2) GRAYISH BROWN Slightly silty CLAY w/ fine gravel abundant iron partings LOW PLASTICITY Slightly Moist		>4.5	Microtip = Alpha = SAA By =
14.5		23	5"	SAA		>4.5	Microtip = Alpha = SAA By =
15.0	1452	6	4"	SAA		>4.5	Microtip = 0 ppm Alpha = N/A By = 40-120 cpm
15.5			2"	GRAVEL angular to subangular w/ some silt and med grain sand DRY		N/A	
16.0		16	6"	HARD (2.5Y 4/1) DARK GRAY CLAY w/ some well-graded gravel and trace coarse sand LOW PLASTICITY Slightly Moist		4.5	Microtip = Alpha = SAA By =
16.5		23	1"	SAA		4.5	Microtip = Alpha = SAA By =
				NR	N/A		
	1500	5	1"	COARSE GRAVEL DRY		N/A	Microtip = 0 ppm Alpha = N/A By = 40-120 cpm
17.0			5"	VERY STIFF (2.5Y 4/1) DARK GRAY Slightly silty CLAY w/ well graded gravel trace coarse sand Slightly moist DRY TO NO-LOW PLASTICITY		3.75	
17.5		10	5"	SAA but HARD		4.5	Microtip = Alpha = SAA By =
				NR			

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11509

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
17.5		50/2"	0"	NR		N/A	microtip = Alpha = N/A Bγ =
18.0	1507	7	PAY/MEASURE	Appears to be same material as 15.5-16.0' but cobble in spoon "shaved" recovery upon entry and disturbed sample		Not Tested	microtip = 0 ppm Alpha = N/A Bγ = 50 cpm
18.5		11	COUNT ACCURATELY	Appears "HARD"		N/A	microtip = Alpha = SAA Bγ =
19.0		17	COBBLE IN SPOON "SHAVED"			N/A	microtip = Alpha = SAA Bγ =
19.5		3	2"	SAA @ 15.5-16.0' only fine gravel in coarse sand, Brown mottling SEE DRY		1.25	microtip = 0 ppm Alpha = N/A Bγ = 50-100 cpm
			4"	SAA @ 15.5-16.0' only very fine to fine gravel ... ½ inch sand lens HIGH PLASTICITY Slightly Moist		1.25	
20.0		5	6"	SAA, but VERY SOFT piece of root? MODERATE PLASTICITY		.25	microtip = Alpha = SAA Bγ =
20.5		6	1"	SAA, but SOFT HIGH PLASTICITY Moist		.5	microtip = Alpha = SAA Bγ =
				NR			
21.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

000210

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CP111 MODULAR PROCESS AREA Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11509

COORDINATES:

RELATED FAC NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0	1519	5	4"	SAA @ 20.5' SOFT PLASTIC Slightly Silty CLAY		NOT	microtip = 0 ppm Alpha = N/a
21.5			2"	Gravel w/ sand, trace clay		0.0	By = 50 to [illegible]
22.0		9	5	LOOSE (2.5Y 4/1) DARK GRAY med to coarse grain SAND and well graded GRAVEL WET		0.0	microtip = Alpha = SAA By =
22.5		8	0"	NR		N/a	microtip = Alpha = N/A By =
23.0	1525	4	6"	VERY LOOSE (2.5Y 4/1) DARK GRAY Fairly uniform Sand (fine to med grain) heavy minerals piece of rounded gravel VERY WET		0.0	microtip = 0 ppm Alpha = N/a By = 40-120 cpm
23.5		16	6"	MED DENSE SAA sand No clay Slightly silty		0.0	Microtip = Alpha = SAA By =
24.0		16	6"	SAA		0.0	microtip = Alpha = SAA By =
24.5	1539	9	6"	SAA		0.0	microtip = 0 ppm Alpha = N/a By = 40-100 cpm

WATER IN SPOON

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA		PAGE	

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRUU Modular Process Area Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11509

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-19-94

GEOLOGIST: Thea Layne and Tiff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-19-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILL HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5							
		15	6"	SAA		0.0	Microtip = Alpha = SAA Βγ =
25.0							
		14	6"	SAA		0.0	Microtip = Alpha = SAA Βγ =
25.5				BOTTOM OF BORING @ 25.5'			Microtip = Alpha = Βγ =
							Microtip = Alpha = Βγ =
							Microtip = Alpha = Βγ =
							Microtip = Alpha = Βγ =
							Microtip = Alpha = Βγ =
							Microtip = Alpha = Βγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

000212

6521

BORING NUMBER: 11509

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU 1 MODULAR PROCESS AREA GEOTECH INVESTIGATION

PROJECT NUMBER: 10.03.10

GEOLOGIST: A. Thea Layne and Cliff Lee

DRILLING METHOD: Hollow Stem Auger Mobile B-59

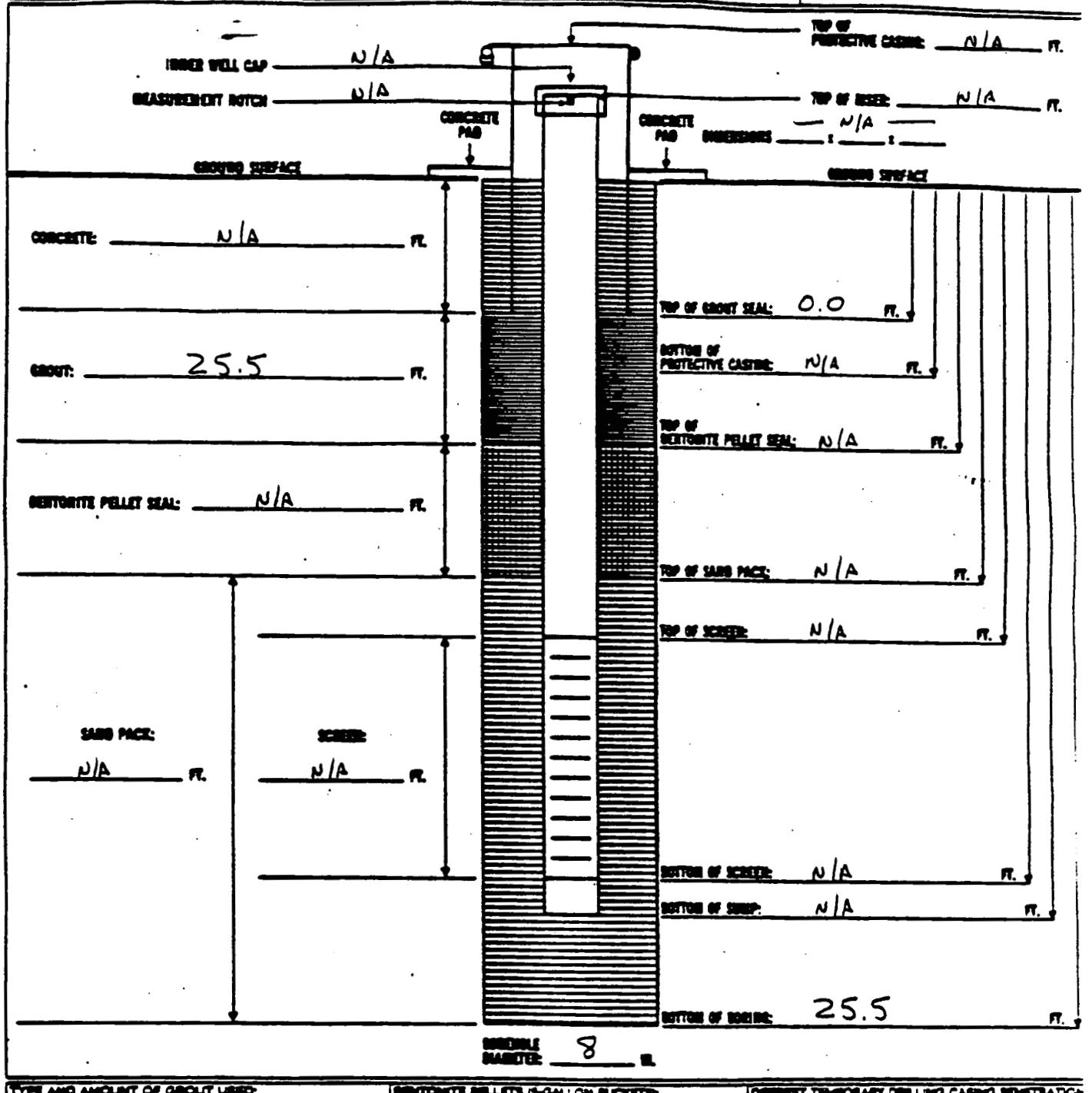
DATES OF INSTALLATION: 10-19-94

WATER LEVEL (ft): N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay / Approx. 2 BAGS OF Grout (50 lb)	BENTONITE PELLETS (5-GALLON BUCKETS): N/A	DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT	
VOLUME OF WATER USED DURING DRILLING: N/A BAGS GAL	RISER MATERIAL: N/A	VOLUME OF WATER USED FOR GROUT HYDRATION: 23 gal. per 50 lb BAG GAL	
RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A IN
RISER/SCREEN DIAMETER: N/A IN.	SCREEN SLOT SIZE: N/A IN.	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A FT

FS-F-3684 (9/10/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page 1 of

PROJECT NAME:	CRU1 MODULAR PROCESS AREA Geotech Investigation
PROJECT NUMBER:	10.03.10
BORING NUMBER:	11511
COORDINATES:	
RELATED FAX NUMBERS:	
SURFACE ELEVATION:	
GROUNDWATER LEVEL:	N/A
DATE:	N/A
TIME:	N/A
DATE STARTED:	10-20-94
GEOLOGIST:	Cliff Lee and Thea Layne
GROUNDWATER LEVEL:	N/A
DATE:	N/A
TIME:	N/A
DATE COMPLETED:	10-20-94
WATER USED DURING DRILLING:	N/A
DRILLING CONTRACTOR:	Alliance
DRILLING EQUIPMENT:	Mobile B59 Auger
DRILLER/HELPER:	Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
0.0	0815	6	6"	STIFF (2.5Y 4/2) DARK GRAYISH BROWN Silty CLAY w/ some sand and several coarse angular gravel -Vegetation- NE to LOW PLASTICITY SLIGHTY MOIST		1.75	microtip = TOO HUMID Alpha = N/A By = 50-90 cpm
0.5		11	5"	VERY STIFF (2.5Y 5/3) LT OLIVE BROWN Clayey SILT w/ some sand NON PLASTIC DRY		3.5	microtip = Alpha = SAA By =
1.0		12	0"	NR	N/A		microtip = Alpha = N/A By =
1.5	0820	7	6"	VERY STIFF (2.5Y 4/3) OLIVE BROWN Clayey SILT w/ fine gravel iron staining LOW TO NO PLASTICITY VERY Slightly Moist		3.75	microtip = TOO HUMID Alpha = N/A By = 50-90 cpm
2.0		11	5"	SAA		3.25	microtip = Alpha = SAA By =
2.5		15	0"	NR	N/A		microtip = Alpha = N/A By =
3.0				Drillers directed to auger through this interval per CRU 1	N/A		microtip = Alpha = N/A By =
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	TOO HUMID	10-20-94	0815
ALPHA	N/A	N/A	N/A
BETA/GAMMA	20-100 cpm	10-20-94	0815

NOTES: microtip not functioning properly due to high humidity

* Samples collected per ASTM Standard Penetration test. • All colors identified on Munsell Color Chart

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11511

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Cliff Lee and Tree Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-20-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
3.5				RECOVERY ON SHELBY TUBE Approx. 21"	N/A		microtip = / Alpha N/A / Bγ =
4.0		DIREBIT					microtip = / Alpha N/A / Bγ =
4.5		SHELBY		DESCRIPTION FOR BOTTOM OF SHELBY: (2.5Y 5/4) LT OLIVE BROWN slightly silty CLAY w/ trace of fine gravel, iron staining & specks HIGH PLASTICITY VERY MOIST		N/A	microtip = TOO HUMID Alpha = N/A Bγ = 20-100 cpm
5.0		SHELBY		NR		N/A	microtip = / Alpha N/A / Bγ =
5.5		SHELBY		NR		N/A	microtip = / Alpha N/A / Bγ =
6.0	0832	SHELBY	6"	VERY SOFT (2.5Y 5/4) LT OLIVE BROWN Slightly silty CLAY w/ trace coarse sand mottled w/ dessicated rounded fragments of gray clay and iron staining HIGH PLASTICITY VERY MOIST		0.0	microtip = TOO HUMID Alpha = N/A Bγ = 20-100 cpm
6.5		3	2"	VERY SOFT SAA		0.0	microtip = Alpha = SAA Bγ =
7.0				NR			

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	DLL		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified on Munsell Color Chart

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRUI MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11511

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Cliff Lee and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-20-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
7.0		4		NR	N/A	N/A	Microtip = Alpha = Bγ =
7.5				Drillers instructed to auger through this interval per CRUI	N/A		Microtip = Alpha = Bγ =
8.0	0853			TOP OF SHELBY SAA @ 6.0-6.5' RECOVERY ON SHELBY TUBE APPROX. 25"	N/A		Microtip = Alpha = Bγ =
8.5		SHELBY			N/A		Microtip = Alpha = Bγ =
9.0		SHELBY		DESCRIPTION FOR BOTTOM OF SHELBY: SAA @ 6.0-6.5' but mottled w/ GRAY CLAY and HARD Sl. GRAY MOIST	>4.5		Microtip = TOO HUMID Alpha = N/A Bγ = 20-100 cpm
9.5		SHELBY			N/A		Microtip = Alpha = Bγ =
10.0		SHELBY		NR	N/A		Microtip = Alpha = Bγ =
10.5		SHELBY					

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration Test. • All colors identified by Munsell Color Chart

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11511

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-20-94

GEOLOGIST: Cliff Lee and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-20-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
10.5	0913	50 / 5"	4" / 1"	VERY STIFF CLAY HIGH PLASTICITY STICKY WET. HARD (2.5Y 5/1) GRAY CLAY w/ fine angular gravel LOW PLASTICITY. Slightly Moist		2.75 / 4.5	Microtip = 0 ppm Alpha = N/A Bγ = 50 cpm
11.0							Microtip = Alpha = Bγ =
11.5				NR			Microtip = Alpha = Bγ =
12.0	0925	6	6" (approx)	VERY STIFF (5GY 4/1) DK GREENISH GRAY CLAY w/ coarse angular gravel. Apparently cobble @ mouth of DRIVE SHOE SHREDDED RECOVERY LOW PLASTICITY Slightly Moist		4.0	Microtip = 0 ppm Alpha = N/A Bγ = 70 cpm
12.5		14	6" (approx)	HARD SAA Slightly Moist		4.5	Microtip = Alpha = SAA Bγ =
13.0		16		NR			Microtip = Alpha = Bγ =
13.5	1020	22	4"	2" OF MED STIFF (5Y 4/1) DK GRAY CLAY w/ coarse angular gravel and fine gravel MED TO HIGH PLASTICITY Slightly Moist. 2" OF SAA but DRIER. VERY SLIGHTY MOIST		.75 / 3.0	Microtip = 18 ppm Alpha = N/A Bγ = 70 cpm
14.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	Still		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: Microtip working properly now. We checked + re-checked this reading but possibility of malfunction.

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

000217

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

6521

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PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11511

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Cliff Lee and Trea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-20-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0							
14.0		15	0"	NR	N/A		microtip = Alpha = N/A Bγ =
15.0		15	0"	NR	N/A		microtip = Alpha = N/A Bγ =
15.5	1027	9	Sample Shaved Because Measured Cobble in Spoon	Appears to be SAA @ 13.5-14.0' GRAY CLAY w/ trace of well-graded gravel and trace sand MED PLASTICITY Slightly MOIST		Discussed — Can not make accurate measurements	microtip = NOT TAKEN Alpha = N/A Bγ = 50-60 ppm
16.0		10		COBBLE IN SPOON PREVENTED FULL RECOVERY AND "SHAVED" what Recovery we got			microtip = Alpha = SAA Bγ =
16.5		14	Cobble can't be measured	NR			microtip = Alpha = N/A Bγ =
17.0	1033	5	6"	STIFF (5GY 4/1) DK GREENISH GRAY CLAY w/ well-graded fine to coarse angular gravel and some rounded gravel MED-HIGH PLASTICITY MOIST		1.0	microtip = 0 ppm Alpha = Bγ = 50-100 ppm
17.5		8	6"	SAA, but slightly silty MED PLASTICITY MOIST		1.5	microtip = Alpha = SAA Bγ =

INSTRUMENT	BACKGROUND	DATE	TIME
[illegible]	[illegible]		
ALPHA		[illegible]	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11511

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Cliff Lee and Theo Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-20-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
17.5		11		SAA large cobble		1.0	Microtip = Alpha = By = SAA
18.0	1038	5	6"	SAA w/ trace of med to coarse sand and MED STIFF HIGH PLASTICITY VERY MOIST		.75	Microtip = 0 ppm Alpha = N/A By = 50-100 cpm
18.5		8	6"	SAA, but, less coarse gravel MED TO HIGH PLASTICITY MOIST		.75	Microtip = Alpha = SAA By =
19.0		11	2"	SAA, but, VERY STIFF Increased Silt Increased fine gravel and coarse sand MOIST NR		2.5	Microtip = Alpha = SAA By =
19.5	1045	4	6"	STIFF (5GY 4/1) DK GREENISH GRAY Slightly silty CLAY w/ well-graded fine to coarse gravel and trace sand HIGH PLASTICITY MOIST		1.25	Microtip = 0 ppm Alpha = N/A By = 50-100 cpm
20.0		4	6"	SAA w/ Increased rounded coarse gravel VERY HIGH PLASTICITY MOIST		<.25	Microtip = Alpha = SAA By =
20.5		5	9"	SAA w/ Increased Silt and Increased Gravel FRACTION OF: WET SAND & GRAVEL AT BOTTOM OF SPOON MOIST		<.25	Microtip = Alpha = SAA By =
21.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

6521

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page 7 of

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11511

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Cliff Lee and Thec Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-20-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0				Drillers directed to auger through this interval per FIELD GEOLOGISTS	N/A		Microtip = Alpha = Bγ =
21.5	1056			RECOVERY ON SHELBY TUBE Approx. 29" TOP OF TUBE: SAN Gravelly CLAY WET	N/A		Microtip = Alpha = Bγ =
22.0					N/A		Microtip = Alpha = Bγ =
22.5					N/A		Microtip = Alpha = Bγ =
23.0					N/A		Microtip = Alpha = Bγ =
23.5					N/A		Microtip = Alpha = Bγ =
24.0				BOTTOM OF TUBE: Silty GRAVEL w/ sand round to subangular gravel fine to coarse sand WET	N/A		Microtip = 0 ppm Alpha = N/A Bγ = 50-100 cpm
	1110	5	4"	LOOSE Slightly silty fine to coarse sand w/ fine gravel MED TO COARSE GRAVEL AT BOTTOM WET		0.0	Microtip = 0 ppm Alpha = N/A Bγ = 50-100 cpm
24.5			2"	MED STIFF DARK GRAYISH GRAY CLAY w/ well-graded gravel MED PLASTICITY MOIST		.75	

WATER IN TUBE — SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA		PAGE	

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

000220

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11511

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-20-94

GEOLOGIST: Cliff Lee and Trea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-20-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
24.5							
2-3oz. of WATER IN SPOON		8	6"	SAA CLAY MOIST		NOT TAKEN	microtip = Alpha = Bg = SAA
25.0							
		20	1"	SAA Slightly MOIST		1.75	microtip = Alpha = SAA Bg =
				NR			
26.0							
	1131	13	6"	2" of Slightly Silty well-rounded SAND w/ trace of fine gravel WET		0.0	microtip = 0 ppm Alpha = N/A Bg = 50-100 cpm
				4" VERY STIFF Silty CLAY w/ well-graded gravel and fine to coarse sand Slightly MOIST		2.75	
26.0							
		21	6"	SAA Clay w/ trace sand VERY STIFF		3.75	microtip = Alpha = SAA Bg =
26.0							
		37	3"	SAA, but HARD		>4.5	microtip = Alpha = SAA Bg =
				NR			
27.0							
	1142	18	6"	SAA Silty CLAY w/ fine to med gravel trace IRON HARD DRY TO VERY Slightly MOIST		>4.5	microtip = 0 ppm Alpha = N/A Bg = 50-100 cpm
27.0							
		22	6"	SAA but, well-graded fine to coarse gravel piece of tree branch in CLAY 1½" HARD		>4.5	microtip = Alpha = SAA Bg =
28.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

000221

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRUI MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11511

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-20-94

GEOLOGIST: Cliff Lee and Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-20-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
28.0							
28.5		32	6"	SAA w/ fine to med gravel only and HARD		>4.5	microtip = Alpha = SAA By =
29.0		14	6"	SAA w/ fine gravel only Slightly moist		>4.5	microtip = 0ppm Alpha = N/A By = 50-100cpm
29.5		24	1"	SAA		>4.5	microtip = Alpha = SAA By =
30.0		26	0"	NR BOTTOM OF BORING @ 30.0'	N/A		microtip = Alpha N/A Tremie Grout SAA By =
							microtip = Alpha = By =
							microtip = Alpha = By =
							microtip = Alpha = By =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration Test. * All colors identified by Munsell Color Chart.

BORING WELL NUMBER: 11511

FEMP WELL COMPLETION LOG

CONTROL NUMBER:

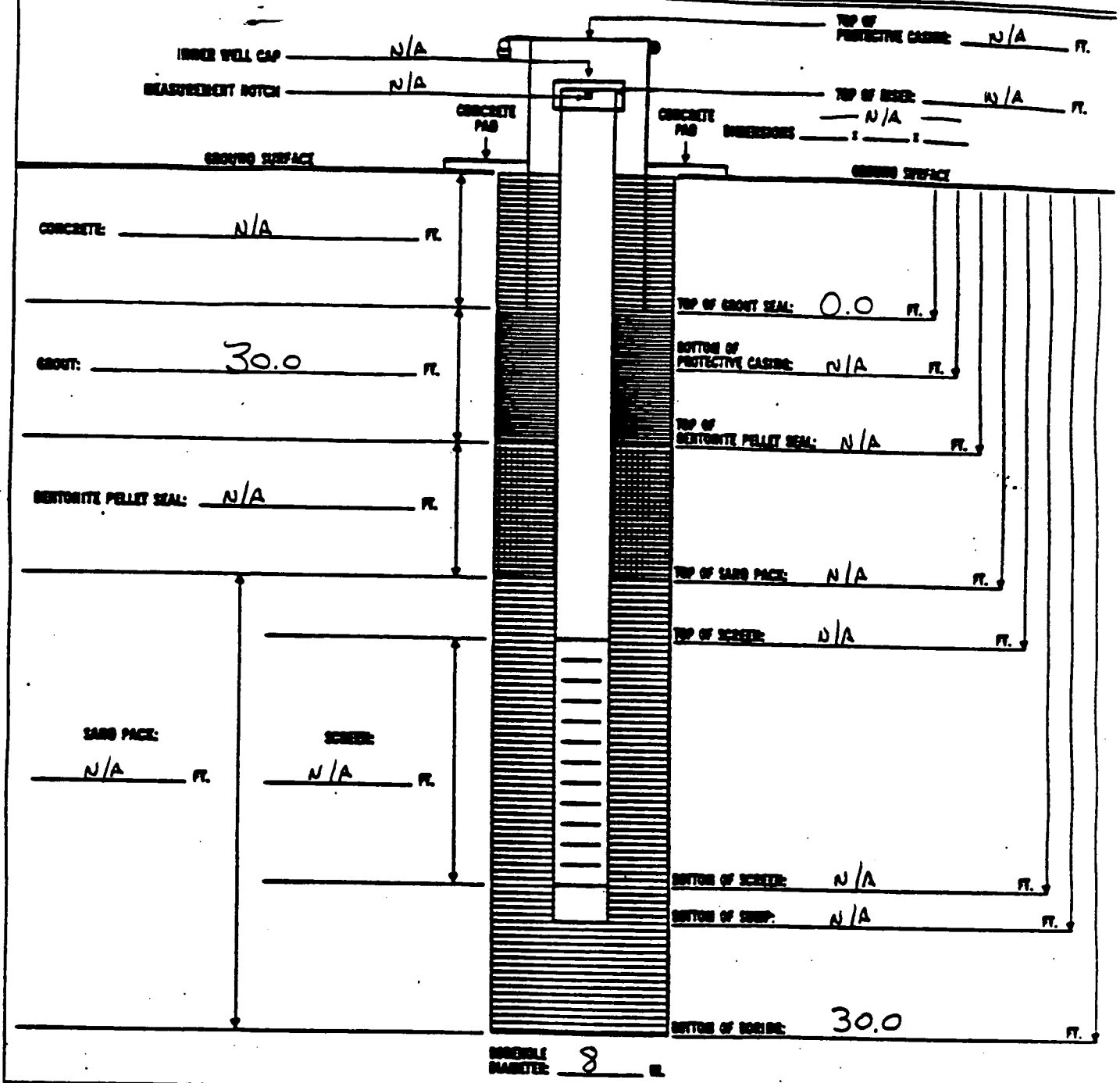
PROJECT NAME: CRU1 MODULAR PROCESS AREA GEOTECH INVESTIGATION

PROJECT NUMBER: 10.03.10

GEOLOGIST: A. Thea Layne and Cliff Lee

DRILLING METHOD: Hollow Stem Auger Mobile B59

DATES OF INSTALLATION:	WATER LEVEL (ft.):	DATE:	RELATED FAL NUMBERS:	CHECKED BY:
10-20-94	N/A	N/A		



TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS):	DEEPEST TEMPORARY DRILLING CASING PENETRATION:
Volclay / 2 50 lb BAGS	N/A	N/A FT.
VOLUME OF WATER USED DURING DRILLING:	**RISER MATERIAL:**	**VOLUME OF WATER USED FOR GROUT HYDRATION:**
N/A GAL	N/A	23 gal. per 50 lb BAG GAL

RISER WALL THICKNESS:	TYPE OF SAND PACK:	SCREEN MATERIAL:	DRILLING CASING DIAMETER:
N/A	N/A	N/A	N/A IN.
RISER/SCREEN DIAMETER:	**SCREEN SLOT SIZE:**	**SCREEN TYPE:**	**DEPTH OF CENTRALIZERS:**
N/A IN.	N/A IN.	N/A	N/A FT

FS-F-3684 (9/10/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page 1 of

PROJECT NAME: CRU1 MODULAR PROCESS AREA Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11507

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-21-94

GEOLOGIST: Theclayne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
0.0	1157	9	6"	(2.5 4/2) DK GRAYISH BROWN Silty Clay abundant surface gravel Vegetation NONPLASTIC DRY		11.5	microtip = 0 ppm Alpha = βγ = 90-120 cpm
0.5		20		(2.5Y 4/2) DK GRAYISH BROWN Slightly silty Clay w/ well rounded cobbles NON PLASTIC DRY		No more gravel	microtip = 0 ppm Alpha = βγ = 80-90 cpm
1.0		50/0"		NR	N/A		microtip = Alpha = βγ =
1.5				Drilled out to 2.0' per direction of CRU 1			microtip = Alpha = βγ =
2.0	1213	12	6"	(2.5Y 4/3) OLIVE BROWN Silty CLAY w/ fine gravel NONPLASTIC TO Slightly Plastic DRY TO Moist	Slightly	14.5	microtip = 0 ppm Alpha = βγ = 50-10 cpm
2.5		13	5"	SAND TOWARDS BOTTOM IRON PARTINGS – Increased Silt Slightly Plastic @ Bottom Slightly Moist		14.5 3.0	microtip = Alpha = SAN βγ =
3.0		15	0"	NR	N/A		microtip = Alpha = N/A βγ =
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 ppm	10-21-94	1152
ALPHA	N/A	N/A	N/A
BETA/GAMMA	10—90 cpm	10-21-94	1156

NOTES: Driller's Helper is Rick Beebe

USCS symbols to be filled in after analysis results are in from Geotech samples. (Per CRU 1)

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11507

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-21-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
3.5	1223	12	3" 3"	SILN and VERY STIFF. ROCK SHAVED RECOVERY - All measurements Approximate. Increased Moisture SILN Slightly moist		30	Microtip = 0 ppm Alpha = Bγ = 80-90 cpm
4.0		20	6" APPROX	Silty Clay w/ iron partings No gravel Slightly Plastic Slightly moist		1.5	Microtip = Alpha = SAA Bγ =
4.5		17		NR	N/A		Microtip = Alpha N/A Bγ =
5.0		9		NR	N/A		Microtip = Alpha N/A Bγ =
5.5				Drillers instructed to auger through this interval per GEOLOGISTS IN FIELD CREW	N/A		Microtip = Alpha N/A Bγ =
6.0	1231	SHELBY		RECOVERY ON SHELBY MINIMAL AND LOOSE — DISTURBED MOST SLIPPED OUT IN HOLE — REMAINDER WAS PUT IN JAR	N/A		Microtip = 0 ppm Alpha = Bγ = 10-80 cpm
6.5		SHELBY		DESCRIPTION: VERY Silty CLAY Slightly Sandy, IRON SPECKS (2.5Y 4/4 to 5/4) OLIVE BROWN Coarse rounded Gravel and angular chert. Looks like fill. DRY	N/A		Microtip = Alpha = N/A Bγ =
7.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

000225

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRUI MODULAR PROCESS AREA Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11507

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-21-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
7.0							
7.5		SHELBY		NR	N/A		microtip = Alpha = N/A By =
8.0		SHELBY		NR	N/A		microtip = Alpha N/A By =
8.5		SHELBY		NR	N/A		microtip = Alpha N/A By =
9.0	1239	9	2" (approx)	SAND w/ coarse angular gravel trace fine gravel. ROCK SHAVED RECOVERY IN DRIVE SHOE. LOW TO MED PLASTICITY. Slightly Moist		1.5 (approx)	microtip = 0 ppm Alpha = N/A By = 20-50 cpm
9.5		20	0"	NR	N/A		microtip = Alpha N/A By =
10.0		18	0"	NR	N/A		microtip = Alpha N/A By =
10.5	1246	6	6" (approx)	SAND w/ fine well rounded gravel. ROCK SHAVED RECOVERY. IRON staining. MED PLASTICITY. Slightly Moist		NOT TABLE TO TAKE MEASUREMENT	microtip = 0 ppm Alpha = By = 20-50 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

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PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11507

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-21-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
10.5							
11.0		9	6" approx.	SAA Moist		Recovery Disturbed	microtip = Alpha = SAA Bγ =
11.5		7	0"	NR	N/A		microtip = Alpha N/A Bγ =
12.0		7	0"	NR	N/A		microtip = Alpha N/A Bγ =
12.5	1250	4	6"	MED STIFF (2.5Y 4/4) OLIVE BROWN MOTTLED W/ DARK BROWN Slightly Silty CLAY w/ some Sand and well-graded gravel LOW-MED PLASTICITY Slightly Moist		.75	microtip = 0 ppm Alpha = N/A Bγ = 70-80 cpm
13.0		9	6"	SAA less silt Slightly Moist / Moist / Slightly Moist		1.25	microtip = Alpha = SAA Bγ =
13.5		6	4"	SAA Slightly Moist TO ↓ Moist at Bottom		.75	microtip = Alpha = SAA Bγ =
14.0		9	0"	NR	N/A		microtip = Alpha N/A Bγ =

5 Foot Pounded 2 FT

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test
* All colors identified by Munsell Color Chart.

000227

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

6521

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PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11507

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-21-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
14.0							
				Drillers directed to auger out this interval per FIELD GEOLOGISTS	N/A		Microtip = Alpha N/A = βγ =
14.5	1259			RECOVERY ON SHELBY TUBE 24" approx. SAW @ TOP OF TUBE (CLAY)	N/A		Microtip = Alpha N/A βγ =
15.0							
					N/A		Microtip = Alpha N/A βγ =
15.5							
					N/A		Microtip = Alpha N/A βγ =
16.0							
					N/A		Microtip = Alpha N/A βγ =
16.5				BOTTOM OF TUBE DESCRIPTION (2.5Y 4/4) OLIVE BROWN FINE TO MED GRAIN WELL ROUNDED TO SUBANGULAR SAND W/ CLAY		NOT TREATED	Microtip = 0 ppm Alpha = N/A βγ = 50 cpm
17.0	1306	3	3"	NOTE → pieces of 1/8" steel WIRE IN BOTTOM WET AT BOTTOM. VERY LOOSE (2.5Y 4/3) DK GRAYISH BROWN FINE SAND WET			Microtip = 0 ppm Alpha = N/A βγ = 40 cpm
			2"	VERY LOOSE (2.5Y 4/1) DK GRAYISH BROWN COARSE SAND WET & FINE GRAVEL			
17.5			1"	VERY LOOSE MED SAND WET			

INSTRUMENT	BACKGROUND	DATE	TIME
PID	JEL		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 MODULAR PROCESS AREA Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11507

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-21-94

GEOLOGIST: Thea Layne and Cliff Lee | GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/a | DRILLING CONTRACTOR: Alliance | DRILLING EQUIPMENT: Mobile B59 Augers | DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors Identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5							
		6	1H 5"	SAA LOOSE MED TO COARSE SAND and fine to med GRAVEL WET		N/A	microtip = Alpha = SAA βγ =
18.0							
		9		NR VERY SOFT	N/A		microtip = Alpha N/A βγ =
18.5							
	1320	3	6"	3" of (2.5 Y 4/1) DK GRAY GRAVELLY, SANDY CLAY VERY LOOSE WET 3" of fine to coarse SAND and fine to med gravel SATURATED		0.0	microtip = 0 Alpha = βγ = 50-60 cpm
19.0							
		6		NR	N/A		microtip = Alpha N/A βγ =
19.5							
		6		NR	N/A		microtip = Alpha N/A βγ =
20.0							
				SAND HEAVING INTO AUGERS / Drillers directed to auger down to 21.0' and attempt split spoon from that depth.	N/A		microtip = Alpha N/A βγ =
20.5							
					N/A		microtip = Alpha N/A βγ =
21.0							

WATER IN SPOON

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

000229

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11507

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-21-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0				SAND HEAVING INTO AUGERS. DRILLERS DIRECTED TO DRILL OUT TO 25.0'	N/A		Microtip = Alpha N/A Bγ =
21.5					N/A		Microtip = Alpha N/A Bγ =
22.0					N/A		Microtip = Alpha N/A Bγ =
22.5					N/A		Microtip = Alpha N/A Bγ =
23.0					N/A		Microtip = Alpha N/A Bγ =
23.5					N/A		Microtip = Alpha N/A Bγ =
24.0					N/A		Microtip = Alpha N/A Bγ =
24.5					N/A		Microtip = Alpha N/A Bγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		PAGE	
BETA/GAMMA			ONE

NOTES:

* Samples collected per ASTM Standard Penetration Test. • All Colors identified by Munsell Color Chart.

000230

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11507

COORDINATES:

RELATED FAC NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-21-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5				SANDS STILL HEAVING INTO AUGERS BOTTOM OF BORING @ 25.0' GRAB SAMPLE FROM CENTER STEM ROD	N/A		microtip = Alpha βγ = N/A
25.0	1410			DESCRIPTION OF HEAVING SAND @ 25.0' (2.5Y 5/2) GRAYISH BROWN Fine to coarse SAND and fine to med GRAVEL subangular mostly on SAND SATURATED	N/A		microtip = 0 ppm Alpha = N/A βγ = 60-70 cpm
25.5				subangular on gravel also			microtip = Alpha = βγ =
26.0							microtip = Alpha = βγ =
26.5							microtip = Alpha = βγ =
27.0							microtip = Alpha = βγ =
27.5							microtip = Alpha = βγ =
28.0							microtip = Alpha = βγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SET		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: This Boring was terminated at 25.0' due to heaving sands.

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

000231

11507

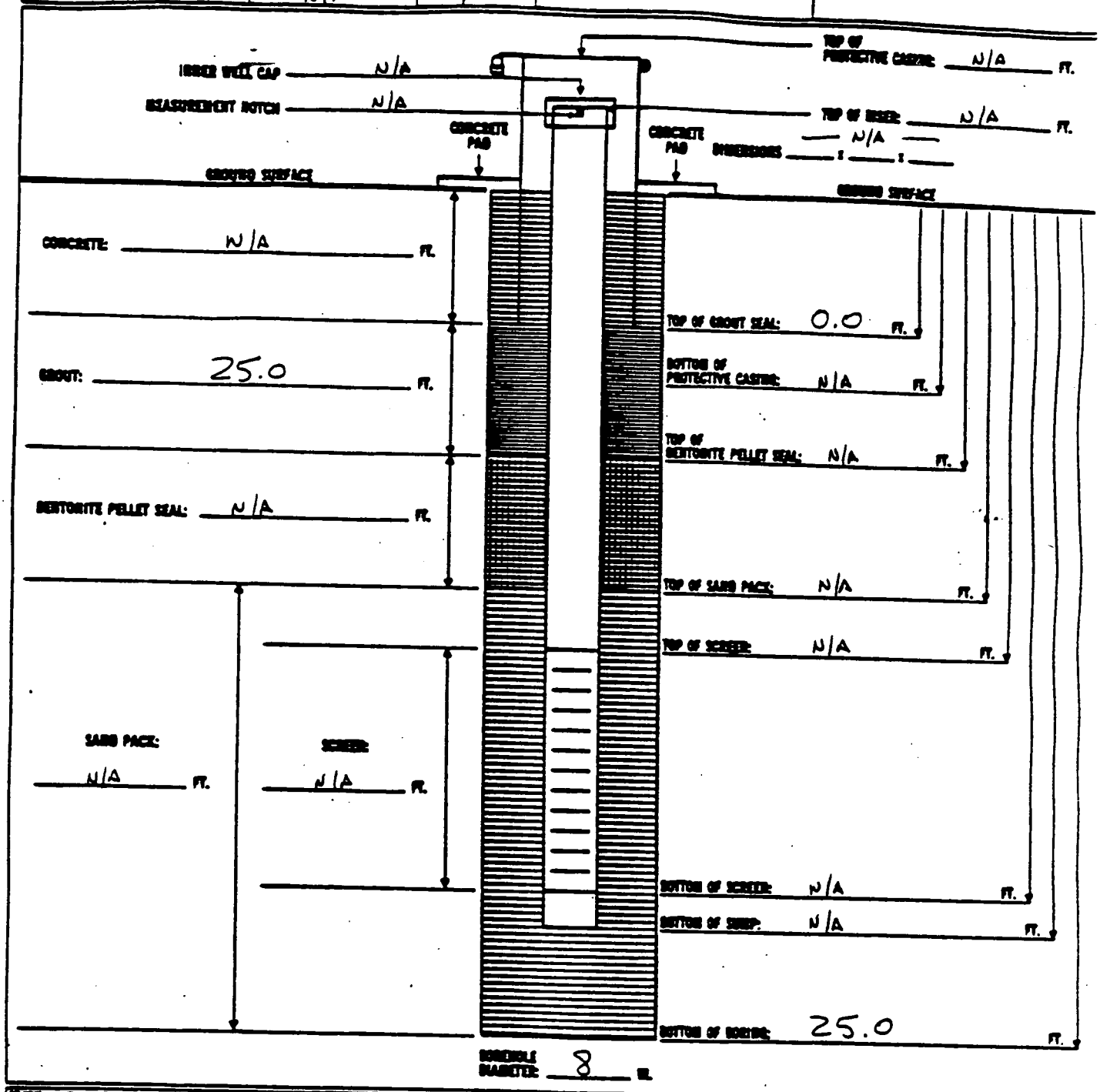
FEMP

WELL COMPLETION LOG

6521

PROJECT NAME: CRU 1 MODULAR PROCESS AREA GEOTECH INVESTIGATION	PROJECT NUMBER: 10.03.10
GEOLOGIST: A. Thee Layne and Cliff Lee	DRILLING METHOD: Hollow Stem Auger Mobile B-59

DATES OF INSTALLATION	WATER LEVEL (BL):	DATE:	RELATED FAL NUMBERS:	CHECKED BY:
10-21-94	N/A	N/A		



TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS):	DEEPEST TEMPORARY DRILLING CASING PENETRATION:
Volclay 12½ 50 lb BAGS	N/A	N/A FT.
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A	VOLUME OF WATER USED FOR GROUT HYDRATION: 23 gal. per 50 lb bag GAL

RISER WALL THICKNESS:	TYPE OF SAND PACK:	SCREEN MATERIAL:	DRILLING CASING DIAMETER:
N/A	N/A	N/A	N/A IN.
RISER/SCREEN DIAMETER: N/A IN.	SCREEN SLOT SIZE: N/A IN.	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A FT

FS-F-3684 (9/10/93)

000232

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG.

Page | of

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11512

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
0.0	1549	5	6"	STIFF TO VERY STIFF (2.5Y 5/4) LT OLIVE BROWN Silty CLAY w/ trace fine gravel Some iron staining, vegetation NON PLASTIC. DRY		1.0 ↓ to 3.75	Microtip = 0 ppm Alpha = N/A Bγ = 50-70 cpm
0.5		9	6"	SAA but, VERY STIFF DRY		2.0	microtip = Alpha = SAA Bγ =
1.0		13	6"	SAA and mottled w/ iron staining and iron particles DRY		2.5	microtip = Alpha = SAA Bγ =
1.5				Drilled out this interval per direction of CRU 1	N/A		microtip = Alpha = Bγ =
2.0	1556	SHELBY		RECOVERY ON SHELBY 26" approximate			Microtip = 0 ppm Alpha = Bγ = 50-90 cpm
2.5		SHELBY			N/A		microtip = Alpha = Bγ =
3.0		SHELBY			N/A		microtip = Alpha = Bγ =
3.5							

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0. ppm	10-20-94 ~~1545~~	1545
ALPHA	N/A	10-20-94 TL 10-20-94 TL	N/A
BETA/GAMMA	50-100 cpm	10-20-94 ~~1545~~	1545

NOTES: Driller's Helper is Rick Beebe

USCS Symbols to be filled in after results are in from Geotech analysis per CRU 1. TL

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 Modular Process Area Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11572

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
3.5							
				STIFF MOTTLED (2.5Y 5/4) and (2.5Y 5/1) LT OLIVE BROWN and GRAY Silty CLAY w/ iron pockings & iron specklas ↑ ↑ Slightly Moist		1.0	microtip = 0.0 ppm Alpha = N/A βγ = 50-90 cpm
4.0		SHELBY					
SHELBY				BOTTOM OF SHELBY DESCRIPTION	N/A		microtip = Alpha N/A βγ =
4.5		SHELBY					
	1559	4	6"	3" of STIFF (2.5Y 4/4) OLIVE BROWN CLAY w/ iron pockings Slightly Moist		1.75	microtip = 0.0 ppm
				3" SAA but mottled w/ GRAY CLAY Slightly Moist		1.75	Alpha = N/A βγ = 50-70 cpm
5.0							
		6	6"	1" of OLIVE BROWN CLAYEY SAND Moist		0.0	microtip =
				4" of OLIVE BROWN Sandy CLAY (VERY STIFF) Moist		2.75	Alpha = SAA
				1" of OLIVE BROWN clayey SAND Moist		0.0	βγ =
5.5							
		8	3"	HARD (2.5Y 4/4) OLIVE BROWN CLAY w/ well-graded gravel and some sand Slightly Moist		4.5	microtip =
				NR			Alpha = SAA βγ =
6.0							
				Drillers instructed to drill through this interval per CRU 1	N/A		microtip = Alpha N/A βγ =
6.5							
	1606			RECOVERY ON SHELBY Approximate 16" NOTE: SHELBY WAS ONLY PUSHED 17 inches	N/A		microtip = Alpha N/A βγ =
7.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: Drillers did not push SHELBY deeper than 17" due to encountering resistance

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

6521

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG.

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PROJECT NAME: CRUI MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11512

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors Identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
7.0							
7.5		SHELBY			N/A		Microtip = / Alpha = / βγ =
				LOOSE (2.5Y 5/4) Clayey gravelly SAND WET		0.0	Microtip = 0 ppm Alpha = N/A βγ = 20-70 cpm
8.0		SHELBY		BOTTOM OF SHELBY			
8.5				Drillers instructed to auger through this interval prior to pounding spoon @ 9.0'	N/A		Microtip = / Alpha = / βγ =
9.0					N/A		Microtip = / Alpha = / βγ =
	1611	12	3"	LOOSE (2.5Y 5/4) LT OLIVE BROWN well graded subrounded to subangular fine to coarse SAND and fine GRAVEL w/ silt WET		0.0	Microtip = 0 ppm
			3"	(2.5Y 5/4) LT OLIVE BROWN Sandy CLAY WET		NOT TAKEN	Alpha = N/A βγ = 50-70 cpm
9.5		18	2"	SAA WET		NOT TAKEN	Microtip =
			1"	LOOSE WELL-GRADED SAND and GRAVEL WET		0.0	Alpha = SAA βγ =
10.0				NR			
		28	0"	NR		N/A	Microtip = Alpha = N/A βγ =
10.5							

SHELBY TUBE

WATER IN SPOON

SPOON POUNDED 2 FT

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration Test. • All colors identified by Munsell Color Chart

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA Geotech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11512

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-20-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
10.5		18	0"	NR		N/A	microtip = Alpha = N/A Bγ =
10.0				Drillers instructed to auger through this interval per CRU 1		N/A	microtip = Alpha N/A Bγ =
11.5	1622			MINIMAL RECOVERY ON SHELBY — SHELBY BENT AND SAMPLE DISTURBED, SAMPLE WAS TRANSFERRED TO JAR		N/A	microtip = Alpha N/A Bγ =
12.0				DESCRIPTION: Same LT OLIVE BROWN WELL GRADED SAND and GRAVEL DESCRIBED ABOVE WET MIXED WITH (2.5Y 4/1) DK GRAY VERY SILTY GRAVELLY CLAY w/ some fine ?		N/A	microtip = 0 ppm Alpha = N/A Bγ = 50-70 cpm
12.5				Some coarse sand Slightly MOIST		N/A	microtip = Alpha N/A Bγ =
13.0						N/A	microtip = Alpha = Bγ =
13.5				Drillers instructed to auger through this interval per Geologists on FIELD CREW		N/A	microtip = Alpha N/A Bγ =
14.0							

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

LITHOLOGIC LOG

Page 6521

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11512

COORDINATES:

RELATED FAR NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0	1629	3	11"	Silty, Gravelly CLAY MOTTLED GRAY and BROWN SILTY MOIST		0.0	Microtip = 0 ppm
			3"	GRAY CLAY MOIST		2.0	Alpha = N/A
			2"	WELL-GRADED SAND and GRAVEL WET		0.0	By = 50-70 cpm
14.5			1"	GRAY CLAY MOIST		0.0	
		5	6"	VERY SOFT (2.5Y 4/1) DK GRAY Silty CLAY w/ fine gravel and some sand HIGH PLASTICITY MOIST		.25	Microtip = Alpha = SAA By =
15.0		3	4"	SAA, but less sand		<2.5	Microtip = Alpha = SAA By =
15.5				NR			
				Drillers instructed to auger through this interval per direction of CRU 1	N/A		Microtip = Alpha = By =
16.0	1640 - SHELBY 1644 - SPOON		6"	SHELBY HAD NO RECOVERY AND TUBE IS BENT — DECISION MADE BY FIELD GEOLOGISTS TO PUSH SPOON 2 FT AT SAME INTERVAL AND RECOVER LOST MATERIAL FOR EVALUATION	N/A		Microtip = Alpha = By =
16.6		COUNTS JUST ACCURATE DISTURBED STRATA	6"	A PORTION OF SHELBY MOLDED MATERIAL WAS RECOVERED IN AUGER AND IT CORRESPONDED TO RECOVERY IN SPOON MATERIAL WAS A MOIST GRAY CLAY w/ well-graded gravel and trace sand. CLAY WAS HIGHLY PLASTIC	N/A		Microtip = 0 ppm Alpha = N/A By = 50-70 cpm
17.0			4"	THERE WAS WATER IN SPOON AND IT APPEARED THAT CONTENTS OF SHELBY TUBE "SLIPPED OUT" OF TUBE FAIRLY INTACT BECAUSE OF THE WATER RELEASED WHEN CLAY WAS COMPACTED INTO TUBE	N/A		Microtip = Alpha = By =
17.5							

SHELBY TUBE THEN SPLIT SPOON.

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

000237

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11512

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Thec Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
17.5							
SHELBY TUBE THEN SPLIT SPOON		N/A		See Above			microtip = Alpha = β_{γ} = Td
18.0							
		N/A		See Above			microtip = Alpha = β_{γ} =
18.5							
				Drillers Augered through this interval per direction OF FIELD GEOLOGISTS	N/A		microtip = Alpha = β_{γ} =
19.0							
	1652			RECOVERY ON SHELBY TUBE Approx. 24"	N/A		microtip = Alpha = β_{γ} =
19.5		SHELBY					
SHELBY TUBE					N/A		microtip = Alpha = β_{γ} =
20.0		SHELBY					
					N/A		microtip = Alpha = β_{γ} =
20.5		SHELBY					
					N/A		microtip = Alpha = β_{γ} =
21.0		SHELBY					

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA		PAGE	

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

6521

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11512

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
21.0							
SHELBY				DESCRIPTION FOR BOTTOM OF SHELBY: (5GY 4/1) DK GREENISH GRAY Gravelly CLAY w/ coarse sand HIGH PLASTICITY Moist		TRACE MED. GRAVEL	Microtip = 0 ppm Alpha = N/A β_γ = [illegible]
21.5		SHELBY		LARGE COBBLE AT BOTTOM			
	1700	4	6"	3" SAA CLAY w/ fine to coarse gravel Moist		0.0	Microtip = 0 ppm
				3" SAA, but STIFF Slightly Moist		1.5	Alpha = N/A β_γ = 50-70 cpm
22.0		13	3"	SAA Slightly Moist		1.5	Microtip =
			3"	LOOSE Sandy GRAVEL WET		0.0	Alpha = SAA β_γ =
22.5		23	0"	NR	N/A		Microtip = Alpha = β_γ =
23.0				Drillers instructed to auger through this interval per direction of FIELD GEOLOGISTS	N/A		Microtip = Alpha = β_γ =
23.5	1707			Drillers could only push SHELBY 3 inches — NO RECOVERY SAND HEAVED 16" up into augers	N/A		Microtip = Alpha = β_γ =
24.0				Drillers directed to auger down to 25.0' and pound Split spoon 2 FT	N/A		Microtip = Alpha = β_γ =
24.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	[illegible]		
ALPHA		[illegible]	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11512

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST: Thea Layne and Cliff Lee

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-21-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
24.5				See above	NR	NR	Microtip = / Alpha = / Bγ =
25.0	0953	6	6"	(5GY 5/1) GREENISH GRAY Well graded sand and gravel WET; LAST 2" sandy, gravelly clay WET		6.0	Microtip = 0 ppm; Alpha = ; Bγ = 50-80 cpm
25.5		6	3"	VERY STIFF (5GY 5/1) GREENISH GRAY Slightly silty gravelly clay; SLIGHTLY PLASTIC; Slightly moist to moist		2.0	Microtip = ; Alpha = SAA; Bγ =
26.0		9		NR	N/A		Microtip = ; Alpha = N/A; Bγ =
26.5		11		NR	N/A		Microtip = ; Alpha = N/A; Bγ =
27.0	0902	4	6"	MED STIFF TO SOFT (5GY 5/1) GREENISH GRAY Silty CLAY w/ abundant gravel fine to med to coarse (well graded) GRAVEL becomes more fine last 3 inches; MED PLASTICITY; Slightly moist to moist		.5 / .25	Microtip = 0 ppm; Alpha = N/A; Bγ = 50-80 cpm
27.5		5		NR	N/A	.5	TM 10-24-94 Microtip = ; Alpha = N/A; Bγ =
28.0							

WATER IN SPOON

SPOON POUNDS 2 FT

SPOON PUSHED 2 FT

INSTRUMENT	BACKGROUND	DATE	TIME
PID	[illegible]	10-21-94	[illegible]
ALPHA	[illegible]	N/A	
BETA/GAMMA	20 - 120 cpm	10-21-94	0840

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

000240

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 MODULAR PROCESS AREA GeoTech Investigation

PROJECT NUMBER: 10.03.10

BORING NUMBER: 11512

COORDINATES:

RELATED FAX NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-20-94

GEOLOGIST:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED:

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch.)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
28.0							
		7		NR			microtip = Alpha = βγ =
28.5							
		7		NR			microtip = Alpha = βγ =
29.0				BOTTOM OF BORING @ 29.0'			microtip = Alpha = βγ =
29.5							microtip = Alpha = βγ =
30.0							microtip = Alpha = βγ =
							microtip = Alpha = βγ =
							microtip = Alpha = βγ =
							microtip = Alpha = βγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA/GAMMA			

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

BORING

WELL NUMBER: 11512

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU1 MODULAR PROCESS AREA GEOTECH INVESTIGATION

PROJECT NUMBER: 10.03.10

GEOLOGIST: Thea Layne and Cliff Lee

DRILLING METHOD: Hollow Stem Auger Mobile B-59

DATES OF INSTALLATION: 10-20-94 to 10-21-94

WATER LEVEL (ft.): N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:

INNER WELL CAP: N/A

MEASUREMENT NOTCH: N/A

TOP OF PROTECTIVE CASING: N/A FT.

TOP OF RISER: N/A FT.

CONCRETE PAD DIMENSIONS: N/A

CONCRETE PAD

GROUND SURFACE

CONCRETE: N/A FT.

GROUT: 29.0 FT.

BENTONITE PELLET SEAL: N/A FT.

SAND PACK: N/A FT.

SCREEN: N/A FT.

TOP OF GROUT SEAL: 0.0 FT.

BOTTOM OF PROTECTIVE CASING: N/A FT.

TOP OF BENTONITE PELLET SEAL: N/A FT.

TOP OF SAND PACK: N/A FT.

TOP OF SCREEN: N/A FT.

BOTTOM OF SCREEN: N/A FT.

BOTTOM OF SUMP: N/A FT.

BOTTOM OF BORING: 29.0 FT.

BOREHOLE DIAMETER: 8 IN.

TYPE AND AMOUNT OF GROUT USED: Volclay / APPROX. 2½ 50lb BAGS	BENTONITE PELLETS (5-GALLON BUCKETS): N/A	DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A	VOLUME OF WATER USED FOR GROUT HYDRATION: 23 gal. per 50lb bag GAL
RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A
DRILLING CASING DIAMETER: N/A IN.	RISER/SCREEN DIAMETER: N/A IN.	SCREEN SLOT SIZE: N/A IN.
SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A FT.	

FS-F-3684 (9/10/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page | of

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11360

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-12-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	1444	6	1"	LOOSE (2.5Y 5/4) LT OLIVE BROWN Silty clayey SAND DRY		3.5	Microtip = 0 ppm Alpha = 0 cpm By = 500 cpm
.5			5"	10-12-94 LOOSE DARK GRAY "Silt-like" material, some fine grain sand coal/flyash fragments small gravel DRY		0.0	
1.0		12	6"	SAA		4.5	Microtip = 0 ppm Alpha = 0 cpm By = 500 cpm
1.5		12	0"	NR	N/A		Microtip = Alpha = N/A By =
2.0	1452	25	2"	Same as above in 0.0-0.5 (Silt-like)			Microtip = 0 ppm Alpha = 10 cpm By = 500 cpm
2.5		50/3"	3"	Pieces of charred or black stained wood DRY			Microtip = 0 ppm Alpha = 10 cpm By = 500 cpm
3.0		0"	0"	NR	N/A		Microtip = Alpha = N/A By =
3.5	1503	24	4"	SAA (wood only) DRY TO WET			Microtip = 1.5 ppm Alpha = 10 cpm By = 500 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 ppm	10-11-94	1444
ALPHA	0.0 cpm	10-11-94	1447
BETA/GAMMA	120 cpm	10-11-94	1447

NOTES: Driller's Helper: Rick Beale

10-12-94

All USCS symbols to ~~be~~ be filled in after analysis results are received, per instructions of CRU1.

000243

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

Page 2 of

BORING NUMBER: 11360

SURFACE ELEVATION:

COORDINATES:

RELATED FAL NUMBERS:

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A DATE: N/A TIME: N/A

WATER USED DURING DRILLING: N/A

GROUNDWATER LEVEL: N/A DATE: N/A TIME: N/A

DATE STARTED:

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DATE COMPLETED:

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5		16	0"	NR			
4.0		50/3"	0"	NR	N/A		microtip = Alpha = N/A βγ =
4.5	1505	13	4"	Same as above (wood)	N/A		microtip = Alpha = N/A βγ =
5.0		10	0"	NR			microtip = 9.0 ppm Alpha = 20 cpm βγ = 800 cpm
5.5		8	0"	NR	N/A		microtip = Alpha = N/A βγ =
6.0				Bottom of Boring @ 6.0	N/A		Microtip = Alpha = N/A βγ =
6.5							microtip = Alpha = βγ =
7.0							Microtip = Alpha = βγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA/GAMMA			

NOTES: Boring abandoned because of continued recovery of pieces of wood only.

* Samples collected per ASTM Standard Penetration test.

Colors identified as Munsell Color Chart

000244

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11360

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-12-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0				Adjacent Boring			
	1530	10	5"	LOOSE (2.5Y 5/4) LT OLIVE BROWN Silty, ~~sandy clay~~ clayey sand DRY (2 10-12-94)		NOT TAKEN	Microtip = 0 ppm Alpha = 0 cpm
0.5			1"	LOOSE "silt-like" (10YR 4/1) DARK GRAY some fine grain sand DRY		NOT TAKEN	βγ = 500 cpm
1.0		25	6"	SAA			Microtip = Alpha = SAA βγ =
1.5		25	3	SAA			Microtip = Alpha = SAA βγ =
2.0	1539	23	2"	SAA			Microtip = 0 ppm Alpha = 0 cpm βγ = 500 cpm
			4"	pieces of charred or black-stained wood DRY			
2.5		18	1"	MED DENSE (10YR 4/2) LT BROWN, SIT GRAY "Silty sand-like" various shades of gray Lt to Dark, fine to coarse grain w/ well-graded small subrounded gravel (ASH MATRIX?) 2" x 1" piece of jagged metal DRY		0.0	Microtip = Alpha = SAA βγ =
3.0		22	0"	NR	N/A		Microtip = Alpha = N/A βγ =
3.5	1546	6	4"	pieces of charred or black-stained wood in black water — water — WET			Microtip = 0.2 ppm Alpha = 0 cpm βγ = 500 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 ppm	10-11-94	1447
ALPHA	0.0 cpm	10-11-94	1447
BETA/GAMMA	120 cpm	10-11-94	1447

NOTES: This boring is adjacent to the original 11360. It is located approx. 5 FT west/N.W. of 11360.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11360

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune | GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-12-94

WATER USED DURING DRILLING: N/A | DRILLING CONTRACTOR: Alliance | DRILLING EQUIPMENT: Mobile B59 Auger | DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5		8	0"	NR	N/A		Microtip = Alpha N/A By =
4.0		25	0"	NR	N/A		Microtip = Alpha = N/A By =
4.5	1552	11 14	1" 6"	SAA (wood)		N/A	Microtip = 0 ppm Alpha = 0 cpm By = 300 cpm
5.0		10	1"	SAA	N/A		Microtip = Alpha = SAA By =
5.5		8	0"	NR	N/A		Microtip = Alpha = N/A By =
6.0	1557	6	0"	No Recovery	N/A		Microtip = Alpha = N/A By =
6.5		10	0"	NR	N/A		Microtip = Alpha = N/A By =
7.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11360

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-12-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0		8		NR	N/A		Microtip = Alpha N/A By =
7.5				DID NOT PUSH SPLIT SPOON IN THIS INTERVAL – Drillers instructed to auger through to 9.0'	N/A		Microtip = Alpha = N/A By =
8.0					N/A		Microtip = Alpha = N/A By =
8.5					N/A		Microtip = Alpha = N/A By =
9.0	1603	3	6"	STIFF (2.5Y 5/4) LT OLIVE BROWN Silty Clay w/ well-graded rounded pebbles, trace sand MED PLASTICITY MOIST		1.75	Microtip = 0 ppm Alpha = 0 cpm By = 200 cpm
9.5		5	3"	SAA		1.75	Microtip = Alpha = SAA By =
10.0		6	0"	NR	N/A		Microtip = Alpha = N/A By =
10.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA		PAGE	

NOTES:

000247

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11360

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-12-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

NEW DAY

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5	0850			NO RECOVERY *Inside of tube was wet and there were traces of gray clay w/ sand	N/A		Microtip = Alpha = N/A Bγ =
11.0		SHELBY					
11.5		SHELBY			N/A		Microtip = Alpha = N/A Bγ =
12.0		SHELBY			N/A		Microtip = Alpha = N/A Bγ =
12.5		SHELBY			N/A		Microtip = Alpha = N/A Bγ =
13.0		SHELBY			N/A		Microtip = Alpha = N/A Bγ =
13.5	0902 10-12-94 SAMPLE 400097	2	1"	VERY SOFT GRAY GRAVELLY CLAY w/ sand and pebbles, fibrous root material WET		0.0	Microtip = 1.0 ppm Alpha = 10 cpm Bγ = 500 cpm
			2"	STIFF LT OLIVE BROWN SANDY Clay MOIST		1.0	
			3"	VERY SOFT (5YR 5/6 and 10YR 5/3) YELLOWISH RED and BROWN-PUDDING-LIKE MATERIAL WET		0.0	
14.0	0902 10-12-94 SAMPLE 400098	2	6"	VERY SOFT (10YR 3/1) VERY DARK GRAY Sandy clay w/ silt fine grain sand WET		0.0	Microtip = 1.0 ppm Alpha = 10 cpm Bγ = 500 cpm

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	10-12-94	0848
ALPHA	10	10-12-94	0848
BETA/GAMMA	10	[illegible]	0848

NOTES: Driller's Helper is Rick Beebe

000248

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11360

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-12-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (Feet)	SAMPLE TIME, DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0							
		1	6"	SAA		0.0	microtip = Alpha = SAA Bγ =
14.5	0910	1	3"	SOFT (10YR 7/10) DARK GRAYISH BROWN silty, sandy clay w/ root material		.25	microtip = 0.6 ppm
			1"	VERY SOFT (7.5 YR 4/6) STRONG BROWN "PUDDING LIKE MATERIAL." WET		0.0	Alpha = 10 cpm Bγ = 300 cpm
15.0		0	0"	NR	N/A		microtip = Alpha = N/A Bγ =
15.5		1	0"	NR	N/A		microtip = Alpha = N/A Bγ =
16.0	0916	1	3"	mixture of above and gray sandy clay WET		0.0	Microtip = 0 ppm
			3"	mixture of BROWNS and STRONG BROWN "PUDDING-LIKE" material w/ pockets of white paste-like material MOIST TO WET		0.0	Alpha = 20 cpm Bγ = 700 cpm
16.5		0	6"	SAA, last 2 inches becomes more paste-like and deeper red brown MOIST		0.0	microtip = Alpha = SAA Bγ =
17.0		1	2"	same as previous 2"		0.0	microtip = Alpha = SAA Bγ =
17.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		PAGE	
BETA/GAMMA			SIX

NOTES:

000249

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME:	CRU1 DeWatering Excavation Evaluation Program
PROJECT NUMBER:	10.03.06
BORING NUMBER:	11360
COORDINATES:	
RELATED FAL NUMBERS:	
SURFACE ELEVATION:	—
GROUNDWATER LEVEL:	N/A
DATE:	N/A
TIME:	N/A
DATE STARTED:	10-11-94
GEOLOGIST:	A. Thea Laune
GROUNDWATER LEVEL:	N/A
DATE:	N/A
TIME:	N/A
DATE COMPLETED:	10-12-94
WATER USED DURING DRILLING:	N/A
DRILLING CONTRACTOR:	Alliance
DRILLING EQUIPMENT:	Mobile B59 Auger
DRILLER/HELPER:	Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5	0923	1	6"	SAA mixture (fine grain sand from WET CLAY)			microtip = 0.5 ppm Alpha = 10 cpm βγ = 400 cpm
18.0		3	3"	SOFT (2.5Y 4/2) DARK GRAYISH BROWN sandy, silty clay fine-med grain sand HIGH PLASTICITY - VERY STICKY WET		.25	microtip = Alpha = SAA βγ =
18.5		4	0"	NR	N/A		microtip = Alpha = N/A βγ =
19.0	0927	1	6"	STIFF Same as 17.5-18.5' but with white "marshmallow creme" material that is wet (pockets) VERY MOIST		1.0	microtip = 0.4 ppm Alpha = 10 cpm βγ = 300 cpm
19.5		3	6"	SAA		1.5	microtip = Alpha = SAA βγ =
20.0		5	1"	SAA		1.0	microtip = Alpha = SAA βγ =
20.5	0935 10-12-94 ARCHIVE 400035	SHELBY		Recovery on SHELBY TUBE	N/A		microtip = Alpha = N/A βγ =
SHELBY 21.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		PAGE	
BETA/GAMMA			SIX

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRUI DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11360

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-12-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
21.0							
21.5		SHELBY			N/A		microtip = Alpha = N/A By =
22.0		SHELBY			N/A		microtip = Alpha = N/A By =
22.5		SHELBY		DESCRIPTION FROM BOTTOM OF SHELBY	N/A		microtip = Alpha = N/A By =
23.0		SHELBY		VERY STIFF (2.5Y 4/2) DARK GRAYISH BROWN sandy, silty clay w/ tiny (fine-coarse grain sand) subangular gravels HIGH PLASTICITY VERY MOIST		3.0	microtip = 1.5 ppm Alpha = 0 cpm By = 300 cpm
	0942	4		NO RECOVERY ON THIS SPOON			
23.5					N/A		microtip = Alpha = N/A By =
		4					
24.0					N/A		microtip = Alpha = N/A By =
		4					
24.5					N/A		microtip = Alpha = N/A By =

TRISE

SHELBY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		PAGE	
BETA/GAMMA			SIX

NOTES:

~~000351~~

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11360

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-12-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5 – 25.0	0948	4	6"	SOFT (2.5Y 4/2) DARK GRAYISH BROWN SAME AS BOTTOM OF SHELBY TUBE @ 20.5 – 23.0' VERY Moist		[illegible]	microtip = [illegible] ppm Alpha = 0 cpm Bγ = 200 cpm
25.5		4	4"	SAA but, STIFF		1.5	microtip = Alpha = SAA Bγ = 200 cpm
26.0		4	0"	NR	N/A		microtip = Alpha = N/A Bγ =
26.5	1011	3	6"	SAA @ 24.5 – 25.0'			microtip = Alpha = Bγ =
27.0		5	3"	SAA			microtip = Alpha = Bγ =
27.5		4	0"	NR BOTTOM OF BORING @ 27.5'	N/A		microtip = Alpha = N/A Bγ =
28.0							microtip = Alpha = Bγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		PAGE	
BETA/GAMMA			SIX

NOTES:

000252

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

6521

BORING

WELL NUMBER: 11360

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU1 Dewatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Layne

DRILLING METHOD: Hollow Stem Auger Mobile B59

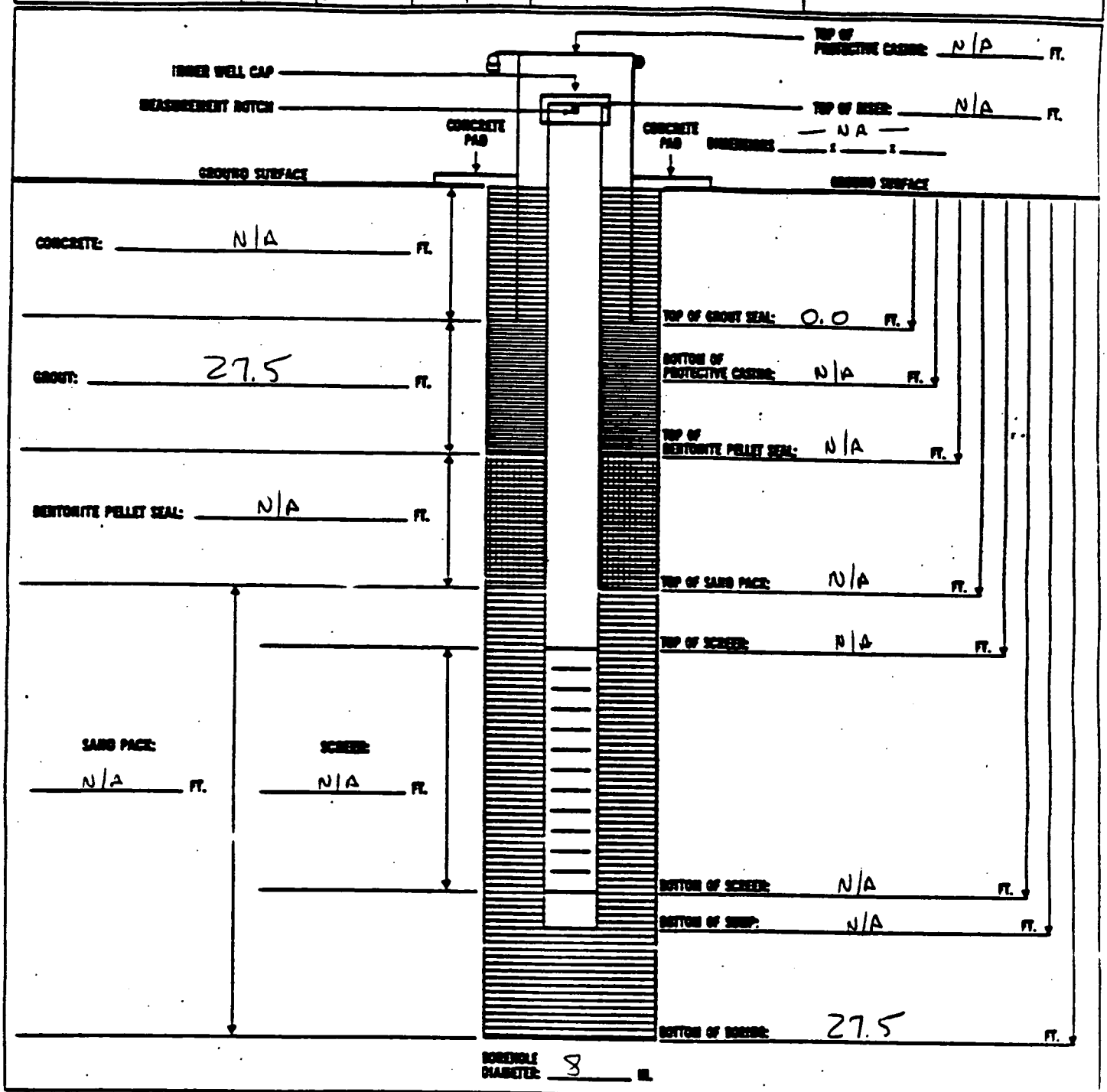
DATES OF INSTALLATION: 10-11-94 → 10-12-94

WATER LEVEL (R.): N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay / Approx. 1-1½ BAG (50 lb BAGS)

BENTONITE PELLETS (5-GALLON BUCKETS): N/A

DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT

VOLUME OF WATER USED DURING DRILLING: N/A GAL

FILTER MATERIAL: N/A

VOLUME OF WATER USED FOR GROUT HYDRATION: 20 gal. per 50 lb BAG GAL

RISER WALL THICKNESS: N/A

TYPE OF SAND PACK: N/A

SCREEN MATERIAL: N/A

DRILLING CASING DIAMETER: N/A IN.

RISER/SCREEN DIAMETER: N/A IN.

SCREEN SLOT SIZE: N/A IN

SCREEN TYPE: N/A

DEPTH OF CENTRALIZER(S): N/A

000253

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU/ DeWatering Excavation Evaluation Program Geotech Inves.

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11353

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-4-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-4-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0		20	3"	VERY STIFF (2.5Y 6/6) Olive Yellow Sandy, clayey SILT w/ rootlets DRY		3.5	Microtip = 0 ppm Alpha = 0 cpm
0.5			3"	LOOSE (2.5Y 5/4) Lt olive Brown silty fine sand w/ angular Fill Gravel and (2.5Y N/3) VERY DARK GRAY ASH Like Substance DRY		0.0	Bg = 300 cpm
		20	4"	SAA		0.0	Microtip = 0 ppm Alpha = 0 cpm
1.0			2"	VERY STIFF (2.5Y 5/4) Lt. OLIVE BROWN silty, sandy clay w/ gravel DRY		3.0	Bg = 300 cpm
		20	2"	VERY STIFF (2.5Y 5/4) Lt. Olive Brown sandy clay DRY		3.0	Microtip = 0 ppm Alpha = 10 cpm
SPOON #1 1.5			0"	NR	N/A		Bg = 500 cpm
		4	6"	VERY STIFF (2.5Y 5/6) Lt. Olive Brown Silty, sandy clay Medium Plasticity Slightly Moist		2.75	Microtip = 0 ppm Alpha = 0 cpm Bg = 200 cpm
2.0		5	4"	SAA		2.75	Microtip = 0 ppm Alpha = 0 cpm
2.5			0"	NR	N/A		Bg = 200 cpm
		6	0"	No Recovery	N/A		Microtip: Alpha = N/A Bg =
SPOON #2 3.0		6	6"	VERY SOFT (2.5Y 5/6) Lt. Olive Brown Silty, sandy clay w/ gravels Moist		.5	Microtip = 0 ppm Alpha = 0 cpm Bg = 200 cpm
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 ppm	10-4-94	1245
ALPHA	0 cpm	10-4-94	1245
BETA/GAMMA	170 cpm	10-4-94	1245

NOTES: Driller Helpers: Rick Beebe, Bill Montanye, Jerry Beardmore

USCS SYMBOL TO BE FILLED IN LATER AFTER GEOTECHNICAL ANALYSES OF SAMPLES

* Samples collected per ASTM Standard Penetration test. All Colors identified by Munsell Color Chart

FS-F-3681 (8/18/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program Geotech Inves.

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11353

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-4-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-4-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: MOBILE B59 AUGER

DRILLER/HELPER: MARTIN PROCTOR

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5		7	2"	SAA		.25	Microtip = 0 ppm
			2"	VERY SOFT (2.5Y 4/2) DARK Grayish Brown Silty, Sandy, clay w/ small gravels "RED" ANGULAR GRAVELS ALSO MOIST		.5	Alpha = 0 cpm By = 400 cpm
4.0		10	0"	NO RECOVERY	N/A		Microtip = Alpha = N/A By =
↑ SPOON #3 4.5	10-4-94 1310 400047 SAMPLE	9	4"	STIFF (2.5Y 4/4) Olive Brown Silty Clay w/ gravel MOIST		1.25	Microtip = 0 ppm
			2"	BRIGHT GREEN GRANULES coarse grain size some white particles WET		0.0	Alpha = 0 cpm By = 2000 cpm
5.0	10-4-94 1310 400047	7	2"	MED STIFF (2.5Y 4/4) Olive Brown Silty Clay, VERY MOIST with BLACK WET JELLY TYPE MATERIAL		1.0	Microtip = 0 ppm
			0"	NR	N/A		Alpha = 0 cpm By = 1000 cpm
5.5		6	0"	NO RECOVERY	N/A		Microtip = Alpha = N/A By =
↑ SPOON #4 6.0				TRACE OF BLACK JELLY TYPE MATERIAL ON END OF SHELBY OTHERWISE Absolutely NO recovery in tube and interior of liner/sleeve was	N/A		Microtip = Alpha = N/A By =
↓ SHELBY 6.5	SHELBY			totally dry w/ have of dust/dry	N/A		Microtip = Alpha = N/A By =
7.0	SHELBY						

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. All colors identified by Munsell Color Chart

FS-F-3681 (8/18/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program Geotech Inves.

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11353

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-4-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-4-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: MOBILE B59 AUGER

DRILLER/HELPER: MARTIN PROCTOR

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0							
7.5	SHELBY			NO RECOVERY	N/A		Microtip = Alpha = N/A Bg =
8.0	SHELBY			NO RECOVERY	N/A		Microtip = Alpha = N/A Bg =
8.5	SHELBY			NO RECOVERY	N/A		Microtip = Alpha = N/A Bg =
				BOTTOM OF BORING @ 8.5'			Microtip = Alpha = Bg =
							Microtip = Alpha = Bg =
							Microtip = Alpha = Bg =
							Microtip = Alpha = Bg =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. All colors identified by Munsell Color Chart

FS-F-3681 (8/18/93)

BORING

WELL NUMBER: #11353

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Layne

DRILLING METHOD: Hollow Stem Auger Mobile B59

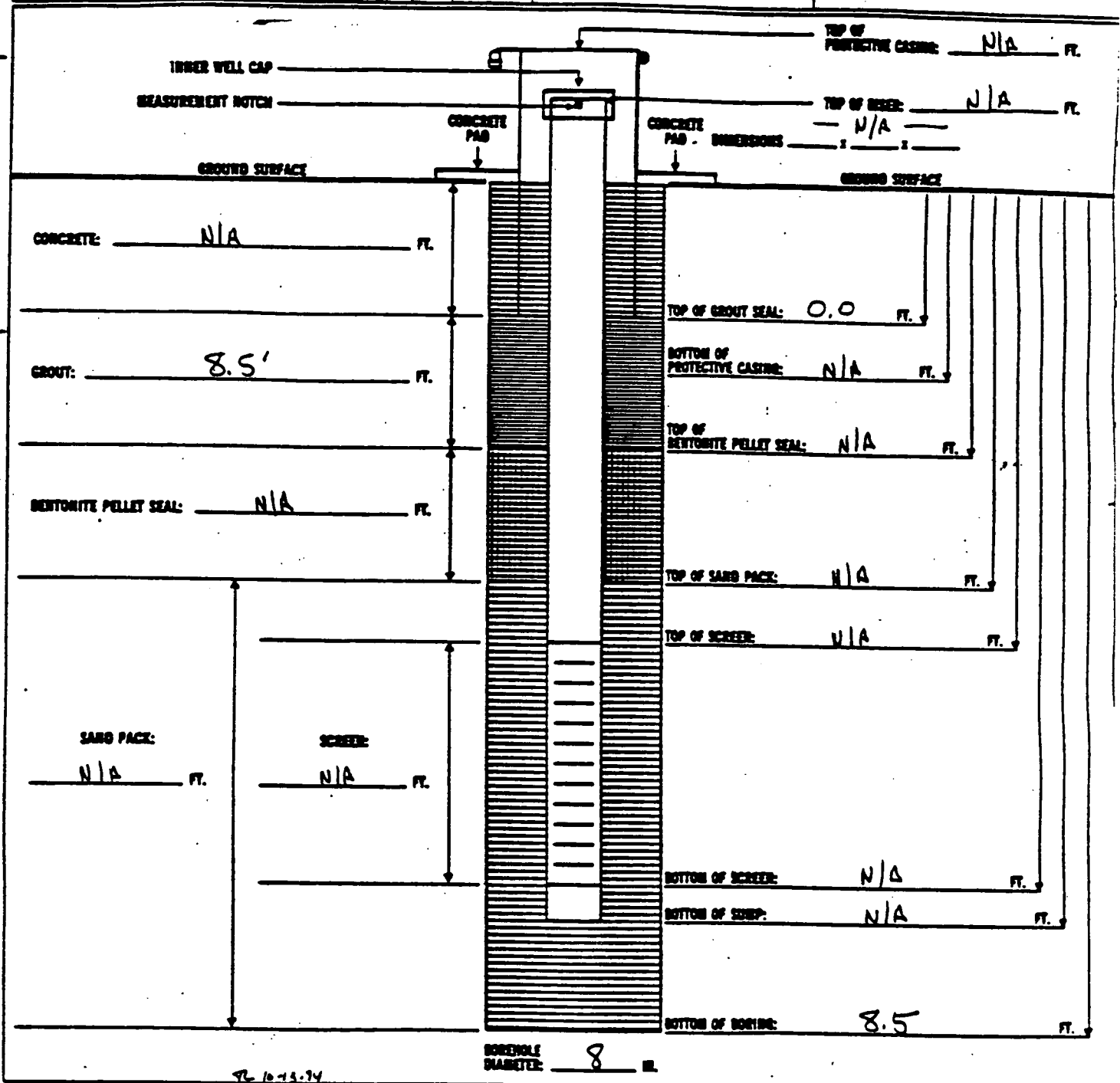
DATES OF INSTALLATION: 10-4-94

WATER LEVEL (ft.): N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:



TL 10-13-94

TYPE AND AMOUNT OF GROUT USED: ½ 50 lb Volclay Grout / Approx ¾ BAG

BENTONITE PELLETS (5-GALLON BUCKETS): N/A

DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.

VOLUME OF WATER USED DURING DRILLING: N/A GAL

RISER MATERIAL: N/A

VOLUME OF WATER USED FOR GROUT HYDRATION: 23 gal. per 50 lb bag GAL

RISER WALL THICKNESS: N/A

TYPE OF SAND PACK: N/A

SCREEN MATERIAL: N/A

DRILLING CASING DIAMETER: N/A IN.

RISER/SCREEN DIAMETER: N/A IN.

SCREEN SLOT SIZE: N/A IN.

SCREEN TYPE: N/A

DEPTH OF CENTRALIZER(S): N/A FT.

Please Note: This was initial Boring for 11353. Because of no recovery on first Shelby Tube, a new Boring was performed Approx 5ft N.W. The adjacent Boring was completed to 15.5' as planned. TL

FS-F-3684 (9/10/93)

000257

6521

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program Geotech Inves.

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11353

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-4-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-4-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: MOBILE B59 AUGER

DRILLER/HELPER: MARTIN PROCTOR

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0 ↓ 3.5			*	Adjacent BORING TO 11353 —			
				WAS AUGERED DOWN TO 6.0 FT. SEE BORING LOG FOR BORING #11353 FOR DESCRIPTION TO 6.0 FT			Microtip = Alpha = Py =
4.0							Microtip = Alpha = Py =
4.5							Microtip = Alpha = Py =
5.0							Microtip = Alpha = Py =
5.5							Microtip = Alpha = Py =
6.0				VERY SOFT (2.5Y 4/2) DARK GRAYISH BROWN WET Silty clay w/ gravels and a few "red" angular gravels in end/ bottom of tube — water poured out from top end		Not taken	Microtip: Not Alpha: taken Py =
6.5	PISTON SAMPLER			top attachment section of Piston Sampler could not be disengaged THIS INTERVAL WAS Abandoned for sampling - 2ND ATTEMPT			Microtip: Alpha: Py =
7.0	PISTON SAMPLER						

SEE BORING LOG FOR 11353

PISTON SAMPLER

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. All colors identified by Munsell Color Chart

FS-F-3881 (8/18/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program Geotech Inves.

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11353

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-4-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-4-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: MOBILE B57 AUGER

DRILLER/HELPER: MARTIN PROCTOR

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0 ↓ ← PISTON SAMPLER				SAMPLER COULD NOT BE Disengaged — see previous page			Microtip = Alpha = βγ =
7.5							Microtip = Alpha = βγ =
8.0							Microtip = Alpha = βγ =
8.5	1450 10-4-94 400048 SAMPLE	2	5"	VERY LOOSE (2.5Y N/2) Black (ASH?) "Paste-like" material, clay size to very fine grain size - cohesive, holds shape when disturbed — piece of WIRE — WET		N/A	Microtip = 0 ppm Alpha = 0 cpm βγ = 1700 cpm
9.0		2		NO RECOVERY	N/A		Microtip = Alpha = N/A βγ =
9.5		1		NO RECOVERY	N/A		Microtip = Alpha = N/A βγ =
10.0 ↑ SPOON ← SHELBY	1455 10-4-94 400025 ARCHIVE SHELBY			(2.5Y N/5) Gray "SAND LIKE" SUBSTANCE, VERY FINE TO MEDIUM COARSE GRAIN SIZE — THIS IS "METAL LIKE" SILVERY SUBSTANCE, SOME particles dryed to white GRAY powder MOIST		NOT TAKEN	Microtip = 0 ppm Alpha = 10 cpm βγ = 40,000 cpm
10.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. All colors identified by Munsell Color Chart

FS-F-3651 (8/18/93)

000259

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

Page 6 of

PROJECT NAME: CRUI DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11353

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-4-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-4-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5				DESCRIPTION ABOVE FROM EXPOSED MATERIAL AT BOTTOM of TUBE Estimated 25-27" RECOVERY		N/A	Microtip= Alpha = N/A By=
11.0	SHELBY					N/A	Microtip= Alpha = N/A By =
11.5	SHELBY					N/A	Microtip= Alpha = N/A By =
12.0	SHELBY					N/A	Microtip= Alpha = N/A By =
12.5	SHELBY					N/A	Microtip= Alpha = N/A By =
13.0	1520 10-4-94 400049 SAMPLE	2	6"	VERY LOOSE (2.5Y N/5) GRAY granular - fine to medium grain size "sand" like, appears to be metallic silvery type substance VERY MOIST		N/A	Microtip = 0 ppm Alpha = 0 cpm By = 20,000 cpm
13.5	1520 10-4-94 400050 ARCHIVE	2	6"	SAA			Microtip = 0 ppm Alpha = 0 cpm By = 20,000 cpm
Spec'n 14.0	1520 10-4-94 400051 SAMPLE	1	6"	VERY SOFT (2.5Y N/7) LT GRAY "Pudding to cake icing type" consistency SMOOTH TO GRANULAR VERY LT WEIGHT WET		0.0	Microtip = 0 ppm Alpha = 0 cpm By = 20,000 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES: Samples #400049 and 400050 — both are from depth of 12.5 - 13.5

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell

FS-F-3681 (8/18/93)

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

Page 1 of

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program "Geotech Inves."

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11353

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-4-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-4-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: MOBILE B57 AUGER

DRILLER/HELPER: MARTIN PROCTOR

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0		1	6"	SAA			Microtip = 0 ppm Alpha = 0 cpm βγ = 25,000 cpm
14.5		0	6"	SAA BUT, some small pockets of white "marshmellow creme" type substance Also — color near (2.5Y 5/6) OLIVE GREEN Granular pockets			Microtip = 0 ppm Alpha = 0 cpm βγ = 25,000 cpm
15.0 ↑ SPOON		1	6"	SAA Gold color metallic granular "gravel" angular shape — 1/2 - 3/4 inch diameter			Microtip = 0 ppm Alpha = 0 cpm βγ = 25,000 cpm
15.5	15.5			BOTTOM OF BORING @ 15.5'			Microtip = Alpha = βγ =
							Microtip = Alpha = βγ =
							Microtip = Alpha = βγ =
							Microtip = Alpha = βγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. All colors identified by Munsell Color Chart

FS-F-3681 (8/18/93)

6521

BORING

WELL NUMBER: #11353 Adjacent Boring

FEMP WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Layne

DRILLING METHOD: Hollow Stem Auger Mobile B59

DATES OF INSTALLATION: 10-4-94

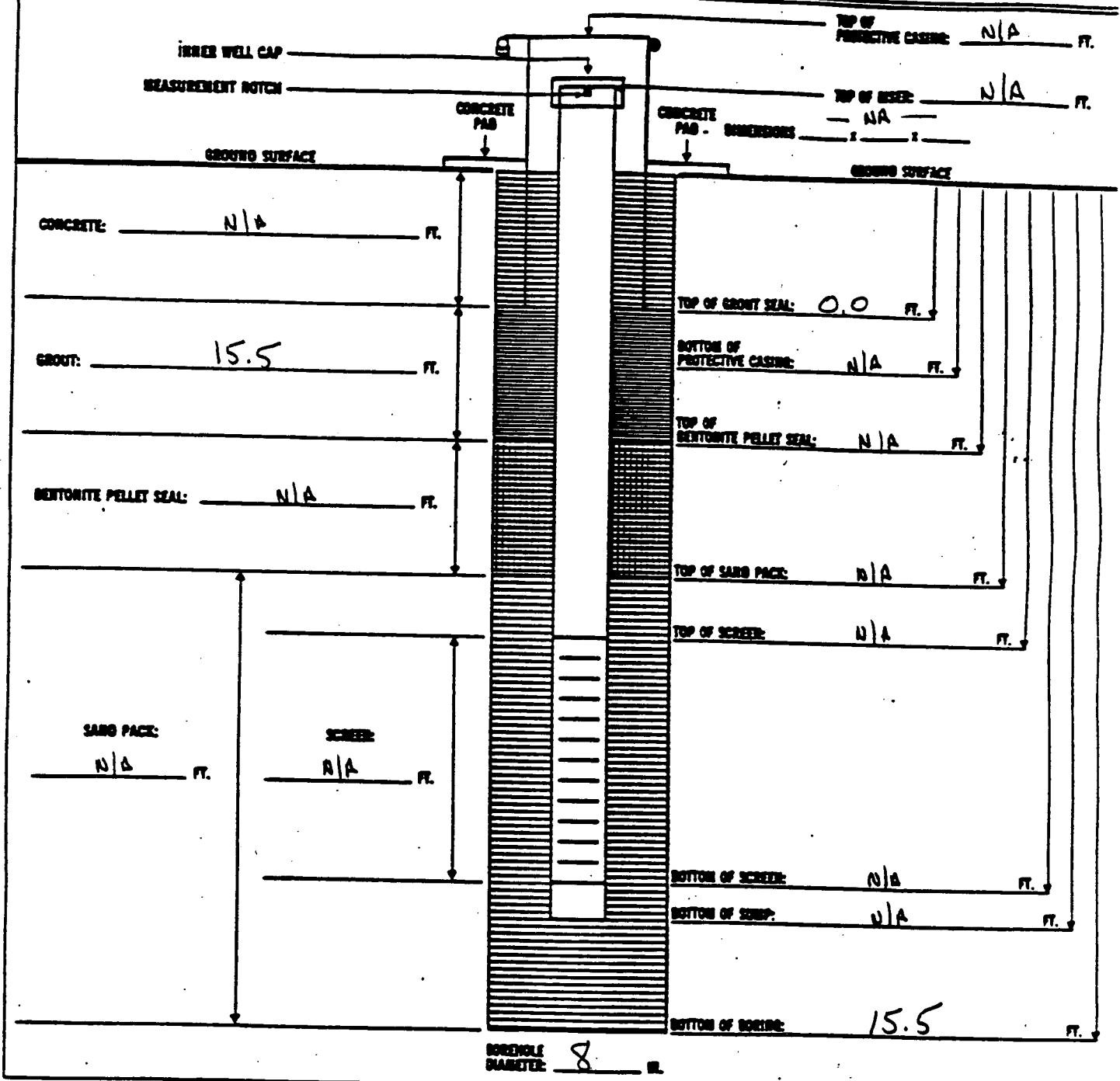
WATER LEVEL (BL): - N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:

Please Note: This was an adjacent Boring to the initial Boring of 11353



TYPE AND AMOUNT OF GROUT USED: Volclay Grout/ approx. 1½ 50lb BAG	BENTONITE PELLETS (5-GALLON BUCKETS): N/A		DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A		VOLUME OF WATER USED FOR GROUT HYDRATION: 23 gal. per 50 lb bag GAL
RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A IN.
RISER/SCREEN DIAMETER: N/A IN.	SCREEN SLOT SIZE: N/A IN.	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A FT.

FS-F-3664 (9/10/93)

*Please Note: Grout kept sinking in this hole during the procedure - after grout had set up it stabilized about 3 ft from surface. A thinner grout mixture was used to top it off the next day.

000262

6521

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page | of

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program Geotech Inves.

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11352

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-5-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-5-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile 59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	0820 10-5-94	8	6"	VERY STIFF (2.5Y 5/4) LT OLIVE BROWN sandy, clayey silt. None to low plasticity Slightly MOIST		2.25	Microtip = 0 ppm Alpha = 0 cpm βγ = 3000 cpm
0.5	0820 10-5-94 400052 SAMPLE	11	6"	VERY STIFF (2.5Y N/4) Dark Gray "Silt-like" to powdery material (ASH?) Very light weight but dense Slightly cohesive MOIST		2.50	Microtip = 0 ppm Alpha = 10 cpm βγ = 2000 cpm
1.0	0820 10-5-94	11	2"	VERY SOFT (2.5Y N/6) GRAY "Silt to Clay" size particles — less dense "POWDERY" (ASH?) Slightly MOIST		0.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 2000 cpm
SPOON #1 1.5			0"	NR		N/A	
	0830 10-5-94	3	6"	STIFF (2.5Y N/3) VERY DARK GRAY "Silt or Ash-like" slightly cohesive "RED" MOTTLING low plasticity light weight MOIST		1.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 1500 cpm
2.0	0830 10-5-94 400053 SAMPLE	3	6"	STIFF (2.5YR 5/4) REDDISH BROWN Basically SAA but more "clay like" Increased plasticity MOIST		1.5	Microtip = 0 ppm Alpha = 10 cpm βγ = 2500 cpm
2.5	0830 10-5-94 400053	3	2"	SAA		1.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 2500 cpm
SPOON #2 3.0			0"	NR		N/A	
3.5	10-5-94	2	6"	STIFF (2.5YR 5/4) REDDISH BROWN SAA 2.0-2.5' INTERVAL "SILTY CLAY LIKE" MATERIAL low density low plasticity MOIST		1.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 2000 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0 ppm	10-5-94	0820
ALPHA	0 cpm	10-5-94	0820
BETA/GAMMA	150 cpm	10-5-94	0820

NOTES: Sample # 400053 is from 2.0-3.0'
USCS SYMBOLS TO BE FILLED IN AFTER ANALYSES
Driller Helpers: Rick Beebe, Bill Montanye

* Samples collected per ASTM Standard Penetration test. All colors identified by Munsell Color Chart

FS-F-3681 (8/18/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU/ DeWatering Excavation Evaluation Program Geotech Inves.

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11352

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-5-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-5-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5							
4.0	10-5-94	1	6"	SAA		1.25	Microtip = 0 ppm Alpha = 10 cpm βγ = 2000 cpm
4.5 (↑ SPOON #3)	10-5-94	1	4"	SAA BUT, Small pockets of white "paste like" material		.5	Microtip = 0 ppm Alpha = 40 cpm βγ = 2000 cpm
			0"	NR		N/A	
5.0	0840 10-5-94	1	6"	STIFF (2.5YR 5/2) WEAK RED Silty "clay-like" material Basically same as 2.0-2.5' INTERVAL low density — low plasticity MOIST		1.0	Microtip = 0 ppm Alpha = 20 cpm βγ = 1000 cpm
5.5	0840 10-5-94	2	6"	VERY SOFT (2.5YR 5/4) REDDISH BROWN SAA VERY MOIST		0.0	Microtip = 0 ppm Alpha = 20 cpm βγ = 1500 cpm
6.0 (↑ SPOON #4)	0840 10-5-94 400054 SAMPLE	1	6"	VERY SOFT (2.5YR N/5) GRAY "Clay size particle PASTE-LIKE" Cohesive — sticky MOIST TO WET		0.0	Microtip = 0 ppm Alpha = 30 cpm βγ = 1500 cpm
6.5	10-5-94	1	6"	SAA MOIST		0.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 1000 cpm
7.0	10-5-94	1	6"	SAA "cohesive paste-like material" low plasticity — can be molded into shapes — light weight WET		0.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 1000 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. All colors identified by Munsell Color Chart

FS-F-3681 (8/18/93)

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

SR 10-3-94

PROJECT NAME: CRUI DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11352

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-5-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-5-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0							
		1	0"	NO RECOVERY			Microtip = Alpha = By =
↑ SPOON #5 — 7.5	0855 10-5-94 ARCHIVE 400025			FULL RECOVERY ON SHELBY TOP END SAME MATERIAL AS 2.0-2.5' INTERVAL MOIST TO WET		NOT TAKEN	Microtip = Alpha = By = Readings NOT TAKEN
8.0		SHELBY					
8.5		SHELBY					Microtip - Alpha = By =
9.0		SHELBY					Microtip - Alpha = By =
9.5		SHELBY					Microtip = Alpha = By =
10.0		SHELBY		BOTTOM END — HARD (2.5Y N/8) WHITE "Clay-silt" type matrix w/ fine to med. coarse size grains homogeneous throughout MOIST		74.5	Microtip = 0 ppm Alpha = 30 cpm By = 1,500 cpm
		1	6"	VERY SOFT (2.5Y 4/2) DARK GRAYISH BROWN "Clay-like" Some green and red mottling MEDIUM PLASTICITY WET		0.0	Microtip = 0 ppm Alpha = 0 cpm By = 1,000 cpm
10.5							

TUBE — SHELBY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES: Readings for bottom of SHELBY taken on Exposed material only & may not reflect characteristics of waste inside tube

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

FS F-3681 9-18-93

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11352

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-5-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-5-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5	0905 10-5-94 SAMPLE 400055	10	6"	STIFF (2.5Y N/7) LT. GRAY Granular material - fine to med. coarse grains in clay/silt type matrix low plasticity - sticky MOIST		1.5	Microtip = 0 ppm Alpha = 0 cpm By = 1,000 cpm
11.0	0905 10-5-94 SAMPLE 400056	12	6"	SOFT-MED DENSE (2.5 N/5) GRAY "Clayey sand-like" Fine to med coarse grain MOIST.		.5	Microtip = 0 ppm Alpha = 20 cpm By = 7,000 cpm
11.5 (SPOON #6)	0915 10-5-94 ARCHIVE 400026	SHELBY		FULL RECOVERY ON SHELBY TOP END has WATER IN TUBE — "SOUPY" FINE GRAIN "BLOW SAND TYPE"		0.0	Microtip - Alpha = Readings Not TAKEN By =
12.0		SHELBY					Microtip - Alpha = By =
12.5		SHELBY					Microtip = Alpha = By =
13.0		SHELBY					Microtip = Alpha = By =
13.5		SHELBY					Microtip = Alpha = By =
14.0		SHELBY		BOTTOM END VERY STIFF (2.5Y N/5) GRAY "Silty Clay-like" MOIST		2.75	Microtip = 0 ppm Alpha = 0 cpm By = 2,200 cpm

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES: SAMPLES #400055 and 400056 very similar — may want to combine or archive one of the samples.

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRUI DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11352

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-5-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-5-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0	0925 10-5-94 400057 SAMPLE	5	6"	STIFF (2.5Y N/5, N/6, N/4) LT GRAY TO GRAY COLOR GRAINS and particles Clayey, silty "Sand-like" (Some ash?) SOME 7/2 LT GRAY GRAINY "PASTE-LIKE" POCKETS STICKY MOIST		1.0	Microhp = 0 ppm Alpha = 20 cpm βγ = 9000 cpm
14.5	0925 10-5-94 400058 ARCHIVE	5	6"	SOFT TO VERY STIFF SAA BUT Bright yellow and dark green "powders" scattered throughout Also, white fine grain "icing-type" Pockets STICKY MOIST		2.25 TO .5	Microhp = 0 ppm Alpha = 0 cpm βγ = 4000 cpm
15.0	0925 10-5-94	12	6"	SAA Fine to medium coarse grain Slightly cohesive — piece of glass — MOIST TO WET		0.0	Microhp = 0 ppm Alpha = 0 cpm βγ = 3500 cpm
SPOON → 15.5				↑ BOTTOM OF BORING @ 15.5'			

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

BORING

WELL NUMBER: #11352

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

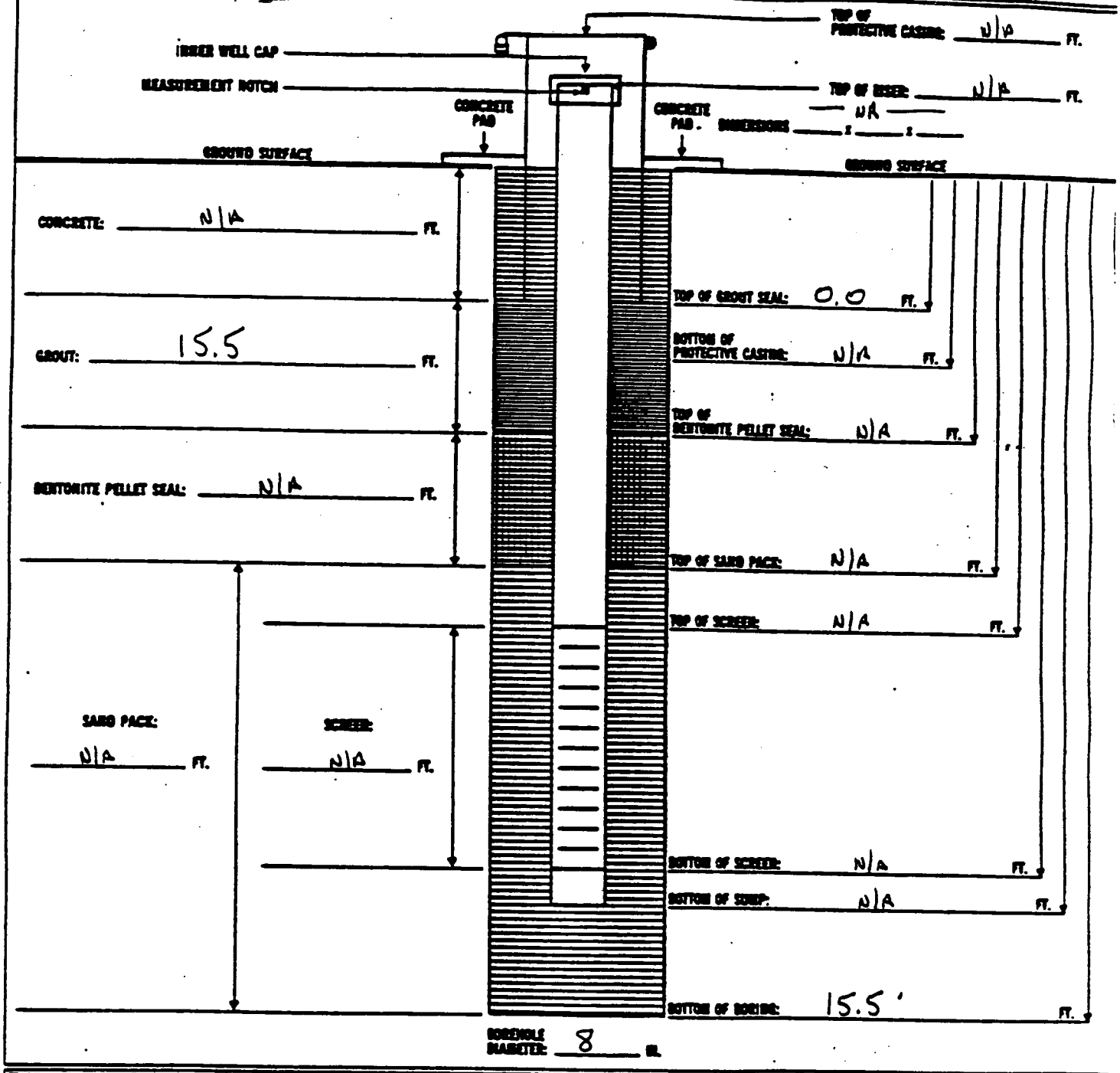
PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Layne

DRILLING METHOD: Hollow Stem Auger Mobile B59

DATES OF INSTALLATION:	WATER LEVEL (R.):	DATE:	RELATED FAL NUMBERS:	CHECKED BY:
10-5-94	N/A	N/A		



TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS):	DEEPEST TEMPORARY DRILLING CASING PENETRATION:
Volclay Grout / approx. 1 BAG	N/A	N/A FT.
VOLUME OF WATER USED DURING DRILLING:	RISER MATERIAL:	VOLUME OF WATER USED FOR GROUT HYDRATION:
N/A GAL	N/A	23 gal. per 50 lb bag GAL

RISER WALL THICKNESS:	TYPE OF SAND PACK:	SCREEN MATERIAL:	DRILLING CASING DIAMETER:
N/A	N/A	N/A	N/A IN.
RISER/SCREEN DIAMETER:	SCREEN SLOT SIZE:	SCREEN TYPE:	DEPTH OF CENTRALIZER(S):
N/A IN.	N/A IN.	N/A	N/A FT.

FS-F-3684 (9/10/93)

000268

6521

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11359

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-5-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-5-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	1310 10-5-94 400059 SAMPLE	7	6"	STIFF (7.5YR 5/6) STRONG BROWN "Clay-like" MED PLASTICITY MOIST		1.5	Microtip = 0 ppm Alpha = 20 cpm Bγ = 1000 cpm
0.5	1310 10-5-94 400060 SAMPLE	6	6"	VERY STIFF (2.5Y 6/6) OLIVE YELLOW "Clay-like" MED PLASTICITY MOIST		2.25	Microtip = 0.0 ppm Alpha = 10 cpm Bγ = 1000 cpm
1.0	1310 10-5-94	3	6"	STIFF ~~SAA~~ as 0.0-0.5' INTERVAL same in Color & Consistency MOIST		1.25	Microtip = 0.0 ppm Alpha = 10 cpm Bγ = 1000 cpm
↑ SPOON #1 1.5	10-5-94	1	6"	SAA MOIST		1.25	Microtip = 0 ppm Alpha = 10 cpm Bγ = 1000 cpm
2.0	10-5-94	5	4"	SAA BUT MED STIFF		.75	Microtip = 0 ppm Alpha = 10 cpm Bγ = 1000 cpm
2.5			0"	NR		N/A	
		6	0"	NO RECOVERY		N/A	~~Microtip = 0 ppm Alpha = 10 cpm Bγ = 1200~~ N/A
↑ SPOON #2 3.0		1	6"	VERY SOFT (7.5YR 5/8) STRONG BROWN "Clay-like" "Play-dough type consistency" HIGH PLASTICITY VERY MOIST		0.0	Microtip = 0 ppm Alpha = 10 cpm Bγ = 1200 cpm
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

FS-F-3681 (8-18-93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11359

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-5-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-5-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5	1320 10-5-94 400061 ARCHIVE	1	6"	SAA A few pockets of black granules VERY MOIST		0.0	Microtip = 0 ppm Alpha = 20 cpm βγ = 2500 cpm
4.0	1320 10-5-94	1	6"	SAA		0.0	Microtip = Alpha = SAA βγ =
↑ SPOON #3 4.5	1325 10-5-94 400033 ARCHIVE	SHELBY		BOTTOM END SHOWS SAA	N/A		Microtip = 0.0 ppm Alpha = 50 cpm βγ = 3,500 cpm
5.0				12-14 inches Recovery	N/A		Microtip = Alpha = N/A βγ =
5.5		SHELBY			N/A		Microtip = Alpha = N/A βγ =
6.0		SHELBY			N/A		Microtip = Alpha = N/A βγ =
6.5		SHELBY			N/A		Microtip = Alpha = N/A βγ =
7.0		SHELBY			N/A		Microtip = Alpha = N/A βγ =

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES: NOTE: 3.5-4.0' Archived because material was similar to material @ 0.0-.5' when there was not enough material for archive.

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

FS-F-3681 (8/18/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME:	CRU1 DeWatering Excavation Evaluation Program
PROJECT NUMBER:	10.03.06
BORING NUMBER:	11359
COORDINATES:	
RELATED FAL NUMBERS:	
SURFACE ELEVATION:	
GROUNDWATER LEVEL:	N/A
DATE:	N/A
TIME:	N/A
DATE STARTED:	10-5-94
GEOLOGIST:	A. Thea Laune
GROUNDWATER LEVEL:	N/A
DATE:	N/A
TIME:	N/A
DATE COMPLETED:	10-5-94
WATER USED DURING DRILLING:	N/A
DRILLING CONTRACTOR:	Alliance
DRILLING EQUIPMENT:	Mobile B59 Auger
DRILLER/HELPER:	Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0							
7.5		1	6"	VERY SOFT (7.5 YR 5/8) STRONG BROWN "Clay-like" "cookie dough consistency" -Sticky- High Plasticity VERY MOIST		0.0	Microtip: 0 ppm Alpha = 10 cpm Bγ = 2000 cpm
8.0		1	6"	SAA		0.0	Microtip: 0 ppm Alpha = 10 cpm Bγ = 2000 cpm
8.5 (↑ SPOON #4)		3	6"	SAA		0.0	Microtip: 0 ppm Alpha = 10 cpm Bγ = 2000 cpm
9.0	1340 10-5-94 400034 ARCHIVE	SHELBY		BOTTOM END SAA FULL RECOVERY 2.5-3.0 FT			Microtip: 0 ppm Alpha = 10 cpm Bγ = 1300 cpm
9.5		SHELBY					N/A
10.0		SHELBY					N/A
10.5		SHELBY					N/A

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

FS-F-3681 (8/18/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11359

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-5-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-5-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5							
11.0		SHELBY		BOTTOM OF BORING @ 11.0'			N/A

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test.

* All colors identified by Munsell Color Chart.

FS-F-3681 (8/18/93)

BORING

6521

WELL NUMBER: #11359

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU 1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Layne

DRILLING METHOD: Hollow Stem Auger Mobile B59

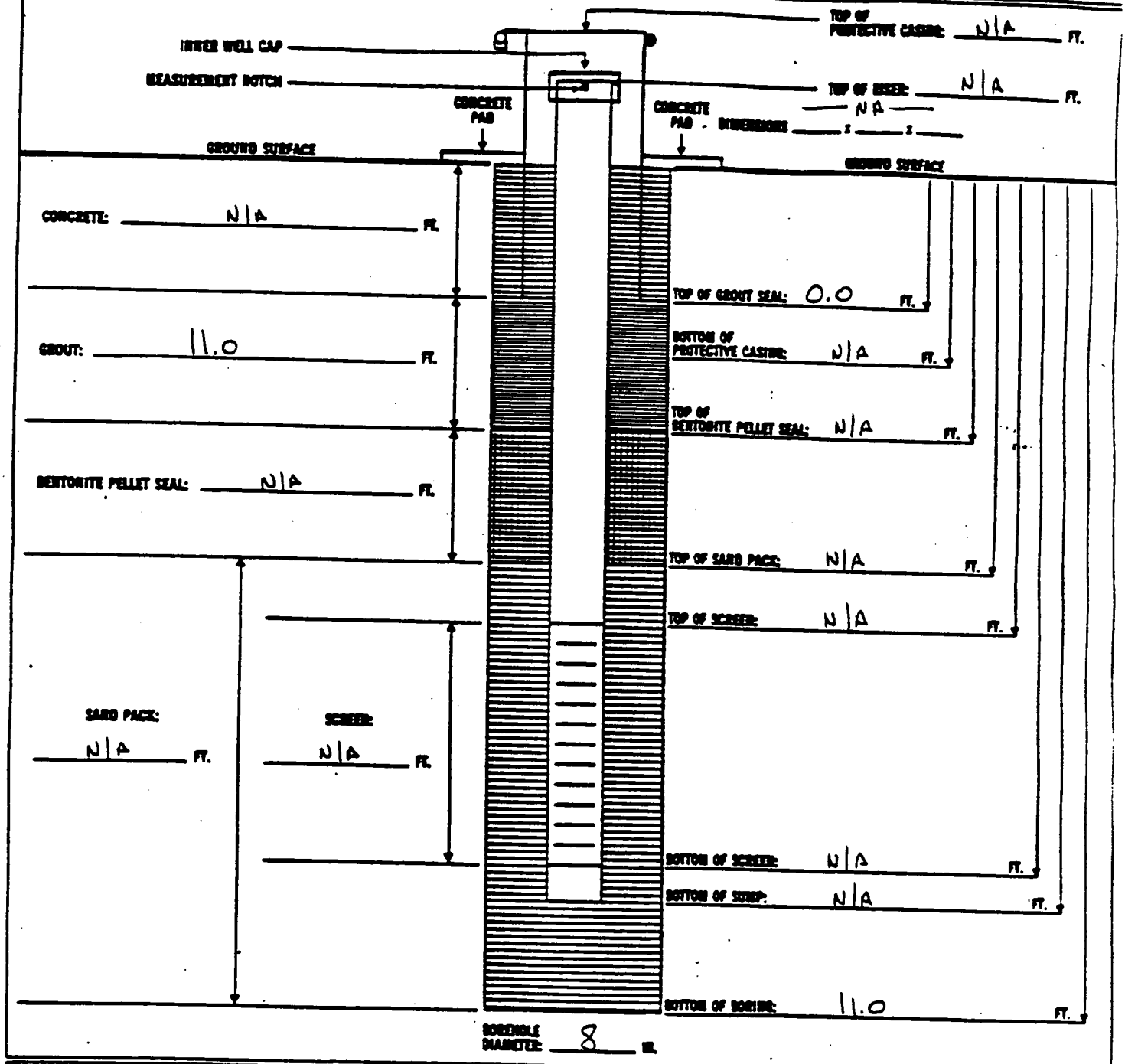
DATES OF INSTALLATION: 10-5-94

WATER LEVEL (R.): - N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay / Approx. 1/2 50 lb. BAG	BENTONITE PELLETS (5-GALLON BUCKETS): N/A		DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A		VOLUME OF WATER USED FOR GROUT HYDRATION: 23 gal. per 50 lb BAG GAL
RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A IN.
RISER/SCREEN DIAMETER: N/A IN.	SCREEN SLOT SIZE: N/A IN.	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A FT.

FS-F-3684 (9/10/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page 1 of

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11358

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-6-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-6-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	0835 10-6-94	10	6"	VERY STIFF (2.5Y 4/4) OLIVE BROWN Clayey, sandy silt. Rootlets DRY		3.75	Microtip = 0 ppm Alpha = 30 cpm By = 200 cpm
0.5		20	6"	VERY STIFF (2.5Y 6/6) OLIVE YELLOW Sandy, clayey silt DRY		4.0	Microtip = 0 ppm Alpha = 30 cpm By = 250 cpm
1.0		20	3"	HARD (2.5Y 5/4) LT OLIVE BROWN Sandy, clayey silt DRY		4.5	Microtip = 0 ppm Alpha = 30 cpm By = 200 cpm
↑ Spoon #1 1.5				NR			
	0840	5	6"	HARD (2.5Y 4/2) DARK GRAYISH BROWN Silty Clay MED PLASTICITY DRY		4.5	Microtip = 0 ppm Alpha = 10 cpm By = 250 cpm
2.0		12	4"	SAA, but MED STIFF piece of fractured quartz in bottom of spoon DRY		.75	Microtip = 0 ppm Alpha = 10 cpm By = 250 cpm
2.5				NR			
		7	0"	NO RECOVERY	N/A		Microtip: Alpha = N/A By:
↑ Spoon #2 3.0		3	3"	STIFF (2.5Y 3/2) VERY DARK GRAYISH BROWN Silty Clay w/ some white granular particles & weak red "ice cream-like material" WET		1.25	Microtip = 0 ppm Alpha = 0 cpm By = 200 cpm
3.5				NR			

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.6 ppm	10-6-94	0830
ALPHA	0 cpm	10-6-94	0830
BETA/GAMMA	150 cpm	10-6-94	0830

NOTES: Driller Helpers: Rick Beebe, Bill Montanye
USCS Symbol TO BE FILLED IN AFTER ANALYSES

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

FS-F-3681 (8-18-93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11358

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
3.5		10	0"	NO RECOVERY	N/A		Microtip = Alpha = N/A By =
4.0		17	0"	NO RECOVERY	N/A		Microtip = Alpha = N/A By =
↑ SPOON #3 4.5	0850	5	6"	NO RECOVERY ON FIRST ATTEMPT — SOFT (2.5Y 5/4) LT OLIVE BROWN Silty Clay w/ sand and gravels HIGH PLASTICITY WET TO MOIST		.25	Microtip - Alpha = By =
5.0		5	4"	SAA, but no gravels			Microtip - Alpha = By =
5.5				NR			
↑ SPOON #4 #5 6.0		5	0"	NO RECOVERY	N/A		Microtip = Alpha = N/A By =
SHELBY 6.5	0905 10-6-94 ARCHIVE 400031	SHELBY		WATER IN TOP OF SHELBY TUBE, carefully drained off. Appears to be 20-24" recovery. Ends of tube sealed w/ wax immediately.	N/A		Microtip = Alpha = By = (readings not taken)
7.0		SHELBY			N/A		Microtip = Alpha = N/A By =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

FS-F-3681 (9-18-93)

000275

6521

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11358

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED:

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED:

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0							
7.5		SHELBY			N/A		Microtip = Alpha = N/A By =
8.0		SHELBY			N/A		Microtip = Alpha = N/A By =
8.5		SHELBY			N/A		Microtip - Alpha = N/A By =
9.0	0916 10-6-94 SAMPLE 400062	0	6"	VERY SOFT (10YR 6/8) BROWNISH YELLOW MATERIAL IS VERY LT WEIGHT & Vesicular Appearance of "ICE CREAM" and somewhat clay-like LOW TO MED PLASTICITY VERY moist		0.0	Microtip - 0 ppm Alpha = 30 cpm By = 2500 cpm
9.5	0916 10-6-94 SAMPLE 400063	0	6"	BRIGHT WHITE W/ GREENISH TINT MATERIAL that looks like and has consistency of "LARD" or "Vegetable Shortening" MOIST		0.0	Microtip = 0 ppm Alpha = 10 cpm By = 1000 cpm
	0916 10-6-94 400064 ARCHIVE	0	12"	SAA ↓ Bottom 4 inches of this spoon contained VERY SOFT (2.5Y 7/2) LT GRAY material "silty clay-like" cohesive but not sticky VERY moist		0.0	Microtip = 0 ppm Alpha = 10 cpm By = 1000 cpm
10.0	SAMPLE 400065						
10.5		SHELBY		SHELBY TUBE ATTEMPTED AT 10.0-12.5 FT BUT NO RECOVERY	N/A		Microtip = Alpha = By =

— SHELBY

2 FT RECOVERY ON SPOON MATERIAL COULD HAVE HEAVED UP INTO SPOON #6

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES: Samples 400064 and 400065 were from spoon that had 2 FT RECOVERY — 400064 is from 9.5-10.5' (Archive) 400065 is from 10.0-10.5' (Sample) material heaved into spoon.

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

FD-F-3081 (8/18/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11358

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 SHELBY TUBE				NO RECOVERY	N/A		Microtip = Alpha = N/A By =
11.0				NO RECOVERY	N/A		Microtip = Alpha = N/A By =
11.5					N/A		Microtip = Alpha = N/A By =
12.0					N/A		Microtip = Alpha = N/A By =
12.5				BOTTOM OF BORING @ 12.5'	N/A		Microtip = Alpha = N/A By =
							Microtip = Alpha = By =
							Microtip = Alpha = By =
							Microtip = Alpha = By =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

FS-F-3681 (8/18/93)

0002277

FEMP

LITHOLOGIC LOG

CONTROL NO.:			
PROJECT NAME: See pg 1			PROJECT NO.:
BORING NUMBER: 11491	COORDINATES:	RELATED FAL NO.s:	
SURFACE ELEVATION:	GROUNDWATER LEVEL:	DATE:	TIME:	DATE STARTED: 12-14-94
GEOLOGIST: Ken Geiger	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED: 12-15-94
WATER USED DURING DRILLING: 230 gal	DRILLING CONTRACTOR: Alliance	DRILLING EQUIPMENT: ReTuSonic	DRILLER / HELPER: See pg 1

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.5	12-14-94 1345 402620	NA	6	DRY STIFF 10YR 4/4 DARK YELLOWISH BROWN SILTY CLAY WITH SOME GRAVEL (10%) MEDIUM IN SIZE, TRACE OF SAND, MED. PLASTICITY, MOIST	CL	3.0	BR 5 PID 7.2
8.0	12-14-94 1345 402620		6	SAA	CL	3.0	BR NA PID 7.2
8.5	12-14-94 1355 402620		6	SAA	CL	3.0	BR PID 7.3
9.0	12-14-94 1355 402621		6	SAA	CL	3.0	BR PID 7.4
9.5	12-14-94 1355 402621		6	STIFF 10YR 4/6 DARK YELLOWISH BROWN SILTY CLAY, ~~BROWN~~ DARK GRAY MOTTLING, SOME LARGE GRAVEL, TRACE OF SAND, MED. PLASTICITY, MOIST RG 12-14-94	CL	1.5	BR 5 PID 8.9
10.0	12-14-94 1355 402621		6	SAME AS 9.0-9.5 FT WITH SOME LARGER GRAVEL FRAGMENTS	CL	1.0	BR 5 PID 9.2
	12-14-94 1355 402621	NA	6	SAME AS 9.5-10.0	CL	1.5	BR 10 PID 7.8

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	See pg 1		
BETA / GAMMA			

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: See pg 1

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-14-94

GEOLOGIST: Ken Geiger

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 34,200 Gallons

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brower / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5	12-14-94 1400 402621	NA	6	PRELIMINARY SAME AS 10.0 - 10.5 FT	CL	1.5	BR 5 PID 7.9
11.0	12-14-94 1400 402621		6	SAME AS 10.5 - 11.0 FT	CL	1.5	BR 15 PID 8.0
11.5	12-14-94 1400 402621		6	Very Stiff SAME AS 11.0 - 11.5 FT	CL	3.0	BR 25 PID 9.5
12.0	12-14-94 1405 402621		6	SAME AS 11.5 - 12.0 FT	CL	2.5	BR 20 PID 9.8
12.5 CLAY BREAK	12-14-94 1405 402621		6	Stiff 10 YR 3/1 VERY DARK GREY, ~~SOFT~~ SANDY CLAY WITH APPROX 15% RED TO YELLOW ORANGE, SLIGHTLY PLASTIC, SLIGHTLY MOIST	CL	1.0	BR 40 PID 10.0
13.0	12-14-94 1410 402622		6	Med. Stiff SAME AS 12.5 - 13.0	CL	0.5	BR 25 TCLP 402633 TOTAL 402633 PID 14.4 Kd 402639
13.5	12-14-94 1415 402622	NA	6	Stiff SAME AS 13.5 - 14.0	CL	1.0	BR 25 TCLP 402635 TOTAL 402634 Kd 402637 PID 14.0

INSTRUMENT	BACKGROUND	DATE	TIME
PID	9.5	12-14-94	1410
ALPHA	NA	NA	NA
BETA / GAMMA	40 cpm	12-14-94	1410

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3661

G:/WPSC/94-776.DRW (11-23-9

6521

BORING

WELL NUMBER: 11363

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Layne

DRILLING METHOD: Hollow Stem Auger Mobile B59

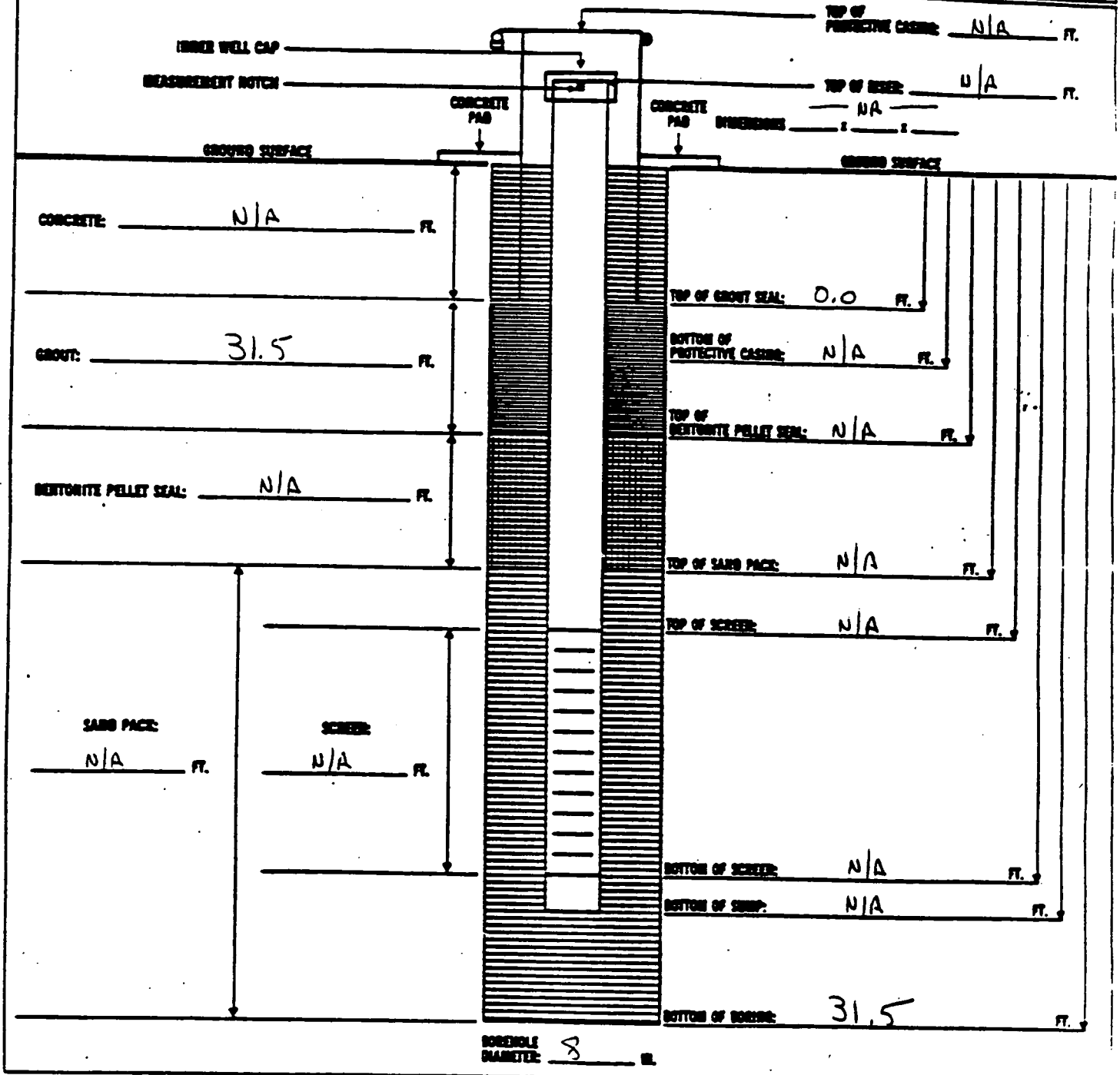
DATES OF INSTALLATION: 10-10-94

WATER LEVEL (ft.): N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay / APPROX 1-1½ BAG (50 lb BAG)

BENTONITE PELLETS (5-GALLON BUCKETS):

DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.

VOLUME OF WATER USED DURING DRILLING: N/A GAL.

RISER MATERIAL: N/A

VOLUME OF WATER USED FOR GROUT HYDRATION: 20 gal. per 1 50 lb BAG GAL.

RISER WALL THICKNESS: N/A

TYPE OF SAND PACK: N/A

SCREEN MATERIAL: N/A

DRILLING CASING DIAMETER: N/A IN.

RISER/SCREEN DIAMETER: [illegible] IN.

SCREEN SLOT SIZE: [illegible]

SCREEN TYPE: [illegible]

DEPTH OF CENTRALIZERS: [illegible]

000280

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRUI DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-93

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-93

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5	1257	2	6"	SAA @ 21.5-22.0 WET			Microtip = 1.8 ppm Alpha = 0 cpm By = 150 cpm
25.0		2	2"	(2.5Y 5/6) LT OLIVE BROWN Silty Clay w/ plant material? MOIST		NOT TAKEN	Microtip = Alpha = SAA By =
25.5			3"	Same as 24.5-25.0' WET	N/A		
↑ POOR 26.0		4	0"	NR	N/A		Microtip = Alpha = N/A By =
26.5	1307	1	6"	Same as 24.5-25.0' "Sludge"	N/A		Microtip = 0 ppm Alpha = 0 cpm By = 150 cpm
27.0		1	2"	SAA	N/A		Microtip = Alpha = SAA By =
			0"	NR	N/A		
↑ POOR 27.5		2	0"	NR	N/A		Microtip = Alpha = N/A By =
SHELBY 28.0	1318	SHELBY		NO RECOVERY	N/A		Microtip = Alpha = N/A By =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0							
SH. 2.84					N/A		Microtip = Alpha = N/A By =
21.5		SHELBY					
	1239	3	6"	SAME BLACK SLUDGE MATERIAL AS DESCRIBED ABOVE — LOOSE IT IS A "SILTY SAND" TYPE MATERIAL W/ SCATTERED COARSE GRAINS and SOME SMALL ANGULAR "PEBBLES" VERY WET	N/A		Microtip = 0 ppm Alpha = 0 cpm By = 150 cpm
22.0							
		1	6"	JUST NOTICED THIS HAS A METALLIC-LIKE SHEEN AND MAY BE MAGNETIC BY THE WAY THE SILT SIZE GRAINS LINE UP ON MY GLOVE	N/A		Microtip = Alpha = SAA By =
22.5							
		3	4"	SAA	N/A		Microtip = Alpha = SAA By =
23.0							
	1250	2	6"	SAA	N/A		Microtip = Alpha = SAA By =
23.5							
		2	5"	SAA	N/A		Microtip = Alpha = SAA By =
24.0							
		3	0"	NR	N/A		Microtip = Alpha = N/A By =
24.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

990283

Samples collected per ASTM Standard Penetration test. * Soil colors identified by Munsell Color Chart

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
28.0							
28.5		SHELBY			N/A		Microtip = Alpha = N/A By =
29.0		SHELBY			N/A		Microtip = Alpha = N/A By =
29.5		SHELBY			N/A		Microtip = Alpha = N/A By =
30.0		SHELBY			N/A		Microtip = Alpha = N/A By =
	1325	6	6"	Same as 24.5-25.0 "BLACK SLUDGE"			Microtip = 0 ppm Alpha = 0 cpm By = 120 cpm
30.5		5	6"	TR 10-10-94 ~~SAA~~ (3 inches of Clay) 30 inch MOIST		.75	Microtip = Alpha = SAA By =
31.0		6	2"	SOFT (2.5Y 5/6) LT OLIVE BROWN SILTY CLAY MED TO HIGH PLASTICITY		.5	Microtip = Alpha = SAA By =
			3"	NR			
31.5				BOTTOM OF BORING	N/A		

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: @ 31.5'

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5	1220 10-10-94 SAMPLE 400091	2	6"	SAA		0.0	Microtip = .8 ppm Alpha = 0 cpm By = 250 cpm
18.5		2	6"	SAA		0.0	Microtip = Alpha = SAA By =
19.0		2	3"	SAA		0.0	Microtip = Alpha = SAA By =
			0"	NR	N/A		
19.5	1315 10-10-94 ARCHIVE 400045	SHELBY		Approx. 9" RECOVERY ON SHELBY Appears to be "Black Sludge" material as described above WET	N/A		Microtip = TOO Alpha = WET By = TO READ
20.0		SHELBY			N/A		Microtip = Alpha = N/A By =
20.5		SHELBY			N/A		Microtip = Alpha = N/A By =
21.0		SHELBY			N/A		Microtip = Alpha = N/A By =

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: Samples 400091 & 400090 are representative of majority of material @ depths beginning from 14.5' so it was archived.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 SHELBY				BOTTOM OF SHELBY TUBE APPEARED TO BE "BLACK SLUDGE" TYPE MATERIAL WET	N/A		Microtip = 0 ppm Alpha = too WET By = 30,000 cpm
14.5	1203 10-10-94 ARCHIVE 400089	3 SHELBY	2"	LOOSE (2.5Y N/2) BLACK "Sludge type material" Granular fine to coarse grain WET		0.0	Microtip = 4.2 ppm Alpha = [illegible] By = 10,000 cpm
15.0		3	0"	NR	N/A		Microtip = Alpha = N/A By =
15.5		3	0"	NR	N/A		Microtip = Alpha = N/A By =
↑ PODN #9 16.0	1211 10-10-94 SAMPLE 400090	2	2"	Same as 14.5'-15.0' WET		0.0	Microtip = 1.2 ppm Alpha = 20 cpm By = 200 cpm
16.5			4"	MED STIFF (2.5Y 4/5) LT OLIVE BROWN Silty Clay Moist		.5	
		2	5"	SAA		1.5	Microtip = Alpha = SAA By =
17.0			1"	Black Sludge same as 14.5-15.0' WET			
17.5		2	0"	NR	N/A		Microtip = Alpha = N/A By =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: [illegible] because it resembled material in bottom of Shelby Tube. Also = 400090

000285

* Samples collected per ASTM Standard Practice [illegible]

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5	0923	4	6"	VERY SOFT (2.5Y 4/2) DARK GRAYISH BROWN Silty Clay w/ Some fine grain Sand and some coarse Sand, traces of black particles (Fly ash?) and yellow particles HIGH PLASTICITY VERY MOIST		0.0	Microtip = 0 ppm Alpha = 40 cpm By = 110,000 cpm
11.0		12	6"	SAA VERY MOIST		.5	Microtip = Alpha = SAA By =
11.5		10	2"	SAA VERY MOIST		.25	Microtip = SAA Alpha = By =
12.0			0"	NR	N/A		
12.5	0932 10-10-94 ARCHIVE 400044	SHELBY		17" approx. recovery on SHELBY TOP OF TUBE — Appeared to be Same as 10.5-11.5'	N/A		Microtip = Alpha = N/A By =
13.0		SHELBY			N/A		Microtip = Alpha = N/A By =
13.5		SHELBY			N/A		Microtip = Alpha = N/A By =
14.0		SHELBY			N/A		Microtip = Alpha = N/A By =

↑ poor = 5

SHELBY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

000286

* Samples collected per ASTM Standard Penetration test. * Colors identified by Munsell Soil Color Chart

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0							
↑ Pooh #5 7.5		9	0"	NR	N/A		Microtip = Alpha = N/A By =
	0907	0	6"	VERY SOFT (2.5Y 5/4) LI OLIVE BROWN Silty clay w/ trace fine sand and coarse sand/small gravels MED — HIGH PLASTICITY VERY MOIST		<2.5	Microtip = 0 ppm Alpha = 0 cpm By = 80 cpm
8.0		2	5"	SAA		SAA	Microtip = Alpha = SAA By =
8.5		5	0"	NR	N/A		Microtip = Alpha = N/A By =
↑ Pooh #6 9.0	0915	3	6"	SAA VERY MOIST		0.0	Microtip = 0 ppm Alpha = 10 cpm By = 200 cpm
9.5		4	6"	SAA, but some fluorescent yellow granules VERY MOIST		0.0	Microtip = 0 ppm Alpha = 10 cpm By = 35,000 cpm
10.0		5	0"	NR	N/A		Microtip = Alpha = N/A By =
↑ 10.5 Pooh #7							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart

FEMP

LITHOLOGIC LOG

CONTROL NO.:			
PROJECT NAME: Pre Design Investigation			PROJECT NO.:
BORING NUMBER: 11491	COORDINATES:	RELATED FAL NO.: NA	
SURFACE ELEVATION: —	GROUNDWATER LEVEL:	DATE:	TIME:	DATE STARTED: 12-14-94
GEOLOGIST: Kim Gaskill	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED: 12-14-94
WATER USED DURING DRILLING: 34200 gal	DRILLING CONTRACTOR: Alliance	DRILLING EQUIPMENT: Rotosonic	DRILLER / HELPER: L. Brown B. Gaiam

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
4.0	12-14-94 1330 402614	NA	6	VERY STIFF SILTY CLAY 10 YR 4/2 DARK YELLOWISH BROWN MOTTLED WITH LIGHT GRAY, LITTLE (OR FEW) SMALL TO FINE GRAVEL, MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	2.0	BZ 5 PID 7.4
4.5	12-14-94 1330 402614		6	SAME AS 3.5 - 4.0 FT	CL	2.25	BZ 15. PID 7.4
5.0	12-14-94 1330 402614		6	SAME AS 4.0 - 4.5 FT	CL	2.5	BZ 25 PID 8.1
5.5	12-14-94 1330 402620		6	SAME AS 4.5 - 5.0 FT	CL	2.5	BZ 40 PID 8.4
6.0	12-14-94 1340 402620		6	SAME AS 5.0 - 5.5 FT	CL	2.5	BZ 35 PID 8.3
6.5	12-14-94 1340 402620		6	SAME AS 5.5 - 6.0 FT WITH MORE DEFINED MOTTLING	CL	2.5	BZ 30 PID 8.1
	12-14-94 1340 402620	NA	6	SAME AS 6.0 - 6.5 FT	CL	2.5	BZ 5 PID 8.0

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	See Pg 1		
BETA / GAMMA			

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3991

G:/WPSC/94-776.DRW (11-23-9

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I&A OU2 Pre Design Investigation

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.: NA

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME:

DATE STARTED: 12-14-94

GEOLOGIST: Ken Grigsby

GROUNDWATER LEVEL: | DATE: | TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 34 ~~200~~ gallons

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: L. Brown B. Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.5	12-14-94 1315 402619	NA	6	Stiff 10YR 4/4 Dark Yellowish Brown Silty Clay with a trace of fine gravel with roots, medium plasticity, slightly moist	CL	1.5	BZ 60 cpm PID 6.6
1.0	12-14-94 1315 402619	NA	6	Same as 0.0 - 0.5	CL	1.5	BZ 60 cpm PID 6.8
1.5	12-14-94 1315 402619	NA	6	Very Stiff 10YR 4/4 Dark Yellowish Brown Silty Clay with slightly larger gravel fragments, root fragments, med. plasticity, slightly moist	CL	2.5	BZ 50 cpm PID 7.4
2.0	12-14-94 1315 402619	NA	6	Stiff 10YR 3/4 Dark Yellowish Brown Silty Clay with slightly larger gravel fragments, roots, med. plasticity, slightly moist	CL	1.0	BZ 60 PID 7.7
2.5	12-14-94 1315 402619	NA	6	10YR 3/3 Dark Brown Same lithology as 1.5 - 2.0	CL	1.0	BZ 80 PID ~~80~~ 7.7 KG 12-14-94
3.0	12-14-94 1315 402619	NA	6	Same as 2.0 - 2.5	CL	1.0	BZ 70 PID 7.7
	12-14-94 1330 402619	NA	6	Same as 2.0 - 2.5 with virtually no gravel	CL	1.0	BZ 10 cpm PID 7.2

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	4.9 ppm	12-14-94	
ALPHA	NA	NA	NA
BETA / GAMMA	40 cpm		

NOTES: Above

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3891

G:/WPSC/94-778.DRW (11-23-94)

000289

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	0836 10-10-94	6	5"	STIFF (2.5Y 5/6) LT OLIVE BROWN sandy Clay DRY		1.5	Microtip = 0 ppm Alpha = 20 cpm Bg = 100-200 cpm
0.5			1"	~~VERY~~ LOOSE (2.5Y N/2) BLACK TL 10-10-94 "ORGANIC SILT — TOPSOIL-LIKE" FLY ASH ? DRY TO MOIST		0.0	
1.0		6	5"	SAA DRY TO MOIST			Microtip = Alpha = SAA Bg =
1.5		3	0"	NR	N/A		Microtip = Alpha = N/A Bg =
2.0	0843 10-10-94 SAMPLE 400087	4	6"	MED STIFF (10 YR 4/8) RED "Clay-like" smooth-no grain-consistency of modeling clay MED TO HIGH PLASTICITY MOIST		.75	Microtip = 0 ppm Alpha = 30 cpm Bg = 1,000 cpm
2.5	0843 10-10-94 ARCHIVE 400088	1	6"	SAA MOIST		.25	Microtip = 0 ppm Alpha = 30 cpm Bg = 1,000 cpm
3.0		6	3"	Same sandy CLAY AS 0-.5' DRY		2.5	Microtip = 0 ppm Alpha = 30 cpm Bg = 1,000 cpm
			0"	NR			
3.5	0852	4	6"	MED STIFF (2.5Y 5/4) LT. OLIVE BROWN Silty Clay w/ trace sand and (coarse sand/small gravels) MED TO HIGH PLASTICITY MOIST		.75	Microtip = 0 ppm Alpha = 40 cpm Bg = 50 cpm

POON #1

POON #2

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 ppm	10-10-94	0834
ALPHA	20 cpm	10-10-94	0834
BETA/GAMMA	50-60 cpm	10-10-94	0834

NOTES: Drillers Helper is Rick Beebe

USCS symbols to be filled in after analysis results per CRU1 instructions

000230

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5		6	2"	SAA VERY MOIST		.5	Microtip = 0 ppm
			0"	NR	N/A		Alpha = 40 cpm
4.0							By = 50 cpm
		6	0"	NR	N/A		Microtip =
							Alpha = N/A
↑ 200N #3 4.5							By =
	0857	3	1"	RED "CLAY-LIKE" STUFF SAA 1.5-2.5'		0.0	Microtip - 0 ppm
			5"	Same Silty clay as 3.0-3.5' MOIST		.75	Alpha = 0 cpm
5.0							By = 100 cpm
		6	2"	SAA		.5	Microtip - 0 ppm
			0"	VERY MOIST			Alpha = 0 cpm
5.5							By = 100 cpm
		9	0"	NR	N/A		Microtip =
							Alpha = N/A
↑ 200N #4 6.0							By =
	0903	5	6"	SOFT (2.5Y 5/4) LT OLIVE BROWN Silty clay w/ trace sand MED TO HIGH PLASTICITY MOIST		.5	Microtip = 0 ppm
							Alpha = 40 cpm
6.5							By = 60 cpm
		5	3"	SAA		.75	Microtip =
			0"	NR	N/A		Alpha = SAA
7.0							By =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

6521

BORING

WELL NUMBER: 11361

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

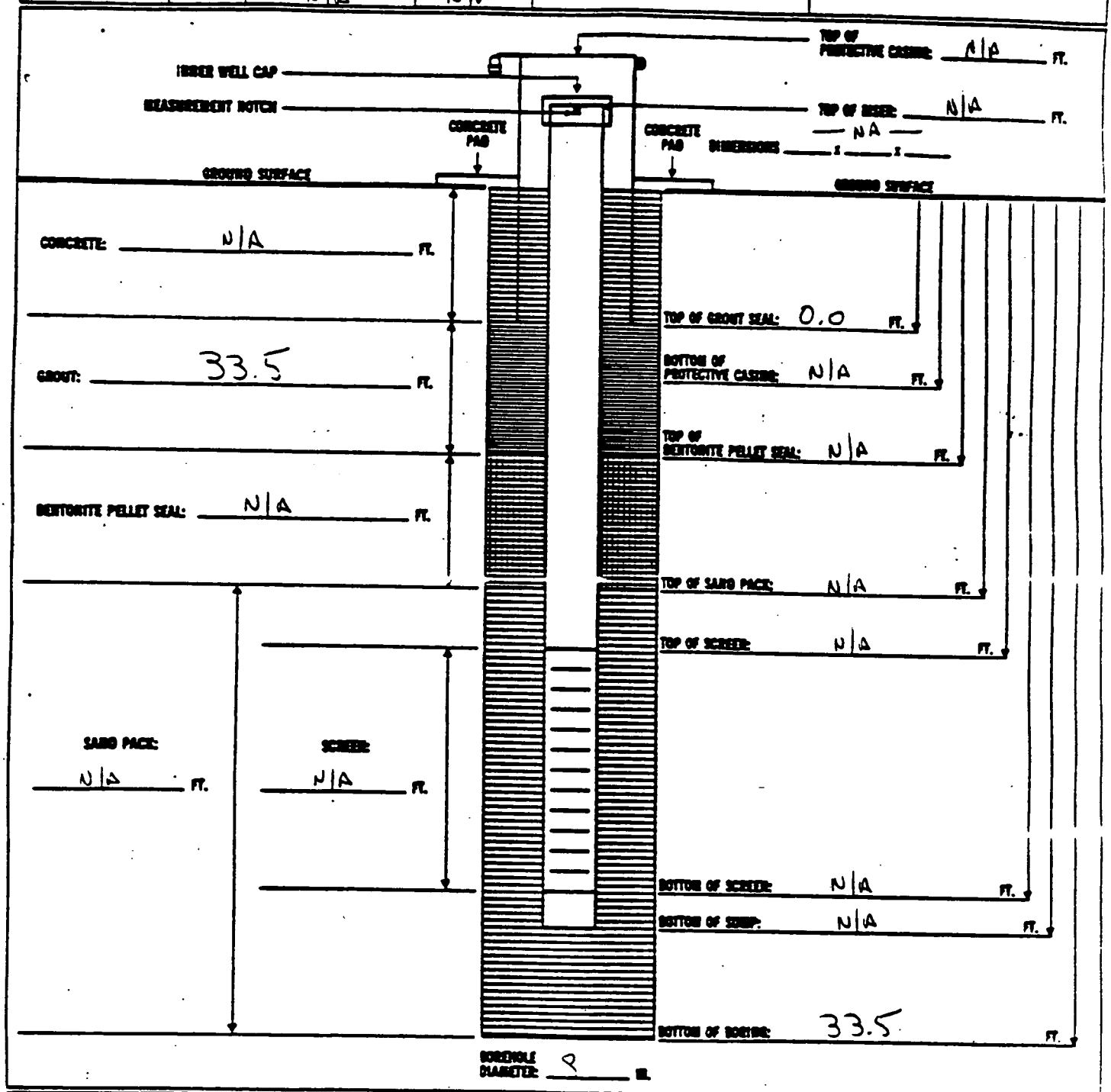
PROJECT NAME: CRU1 Dewatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Layne

DRILLING METHOD: Hollow Stem Auger Mobile B59

DATES OF INSTALLATION:	WATER LEVEL (BLS)	DATE:	RELATED FAL NUMBERS:	CHECKED BY:
10-11-94	N/A	N/A		



TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS):	DEEPEST TEMPORARY DRILLING CASING PENETRATION:
Volclay / 1-1½ BAGS (50 lb. BAG) APPROX.		N/A FT.

VOLUME OF WATER USED DURING DRILLING:	RISER MATERIAL:	VOLUME OF WATER USED FOR GROUT HYDRATION:
N/A GAL	N/A	20 gal. per BAG (50 lb.) GAL

RISER WALL THICKNESS:	TYPE OF SAND PACK:	SCREEN MATERIAL:	DRILLING CASING DIAMETER:
N/A	N/A	N/A	N/A IN.

RISER/SCREEN DIAMETER:	SCREEN SLOT SIZE:	SCREEN TYPE:	COUNT OF CENTRALIZER(S):

000292

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
28.0	1011	0 RAMMER	6"	VERY SOFT (7.5 YR 3/4) STRONG BROWN "PUDDING-LIKE" MATERIAL W/ SOME red clay-like material, black "flyash" and brownish yellow paste-like material mixed IN WET		0.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 500 cpm
29.0		0 WEIGHT OF	16"	SAA WET		0.0	microtip = Alpha = SAA βγ =
29.5	1018 10-11-94 ARCHIVE 400040	SHELBY		RECOVERY on SHELBY TUBE ~~29.0"~~ 10-12-94	N/A		microtip = 0 ppm Alpha = 10 cpm βγ = 800 cpm
30.0		SHELBY			N/A		microtip = Alpha = N/A βγ =
30.5		SHELBY			N/A		microtip = Alpha = N/A βγ =
31.0		SHELBY			N/A		microtip = Alpha = βγ =
31.5		SHELBY		BOTTOM OF SHELBY	N/A		microtip = 0 ppm Alpha = 10 cpm βγ = 800 cpm

SHELBY TUBE

REC. INCHES OF SHELBY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA		PAGE	

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRUI DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
31.5 – 32.0	1025	0 (WEIGHT OF HAMMER)	6"	VERY SOFT (10YR 6/4, 5/4, 4/4) LT yellowish BROWN TO DK yellowish BROWN "SWIRLS" — material has consistency of "LARD" Greasy/shiny MOIST TO WET		0.0	Microtip = 0 ppm Alpha = 0 cpm βγ = 700 cpm
32.0 – 32.5	1025 10-11-94 SAMPLE 400097	0	6"	SAA		0.0	Microtip = Alpha = SAA βγ =
32.5 – 33.0	1025 10-11-94 SAMPLE 400098	0	6"	SAA		0.0	Microtip = Alpha = SAA βγ =
33.0 – 33.5		0	6"	SAA, but w/ "Flyash" and pockets of very white soft creamy "paste-like" material WET		0.0	Microtip = Alpha = SAA βγ =
				BOTTOM OF BORING @ 33.5' ?			Microtip = Alpha = βγ =
							Microtip = Alpha = βγ =
							Microtip = Alpha = βγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: With material heaving into spoons and spoons dropping 2 FT @ a time. I cannot be absolutely sure on the depths in this boring because of the soft material — There may be ±ft to 1 FT PLAY

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0							
21.5		SHELBY			N/A		Microtip = Alpha = N/A Bγ =
22.0		SHELBY			N/A		Microtip = Alpha = N/A Bγ =
22.5		SHELBY			N/A		Microtip = Alpha = N/A Bγ =
23.0		SHELBY		BOTTOM OF TUBE	N/A		Microtip = 0 ppm Alpha = 50 cpm Bγ = 3,000 cpm
23.5	0950	0 WEIGHT OF HAMMER	6"	SAA mixed with "Flyash" MOIST TO WET		0.0	Microtip = 0 ppm Alpha = 10 cpm Bγ = 1,500 cpm
24.0	0950 10-11-94 SAMPLE 400094	0 WEIGHT OF HAMMER	6"	SAA, but mixed with (2.5Y N/5) GRAY material that has appearance of and consistency of thick oatmeal cereal" MED GRAIN SIZE PARTICLES WET		0.0	Microtip = Alpha = SAA Bγ =
24.5	0950 10-11-94 ARCHIVE 400095	0 WEIGHT	6"	SAA		0.0	Microtip = Alpha = SAA Bγ =

— SHELBY TUBE —

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			DAI —

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG.

PROJECT NAME: CRUI DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
24.5 – 25.0	0955	0	6"	SAA but a mixture of red and gray materials described above—Not much gray material "PUDDING LIKE CONSISTENCY" WET		0.0	Microtip = 0 ppm Alpha = 10 cpm Bγ = 1000 cpm
25.0 – 25.5		0	6"	VERY SOFT (10YR 6/8) BROWNISH YELLOW "PASTE-LIKE" material mixed in with materials described above WET		0.0	Microtip = 0 ppm Alpha = 10 cpm Bγ = 1000 cpm
25.5 – 26.0		0	12"	All of the above described materials mixed in — "Black" SWIRLS" (FILCH?) (Extra 6" heaved into spoon) WET		0.0	Microtip = 0 ppm Alpha = 10 cpm Bγ = 800 cpm
26.0 – 26.5	1003	0 / 6" of hammer weight	6"	SAA, but materials are in stratographic-type layers Colors are: Gray, Dark Brown, LT Brown, Black and strong brown (reddish)		0.0	Microtip = Alpha = SAA Bγ =
26.5 – 27.0		0	6"	Material is "paste-like" SAA		0.0	Microtip = Alpha = SAA Bγ =
27.0 – 27.5		0	6"	SAA		0.0	Microtip = Alpha = SAA Bγ =
27.5 – 28.0	1003 10-11-94 SAMPLE 400096	0	6"	SAA		0.0	Microtip = Alpha = SAA Bγ =

2 FT RECOVERY — 02 THIS SPOON

INSTRUMENT	BACKGROUND	DATE	TIME	NOTES:
PID	SEE			
ALPHA		FIRST		
BETA/GAMMA			PAGE	

Blows collected per ASTM Standard Penetration test. • All colors identified on

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0							
14.5		0 WEIGHT OF HAMMER	6"	SAA		0.0	microtip = Alpha = SAA Bγ =
15.0		0 WEIGHT OF HAMMER	6"	SAA		0.0	microtip = Alpha = SAA Bγ =
15.5	0922	0 WEIGHT OF HAMMER ONLY	6"	SAA Moist to wet		0.0	microtip = 0 ppm Alpha = 30 cpm Bγ = 1,000 cpm
16.0		0 WEIGHT OF HAMMER ONLY	6"	SAA		0.0	microtip = Alpha = SAA Bγ =
16.5		0 WEIGHT OF HAMMER ONLY	6"	SAA		0.0	microtip = Alpha = SAA Bγ =
17.0		0 WEIGHT OF HAMMER ONLY	6"	SAA, but material is "breaking" Not as "sticky" same "flyash particles" more similar to a silty clay. Moist		0.0	microtip = 0 ppm Alpha = 30 cpm Bγ = 1,500 cpm
17.5	0926	0	6"	SAA			microtip = Alpha = SAA Bγ =

2 FT RECOVERY ON THIS SPOON

2 FT RECOVERY ON THIS SPOON

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			DRILL

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program	PROJECT NUMBER: 10.03.06
BORING NUMBER: 11361	COORDINATES: / RELATED FAL NUMBERS:
SURFACE ELEVATION:	GROUNDWATER LEVEL: N/A; DATE: N/A; TIME: N/A; DATE STARTED: 10-11-94
GEOLOGIST: A. Thea Laune	GROUNDWATER LEVEL: N/A; DATE: N/A; TIME: N/A; DATE COMPLETED: 10-11-94
WATER USED DURING DRILLING: N/A	DRILLING CONTRACTOR: Alliance; DRILLING EQUIPMENT: Mobile B59 Augers; DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5		0 OF HAMMER	6"	SAA		0.0	microtip = 0 ppm Alpha = 30 cpm βγ = 2,000 cpm
18.0		0 WEIGHT OF	3"	SAA		0.0	microtip = Alpha = SAA βγ =
18.5	0732	0 OF HAMMER	6"	SAA			microtip = 0 ppm Alpha = 30 cpm βγ = 1,800 cpm
19.0		0	3"	SAA			microtip = Alpha = SAA βγ =
19.5		0 WEIGHT	0"		N/A		microtip = N/A Alpha = N/A βγ =
20.0		0	0"		N/A		microtip = Alpha = N/A βγ =
20.5	0944 10-11-94 12cm.c 400039	SHELBY		Full RECOVERY ON SHELBY TUBE	N/A		microtip = Alpha = N/A βγ =
21.0							

2 FT RECOVERY ON THIS SPOON

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA	000298		

NOTES:

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
7.0							
7.5		4	0"	NR	N/A		Microtip = Alpha = N/A Bγ =
8.0	0853	0	2"	"Flyash material"? mixed w clay and "insulation material" (As described above) WET		0.0	Microtip = 0 ppm Alpha = 0 cpm Bγ = 1,500 cpm
8.5		0 (WEIGHT OF HAMMER ONLY)	0"	NR	N/A		Microtip = Alpha = N/A Bγ =
9.0		0 (WEIGHT OF HAMMER ONLY)	0"	NR	N/A		Microtip = Alpha = N/A Bγ =
9.5	0858	1	2"	Same as 7.5-8.0' WET		0.0	Microtip = 0 ppm
			4"	VERY SOFT (10R 5/8) RED "Clay-like material" VERY STICKY HIGH PLASTICITY MOIST - WET		0.0	Alpha = 30 cpm Bγ = 800 cpm
10.0	0858 10-11-94 ARCHIVE 400093	1	6"	SAA		.25	Microtip = Alpha = SAA Bγ =
10.5		1	3"	SAA		.25	Microtip = Alpha = SAA Bγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: Did not take a sample for 8.0-9.0 because this is same material sampled in another boring

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/a

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5	0905 10-11-94 ARCHIVE			FULL RECOVERY ON SHELBY TUBE	N/A		Microtip = Alpha N/A βγ =
11.0	400038	SHELBY					
11.5		SHELBY			N/A		Microtip = Alpha N/A βγ =
12.0		SHELBY			N/A		Microtip = Alpha N/A βγ =
12.5		SHELBY			N/A		Microtip = Alpha N/A βγ =
13.0		SHELBY		BOTTOM OF SHELBY	N/A		Microtip = 0 ppm Alpha = 0 cpm βγ = 600 cpm
13.5	0910	0 WEIGHT OF HAMMER	6"	SAA		0.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 1,000 cpm
14.0		0 WEIGHT OF HAMMER	6"	SAA		0.0	Microtip = Alpha = SAA βγ =

SHELBY TUBE

2 FT RECOVERY ON THIS SPOON

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: NOTE: MATERIAL VERY SOFT AND SPOON SINKING EASILY 2 FT RECOVERY [illegible] combination of spoon slipping and heaving into bottom of spoon

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	0822	9	6"	LOOSE (2.5Y 5/4) LT OLIVE BROWN Silty, clayey sand LOW TO NO PLASTICITY DRY		1.5	microtip = 1.4 ppm Alpha = 20 cpm βγ = 250 cpm
0.5		9	2"	SAA		0.0	microtip = 1.4 ppm Alpha = 20 cpm βγ = 300 cpm
1.0			4"	LOOSE (2.5Y N/2) Black "TOPSOIL-LIKE" but powders between fingers, some fine grains (FLYASH?) DRY		0.0	
1.5		6	0"	NR	N/A		microtip = Alpha = N/A βγ =
2.0	0829 10-11-94 Archive 400092	7	6"	Same as .75 – 1.0 FT DRY TO MOIST		0.0	microtip = 1.6 ppm Alpha = 20 cpm βγ = 2000 cpm
2.5		1	6"	SAA WET		0.0	Microtip = 1.6 ppm Alpha = 40 cpm βγ = 15,000 cpm
3.0		?	0"	NR	N/A		microtip = Alpha = N/A βγ =
3.5	0836	1	6"	SAA, but denser MOIST TO WET		.25	microtip = 2.6 ppm Alpha = 10 cpm βγ = 4,500 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID (MOISTURE IN AIR)	9.9 ppm	10-11-94	0820
ALPHA	0-10 cpm	10-11-94	0820
BETA/GAMMA	120 cpm	10-11-94	0820

NOTES: Driller's Helper is Rick Beebe

USCS symbols to be inserted on Log after Geotech analysis per CRU1 instructions

000301

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

GEOLOGIST: A. Thea Laune

SURFACE ELEVATION:	GROUNDWATER LEVEL:	DATE:	TIME:	DATE STARTED:
	N/A	N/A	N/A	10-11-94
GEOLOGIST:	**GROUNDWATER LEVEL:**	**DATE:**	**TIME:**	**DATE COMPLETED:**
A. Thea Laune	N/A	N/A	N/A	10-11-94

WATER USED DURING DRILLING:	DRILLING CONTRACTOR:	DRILLING EQUIPMENT:	DRILLER/HELPER:
N/A	Alliance	Mobile B59 Auger	Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5		1	4"	MED STIFF (2.5Y 5/4) LT OLIVE BROWN Silty Clay w/ some Sand MED plasticity VERY MOIST		1.0	Microtip = 2.6 ppm Alpha = 10 cpm Bγ = 500 cpm
			1"	Fibrous "insulation-type" material DRY	N/A		
4.0		5	0"	NR	N/A		Microtip = N/A Alpha = Bγ =
4.5	0941	6	6"	"Insulation-type material" mixed in w/ clay and "black flyash"? MOIST		.5	Microtip = 1.4 ppm Alpha = 10 cpm Bγ = 1,100 cpm
5.0		2	0"	NR	N/A		Microtip = Alpha N/A Bγ =
5.5		1	0"	NR	N/A		Microtip = Alpha N/A Bγ =
6.0	0846	1	6"	Flyash? and Clay mixed together WET TO MOIST		.25	Microtip = 0.9 ppm Alpha = [illegible] Bγ = 1000 cpm
6.5		1	6"	MED STIFF (2.5Y 5/4) LT OLIVE BROWN Clay High plasticity MOIST		.75	Microtip = 0.9 ppm Alpha = 10 cpm Bγ = 200 cpm
7.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

6521

BORING

WELL NUMBER: # 11362

FEMP WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Layne

DRILLING METHOD:

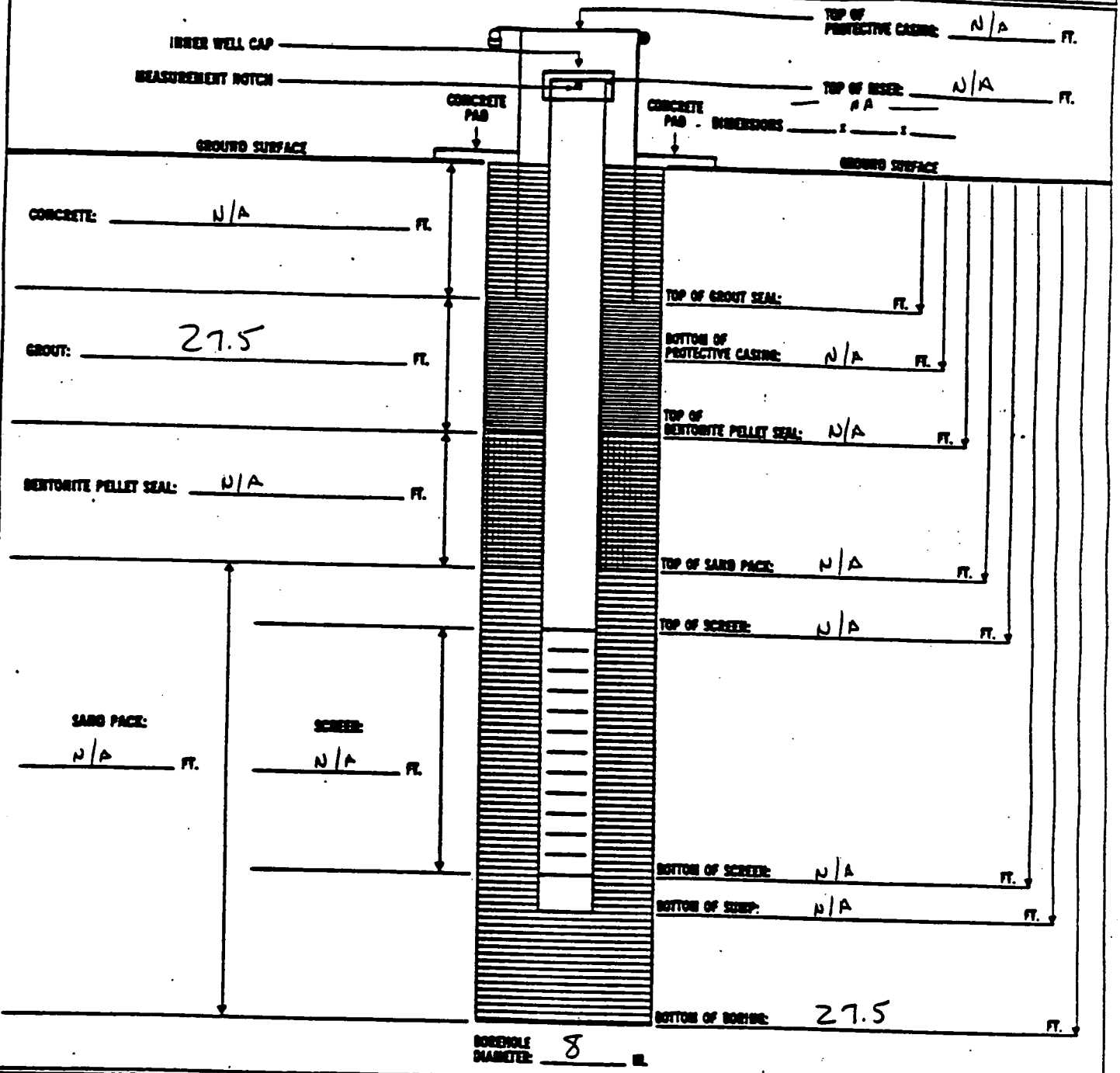
DATES OF INSTALLATION: 10-6-94 thru 10-7-94

WATER LEVEL (R.L): N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay / Approx 42 Bags (50 lb Bags)	BENTONITE PELLETS (5-GALLON BUCKETS): N/A		DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A		VOLUME OF WATER USED FOR GROUT HYDRATION: 20 gal. per 50 lb bag GAL
RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A IN.
RISER/SCREEN DIAMETER: N/A IN.	SCREEN SLOT SIZE: N/A IN	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A FT.

FS-F-3684 (9/10/93)

000303

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program	PROJECT NUMBER: 10.03.06
BORING NUMBER: 11362	COORDINATES: / RELATED FAL NUMBERS:
SURFACE ELEVATION: / GROUNDWATER LEVEL: N/A / DATE: N/A / TIME: N/A	DATE STARTED: 10-6-94
GEOLOGIST: A. Thea Laune / GROUNDWATER LEVEL: N/A / DATE: N/A / TIME: N/A	DATE COMPLETED: 10-7-94
WATER USED DURING DRILLING: N/A / DRILLING CONTRACTOR: Alliance / DRILLING EQUIPMENT: Mobile B59 Auger	DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0 ← SHELBY					N/A		Microtip = Alpha = N/A By =
21.5	TL 10-7-94	SHELBY					
	~~1120~~ 1110 10-7-94 SAMPLE 400084	0 ONLY	6"	VERY SOFT (2.5Y 7/2) LT GRAY INTERSPERSED AND (2.5Y 4/4) OLIVE BROWN MATERIAL THAT HAS APPEARANCE & CONSISTENCY OF "ICE CREAM" HOMOGENOUS/VESICULAR WET		0.0	Microtip = 10.8 ppm Alpha = 0 cpm By = 700 cpm
22.0	1110 10-7-94 Archive 400085	0 WEIGHT OF RODS	6"	SAA WET		0.0	Microtip = 12.9 ppm Alpha = 0 cpm By = 700 cpm
22.5		0	6"	SAA, BUT (2.5Y 8/2) WHITE & less water		0.0	Microtip - 14.4 ppm Alpha = 0 cpm By = 700 cpm
↑ SPOON 23.0				LAST THREE INCHES DENSER AND DRIER SOME FINE SAND GRAINS BREAKS LIKE A SILTY CLAY VERY MOIST		0.0	
SHELBY TUBE → 23.5	1120 10-7-94 Archive 400042	SHELBY		MATERIAL EXPOSED AT BOTTOM OF SHELBY TUBE IS (2.5Y 5/4) OLIVE BROWN "WAXY" MATERIAL LT. WEIGHT BREAKS LIKE A "SILTY CLAY" MOIST	N/A		Microtip = 75.4 ppm Alpha = 10 cpm By = 500 cpm
24.0		SHELBY			N/A		Microtip = ~~7.5~~ TL 10-7-94 Alpha = N/A By =
24.5		SHELBY			N/A		Microtip = Alpha = N/A By =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program	PROJECT NUMBER: 10.03.06
BORING NUMBER: 11362	COORDINATES: / RELATED FAL NUMBERS:
SURFACE ELEVATION:	GROUNDWATER LEVEL: N/A; DATE: N/A; TIME: N/A; DATE STARTED: 10-6-94
GEOLOGIST: A. Thea Laune	GROUNDWATER LEVEL: N/A; DATE: N/A; TIME: N/A; DATE COMPLETED: 10-7-94
WATER USED DURING DRILLING: N/A	DRILLING CONTRACTOR: Alliance; DRILLING EQUIPMENT: Mobile B59 Auger; DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5					N/A		Microtip = Alpha = N/A By =
25.0		SHELBY					
25.5		SHELBY		SEE DESCRIPTION ABOVE	N/A		Microtip = Alpha = N/A By =
	1135 10-7-94	0	6"	VERY SOFT (2.5Y 6/4) LT YELLOWISH BROWN Waxy - "paste-like" material breaks like a silty clay MOIST		0.0	Microtip = 9.2 ppm Alpha = 10 cpm By = 500 cpm
26.0		0	6"			0.0	Microtip = 7.5 ppm Alpha = 10 cpm By = 500 cpm
26.5		0	6"			0.0	Microtip = 5.7 ppm Alpha = 10 cpm By = 500 cpm
27.0	1135 10-7-94 ARCHIVE SAMPLE 400056	0	5"	VERY SOFT (7.5YR 4/6) STRONG BROWN SAA WET		0.0	Microtip = 8.5 ppm Alpha = 10 cpm By = 500 cpm
27.5			1"	VERY SOFT (2.5Y N6/) GRAY SAA MOIST		0.0	
				BOTTOM OF BORING @ 27.5			Microtip = Alpha = N/A By =
28.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

FS-F-3681 (8-18-93)

6521

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11362

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-6-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-7-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0							
		0	6"	SAA WET		0.0	Microtip = Alpha = SAA By =
14.5							
		0	6"	SAA WET		0.0	Microtip = Alpha = SAA By =
↑ spoon 15.0							
	0855 10-7-94	0	6"	SAA WET		0.0	Microtip - 3.5-4.2 ppm Alpha = 0 cpm By = 500 cpm
15.5							
	0855 10-7-94 SAMPLE 400043	0	6"	VERY SOFT (10YR 6/3) PALE BROWN MATERIAL HAS CONSISTENCY OF "COOKIE DOUGH" VERY FINE GRAINS? STICKY & LT. WEIGHT VERY MOIST → WET		0.0	Microtip - Alpha = SAA By =
16.0							
		0	6"	MATERIAL IS THE SAME AS 13.0' to 15.5' FT DEPTH		0.0	Microtip = 17.3-23.5 ppm Alpha = 20 cpm By = 500 cpm
16.5							
		0	6"	THIS INTERVAL MATERIAL IS MIXTURE OF ABOVE DESCRIBED RED MATERIAL AND PALE BROWN MATERIAL "SWIRLED" TOGETHER WET		0.0	Microtip = Alpha = SAA By =
↑ spoon 17.0							
		0	6"	SAA		0.0	Microtip = 42.0 ppm Alpha = 0 cpm By = 500 cpm
17.5							

WEIGHT OF RED ONLY

WEIGHT OF SAMPLING RODS ONLY

INSTRUMENT	BACKGROUND	DATE	TIME
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ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

FS-F-3681 8-18-93

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11362

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-6-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-7-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
17.5 – 18.0		0 ONLY		SAA		0.0	Microtip = 46.0 ppm Alpha = 0 cpm By = 500 cpm
18.0 – 18.5		0 OP RODS		SAA		0.0	Microtip = 92.0 cpm Alpha = 0 cpm By = 500 cpm
18.5 – 19.0		0 WEIGHT		SAA		0.0	Microtip = 92.0 ppm Alpha = 0 cpm By = 500 cpm
19.0 – 19.5	0938 10-7-94 ARCHIVE 400041	SHELBY		BOTTOM OF SHELBY TUBE APPEARS TO BE THE SAME MATERIAL AS ABOVE APPROX. 31" RECOVERY VERY WET	N/A		Microtip - NOT TAKEN Alpha = 0 cpm By = 1500 cpm
19.5 – 20.0		SHELBY			N/A		Microtip = Alpha = N/A By =
20.0 – 20.5		SHELBY			N/A		Microtip = Alpha = N/A By =
20.5 – 21.0		SHELBY			N/A		Microtip = Alpha = N/A By =

SPOON

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

FS-F-3681 (8/18/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME:	CRU1 DeWatering Excavation Evaluation Program
PROJECT NUMBER:	10.03.06
BORING NUMBER:	11362
COORDINATES:	
RELATED FAL NUMBERS:	
SURFACE ELEVATION:	—
GROUNDWATER LEVEL:	N/A
DATE:	N/A
TIME:	N/A
DATE STARTED:	10-6-94
GEOLOGIST:	A. Thea Layne
GROUNDWATER LEVEL:	N/A
DATE:	N/A
TIME:	N/A
DATE COMPLETED:	10-7-94
WATER USED DURING DRILLING:	N/A
DRILLING CONTRACTOR:	Alliance
DRILLING EQUIPMENT:	Mobile B59 Auger
DRILLER/HELPER:	MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0	1700 10-6-94 SAMPLE 400078	5	6"	VERY SOFT (2.5YR 5/8) RED Material with "pudding like Consistency" Smooth — no grains WET		0.0	Microtip = Alpha = SAA By =
↑ SPOON #6 7.5	SPOON DROPPED W/ HAMMER WT	0	PRESSURE	NO RECOVERY ON FIRST ATTEMPT DRILLERS WERE CONTINUOUSLY SAMPLING AND HAD ALREADY DROPPED NEXT SPOON TO INTERVAL BELOW THEREFORE WE COULD NOT MAKE A SECOND			Microtip = Alpha = N/A By =
8.0		0	BLOWS OR HYDRAULICS	ATTEMPT FOR SAMPLING THIS INTERVAL			Microtip = Alpha = N/A By =
8.5		0	ONLY - NO	FROM RIG			Microtip = Alpha = N/A By =
↑ SPOON #7 9.0	1710 10-6-94 SAMPLE 400079	0	even	VERY SOFT (7.5Y 3/2) DARK BROWN "Clay-like" material with red pudding like pockets VERY STICKY WET		0.0	Microtip = 0 ppm Alpha = 0 cpm By = 900 cpm
9.5	1710 10-6-94 Archive 400080	0	without	SAA		0.0	Microtip = Alpha = SAA By =
10.0	SPOON DROPPED UNDER ITS	0	own weight	hammer weight applied SAA		0.0	Microtip = Alpha = SAA By =
10.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

FS-F-3681 (8/18/93)

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11362

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-6-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-7-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

NEW DAY

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5	0840 10-7-94	SHELBY		NO RECOVERY SHELBY TUBE WET WITH BLACK LIQUID ON INSIDE OF TUBE	N/A		Microtip = Alpha = N/A By =
11.0		SHELBY			N/A		Microtip = Alpha = N/A By =
11.5		SHELBY			N/A		Microtip = Alpha = N/A By =
12.0		SHELBY			N/A		Microtip = Alpha = N/A By =
12.5		SHELBY			N/A		Microtip = Alpha = N/A By =
13.0		SHELBY			N/A		Microtip = Alpha = N/A By =
13.5	0849 10-7-94 SAMPLE 400041	0 ROD ONLY	6"	VERY SOFT (2.5YR 4/8) RED "PUDDING LIKE" MATERIAL NO VISIBLE GRAINS WET		0.0	Microtip = 3.0-5.7 ppm Alpha = 20 cpm By = 500 cpm
14.0	0849 10-7-94 Archive 400082	0 WEIGHT OF	6"	SAA		0.0	Microtip = 3.0-5.7 ppm Alpha = 20 cpm By = 500 cpm

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

FS-F-3681 (9-18-93)

000209

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11362

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-6-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-7-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	1640 10-6-94	4	6"	1ST SPOON — NO RECOVERY 2ND SPOON HAD RECOVERY BELOW STIFF (2.5Y 6/6) OLIVE YELLOW sandy, clayey silt ROOTLETS DRY		1.5	Microtip = 0.0 ppm Alpha = 10 cpm By = 120 cpm
0.5		6	6"	SAA TL 10-6-94		3.5	Microtip = Alpha = SAA By =
1.0		8	2"	~~STIFF~~ SOFT (2.5Y 6/6) OLIVE YELLOW Sandy clay low to med plasticity SLIGHTLY MOIST		.5	Microtip = Alpha = SAA By =
1.5 (Poon #1 #2)			0"	NR			
2.0	1647 10-6-94 SAMPLE 400074	12	6"	MED STIFF (2.5Y N2/) BLACK VERY SILTY TYPE MATERIAL, HOMOGENOUS, LIKE A POTTING SOIL CONSISTENCY (COAL ASH?) NON-PLASTIC Slightly MOIST TO DRY		.75	Microtip = 0 ppm Alpha = 10 cpm By = 200 cpm
2.5	1647 10-6-94 Archive 400075	12	6"	SAA		.5	Microtip = Alpha = SAA By =
3.0 (Poon #3)		8	1"	STIFF (2.5Y 5/6) LT OLIVE BROWN sandy, silty clay MED PLASTICITY DRY		1.0	Microtip = Alpha = SAA By =
3.5		5	6"	LOOSE (2.5Y N2/) BLACK "Silty-like" looks like coal ash (same as 1.5-2.0' INTERVAL BUT) MOIST		0.0	Microtip = 0.0 ppm Alpha = 10 cpm By = 200 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA/GAMMA			

NOTES: Driller Helpers: Rick Beebe, Bill Montanye
USCS symbols to be filled in after analyses

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

FS-F-3681 (8/18/93)

LITHOLOGIC LOG

PROJECT NAME:	CRUI DeWatering Excavation Evaluation Program
PROJECT NUMBER:	10.03.06
BORING NUMBER:	11362
COORDINATES:	
RELATED FAL NUMBERS:	
SURFACE ELEVATION:	
GROUNDWATER LEVEL:	N/A
DATE:	N/A
TIME:	N/A
DATE STARTED:	10-6-94
GEOLOGIST:	A. Thea Layne
GROUNDWATER LEVEL:	N/A
DATE:	N/A
TIME:	N/A
DATE COMPLETED:	10-7-94
WATER USED DURING DRILLING:	N/A
DRILLING CONTRACTOR:	Alliance
DRILLING EQUIPMENT:	Mobile B59 Augers
DRILLER/HELPER:	MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5		3	6"	SAA BUT pockets of (10R 4/8) RED powdery substance MOIST		.25	Microtip= Alpha= SAA By=
4.0		8	3"	SAA MOIST		0.0	Microtip= Alpha= SAA By=
↑ Spoon #4 4.5				NR			
	1658	3	6"	SAA BUT Solid pieces of small coal-like material and becoming more granular MOIST		.75	Microtip= 0 ppm Alpha= 10 cpm By= 200 cpm
5.0		3	6"	SAA BUT less dense MOIST		0.0	Microtip= Alpha= SAA By=
5.5		3	6"	SAA MOIST		0.0	Microtip= Alpha= SAA By=
↑ Spoon #5 6.0	1700 10-6-94 400076 SAMPLE	3	6"	SAA BUT More granular and this material has a metallic luster or sheen WET		0.0	Microtip= 0 ppm Alpha= 0 cpm By= 170 cpm
6.5	1700 10-6-94 Archive 400077	5	6"	SAA WET		0.0	Microtip= Alpha= SAA By=
7.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

FS-F-3681 (8/18/93)

000311

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11354

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-6-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-6-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5	1235 10-6-94 SAMPLE 400071	5	6"	SOFT (2.5Y N/2) BLACK resembles "sandy clay", med. coarse grain, white pockets of waxy looking substance and also some "clayey sand" looking material MOIST TO WET		.5	Microtip = 0 ppm Alpha = 0 cpm By = 1,000 cpm
14.5 – 15.0	1235 10-6-94 Archive 400072	5	6"	"Clay-Sand" type mixture in shades of black to grays N/2 → N/8 MOIST TO WET		2.0	Microtip = 0 ppm Alpha = 0 cpm By = 1,000 cpm
15.0 – 15.5	1235 10-6-94 Archive 400073	8	6"	SAA – med. coarse granular material w/ fines, also white granules in substance scattered throughout — piece of plastic — MOIST TO WET		.75	Microtip = 0 ppm Alpha = 0 cpm By = 800 cpm
				BOTTOM OF BORING @ 15.5 FT			Microtip = Alpha = By =
							Microtip = Alpha = By =
							Microtip = Alpha = By =
							Microtip = Alpha = By =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES: 2 Archives were taken from 14.5–15.5 to obtain adequate amt. of material.

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

BORING

WELL NUMBER: #11354

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU 1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Layne

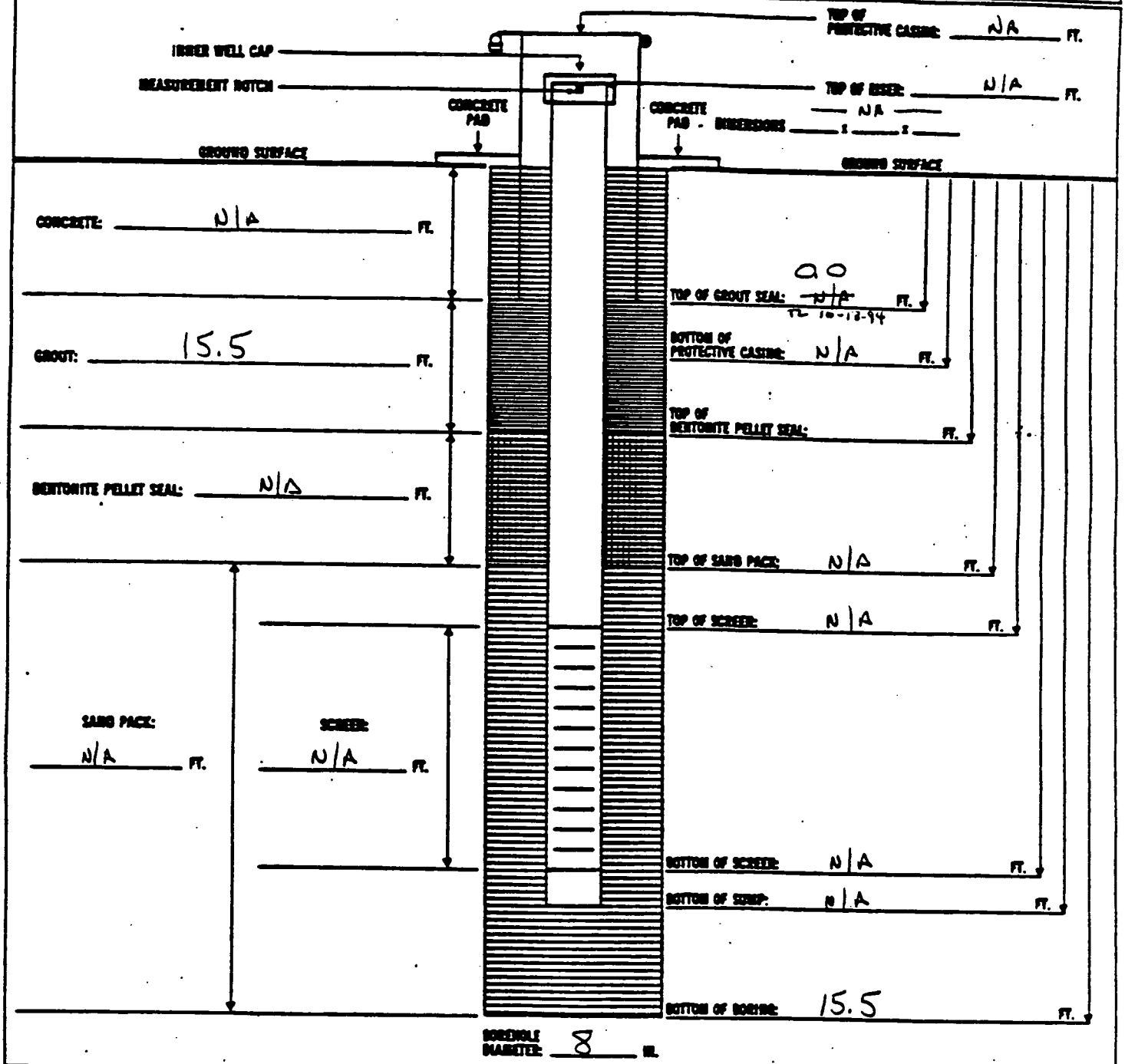
DRILLING METHOD: Hollow Stem Auger Mobile B59

DATES OF INSTALLATION:

WATER LEVEL (ft.): DATE:

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay / Approx. 1 BAG (50 lbs)	BENTONITE PELLETS (5-GALLON BUCKETS): N/A		DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.
VOLUME OF WATER USED DURING DRILLING: N/A GAL	RISER MATERIAL: N/A		VOLUME OF WATER USED FOR GROUT HYDRATION: 20 gal. per 50 lb BAG GAL
RISER WALL THICKNESS: N/A	TYPE OF SAND PACK: N/A	SCREEN MATERIAL: N/A	DRILLING CASING DIAMETER: N/A IN.
RISER/SCREEN DIAMETER: N/A IN.	SCREEN SLOT SIZE: N/A IN.	SCREEN TYPE: N/A	DEPTH OF CENTRALIZER(S): N/A FT.

FS-F-3684 (9/10/93)

6521

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

Page of

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11354

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-6-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-6-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0		8	6"	SAA		1.0	Microtip = 0 ppm Alpha = 10 cpm By = 900 cpm
↑ SPOON #5 7.5	1212 10-6-94 SAMPLE 400029	SHELBY		FULL RECOVERY			Microtip = Alpha = N/A By =
8.0							
8.5		SHELBY					Microtip - Alpha = N/A By =
9.0		SHELBY					Microtip - Alpha = N/A By =
9.5		SHELBY					Microtip = Alpha = N/A By =
10.0		SHELBY		BOTTOM OF SHELBY TUBE HAS SAME MATERIAL AS ABOVE 1.5-7.5'			Microtip = 0.0 Alpha = 50 cpm By = 5000 cpm
10.5	1220 10-6-94 SAMPLE 400068	1	6"	VERY SOFT (2.5Y 4/2) DARK GRAYISH BROWN Material looks like clay but has "pudding like" Consistency — granular, fine to med. coarse — trace of angular coarse grains/ small pebbles. Mottled w/ Red material WET		0.0	Microtip = 0 ppm Alpha = 0 cpm By = 2,000 cpm

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES: meter readings for SHELBY Reflect only characteristics of material at bottom of TUBE

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

000314

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11354

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-6-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-6-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5	1220 10-6-94 SAMPLE 400069	5	6"	SAA WET		0.0	Microtip = 0 ppm Alpha = 0 cpm By = 4,500 cpm
11.0	1220 10-6-94 SAMPLE 400070	8	6"	LOOSE (2.5Y N/6) GRAY, and additional shades of gray — Silty, Sand-type material, med. coarse grain and some white powdery/waxy type substance NONPLASTIC Slighty MOIST		~~2.25~~ ft 10-10-94	Microtip = 0 ppm Alpha = 0 cpm By = 4,500 cpm
11.5 (SPOON #6)	1228 10-6-94 SAMPLE 400030	SHELBY		Recovery on SHELBY			Microtip = Alpha = By =
12.0		SHELBY					Microtip = Alpha = By =
12.5		SHELBY					Microtip = Alpha = By =
13.0		SHELBY					Microtip = Alpha = By =
13.5		SHELBY		Readings from EXPOSED MATERIAL AT BOTTOM OF TUBE			Microtip = 0 ppm Alpha = 0 cpm By = 1,000 cpm
14.0							

TUBE — SHELBY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES: No Archive was taken for material @ 10.0–11.0' because there was not enough material.

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

6521

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11354

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-6-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-6-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	1140 10-6-94	10	6"	VERY STIFF (2.5 Y 5/6) LT OLIVE BROWN Sandy, clayey Silt Rootlets DRY		3.25	Microtip = 0.0 ppm Alpha = 0 cpm By = 4,000 cpm
0.5	1140 10-6-94	30	3"	VERY STIFF (2.5Y 4/2) DARK GRAYISH BROWN Silty clay w/ SOME SAND GRAINS and small subangular pebbles LOW PLASTICITY Slightly MOIST		3.5	Microtip = 0.0 ppm Alpha = 0 cpm By = 7,000 cpm
1.0	1140 10-6-94	30	0"	NO RECOVERY	N/A		Microtip - Alpha = N/A By =
↑ SPOON #1 1.5	1150 10-6-94 400066 SAMPLE	12	6"	STIFF (2.5Y N7/) LT GRAY "Powdery type material that is waxy" "ASH?" Slightly cohesive - Very Lt. weight Breaks like a silt Slightly MOIST		1.25	Microtip - 0.0 ppm Alpha = 10 cpm By = 2,000 cpm
2.0	1150 10-6-94 400067 ARCHIVE	12	6"	SAA → Dry to a white powder (very, very fine) Slightly MOIST		1.75	Microtip = 0.0 ppm Alpha = 10 cpm By = 2,000 cpm
2.5	1150 10-6-94	14	4"	SAA Slightly MOIST		1.25	Microtip = 0.0 ppm Alpha = 10 cpm By = 2,000 cpm
↑ SPOON #2 3.0			NR	NR	N/A		
		8	6"	Same as 1.5-3.0' as described above		1.25	Microtip = 0.0 ppm Alpha = 10 cpm By = 800 cpm
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES: Drillers Helpers: Rick Beebe
Bill Montanye
USCS Symbols to be filled in after analyses

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Color Chart.

000316

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program	PROJECT NUMBER: 10.03.06
BORING NUMBER: 11354	COORDINATES:
RELATED FAL NUMBERS:	
SURFACE ELEVATION:	GROUNDWATER LEVEL: N/A; DATE: N/A; TIME: N/A; DATE STARTED: 10-6-94
GEOLOGIST: A. Thea Laune	GROUNDWATER LEVEL: N/A; DATE: N/A; TIME: N/A; DATE COMPLETED: 10-6-94
WATER USED DURING DRILLING: N/A	DRILLING CONTRACTOR: Alliance; DRILLING EQUIPMENT: Mobile B59 Auger; DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5		12	6"	SAA		2.25	Microtip = 0 ppm Alpha = 10 cpm By = 800 cpm
4.0		12	6"	SAA		1.75	Microtip = 0 ppm Alpha = 10 cpm By = 800 cpm
↑ Spoon #3 4.5		8	6"	STIFF (10YR 6/1) LIGHT GRAY - Same material as described above except for color		1.25	Microtip - 0 ppm Alpha = 20 cpm By = 1,500 cpm
5.0		9	6"	SAA		2.25	Microtip - 0 ppm Alpha = 20 cpm By = 1,500 cpm
5.5		9	3"	SAA		1.75	Microtip = 0 ppm Alpha = 20 cpm By = 1,500 cpm
↑ Spoon #4 6.0			NR	NR	N/A		
6.5		6	6"	SAA, with mottling of (2.5YR 5/2) weak red and white particles MOIST		1.25	Microtip = 0 ppm Alpha = 10 cpm By = 900 cpm
7.0		8	6"	SAA		.75	Microtip = 0 ppm Alpha = 10 cpm By = 900 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. • All colors identified by Munsell Color Chart.

000317

BORING

WELL NUMBER: #11358

6521

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

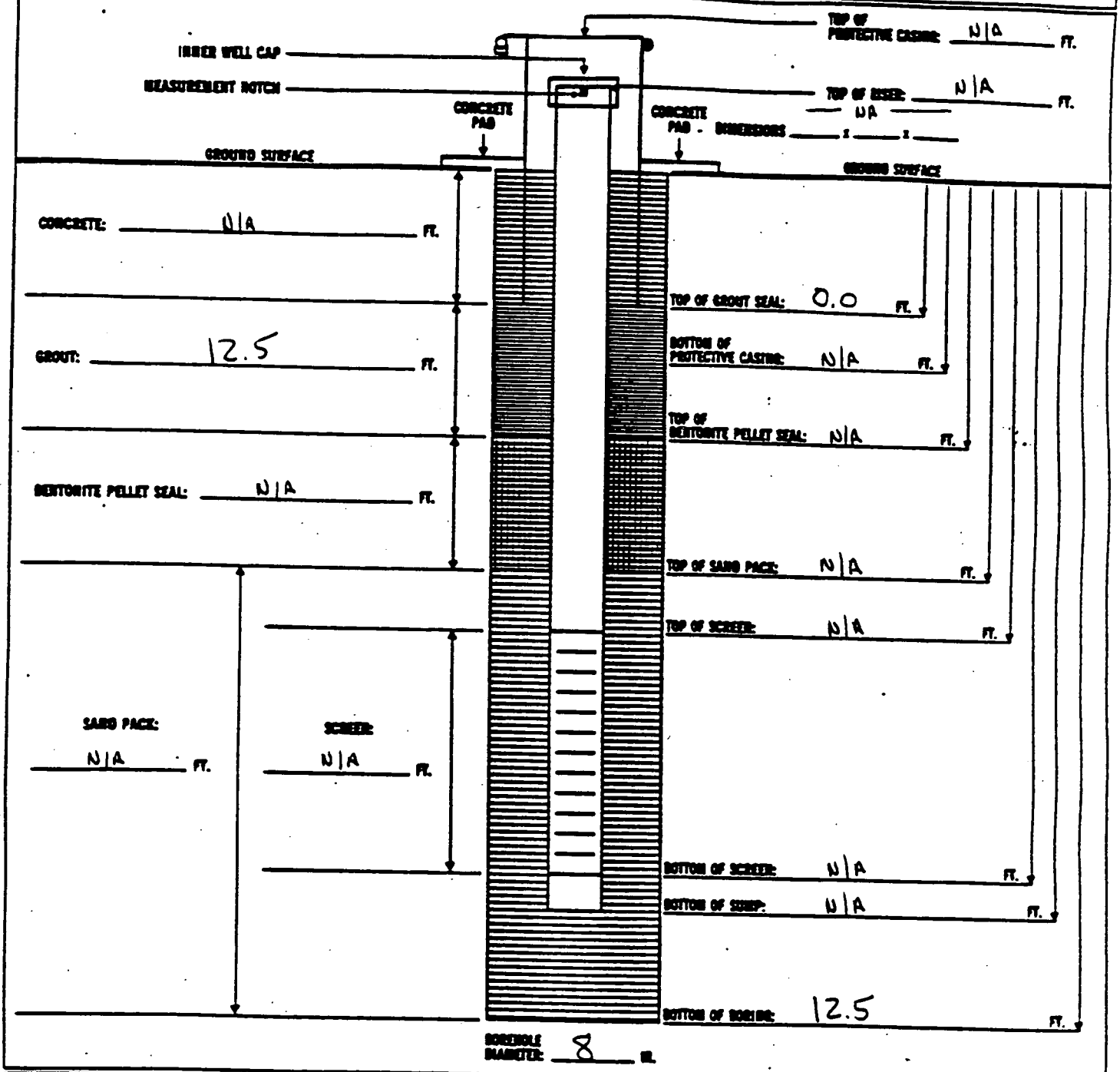
PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.02.06

GEOLOGIST: A. Thea Layne

DRILLING METHOD: Hollow Stem Auger Mobile B59

DATES OF INSTALLATION:	WATER LEVEL (R.):	DATE:	RELATED FAL NUMBERS:	CHECKED BY:
10-6-94	N/A	N/A		



TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS):	DEEPEST TEMPORARY DRILLING CASING PENETRATION:
Volclay / ½ BAG DRY + ½ WET approx. JL 10-19-94	N/A	N/A FT.

VOLUME OF WATER USED DURING DRILLING:	RISER MATERIAL:	VOLUME OF WATER USED FOR GROUT HYDRATION:
N/A GAL	N/A	20 gal. per 50 lb BAG GAL

RISER WALL THICKNESS:	TYPE OF SAND PACK:	SCREEN MATERIAL:	DRILLING CASING DIAMETER:
N/A	N/A	N/A	N/A IN.

RISER/SCREEN DIAMETER:	SCREEN SLOT SIZE:	SCREEN TYPE:	DEPTH OF CENTRALIZER(S):
N/A IN.	N/A IN.	N/A	N/A FT.

FS-F-3684 (8/10/93)

NOTE: ½ bag of dry grout was poured in hole to plug bottom and allowed several hours, then the grout mixture was tremied in. JL

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page 1 of

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED F&L NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	0822	9	6"	LOOSE (2.5Y 5/4) LT OLIVE BROWN Silty, clayey Sand. LOW TO NO PLASTICITY DRY		1.5	Microtip = 1.4 ppm Alpha = 20 cpm βγ = 250 cpm
0.5		9	2"	SAA		0.0	Microtip = 1.4 ppm
			4"	LOOSE (2.5Y N/2) Black "TOPSOIL-LIKE" but powders between fingers, some fine grains (FLYASH?) DRY		0.0	Alpha = 20 cpm βγ = 300 cpm
1.0		6	0"	NR	N/A		Microtip = Alpha = N/A βγ =
1.5	0829 10-11-94 Archive 400092	7	6"	Same as .75 – 1.0 FT DRY TO MOIST		0.0	Microtip = 1.6 ppm Alpha = 20 cpm βγ = 2000 cpm
2.0		1	6"	SAA WET		0.0	Microtip = 1.6 ppm Alpha = 40 cpm βγ = 15,000 cpm
2.5		2	0"	NR	N/A		Microtip = Alpha = N/A βγ =
3.0	0836	1	6"	SAA, but denser MOIST TO WET		.25	Microtip = 2.6 ppm Alpha = 10 cpm βγ = 4,500 cpm
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID (MOISTURE IN AIR)	9.9 ppm	10-11-94	0820
ALPHA	0-10 cpm	10-11-94	0820
BETA/GAMMA	120 cpm	10-11-94	0820

NOTES: Driller's Helper is Rick Beebe

USCS symbols to be inserted on Log after Geotech analysis per CRU1 instructions

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRUI DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5		1	4"	MED STIFF (2.5Y 5/4) LT OLIVE BROWN Silty Clay w/ some sand MED Plasticity VERY MOIST		1.0	Microtip = 2.6 ppm Alpha = 10 cpm
4.0			1"	Fibrous "insulation-type" material DRY	N/A		~~Bγ~~ = 500 cpm
4.5		5	0"	NR	N/A		Microtip = Alpha = N/A ~~Bγ~~ =
5.0	0841	6	6"	"Insulation-type material" mixed in w/ clay and "black flyash"? MOIST		.5	Microtip = 1.4 ppm Alpha = 10 cpm Bγ = 1,100 cpm
5.5		2	0"	NR	N/A		Microtip = Alpha = N/A Bγ =
6.0		1	0"	NR	N/A		Microtip = Alpha = N/A Bγ =
6.5	0846	1	6"	Flyash? and Clay mixed together WET TO MOIST		.25	Microtip = 0.9 ppm Alpha = [illegible] Bγ = 1000 cpm
7.0		1	6"	MED STIFF (2.5Y 5/4) LT OLIVE BROWN Clay High Plasticity MOIST		.75	Microtip = 0.9 ppm Alpha = 10 cpm Bγ = 200 cpm

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
7.0							
		4	0"	NR	N/A		Microtip = Alpha = N/A Bγ =
7.5	0853	0	2"	"Flyash material"? mixed w clay and "insulation material" (As described above) WET		0.0	Microtip = 0 ppm Alpha = 0 cpm Bγ = 1,500 cpm
8.0		0 (WEIGHT OF HAMMER ONLY)	0"	NR	N/A		Microtip = Alpha = N/A Bγ =
8.5		0	0"	NR	N/A		Microtip = Alpha = N/A Bγ =
9.0	0858	1	2"	Same as 7.5-8.0' WET		0.0	Microtip = 0 ppm
9.5			4"	VERY SOFT (10R 5/8) RED "Clay-like material" VERY STICKY HIGH PLASTICITY MOIST - WET		0.0	Alpha = 30 cpm Bγ = 800 cpm
10.0	0858 10-11-94 ARCHIVE #00093	1	6"	SAA		.25	Microtip = Alpha = SAA Bγ =
10.5		1	3"	SAA		.25	Microtip = Alpha = SAA Bγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: Did not take a sample on 9.0-9.5 because this is same material sampled in another BORING

000321

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRUI DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
10.5	0905 10-11-94 ARCHIVE			FULL RECOVERY ON SHELBY TUBE	N/A		Microtip = Alpha N/A βγ =
11.0	400038	SHELBY			N/A		microtip = Alpha N/A βγ =
11.5		SHELBY			N/A		microtip = Alpha N/A βγ =
12.0		SHELBY			N/A		microtip = Alpha N/A βγ =
12.5		SHELBY			N/A		microtip = Alpha N/A βγ =
13.0		SHELBY		BOTTOM OF SHELBY	N/A		Microtip = 0 ppm Alpha = 0 cpm βγ = 600 cpm
13.5	0910	0	6"	SAA		0.0	microtip = 0 ppm Alpha = 10 cpm βγ = 1,000 cpm
14.0		0	6"	SAA		0.0	microtip = Alpha = SAA βγ =

SHELBY TUBE

2 FT RECOVERY ON THIS SPOON

WEIGHT OF HAMMER

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA	000		PAGE

NOTES: NOTE: MATERIAL VERY SOFT AND SPOON SINKING EASILY 2 FT RECOVERY [illegible] Combination of Spoon slipping and heaving into bottom of spoon

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
14.0							
14.5		0 WEIGHT OF HAMMER	6"	SAA		0.0	Microtip = Alpha = SAA By =
15.0		0	6"	SAA		0.0	Microtip = Alpha = SAA By =
15.5	0922	0	6"	SAA MOIST TO WET		0.0	Microtip = 0 ppm Alpha = 30 cpm By = 1,000 cpm
16.0		0 WEIGHT OF HAMMER ONLY	6"	SAA		0.0	Microtip = Alpha = SAA By =
16.5		0	6"	SAA		0.0	Microtip = Alpha = SAA By =
17.0		0	6"	SAA, but material is "breaking" Not as "sticky" some "flyash particles" more similar to a silty clay MOIST		0.0	Microtip = 0 ppm Alpha = 30 cpm By = 1,500 cpm
17.5	0926	0	6"	SAA			Microtip = Alpha = SAA By =

2 FT RECOVERY ON THIS SPOON

2 FT RECOVERY ON THIS SPOON

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0		0 WEIGHT OF HAMMER	6"	SAA		0.0	microtip = 0 ppm Alpha = 30 cpm βγ = 2,000 cpm
18.0 – 18.5		0 WEIGHT OF HAMMER	3"	SAA		0.0	microtip = Alpha = SAA βγ =
18.5 – 19.0	0732	0 WEIGHT OF HAMMER	6"	SAA			microtip = 0 ppm Alpha = 30 cpm βγ = 1,800 cpm
19.0 – 19.5		0 WEIGHT OF HAMMER	3"	SAA			microtip = Alpha = SAA βγ =
19.5 – 20.0		0 WEIGHT	0"		N/A		microtip = N/A Alpha = N/A βγ =
20.0 – 20.5		0	0"		N/A		microtip = Alpha = N/A βγ =
20.5 – 21.0	0944 10-11-94 12cm x 5 400039	SHELBY		FULL RECOVERY ON SHELBY TUBE	N/A		microtip = Alpha = N/A βγ =

2 FT RECOVERY ON 1 THIN SPOON

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA		DAY	

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A

DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
21.0							
21.5		SHELBY			N/A		microtip = Alpha = N/A By =
22.0		SHELBY			N/A		microtip = Alpha = N/A By =
22.5		SHELBY			N/A		microtip = Alpha = N/A By =
23.0		SHELBY		✓ BOTTOM OF TUBE	N/A		microtip = 0 ppm Alpha = 50 cpm By = 3,000 cpm
23.5	0950	0 WEIGHT OF HAMMER	6"	SAA mixed with "Flyash" MOIST TO WET		0.0	Microtip = 0 ppm Alpha = 10 cpm By = 1,500 cpm
24.0	0950 10-11-94 SAMPLE 400094	0 WEIGHT OF HAMMER	6"	SAA, but mixed with (2.5Y N/5) GRAY material that has appearance of and consistency of a thick oatmeal cereal" MED GRAIN SIZE PARTICLES WET		0.0	microtip = Alpha = SAA By =
24.5	0950 10-11-94 ARCHIVE 400095	0 WEIGHT OF HAMMER	6"	SAA		0.0	microtip = Alpha = SAA By =

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			DAI

NOTES:

000325

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
24.5 – 25.0	0955	0	6"	SAA but a mixture of red and gray materials described above—Not much gray material "PUDDING LIKE CONSISTENCY" WET		0.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 1000 cpm
25.0 – 25.5		0	6"	VERY SOFT (10YR 6/8) BROWNISH YELLOW "PASTE-LIKE" material mixed in with materials described above WET		0.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 1000 cpm
25.5 – 26.0		0	12"	All of the above described materials mixed in — "Black" SWIRLS" (Filcin?) (Entire 6" heaved into spoon) WET		0.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 800 cpm
26.0 – 26.5	1003	0	6"	SAA, but materials are in stratographic-type layers Colors are: Gray, Dark Brown, LT Brown, Black and strong brown (reddish)		0.0	Microtip = Alpha = SAA βγ =
26.5 – 27.0		0	6"	Material is "paste-like" SAA		0.0	Microtip = Alpha = SAA βγ =
27.0 – 27.5		0	6"	SAA		0.0	Microtip = Alpha = SAA βγ =
27.5 – 28.0	1003 10-11-94 SAMPLE 400096	0	6"	SAA		0.0	Microtip = Alpha = SAA βγ =

2 FT RECOVERY — 1 OF THIS SPOON — WEIGHT OF HAMMER

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA	FIRST		
BETA/GAMMA			PAGE

NOTES:

000326

* Samples collected per ASTM Standard Penetration test. * All colors identified on "Munsell"

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
28.0	1011	0 HAMMER	6"	VERY SOFT (7.5 YR 3/4) STRONG BROWN "PUDDING-LIKE" MATERIAL W/ SOME red clay-like material, black "flyash" and brownish yellow paste-like material mixed IN WET		0.0	Microtip = 0 ppm Alpha = 10 cpm βγ = 500 cpm
29.0		0 WEIGHT OF	16"	SAA WET		0.0	microtip = Alpha = SAA βγ =
29.5	1018 10-11-94 ARCHIVE 400040	SHELBY		RECOVERY on SHELBY TUBE ~~29.0"~~ 10-12-94	N/A		microtip = 0 ppm Alpha = 10 cpm βγ = 800 cpm REF. INFO FROM BOTTOM OF SHELBY
30.0		SHELBY			N/A		microtip = Alpha N/A βγ =
30.5		SHELBY			N/A		microtip = Alpha N/A βγ =
31.0		SHELBY			N/A		microtip = Alpha = βγ =
31.5		SHELBY		BOTTOM OF SHELBY	N/A		microtip = 0 ppm Alpha = 10 cpm βγ = 800 cpm

SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA		PAGE	

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page 10 of

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11361

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-11-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-11-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.5	1025	0	6"	VERY SOFT (10YR 6/4, 5/4, 4/4) LT Yellowish BROWN TO DK Yellowish BROWN "SWIRLS" — material has consistency of "LARD" Greasy/shiny MOIST TO WET		0.0	Microtip = 0 ppm Alpha = 0 cpm βγ = 700 cpm
32.0	1025 10-11-94 SAMPLE 400097	0 (HAMMER)	6"	SAA		0.0	Microtip = Alpha = SAA βγ =
32.5	1025 10-11-94 SAMPLE 400098	0 (WEIGHT)	6"	SAA		0.0	Microtip = Alpha = SAA βγ =
33.0		0	6"	SAA, but w/ "Flyash" and pockets of very white soft creamy "paste-like" material WET		0.0	Microtip = Alpha = SAA βγ =
33.5				BOTTOM OF BORING @ 33.5' ?			Microtip = Alpha = βγ =
							Microtip = Alpha = βγ =
							Microtip = Alpha = βγ =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: With material heaving into spoons and spoons dropping 2 FT @ a time. I cannot be absolutely sure on the depths in this boring because of the soft material — There may be ±ft to 1 FT PLAY

000328

6521

BORING

WELL NUMBER: 11361

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU 1 Dewatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Layne

DRILLING METHOD: Hollow Stem Auger Mobile B59

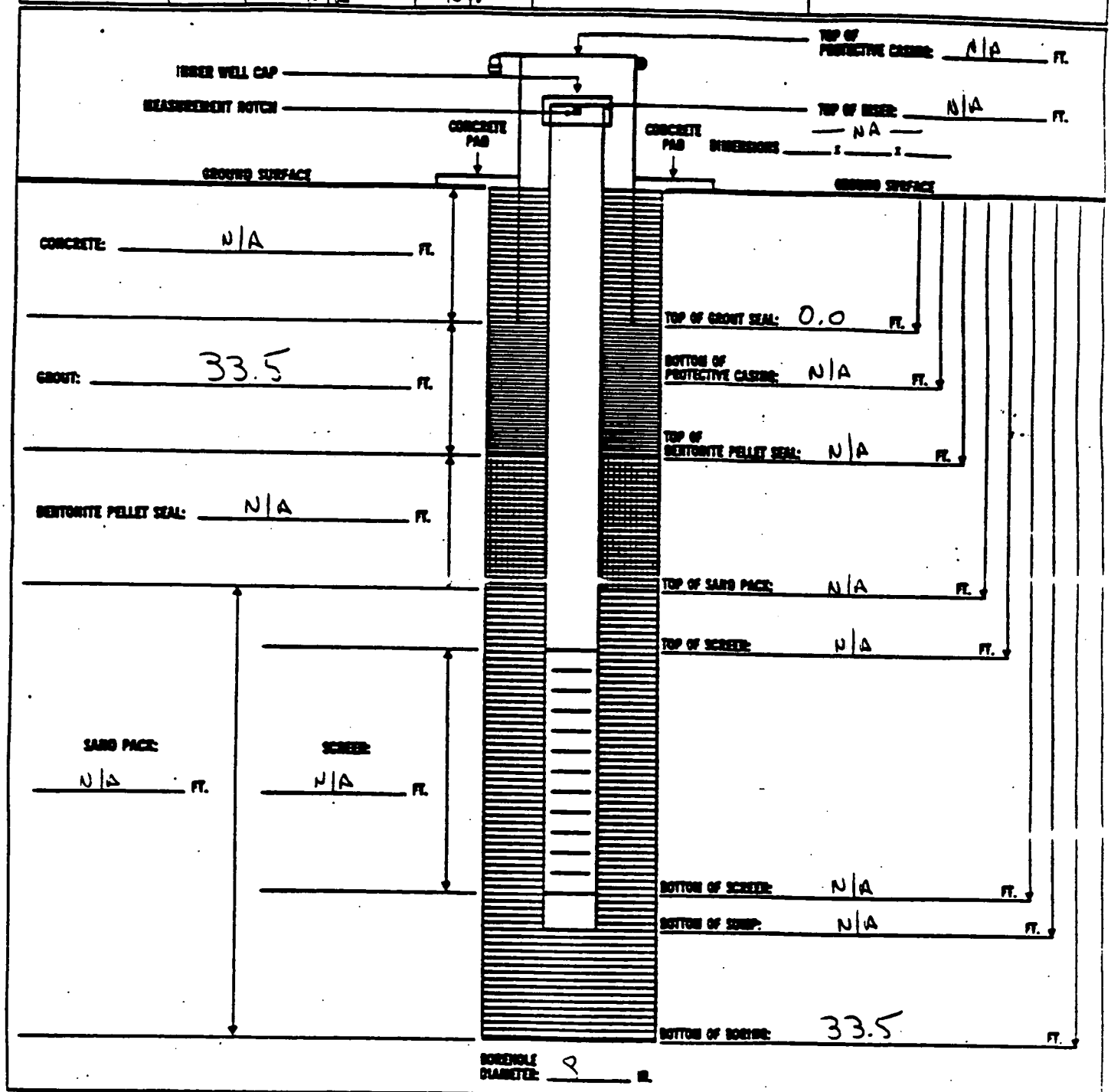
DATES OF INSTALLATION: 10-11-94

WATER LEVEL (ft.): N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay / 1-1½ BAGS (50 lb. BAG) APPROX.

BENTONITE PELLETS (5-GALLON BUCKETS):

DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.

VOLUME OF WATER USED DURING DRILLING: N/A GAL

RISER MATERIAL: N/A

VOLUME OF WATER USED FOR GROUT HYDRATION: 20 gal. per BAG (50 lb.) GAL

RISER WALL THICKNESS: N/A

TYPE OF SAND PACK: N/A

SCREEN MATERIAL: N/A

DRILLING CASING DIAMETER: N/A IN.

RISER/SCREEN DIAMETER:

SCREEN SLOT SIZE:

SCREEN TYPE:

NO. OF CENTRALIZER(S):

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page | of

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	0836 10-10-94	6	5"	STIFF (2.5Y 5/6) LT OLIVE BROWN Sandy Clay DRY		1.5	Microtip = 0 ppm Alpha = 20 cpm By = 100-200 cpm
			1"	~~VERY~~ TO 10-10-94 LOOSE (2.5Y N/2) BLACK "ORGANIC SILT — TOPSOIL-LIKE" FLY ASH ? DRY TO MOIST		0.0	
0.5		6	5"	SAA DRY TO MOIST			Microtip = Alpha = SAA By =
1.0		3	0"	NR	N/A		Microtip = Alpha = N/A By =
↑ POON #1 1.5	0843 10-10-94 SAMPLE 400087	4	6"	MED STIFF (10 YR 4/8) RED "Clay-like" smooth-no grain-consistency of modeling clay MED TO HIGH PLASTICITY MOIST		.75	Microtip = 0 ppm Alpha = 30 cpm By = 1,000 cpm
2.0	0843 10-10-94 ARCHIVE 400088	1	6"	SAA MOIST		.25	Microtip = 0 ppm Alpha = 30 cpm By = 1,000 cpm
2.5		6	3"	Same sandy CLAY AS 0-.5' DRY		2.5	Microtip = 0 ppm Alpha = 30 cpm By = 1,000 cpm
			0"	NR			
↑ POON #2 3.0	0852	4	6"	MED STIFF (2.5Y 5/4) LT. OLIVE BROWN Silty Clay w/ trace sand and (coarse sand/small gravels) MED TO HIGH PLASTICITY MOIST		.75	Microtip = 0 ppm Alpha = 40 cpm By = 50 cpm
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0 ppm	10-10-94	0834
ALPHA	20 cpm	10-10-94	0834
BETA/GAMMA	50-60 cpm	10-10-94	0834

NOTES: Drillers Helper is Rick Beebe

USCS symbols to be filled in after analysis results per CRU1 instructions

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5		6	2"	SAA VERY MOIST		.5	Microtip = 0 ppm
			0"	NR	N/A		Alpha = 40 cpm By = 50 cpm
4.0							
		6	0"	NR	N/A		Microtip = Alpha = N/A By =
↑ 200N #3 4.5	0857	3	1"	RED "CLAY-LIKE" STUFF SAA 1.5-2.5'		0.0	Microtip = 0 ppm
			5"	Same silty clay as 3.0-3.5' MOIST		.75	Alpha = 0 cpm By = 100 cpm
5.0							
		6	2"	SAA		.5	Microtip = 0 ppm
			0"	VERY MOIST			Alpha = 0 cpm By = 100 cpm
5.5							
		9	0"	NR	N/A		Microtip = Alpha = N/A By =
↑ 200N #4 6.0	0903	5	6"	SOFT (2.5Y 5/4) LT OLIVE BROWN Silty clay w/ trace sand MED TO HIGH PLASTICITY MOIST		.5	Microtip = 0 ppm Alpha = 40 cpm By = 60 cpm
6.5							
		5	3"	SAA		.75	Microtip =
			0"	NR	N/A		Alpha = SAA By =
7.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
7.0		9	0"	NR	N/A		Microtip = Alpha = N/A By =
↑ Poon #5 7.5	0907	C	6"	VERY SOFT (2.5Y 5/4) LI OLIVE BROWN Silty clay w/ trace fine sand and coarse sand/small gravels HIGH PLASTICITY VERY MOIST		<2.5	Microtip = 0 ppm Alpha = 0 cpm By = 80 cpm
8.0		MED					
8.5		2	5"	SAA		SAA	Microtip - Alpha = SAA By =
↑ Poon #6 9.0		5	0"	NR	N/A		Microtip - Alpha = N/A By =
9.5	0915	3	6"	SAA VERY MOIST		0.0	Microtip = 0 ppm Alpha = 10 cpm By = 200 cpm
10.0		4	6"	SAA, but some fluorescent yellow granules VERY MOIST		0.0	Microtip = 0 ppm Alpha = 10 cpm By = 35,000 cpm
↑ 10.5 Poon #7		5	0"	NR	N/A		Microtip = Alpha = N/A By =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See		
ALPHA		First	
BETA/GAMMA			Page

NOTES:

* Samples collected per ASTM Standard Penetration test. * All colors identified by Munsell Soil Color Chart

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (tsf)	REMARKS
10.5	0923	4	6"	VERY SOFT (2.5Y 4/2) DARK GRAYISH BROWN Silty Clay w/ Some fine grain Sand and some coarse Sand, traces of black particles (Fly ash?) and yellow particles HIGH PLASTICITY VERY MOIST		0.0	Microtip = 0 ppm Alpha = 40 cpm By = 110,000 cpm
11.0		12	6"	SAA VERY MOIST		.5	Microtip = Alpha = SAA By =
11.5		10	2"	SAA VERY MOIST		.25	Microtip = SAA Alpha = By =
12.0			0"	NR	N/A		
12.5	0932 10-10-94 ARCHIVE 400044	SHELBY		17" approx. recovery on SHELBY TOP OF TUBE — Appeared to be Same as 10.5-11.5'	N/A		Microtip = Alpha = N/A By =
13.0		SHELBY			N/A		Microtip = Alpha = N/A By =
13.5		SHELBY			N/A		Microtip = Alpha = N/A By =
14.0		SHELBY			N/A		Microtip = Alpha = N/A By =

↑ 1000' = 5

SHELBY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA	000333		PAGE

NOTES:

* Samples collected per ASTM Standard Penetration test. * Colors identified by Munsell Color Chart

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Layne

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 SHELBY 14.5		SHELBY		BOTTOM OF SHELBY TUBE APPEARED TO BE "BLACK SLUDGE" TYPE MATERIAL WET	N/A		Microtip = 0 ppm Alpha = too WET By = 30,000 cpm
	1203 10-10-94 ARCHIVE 400089	3	2"	LOOSE (2.5Y N/2) BLACK "Sludge type material" Granular fine to coarse grain WET		0.0	Microtip = 4.2 ppm Alpha = [illegible] By = 10,000 cpm
15.0 15.5		3	0"	NR	N/A		Microtip = Alpha = N/A By =
↑ POOR #9 16.0		3	0"	NR	N/A		Microtip = Alpha = N/A By =
	1211 10-10-94 SAMPLE 400090	2	2"	Same as 14.5'-15.0' WET		0.0	Microtip = 1.2 ppm Alpha = 20 cpm By = 200 cpm
16.5			4"	MED STIFF (2.5Y 4/5) LT OLIVE BROWN Silty Clay Moist		.5	
		2	5"	SAA		1.5	Microtip = Alpha = SAA By =
17.0			1"	Black Sludge same as 14.5-15.0' WET			
		2	0"	NR	N/A		Microtip = Alpha = N/A By =
17.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: "[illegible]" [illegible] because it resembled material in bottom of Shelby Tube. Also # 400090 ~

Samples collected per ASTM Standard Practice [illegible]

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5	1220 10-10-94 SAMPLE 400091	2	6"	SAA		0.0	Microtip = .8 ppm Alpha = 0 cpm By = 250 cpm
18.0		2	6"	SAA		0.0	Microtip = Alpha = SAA By =
18.5		2	3"	SAA		0.0	Microtip = Alpha = SAA By =
19.0			0"	NR	N/A		
19.5	1315 10-10-94 ARCHIVE 400045	SHELBY		Approx. 9" RECOVERY ON SHELBY Appears to be "Black Sludge" material as described above WET	N/A		Microtip = TOO Alpha = WET By = TO READ
20.0		SHELBY			N/A		Microtip = Alpha = N/A By =
20.5		SHELBY			N/A		Microtip = Alpha = N/A By =
21.0		SHELBY			N/A		Microtip = Alpha = N/A By =

SPOON #11 → SHELBY TUBE

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: Samples 400091 & 400090 are representative of majority of material @ depths beginning from 14.5' so it was archived.

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

Page 7 of

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Augers

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0							
SH.2B4 21.5		SHELBY		↓	N/A		Microtip = Alpha = N/A By =
22.0	1239	3	6"	SAME BLACK SLUDGE MATERIAL AS DESCRIBED ABOVE — LOOSE IT IS A "SILTY SAND" TYPE MATERIAL W/ SCATTERED COARSE GRAINS and SOME SMALL ANGULAR "PEBBLES" VERY WET	N/A		Microtip = 0 ppm Alpha = 0 cpm By = 150 cpm
22.5		1	6"	JUST NOTICED THIS HAS A METALLIC-LIKE SHEEN AND MAY BE MAGNETIC BY THE WAY THE SILT SIZE GRAINS LINE UP ON MY GLOVE	N/A		Microtip = Alpha = SAA By =
↑ POOR # 12 23.0		3	4"	SAA	N/A		Microtip = Alpha = SAA By =
23.5	1250	2	6"	SAA	N/A		Microtip = Alpha = SAA By =
24.0		2	5"	SAA	N/A		Microtip = Alpha = SAA By =
24.5		3	0"	NR	N/A		Microtip = Alpha = N/A By =

POOR # 13 ↑

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

000336

* Samples collected per ASTM Standard Penetration test. * Soil colors identified per Munsell Color Chart

CONTROL NUMBER:

FEMP
LITHOLOGIC LOG

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A DATE: N/A TIME: N/A

DATE STARTED: 10-10-93

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A DATE: N/A TIME: N/A

DATE COMPLETED: 10-10-93

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: MARTIN Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5	1257	2	6"	SAA @ 21.5-22.0 WET			Microtip = 1.8 ppm Alpha = 0 cpm By = 150 cpm
25.0		2	2"	Silty Clay w/ plant material? (2.5Y 5/6) LT OLIVE BROWN MOIST		NOT TAKEN	Microtip =
25.5			3"	Same as 24.5-25.0' WET	N/A		Alpha = SAA By =
↑ POOR 14 26.0		4	0"	NR	N/A		Microtip = Alpha = N/A By =
	1307	1	6"	Same as 24.5-25.0' "Sludge"	N/A		Microtip = 0 ppm Alpha = 0 cpm By = 150 cpm
26.5		1	2"	SAA	N/A		Microtip =
27.0			0"	NR	N/A		Alpha = SAA By =
↑ POOR 15 27.5		2	0"	NR	N/A		Microtip = Alpha = N/A By =
SHELBY 28.0	1318	SHELBY		NO RECOVERY	N/A		Microtip = Alpha = N/A By =

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES:

000337

CONTROL NUMBER:

FEMP LITHOLOGIC LOG

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PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

BORING NUMBER: 11363

COORDINATES:

RELATED FAL NUMBERS:

SURFACE ELEVATION:

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE STARTED: 10-10-94

GEOLOGIST: A. Thea Laune

GROUNDWATER LEVEL: N/A | DATE: N/A | TIME: N/A | DATE COMPLETED: 10-10-94

WATER USED DURING DRILLING: N/A

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Mobile B59 Auger

DRILLER/HELPER: Martin Proctor

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
28.0							
28.5		SHELBY			N/A		Microtip = Alpha = N/A By =
29.0		SHELBY			N/A		Microtip = Alpha = N/A By =
29.5		SHELBY			N/A		Microtip = Alpha = N/A By =
30.0		SHELBY			N/A		Microtip = Alpha = N/A By =
	1325	6	6"	Same as 24.5-25.0 "BLACK SLUDGE"			Microtip = 0 ppm Alpha = 0 cpm By = 120 cpm
30.5		5	6"	TR 10-10-94 ~~SAA~~ (8 inches of Clay) 50 inches		.75	Microtip = Alpha = SAA By =
31.0		6	2"	SOFT (2.5Y 5/6) LT OLIVE BROWN SILTY CLAY MED TO HIGH PLASTICITY MOIST		.5	Microtip = Alpha = SAA By =
			3"	NR	N/A		
31.5				BOTTOM OF BORING			

INSTRUMENT	BACKGROUND	DATE	TIME
PID	SEE		
ALPHA		FIRST	
BETA/GAMMA			PAGE

NOTES: @ 31.5'

000338

Samples collected per ASTM Standard Penetration test. Soil Colors identified by Munsell Color Chart

BORING

WELL NUMBER: 11363

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU1 DeWatering Excavation Evaluation Program

PROJECT NUMBER: 10.03.06

GEOLOGIST: A. Thea Layne

DRILLING METHOD: Hollow Stem Auger Mobile B59

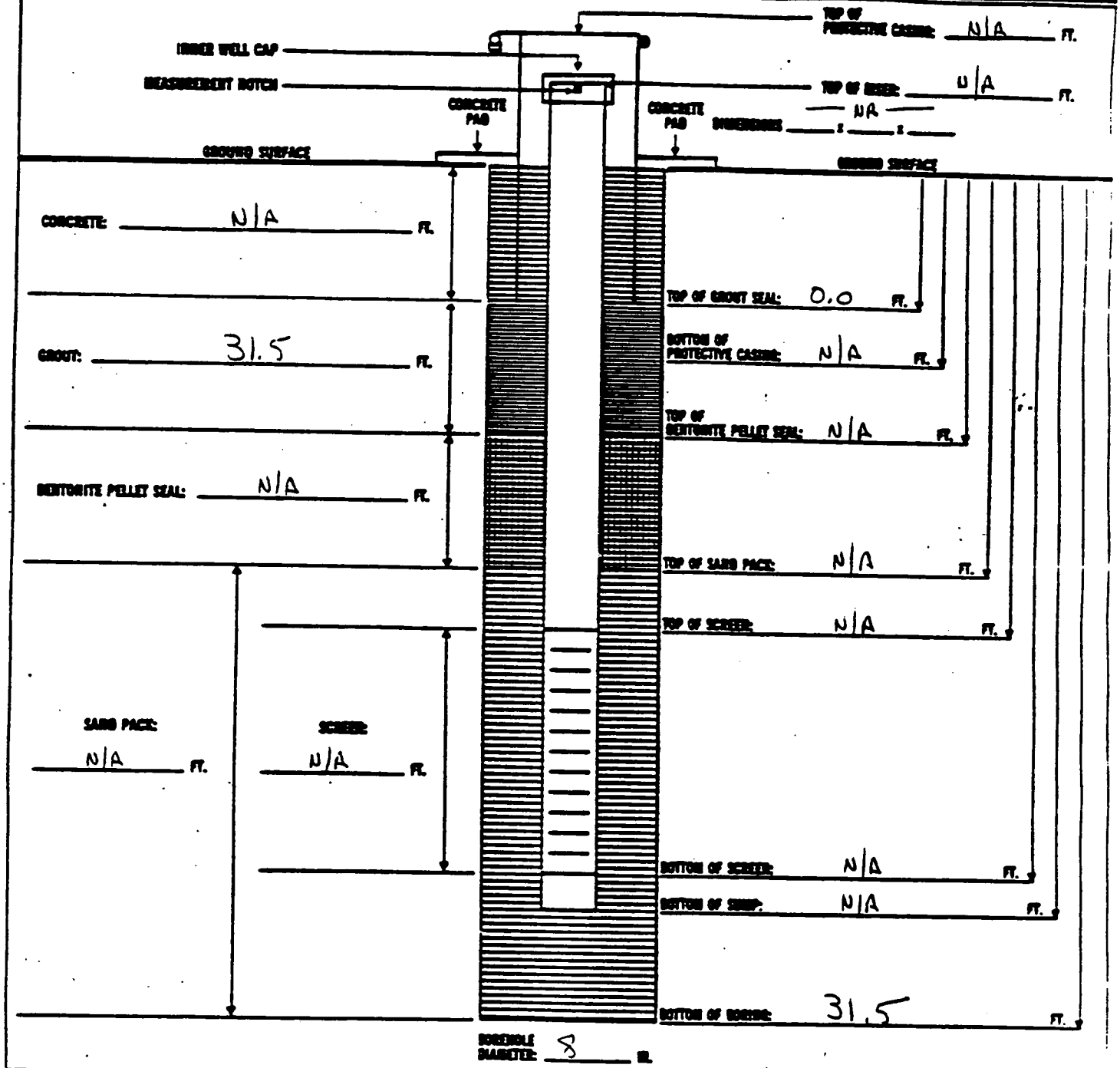
DATES OF INSTALLATION: 10-10-94

WATER LEVEL (ft): N/A

DATE: N/A

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay / Approx 1-1½ BAG (50 lb Bag)

BENTONITE PELLETS (5-GALLON BUCKETS):

DEEPEST TEMPORARY DRILLING CASING PENETRATION: N/A FT.

VOLUME OF WATER USED DURING DRILLING: N/A GAL

RISER MATERIAL: N/A

VOLUME OF WATER USED FOR GROUT HYDRATION: 20 gal. per 1 50lb BAG GAL

RISER WALL THICKNESS: N/A

TYPE OF SAND PACK: N/A

SCREEN MATERIAL: N/A

DRILLING CASING DIAMETER: N/A IN.

RISER/SCREEN DIAMETER: N/A IN.

SCREEN SLOT SIZE:

SCREEN TYPE:

DEPTH OF CENTRALIZER(S): N/A

000339

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 1 OF 13

PROJECT NAME: Phase I&A OU2 Pre Design Investigation

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.: NA

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED: 12-14-94

GEOLOGIST: Ken Grigsby

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED: 12-15 ~~12-14-94~~ KG

WATER USED DURING DRILLING: 34 ~~200~~ gallons

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: L. Brown B. Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.5	12-14-94 1315 402619	NA	6	Stiff 10YR 4/4 Dark Yellowish Brown Silty Clay with a trace of fine gravel with roots, medium plasticity, slightly moist	CL	1.5	BZ 60 cpm PID 6.6
1.0	12-14-94 1315 402619	NA	6	Same as 0.0 - 0.5	CL	1.5	BZ 60 cpm PID 6.8
1.5	12-14-94 1315 402619	NA	6	Very Stiff 10YR 3/4 Dark Yellowish Brown Silty Clay with slightly larger gravel fragments, root fragments, med. plasticity, slightly moist	CL	2.5	BZ 50 cpm PID 7.4
2.0	12-14-94 1315 402619	NA	6	Stiff 10YR 3/4 Dark Yellowish Brown Silty Clay with slightly larger gravel fragments, roots, med. plasticity, slightly moist	CL	1.0	BZ 60 PID 7.7
2.5	12-14-94 1315 402619	NA	6	10YR 3/3 Dark Brown Same lithology as 1.5 - 2.0	CL	1.0	BZ 80 PID ~~80~~ 7.7 KG 12-14-94
3.0	12-14-94 1315 402619	NA	6	Same as 2.0 - 2.5	CL	1.0	BZ 70 PID 7.7
	12-14-94 1330 402619	NA	6	Same as 2.0 - 2.5 with virtually no gravel	CL	1.0	BZ 10 cpm PID 7.2

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	4.9 ppm	12-14-94	
ALPHA	NA	NA	NA
BETA / GAMMA	40 cpm		

NOTES: Above

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Pre Design Investigation

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.: NA

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-14-94

GEOLOGIST: Ken Gaskill

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-14-94

WATER USED DURING DRILLING: 34 200 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Retsonic

DRILLER / HELPER: L Brown B. Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
4.0	12-14-94 1330 402619	NA	6	DRAFT PRELIMINARY. Very stiff 10 YR 4/4 Yellowish Brown silty clay mottled with light gray, little (or few) small to fine gravel, medium plasticity, slightly moist.	CL	2.0	BZ 5 PID 7.4
4.5	12-14-94 1330 402619		6	Same as 3.5 - 4.0 ft	CL	2.25	BZ 15. PID 7.4
5.0	12-14-94 1330 402619		6	Same as 4.0 - 4.5 ft	CL	2.5	BZ 25 PID 8.1
5.5	12-14-94 1330 402620		6	Same as 4.5 - 5.0 ft	CL	2.5	BZ 40 PID 8.4
6.0	12-14-94 1340 402620		6	Same as 5.0 - 5.5 ft	CL	2.5	BZ 35 PID 8.3
6.5	12-14-94 1340 402620		6	Same as 5.5 - 6.0 ft with more defined mottling	CL	2.5	BZ 30 PID 8.1
	12-14-94 1340 402620	NA	6	Same as 6.0 - 6.5 ft	CL	2.5	BZ 5 PID 8.0

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	See pg 1		
BETA / GAMMA			

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3001

G:/WPSC/94-776.DRW (11-23-9

000341

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: See pg 1

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-14-94

GEOLOGIST: Ken Geigel

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 236 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: ReTo Sonic

DRILLER / HELPER: See pg 1

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.5	12-14-94 1345 402620	NA	6	Stiff 10YR 4/4 DARK YELLOWISH BROWN SILTY CLAY WITH SOME GRAVEL (10%) MEDIUM IN SIZE, TRACE OF SAND, MED. PLASTICITY, MOIST	CL	3.0	BR 5 PID 7.2
8.0	12-14-94 1345 402620		6	SAA	CL	3.0	BR NA PID 7.2
8.5	12-14-94 1355 402620		6	SAA	CL	3.0	BR PID 7.3
9.0	12-14-94 1355 402621		6	SAA	CL	3.0	BR PID 7.4
9.5	12-14-94 1355 402621		6	Stiff 10YR 4/6 DARK YELLOWISH BROWN SILTY CLAY, ~~DARK~~ DARK GRAY MOTTLING, SOME LARGE GRAVEL, TRACE OF SAND. MED. PLASTICITY, MOIST	CL	1.5	BR 5 PID 8.9
10.0	12-14-94 1355 402621		6	SAME AS 9.0-9.5 FT WITH SOME LARGER GRAVEL FRAGMENTS	CL	1.0	BR 5 PID 8.2
	12-14-94 1355 402621	NA	6	SAME AS 9.5-10.0	CL	1.5	BR 10 PID 7.8

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	See pg 1		
BETA / GAMMA			

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3991

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: See pg 1

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED: 12-14-94

GEOLOGIST: Ken Geiger

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 34 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
	12-14-94 1400 402621	NA	6	PRELIMINARY SAME AS 10.0 - 10.5 FT	CL	1.5	BZ 5 PID 7.9
11.0	12-14-94 1400 402621		6	SAME AS 10.5 - 11.0 FT	CL	1.5	BZ 15 PID 8.0
11.5	12-14-94 1400 402621		6	Very Stiff SAME AS 11.0 - 11.5 FT	CL	3.0	BZ 25 PID 9.5
12.0	12-14-94 1405 402621		6	SAME AS 11.5 - 12.0 FT	CL	2.5	BZ 20 PID 9.8
CLAY BROWN 12.5	12-14-94 1405 402621		6	Stiff 10 YR 3/1 VERY DARK GREY, ~~brown~~ CLAY WITH APPROX 15% MED TO F.NO SAND ORANGE, SLIGHTY PLASTIC, SLIGHTLY MOIST	CL	1.0	BZ 40 PID 10.0
13.0	12-14-94 1410 402622		6	Med. Stiff SAME AS 12.5-13.0	CL	0.5	BZ 25 TCLP 402633 Total 402633 PID 14.4 Kd 402639
13.5	12-14-94 1415 402622	NA	6	Stiff SAME AS 13.5 - 14.0	CL	1.0	BZ 25 TCLP 402635 Total 402634 PID 14.0 Kd 402635

INSTRUMENT	BACKGROUND	DATE	TIME
PID	9.5	12-14-94	1410
ALPHA	NA	NA	NA
BETA / GAMMA	40 cpm	12-14-94	1410

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94776.DRW (11-23-9

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.C3.07

BORING NUMBER: 11497

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 128 gal per 1/2 day, 7 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5	12-27-94 1330 402681	NA	6	SAA	CI	.25	PID 8.5 BY 50
11.0	12-27-94 1330 402681	NA	6	SAA	CI	.25	PID 8.5 BY 50
11.5	12-27-94 1330 402681	NA	6	Stiff 5Y,4/1 Dark Gray silty clay with Gravel med plasticity, slightly moist	CI	1.0	PID 8.5 BY 50
12.0	12-27-94 1330 402681	NA	6	Rock Fragments	NA	NA	PID 8.5 BY 50
12.5	12-27-94 1330 402681	NA	6	Stiff 5Y,4/1 Dark Gray silty clay with Gravel med plasticity slightly moist	CI	1.0	PID 8.5 BY 50
13.0	12-27-94 1330	NA	0	NR	NA	NA	PID NA BY .
13.5	12-27-94 1330	NA	0	NR	NA	NA	PID NA BY
14.0							

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11497

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0	12-27-94 1325 402686	NA	6	SAA	CI	2.5	PID 8.5 BY 50
7.5	12-27-94 1325 402686	NA	6	SAA	CI	2.5	PID 8.5 BY 50
8.0	12-27-94 1325 402686	NA	6	Soft 10YR 5/4 yellowish Brown Sandy clay with some Gravel, med Plasticity slightly Moist	CI	2.0	PID 8.5 BY 50
8.5	12-27-94 1325 402686	NA	6	stiff 10YR 5/4 yellowish Brown silty Clay with Gravel + Sand med Plasticity slightly moist	CI	2.0	PID 8.5 BY 50
9.0	12-27-94 1325 402686	NA	6	very stiff Dark gray 5Y 4/1 silty Clay with some medium Gravel med Plasticity, slightly Moist	CI	3.0	PID 8.5 BY 50
9.5	12-27-94 1325 402686	NA	6	SAA	CI	3.0	PID 8.5 BY 50
10.0	12-27-94 1325 402686	NA	6	very Soft 10YR 3/3 Brown sandy Clay with some Gravel, mid Plasticity slightly moist	CI	.25	PID 8.5 BY 50
10.5							

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-9

000345

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11497

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Grigak / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5 – 4.0	12-27-94 1315 402687	NA	6	Stiff SAA PRELIMINARY	CI	2.0	PID 7.5 BY 55
4.5	12-27-94 1315 402687	NA	6	SAA	CI	2.0	PID 7.5 BY 55
5.0	12-27-94 1315 402687	NA	6	SAA	CI	2.0	PID 7.5 BY 55
5.5	12-27-94 1315 402687	NA	6	Stiff 10YR 5/4 Yellowish Brown Gravelly Sandy Clay mod plasticity slightly moist	CI	2.0	PID 7.5 BY 55
6.0	12-27-94 1315 402687	NA	6	SAA	CI	2.0	PID 7.5 BY 55
6.5	12-27-94 1315 402687	NA	6	Stiff 10YR 5/4 Yellowish Brown Silty Clay with Gravelly Sand mod plasticity slightly moist	CI	2.0	PID 7.5 BY 55
7.0	12-27-94 1315 402687	NA		SAA	CI	2.0	PID BY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000346

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11497

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

PRELIMINARY

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0 .5	12-27-94 1305 402684	NA	6	mod stiff 10YR 3/4 Dark Yellowish Brown Silty Clay Trace of Sand mod plasticity slightly moist. roots	CI	.75	PID 6.3 By TC
1.0	12-27-94 1305 402684	NA	6	mod stiff 10YR 5/4 Yellowish Brown Silty clay Trace of Sand Mod plasticity, slightly moist, Trace of manganese.	CI	.75	PID 6.3 By TC
1.5	12-27-94 1305 402684	NA	6	SAA	CI	.75	PID 6.3 By TC
2.0	12-27-94 1305 402684	NA	6	stiff SAA	CI	2.0	PID 6.3 By TC
2.5	12-27-94 1305 402684	NA	6	SAA with trace sand	CI	1.75	PID 6.3 By TC
3.0	12-27-94 1305 402684	NA	6	very stiff SAA	CI	2.75	PID 6.3 By TC
3.5	12-27-94 1315 402687	NA	6	mod 10YR 5/4 Yellowish Brown Silty Clay with some Sand + Gravel and cobble mod plasticity slightly moist	CI	4.25	PID 7.5 By SS

INSTRUMENT	BACKGROUND	DATE	TIME
PID	5.9	12-27-94	1000
ALPHA	NA	NA	NA
BETA / GAMMA	60	12-27-94	1000

NOTES: None

000344

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

6521

8 of 8

WELL NUMBER: 11496

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NUMBER: 20.03.07

GEOLOGIST: Geigen/Riley

DRILLING METHOD: Rotosonic

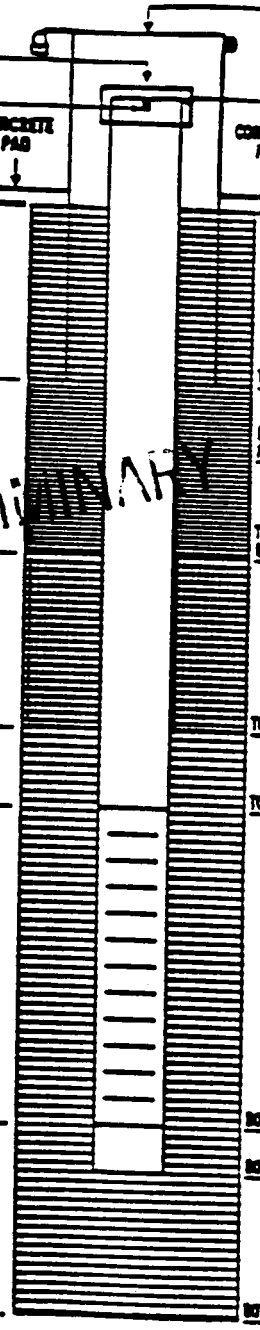
DATES OF INSTALLATION: 12-27-94

WATER LEVEL (R.I): +

DATE:

RELATED FAL NUMBERS:

CHECKED BY:



INNER WELL CAP

MEASUREMENT NOTCH

GROUND SURFACE

CONCRETE PAD

CONCRETE PAD

DIMENSIONS ___ x ___ x ___

TOP OF PROTECTIVE CASING: ___ FT.

TOP OF RISER: ___ FT.

GROUND SURFACE

CONCRETE: 1.0 FT.

GROUT: 3.0 FT.

BENTONITE PELLET SEAL: 5.0 FT.

SAND PACK: 8.0 FT.

SCREEN: 6.0 FT.

TOP OF GROUT SEAL: 1.0 FT.

BOTTOM OF PROTECTIVE CASING: FT.

TOP OF BENTONITE PELLET SEAL: 4.0 FT.

TOP OF SAND PACK: 9.0 FT.

TOP OF SCREEN: 11.0 FT.

BOTTOM OF SCREEN: 17.0 FT.

BOTTOM OF SUMP: 17.0 FT.

BOTTOM OF BORING: 22.0 FT.

BOREHOLE DIAMETER: 6 1/4 IN.

PRELIMINARY

TYPE AND AMOUNT OF GROUT USED: Volclay 10 lbs	BENTONITE PELLETS (5-GALLON BUCKETS): RC 12-27-94 12 5 lb		DEEPEST TEMPORARY DRILLING CASING PENETRATION: 22.0 FT.
VOLUME OF WATER USED DURING DRILLING: RC 12-27-94 7.7 45 gallons GAL	RISER MATERIAL: 15' Riser		VOLUME OF WATER USED FOR GROUT HYDRATION: 5 gal GAL
RISER WALL THICKNESS: Sch 40	TYPE OF SAND PACK: 20/10	SCREEN MATERIAL: Stainless Steel	DRILLING CASING DIAMETER: 6 1/4 IN.
RISER/SCREEN DIAMETER: 2.0 IN.	SCREEN SLOT SIZE: 10 slot IN	SCREEN TYPE: Flush Screw Type Stainless Steel	DEPTH OF CENTRALIZER(S): NA FT.

FS-F-3684 (9/10/93)

000348

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11496

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 7.7 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0							
22.5	1115 402679	NA	6	SAME	CL	1.5 ~~NA~~ 12-27-94	PID 10.3 BY 55
22.0	1115 402679	NA	6	SAME	CL	1.5 ~~NA~~ 12-27-94	PID 10.0 BY 55
22.5		NA		Bottom of Boring 22.0 Feet			PID BY
23.0		NA					PID BY
23.5		NA					PID BY
24.0		NA					PID BY
24.5		NA					PID BY

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000349

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11496

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Grigik / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 7 Gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5	12-27-94 1100 402679	NA		SAME PRELIMINARY	CL	1.0	PID 10.2 BY 55
18.0	12-27-94 1100 402679	NA		SAME	CL	1.0	PID 10.0 BY 60
18.5	12-27-94 1100 402679	NA		SAME	CL	1.5	PID 10.2 BY 50
19.0	12-27-94 1100 402679	NA		SAME	CL	2.0	PID 10.1 BY 55
19.5	12-27-94 1100 402679	NA		SAME	CL	1.5	PID 10.2 BY 55
20.0	12-27-94 1115 402679	NA		SAME 5.5 x 3.5 x 2" LARGE LIMESTONE COBBLE	CL	1.5	PID 10.0 BY 60
20.5	12-27-94 1115 402679	NA		SAME	CL	1.5	PID 10.2 BY 55
21.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000350

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11496

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 7 Gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5	12-27-94 1050 402678	NA	6	SAME	SM	NA	PID 10.3 BY 55
15.0	12-27-94 1050 402678	NA	6	SAME	SM	NA	PID 10.1 BY 60
15.5	12-27-94 1050 402678	NA	6	SAME	SM	NA	PID 9.9 BY 55
16.0	12-27-94 1050 402678	NA	6	SAME	SM	NA	PID 10.1 BY 50
16.5	12-27-94 1050 402678	NA	6	SAME	SM	NA	PID 10.2 BY 60
17.0	12-27-94 1050 402678	NA	6	SAME	SM	NA	PID 10.2 BY 55
17.5	12-27-94 1050 402678	NA	6	STIFF 5Y 4/1 DARK GRAY SILTY CLAY WITH SOME GRAVEL AND FINE SAND, MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	1.0	PID 10.2 BY 55

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

00351

G:/WPSC/34778.DRW (11-22)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11496

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 1.7 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5	12-27-94 1040 402674	NA	0 ~~4~~	SAME	CL	.25	PID 9.4 BY 60
11.0	12-27-94 1040 402674	NA	0 ~~NA~~	PRELIMINARY N/R	NA	NA	PID BY NA
11.5	12-27-94 1040 402674	NA	0	N/R	NA	NA	PID BY NA
12.0	12-27-94 1040 402676	NA	6	5Y 4/1 DARK GRAY SILTY SAND WITH GRAVEL, WET	SM	NA	PID 10.2 BY 55
12.5	12-27-94 1040 402676	NA	6	SAME	SM	NA	PID 10.2 BY 55
13.0	12-27-94 1040 402676	NA	6	SAME	SM	NA	PID 10.1 BY 60
13.5	12-27-94 1040 402678	NA	6	SAME	SM	NA	PID 10.1 BY 50
14.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000352

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 1149K

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: –

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Corrigan / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 1.7 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0 – 7.5	12-27-94 1030 402674	NA	6	Stiff 10YR, 4/4 Dark Yellowish Brown Silty Clay w/ Some Sand + Gravel Large Cobble 3"x3"x2" med Plasticity, Slightly Moist	CI	1.0	PID 9.4 BY 60
5.0	12-27-94 1030 402674	NA	6	Stiff 10YR 4/4 Dark Yellowish Brown Silty Clay w/ Some Sand + Gravel Med Plasticity, Slightly Moist	CI	2.0	PID 9.4 BY 60
5.5	12-27-94 1030 402674	NA	6	PRELIMINARY Same	CI	2.0	PID 9.4 BY 60
9.0	12-27-94 1030 402674	NA	6	Very Stiff 10YR, 4/2 Dark Grayish Brown Silty Clay with Some Sand + Gravel Med. Plasticity, Slightly Moist	CI	2.5	PID 9.4 BY 60
9.5	12-27-94 1030 402674	NA	6	SAME	CI	2.5	PID 9.4 BY 60
10.0	12-27-94 1030 402674	NA	6	Very Stiff 5Y, 4/1 Dark Gray Silty Clay with Some medium to Fine Gravel and a Trace of Sand, med. Plasticity, Slightly Moist	CI	2.25	PID 9.4 BY 60
10.5	12-27-94 1030 402674	NA	6	Very Soft 5Y, 4/1 Dark Gray Sandy Clay with Cobbles, med Plasticity, Slightly Moist	CI	.25	PID 9.4 BY 60

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

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000353

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11496

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Kilov

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 7.7 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotesonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5 – 4.0	12-27-94 1015 402677	NA	6	SAME	CI	3.5	PID 7.4 BY 65
4.5	12-27-94 1015 402677	NA	6	SAME	CI	3.5	PID BY
5.0	12-27-94 1015 402677	NA	6	SAME Lg COBBLES	CI	3.5	PID BY
5.5	12-27-94 1015 402677	NA	0	N/R	NA	NA	PID BY NA
6.0	12-27-94 1015 402677	NA	0	N/R	NA	NA	PID BY NA
6.5	12-27-94 1015 402677	NA	0	N/R	NA	NA	PID BY NA
7.0	12-27-94 1015 402677	NA	0	N/R	NA	NA	PID BY NA

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See	Ag /	
ALPHA	NA	NA	NA
BETA / GAMMA	See	Ag /	

NOTES: NINE

000354

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/34778.DRW

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11496

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 7.7 45 gallons

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Gilm

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0 – .5	12-27-94 1010 402675	NA	6	very soft 10YR 4/4 DARK YELLOWISH BROWN SILTY CLAY W/ROOTS MED PLAST. SLIGHTLY MOIST	CI	.25	PID 2.0 BY 7.5
1.0	12-27-94 1010 402675	NA	6	PRELIMINARY	CI	.25	PID BY
1.5	12-27-94 1010 402675	NA	6	Soft 10YR 4/6 DARK YELLOWISH BROWN SILTY CLAY W/ROOTS MED. PLAST. SLIGHTLY MOIST	CI	.5	PID BY
2.0	12-27-94 1010 402675	NA	6	Stiff 10YR 4/6 DARK YELLOWISH BROWN W/ MANGANESE STAINS SILTY CLAY W/ ROOTS MED. PLAST. SLIGHTLY MOIST	CI	1.75	PID BY
2.5	12-27-94 1010 402675	NA	6	SAME	CI	2.0	PID BY
3.0	12-27-94 1010 402675	NA	6	Stiff 10YR 4/6 DARK YELLOWISH BROWN SILTY CLAY W/ MANGANESE STAINS W/ SOME GRAVEL MED PLAST. SLIGHTLY MOIST	CI	1.0	PID BY ✓
3.5	12-27-94 1010 402677	NA	6	Stiff 10YR 4/4 DARK YELLOWISH BROWN W/SOME GRAY MOTTLING SILTY CLAY W/SOME GRAVEL MED. PLAST. SLIGHTLY MOIST	CI	2.0	PID 9.4 BY 6.5

INSTRUMENT	BACKGROUND	DATE	TIME
PID	5.9	12-27-94	1000
ALPHA	NA	NA	NA
BETA / GAMMA	60	12-27-94	1000

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

00035

ES-5-7681

G:/WPSC/34778.DRW 11-03-

FEMP
WELL COMPLETION LOG

WELL NUMBER: 11495

CONTROL NUMBER:

PROJECT NAME: OU2 Pre-Design

PROJECT NUMBER: 20.03.04

GEOLOGIST: Geiger / Riley

DRILLING METHOD: Rotosonic

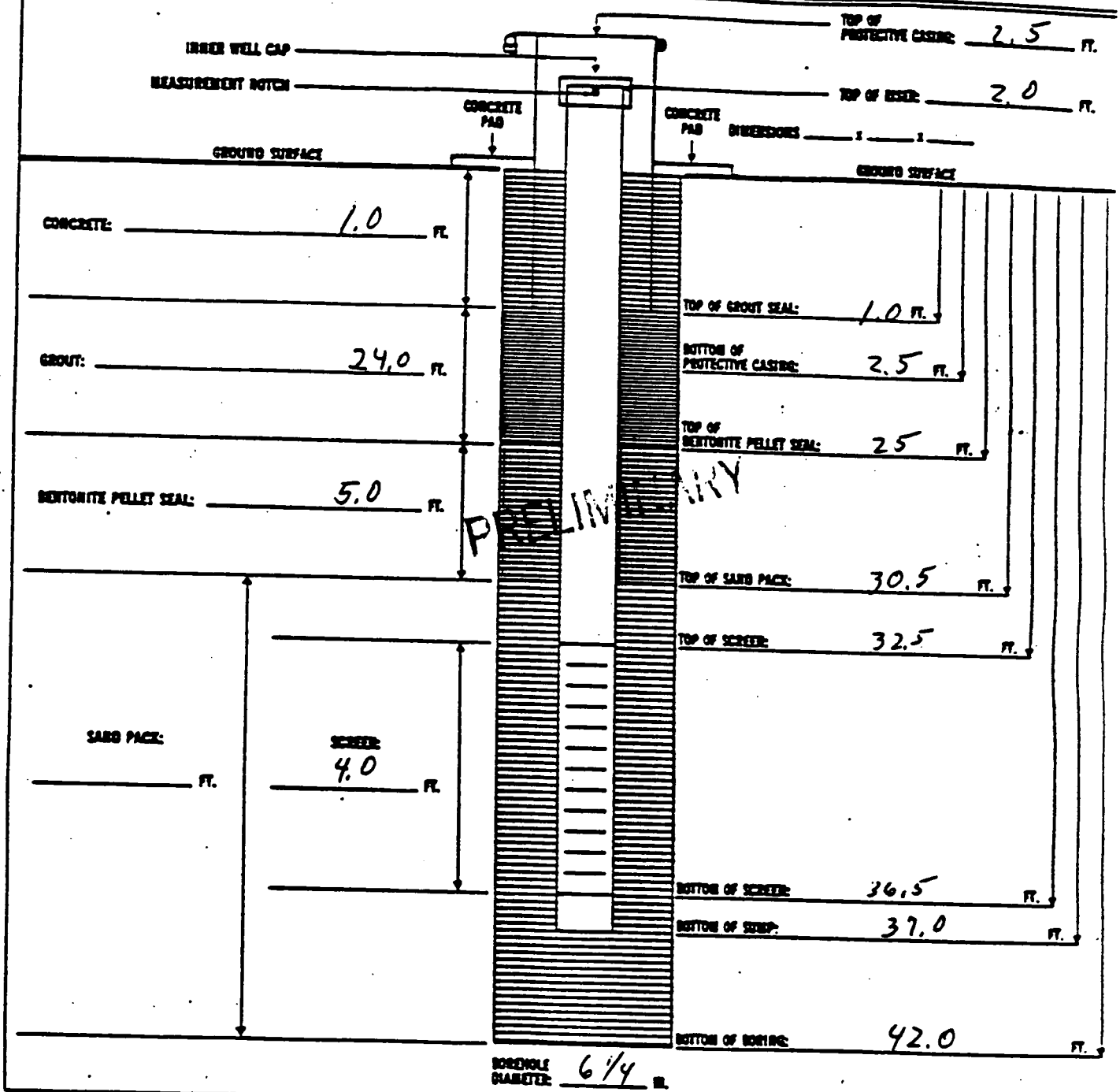
DATES OF INSTALLATION: 12-22-94

WATER LEVEL (R.): —

DATE:

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay 85 lbs	BENTONITE PELLETS (5-GALLON BUCKETS): 100 lbs	DEEPEST TEMPORARY DRILLING CASING PENETRATION: 42.0 FT.
VOLUME OF WATER USED DURING DRILLING: 13.6 ~~60~~ gal 1/3/95 GAL	RISER MATERIAL: Stainless Steel	VOLUME OF WATER USED FOR GROUT HYDRATION: 42 gal GAL
RISER WALL THICKNESS: Sch 40	TYPE OF SAND PACK: 20/10 Sand	SCREEN MATERIAL: Stainless Steel
DRILLING CASING DIAMETER: 6 1/4 IN.	RISER/SCREEN DIAMETER: 2.0 IN.	SCREEN SLOT SIZE: 10 slot IN
SCREEN TYPE: Flush Screw Stainless Steel Type	DEPTH OF CENTRALIZER(S): NA FT.	

000356

FS-F-3884 (9/10/93)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.:

BORING NUMBER: 11495

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 13.6 ~~80~~ gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Browne / Gavin

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
36.5	12-22-94 1115 402672	NA	6	SAA	Cl	.5	Pid 7.5 Bg 10
37	12-22-94 1115 402672	NA	6	SAA	Cl	.5	Pid 7.5 Bg 10
39.5	12-22-94 1115 402672	NA	6	SAA PRELIMINARY	Cl	.5	Pid 7.5 Bg 10
40	12-22-94 1115 402672	NA	6	SAA	Cl	.5	Pid 7.5 Bg 10
40.5	12-22-94 1115 402672	NA	6	SAA	Cl	.5	Pid 7.5 Bg 10
41	12-22-94 1115 402672	NA	6	SAA	Cl	.5	Pid 7.5 Bg 10
41.5	12-22-94 1115 402672	NA	6	SAA	Cl	.5	Pid 7.5 Bg 10
42	12-22-94 1115 402672	NA	6	SAA Bottom of Boring 42.0 Feet	Cl	.5	Pid 7.5 Bg 10

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-23-

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11495

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-22-94

GEOLOGIST: Gerak / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
35.0 35.5	12-22-94 1115 402643	NA	6	SAA	CI	.5	PID 8 By 10
36.0	12-22-94 1115 402643	NA	6	SAA	CI	.5	PID 8 By 10
36.5	12-22-94 1115 402643	NA	6	SAA	CI	.5	PID 8 By 10
37.0	12-22-94 115 402643	NA	6	SAA	CI	.5	PID 8 By 10
37.5	12-22-94 1115 402643	NA	6	SAA	CI	.5	PID 7.5 By 10
38.0	12-22-94 1115 402643	NA	6	SAA	CI	.5	PID 7.5 By 10
38.5	12-22-94 1115 402643	NA	6	SAA	CI	.5	PID 7.5 By 10

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000358

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11495

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 13.6 gal PR 1/3/95

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.5 – 32.0	12-22-94 1115 402694	NA	6	SAA	CI	.5	PID 8 By 10
32.5	12-22-94 1115 402694	NA	6	SAA	CI	.5	PID 8 By 10
33.0	12-22-94 1115 402694	NA	6	SAA	CI	.5	PID 8 By 10
33.5	12-22-94 1115 402693	NA	6	SAA	CI	.5	PID 8 By 10
34.0	12-22-94 1115 402693	NA	6	SAA	CI	.5	PID 8 By 10
34.5	12-22-94 1115 402693	NA	6	SAA with small cobble shell 1x1x2	CI		PID 8 By 10
35.0	12-22-94 1115 402693	NA	6	SAA	CI		PID 8 By 10

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000359

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11495

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
25.0 – 25.5	12-22-94 1110 402688	NA	6	SAA	CI	.5	PID 8 BY 10
26.0	12-22-94 1110 402689	NA	6	SAA	CI	.5	PID 8 BY 10
28.5	12-22-94 1110 402694	NA	6	SAA	CI	.5	PID 8 BY 10
30.0	12-22-94 1110 402694	NA	6	SAA	CI	.5	PID 8 BY 10
30.5	12-22-94 1110 402694	NA	6	SAA	CI	.5	PID 8 BY 10
31.0	12-22-94 1110 402694	NA	6	SAA	CI	.5	PID 8 BY 10
31.5	12-22-94 1110 402694	NA	6	SAA	CI	.5	PID 8 BY 10

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000360

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

ES-F-2681

G:/WPSC 34176 DFW

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11495

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 136 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5 – 25.0	12-22-94 1105 402692	NA	0	no recovery	NA	NA	PID By NA
25.5	12-22-94 1105 402692	NA	0	no recovery	NA	NA	PID By NA
26.0	12-22-94 1105 402692	NA	0	no recovery	NA	NA	PID By NA
26.5	12-22-94 1105 402692	NA	0	no recovery	NA	NA	PID By NA
27.0	12-22-94 1105 402692	NA	0	no recovery	NA	NA	PID By NA
27.5	12-22-94 1105 402693	NA	CI	very soft 10yr 5/1 gray silty sandy clay with gravel and large cobble 4x4x2 med. plast. slightly moist to moist	CI	<.25	PID 8 By 10
28.0	12-22-94 1105 402693	NA	CI	soft 10yr 5/1 gray silty clay with sand and gravel med. plast. slightly moist	CI	.5	PID 8 By 10

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See	19 /	
ALPHA	NA	NA	NA
BETA / GAMMA	See	19 /	

NOTES: none

PRELIMINARY

000361

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11495

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 13.6 ~~50~~ gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0	12-22-94 1100 402692	NA	NA	no recovery	NA	NA	PID By NA
22.5	12-22-94 1100 402692	NA	NA	no recovery	NA	NA	PID By NA
22.0	12-22-94 1100 402692	NA	NA	no recovery	NA	NA	PID By NA
23.5	12-22-94 1100 402692	NA	NA	no recovery	NA	NA	PID By NA
23.0	12-22-94 1100 402692	NA	NA	no recovery	NA	NA	PID By NA
24.5	12-22-94 1100 402692	NA	NA	no recovery	NA	NA	PID By NA
24.0	12-22-94 1100 402692	NA	NA	no recovery	NA	NA	PID By NA
24.5	12-22-94 1100 402692	NA	NA	no recovery	NA	NA	PID By NA

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See	P91	
ALPHA	NA	NA	NA
BETA / GAMMA	See	P91	

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

6521

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11495

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 13.6 ~~gallons~~

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0	12-22-94 1100 402692	NA	6	SAA with smaller Gravel	CI	2.0	PID 16 BY 10
18.5	12-22-94 1100 402692	NA	6	SAA	CI	2.0	PID 16 BY 10
19.0	12-22-94 1100 402692	NA	6	SAA	CI	2.0	PID 16 BY 10
19.5	12-22-94 1100 402692	NA	6	SAA	CI	2.0	PID 16 BY 10
20.0	12-22-94 1100 402692	NA	6	SAA	CI	2.0	PID 16 BY 10
20.5	12-22-94 1100 402692	NA	6	SAA with large cobble 4"x3"x2"	CI	2.0	PID 16 BY 10
21.0	12-22-94 1100 402692	NA	6	SAA with large cobble 4"x4"x6"	CI	2.0	PID 16 BY 10

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000363

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-23-9

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11495

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-22-94

GEOLOGIST: George / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: B.G. ~~Soil~~

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER (43/55)	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.6 – 16.5	12-22-94 1055 402673	NA	6	SAA	CI	2.0	PID 22 By 20
15.0	12-22-94 1055 402673	NA	6	SAA	CI	2.0	PID 22 By 20
15.5	12-22-94 1055 402673	NA	6	SAA	CI	2.0	PID 22 By 20
16.0	12-22-94 1055 402673	NA	6	SAA	CI	2.0	PID 22 By 20
16.4	12-22-94 1055 402673	NA	6	SAA	CI	2.0	PID 22 By 20
17.0	12-22-94 1055 402673	NA	6	SAA	CI	2.0	PID 22 By 20
17.5	12-22-94 1055 402672	NA	6	SAA	CI	2.0	PID 22 By 20

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11495

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
brown 0.0 – 1.0	12-22-94 1050 402637	NA	6	very stiff 10yr 5/4 yellow-brown silty clay with sand + gravel mod. plast. slightly moist	CL	3.0	PID 22 By 20 grades to gray cl
gray 1.0 – 1.5	12-22-94 1050 402637	NA	6	10yr 5/1 gray silty clay with sand + gravel mod. plast. slightly moist PRELIMINARY	CL	2.5	PID 22 By 20
1.5 – 10.0	12-22-94 1050 402673	NA	6	stiff SAA	CL	2.0	PID 22 By 20
10.0 – 11.5	12-22-94 1050 402673	NA	6	SAA	CL	2.0	PID 22 By 20
11.5 – 13.0	12-22-94 1050 402673	NA	6	SAA	CL	2.0	PID 22 By 20
13.0 – 13.5	12-22-94 1050 403673	NA	6	SAA	CL	2.0	PID 22 By 20
13.5 – 14.0	12-22-94 1050 403673	NA	6	SAA	CL	2.0	PID 22 By 20

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000365

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: ~~11494~~ 11495 (6-12-22-94)

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 13.6 gal (~~60 gal~~)

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
2.0	12-22-94 1040 402691	NA	6	soft 10yr 4/1 dark gray silty clay with some sand & gravel med. plast	CI	.25	PID 22 BY 20
3.0	12-22-94 1040 402691	NA	6	soft 10yr/5/4 yellowish brown silty clay with sand & gravel some gray model. med plast.	CI	2.0	PID 22 BY 20
4.5	12-22-94 1040 402654	NA	6	SAA	CI	2.0	PID 22 BY 20
4.0	12-22-94 1040 402654	NA	6	SAA with large cobble 4x4x1	CI	2.0	PID 22 BY 20
4.5	12-22-94 1040 402659	NA	6	SAA with larger gravel	CI	2.0	PID 22 BY 20
10.0	12-22-94 1040 402659	NA	6	SAA	CI	2.0	PID 22 BY 20
10.5	12-22-94 1040 402659	NA	6	SAA	CI	2.0	PID 22 BY 20

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000366

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: –

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 13.6 ~~50~~ gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.0 – 4.0	12-22-94 1035 402690	NA	6	SAA with ~~[illegible]~~ PRELIMINARY modeling	CI	2.5	PID 8.2 BY 50
4.5 – 5.5	12-22-94 1035 402690	NA	6	stiff 10yr 5/4 yellow brown silty clay with ironstains mod plast. slightly moist with gray modeling	CI	2.0	PID 8.2 BY 50
5.5 – 6.5	12-22-94 1035 402690	NA	6	SAA	CI	2.0	PID 8.2 BY 50
6.5 – 7.5	12-22-94 1035 402690	NA	6	SAA	CI	2.0	PID 8.2 BY 50
7.5 – 8.5	12-22-94 1035 402690	NA	6	~~Soft~~ stiff SAA with more gray modeling	CI	2.0	PID 8.2 BY 50
8.5 – 9.5	12-22-94 1035 402690	NA	6	soft SAA with trace of sand + gravel	CI	.5	PID 8.2 BY 50
9.5 – 10.5	12-22-94 1035 402690	NA	6	soft SAA	CI	.5	PID 8.2 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA		See pg 1	

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11495

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 13.6 ~~80~~ gallons

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.5	12-22-94 1030 402695	NA	4	~~soft~~ 10yr 4/3 silty clay some roots med. plasti. slitly moist	CL	1.0	PID 7.2 BY 50
1.0	12-22-94 1030 402695	NA	6	SAA PRELIMINARY	CL	1.0	PID 7.2 BY 50
1.5	12-22-94 1030 402695	NA	6	~~very soft~~ 10yr 3/2 very dark grayish brown silty clay with fe stains med plasti. slitly moist	CL	2.5	PID 7.2 BY 50
2.0	12-22-94 1030 402695	NA	6	SAA	CL	2.5	PID 7.2 BY 50
2.5	12-22-94 1030 402695	NA	6	SAA	CL	2.5	PID 7.2 BY 50
3.0	12-22-94 1030 402695	NA	6	SAA	CL	2.0	PID 7.2 BY 50
3.5	12-22-94 1030 402695	NA	6	SAA	CL	2.0	PID 7.2 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	50	12-22-94	830
ALPHA	NA	NA	NA
BETA / GAMMA	5.2	12-22-94	830

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP
WELL COMPLETION LOG

WELL NUMBER: 11494

CONTROL NUMBER:

PROJECT NAME: OU2 Pre-Design Field Investigation

PROJECT NUMBER: 20.03.07

GEOLOGIST: Geiger / Riley

DRILLING METHOD: Rotosonic

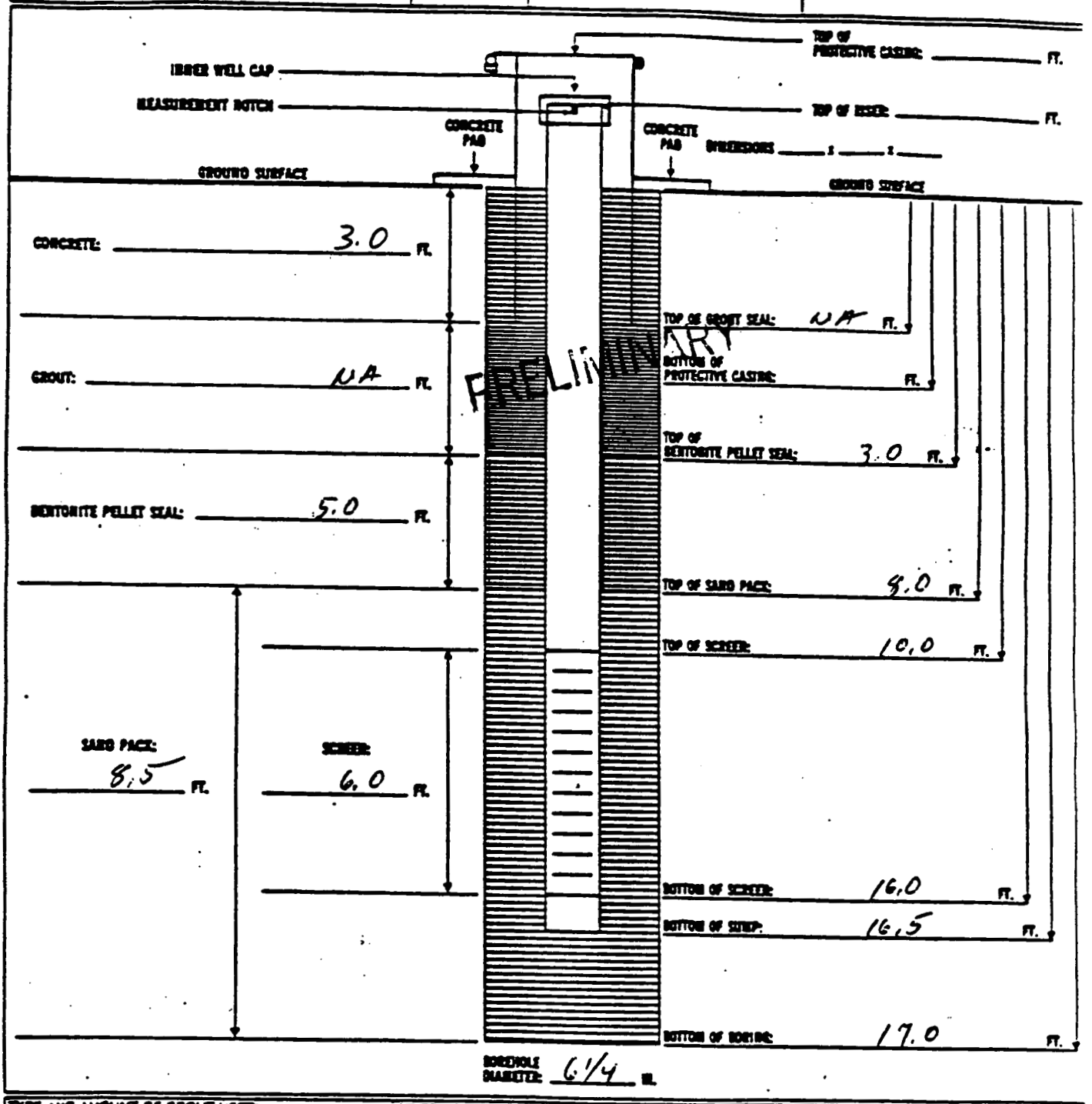
DATES OF INSTALLATION: 12-22-94

WATER LEVEL (B.I.): —

DATE:

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay

BENTONITE PELLETS (5-GALLON BUCKETS):

DEEPEST TEMPORARY DRILLING CASING PENETRATION: 17.0 FT.

VOLUME OF WATER USED DURING DRILLING: 25 GAL.

RISER MATERIAL:

VOLUME OF WATER USED FOR GROUT HYDRATION: GAL.

RISER WALL THICKNESS: Sch 40

TYPE OF SAND PACK: 20/40

SCREEN MATERIAL: Stainless Steel

DRILLING CASING DIAMETER: 6 1/4 IN.

RISER/SCREEN DIAMETER: 2.0 IN.

SCREEN SLOT SIZE: 10 Slot IN

SCREEN TYPE: Stainless Steel Rod screen Type

DEPTH OF CENTRALIZER(S): NA FT.

FS-F-3664 (9/10/93)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11494

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 25 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5	12-22-94 850	NA	6	SAA	CI		PID 20.0 By 50
14.5 – 15.0	12-22-94 850	NA	6	SAA	CI		PID 20.0 By 50.0
15.0 – 15.5	12-22-94 850	NA	6	SAA	CI		PID 25.0 By 50
15.5 – 16.0	12-22-94 850	NA	6	SAA	CI		PID 25.0 By 50
16.0 – 16.5	12-22-94 850	NA	6	with cobble 3x4x1/2	CI		PID 20.0 By 50
16.5 – 17.0	12-22-94 850	NA	6	Very stiff 5Y 5/1 Gray Silty Clay with some Gravel and pebbles Slightly moist	CI	45	PID 20.0 By 50
17.0 – 17.5		NA		Bottom of Boring 17.0'	~~CI~~ RK 12-22-94		PID By

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

PRELIMINARY

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER:

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME:

DATE STARTED: 12-22-94

GEOLOGIST: Conyer / Riley

GROUNDWATER LEVEL: | DATE: | TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 25 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
GRAY 10.5 – 11.0	12-22-94 845	NA	6	Very stiff 5Y 5/1 Gray Silty Clay with some Gravel + Black Sand med Plasticity slightly Moist	CI	2.7	PID 27.0 By 50
11.0 – 11.5	12-22-94 845	NA	6	Very soft 5Y 5/1 Silty Sandy Clay with some Brown Sandy Gravel (Poorly Graded Fine Sand) med Plasticity Slightly to moist	CI	0.25	PID 25.0 By 50
12.0	12-22-94 850	NA	6	Very Soft 5Y 5/3 Olive Sandy Silty Clay with a Trace of Gravel slightly moist, Low Plasticity	CI	0.25	PID 25.0 By 50
12.5	12-22-94 850	NA	6	SAA with Gravel 5%	CI	.25	PID 25.0 By 50
13.0	12-22-94 850	NA	6	SAA	CI	.25	PID 25.0 By 50
13.5	12-22-94 850	NA	6	SAA with Larger Gravel	CI	.25	PID 25.0 By 50
14.0	12-22-94 850	NA	6	SAA	CI	.25	PID 25.0 By 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11-104-

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 25 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
2.0 – 2.5	12-22-94 845	NA	6	SAA with 20-30% Gravel	CI	2.5	PID 6.5 BY 50
5.0	12-22-94 845	NA	6	SAA PRELIMINARY	CI	2.5	PID 6.5 BY 50
7.5	12-22-94 845	NA	6	SAA	CI	2.5	PID 6.5 BY 50
9.0	12-22-94 845	NA	6	SAA	CI	2.5	PID 6.5 BY 50
12.5	12-22-94 845	NA	6	SAA Dry	CI	4.0	PID 6.5 BY 50
10.0	12-22-94 845	NA	6	SAA	CI	4.0	PID 7.2 BY 50
10.5	12-22-94 845	NA	6	SAA			PID 6.5 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-368

000372

G:/WPSC/94-778.CPW (11-23

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 1144

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 25 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5 – 4.0	12-22-94 930	NA	6	Stiff 10YR 4/3 Dark Brown silty clay with some sand med plasticity slightly moist	CI	1.5	PID 6.5 BY 50
4.5 – 5.0	12-22-94 935	NA	6	Very stiff 10YR 5/6 Yellowish Brown silty clay with trace sand w/ manganese stains med plast. slightly moist	CI	2.75	PID 6.5 BY 50
5.0 – 5.5	12-22-94 935	NA	6	SAA	CI	2.0	PID 6.5 BY 50
5.5 – 6.0	12-22-94 935	NA	6	SAA	CI	2.0	PID 6.5 BY 50
6.0 – 6.5	12-22-94 935	NA	6	SAA	CI	2.0	PID 6.5 BY 50
6.5 – 7.0	12-22-94 935	NA	6	SAA	CI	2.0	PID 6.5 BY 50
7.0	12-22-94 935	NA	6	SAA	CI	2.0	PID 6.5 BY 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See A91		
ALPHA	NA	NA	NA
BETA / GAMMA	See A91		

NOTES: NONE

000373

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11494

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED: 12-22-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED: 12-22-94

WATER USED DURING DRILLING: 25 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	12-22-94 930	NA	6	ST.FE 10YR 3/2 Very Dark Grayish Brown Very Silty Clay w/ Roots Trace of Sand Slight med plasticity Slightly moist	CI	1.5	PID 5.3 BY 50
.5	12-22-94 930	NA	6	Same	CI	1.5	PID 5.3 BY 50
1.0	12-22-94 930	NA	6	10YR 4/3 Dark Brown Silty Clay with Trace of Sand + Roots med plasticity Slightly Moist	CI	1.5	PID 5.4 BY 50
1.5	12-22-94 930	NA	6	SAA	CI	1.5	PID 5.5 BY 50
2.0	12-22-94 930	NA	6	SAA	CI	1.5	PID 5.5 BY 50
2.5	12-22-94 930	NA	6	10YR 2/2 Very Dark Brown Silty Clay with Roots + Fe Stains Med plasticity slightly moist	CI	3.5	PID 5.5 BY 50
3.0	12-22-94 930	NA	6	Same As Above	CI	3.5	PID 5.5 BY 50
3.5							

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	5.2	12-22-94	930
ALPHA	NA	NA	NA
BETA / GAMMA	50	12-22-94	930

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-23-94)

6521
pg 14 of 14

WELL NUMBER: 11493

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

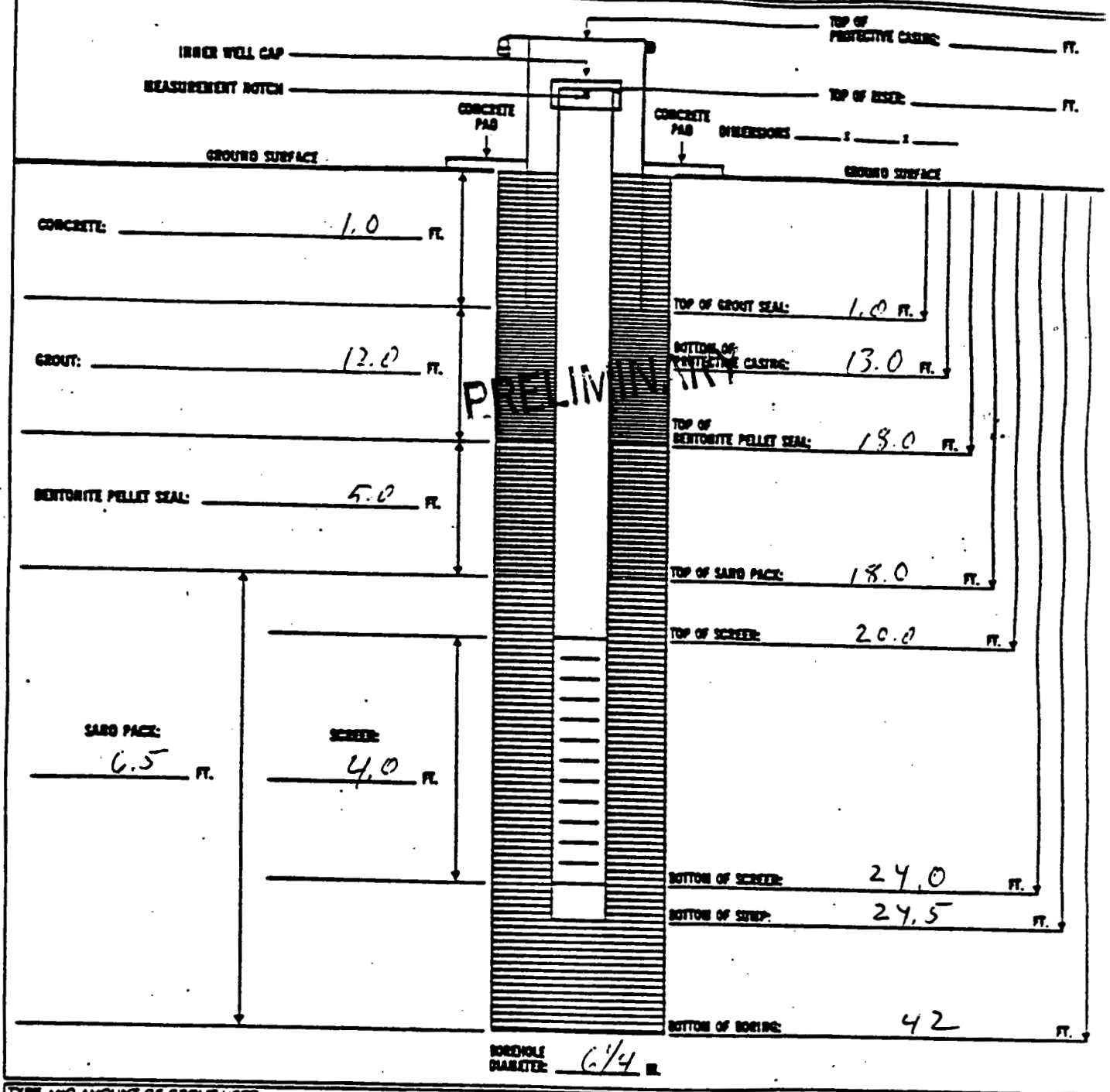
PROJECT NAME:

PROJECT NUMBER:

GEOLOGIST:

DRILLING METHOD:

DATES OF INSTALLATION: WATER LEVEL (R.I.): DATE: RELATED FAL NUMBERS: CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: 50 lb

BENTONITE PELLETS (5-GALLON BUCKETS): 2.5 C

DEEPEST TEMPORARY DRILLING CASING PENETRATION: 42.0 FT.

VOLUME OF WATER USED DURING DRILLING: KV 12-21-94 7.5 12.8 GAL.

RISER MATERIAL:

VOLUME OF WATER USED FOR GROUT HYDRATION: 7.5 GAL.

RISER WALL THICKNESS:

TYPE OF SAND PACK:

SCREEN MATERIAL:

DRILLING CASING DIAMETER: IN.

RISER/SCREEN DIAMETER: IN.

SCREEN SLOT SIZE: IN

SCREEN TYPE:

DEPTH OF CENTRALIZER(S): NA FT.

FS-F-3684 (9/10/93)

000475

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11493

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-21-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12.5 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
43.0	12-21-94 1040	NA	6	SAA	CL	1.5	PID 9 BY 50
		NA		Bottom of Boring 43.0'			PID BY
		NA		PRELIMINARY			PID BY
		NA					PID BY
		NA					PID BY
		NA					PID BY
		NA					PID BY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

000376

G:/WPSC/94-776.DRW (11-23-94)

6521

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11493

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-21-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Gilim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
39.5	12-21-94 1640	NA	6	SAA	CI	1.5	PID 9 BY 50
40.0	12-21-94 1640	NA	6	SAA	CI	1.5	PID 9 BY 50
40.5	12-21-94 1640	NA	6	SAA	CI	1.5	PID 9 BY 50
41.0	12-21-94 1640	NA	6	SAA	CI	1.5	PID 9 BY 50
41.5	12-21-94 1640	NA	6	SAA	CI	1.5	PID 9 BY 50
42.0	12-21-94 1640	NA	6	SAA	CI	1.5	PID 9 BY 50
42.5	12-21-94 1640	NA	6	SAA	CI	1.5	PID 9 BY 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See log		
ALPHA	NA	NA	NA
BETA / GAMMA	See log		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11493

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-21-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
36.0	12-21-94 1030	NA	6	SAA	CI	1.5	PID 9 BY 50
36.5	12-21-94 1030	NA	6	SAA	CI	1.5	PID 9 BY 50
37.0	12-21-94 1030	NA	6	SAA	CI	1.5	PID 9 BY 50
37.5	12-21-94 1030 402758	NA	6	SAA	CI	1.5	PID 9 BY 50
38.0	12-21-94 1030 402756	NA	6	SAA	CI	1.5	PID 9 BY 50
38.5	12-21-94 1030 402760	NA	6	SAA	CI	1.5	PID 9 BY 50
39.0	12-21-94 1030 402760	NA	6	SAA. 4 x 15 x 1.5 piece of pine wood	CI	1.5	PID 9 BY 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See	12/1	
ALPHA	NA	NA	NA
BETA / GAMMA	See	12/1	

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-358 000378

G:/WPSC/94-778.DRW (11-23-9

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11493

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-21-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
32.5	12-21-94 1020	NA	6	SAA	CI	1.5	PID 13 BY 50
33.0	12-21-94 1020	NA	6	SAA	CI	1.5	PID 13 BY 50
33.5	12-21-94 1020	NA	6	SAA	CI	1.5	PID 13 BY 50
34.0	12-21-94 1020	NA	6	SAA	CI	1.5	PID 13 BY 50
34.5	12-21-94 1020	NA	6	SAA	CI	1.5	PID 13 BY 50
35.0	12-21-94 1020	NA	6	SAA	CI	1.5	PID 13 BY 50
35.5	12-21-94 1020	NA	6	SAA	CI	1.5	PID 9 BY 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000379

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-23-9

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11493

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-21-94

GEOLOGIST: Gerlak / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
29	12-21-94 1015	NA	6	SAA	CI	1.5	PID 13 BY 50
29.5	12-21-94 1015	NA	6	SAA	CI	1.5	PID 13 BY 50
30.0	12-21-94 1015	NA	6	SAA PRELIMINARY	CI	1.5	PID 13 BY 50
30.5	12-21-94 1015	NA	6	SAA	CI	1.5	PID 13 BY 50
31.0	12-21-94 1015	NA	6	SAA	CI	1.5	PID 13 BY 50
31.5	12-21-94 1015	NA	6	SAA	CI	1.5	PID 13 BY 50
32.0	12-21-94 1015	NA	6	SAA	CI	1.5	PID 13 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 1149 3

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-21-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12 Gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
25.0 – 25.5	12-21-94 1010	NA	0	No Recovery because of limestone cobble	NA	NA	PID NA By
26.0	12-21-94 1010	NA	0	No Rec	NA	NA	PID NA By
26.5	12-21-94 1010	NA	0	No Rec	NA	NA	PID NA By
27.0	12-21-94 1010	NA	0	No Rec	NA	NA	PID NA By
27.5	12-21-94 1010	NA	6	Stiff 5yr 4/1 Dark Gray Silty Clay medium angular lS gravel, trace of sand, slight plasticity, slightly moist	CI	1.5	PID 13 By 50
28.0	12-21-94 1010	NA	6	SAA	CI	1.5	PID 13 By 50
28.5	12-21-94 1010	NA	6	SAA	CI	1.5	PID 13 By 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

UNCLASSIFIED

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11493

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-21-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.5 – 22.0	9-21-94 1000	NA	6	SAA, with huge piece of limestone, brachs	CL	1.5	PID 42 BY 60
22.5	9-21-94 1000	NA	6	SAA PRELIMINARY	CL	1.5	PID 42 BY 60
23.0	9-21-94 1000	NA	6	SAA	CL	1.5	PID 42 BY 60
23.5	9-21-94 1000	NA	6	SAA	CL	1.5	PID 42 BY 60
24.0	9-21-94 1000	NA	6	SAA	CL	1.5	PID 42 BY 60
24.5	9-21-94 1000	NA	6	SAA	CL	1.5	PID 42 BY 60
25.0	9-21-94 1000	NA	6	SAA	CL	1.5	PID 42 BY 60

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See Log		
ALPHA	NA	NA	NA
BETA / GAMMA	See Log		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

000282

6521

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11493

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-21-94

GEOLOGIST: Gorgik / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12.5 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
18.0 – 18.5	12-21-94 955	NA	6	PRELIMINARY	CI	1.5	PID 42 By 60
18.5 – 19.0	12-21-94 955	NA	6	SAA	CI	1.5	PID 42 By 60
19.0 – 19.5	12-21-94 955	NA	6	SAA	CI	1.5	PID 42 By 60
19.5 – 20.0	12-21-94 955	NA	6	SAA	CI	1.5	PID 42 By 60
20.0 – 20.5	12-21-94 955	NA	6	SAA	CI	1.5	PID 42 By 60
20.5 – 21.0	12-21-94 955	NA	6	SAA	CI	1.5	PID 42 ~~#403340~~ 4612 By 60 ~~#403344~~ 4612
21.0 – 21.5	12-21-94 955	NA	6	SAA	CI	1.5	PID 42 #403343 By 60 #403344

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See	Fig 1	
ALPHA	NA	NA	NA
BETA / GAMMA	See	Fig 1	

NOTES: None.

000383

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 1149-3

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-21-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.5 – 15.0	12-21-94 950	NA	6	SAA PRELIMINARY	CI	3.5	PID 36 BY 60
15.0 – 15.5	12-21-94 950	NA	0	No recovery, due to large cobble jammed in core.	KB 12-21-94 CT	NA	PID 36 BY 60
15.5 – 16.0	12-21-94 950	NA	0	No recovery	KB 12-21-94 CT	NA	PID 36 BY 60
16.0 – 16.5	12-21-94 950	NA	0	No recovery	NA	NA	PID 36 BY 60
16.5 – 17.0	12-21-94 950	NA	0	No Recovery	NA	NA	PID 36 BY 60
17.0 – 17.5	12-21-94 950	NA	6	Stiff Same gray silty clay as 13.5-14 ft	CI	1.5	PID 42 BY 60
17.5 – 19.0	12-21-94 950	NA		SAA	CI	1.5	PID 42 BY 60

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 1493

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME:

DATE STARTED: 12-21-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: | DATE: | TIME:

DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 128 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
11.0–11.5	12-21-94 945	NA	6	~~SAA~~ PRELIMINARY	CI	2.5	PID 32 By 60
12.0	12-21-94 945	NA	6	SAA, with 10YR 5/3 Clayey Silt lense, approximately 6 inches thick, slightly moist non-plastic	CI	3.5	PID 32 By 60
12.5	12-21-94 945	NA	6	SAA, with increasing gravel	CI	3.5	PID 36 By 60
13.0	12-21-94 945	NA	6	SAA	CI	3.5	PID 36 By 60
13.5	12-21-94 945	NA	6	SAA	CI	3.5	PID 36 Kd #403345 By 60 #403340 #403339
14.0	12-21-94 945	NA	6	KG 12-21-94 5yr 4/1 Dark gray, silty ~~SAA~~ clay with gravel, trace sand, some large cobbles, slightly moist, medium plasticity	CI	3.5	PID 36 Kd #403346 By 60 #403341 #403342
14.5	12-21-94 945	NA	6	KG 12-21-94 ~~SAA~~ SAA	CI	3.5	PID 36 By 60

transition Brown gray clay break

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000385

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11493

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-21-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotesonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
2.0 – 3.5	12-21-94 950	NA	6	SAA, with only iron staining	CI	2.5	PID 32 BY 60
3.5 – 5.0	12-21-94 950	NA	6	PRELIMINARY	CI	2.5	PID 32 BY 60
5.0 – 6.5	12-21-94 950	NA	6	SAA, with increasing gravel content 25%, some cobles	CI	2.5	PID 32 BY 60
6.5 – 8.0	12-21-94 950	NA	6	SAA	CI	2.5	PID 32 BY 60
8.0 – 9.5	12-21-94 950	NA	6	SAA	CI	2.5	PID 32 BY 60
9.5 – 10.0	12-21-94 950	NA	6	SAA	CI	2.5	PID 32 BY 60
10.0 – 11.5	12-21-94 950	NA	6	SAA	CI	2.5	PID 32 BY 60

INSTRUMENT	BACKGROUND	DATE	TIME
PID	5.2	1991	
ALPHA	NA	NA	NA
BETA / GAMMA	5.4	1991	

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11493

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-21-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
4.0	12-21-94 940	NA	6	SAA PRELIMINARY	CI	2.5	PID 17 BY 50
4.5	12-21-94 940	NA	6	SAA	CI	2.5	PID 17 BY 50
5.0	12-21-94 940	NA	6	SAA	CI	2.5	PID 17 BY 50
5.5	12-21-94 940	NA	6	SAA	CI	2.5	PID 30 BY 60
6.0	12-21-94 940	NA	6	SAA	CI	2.5	PID 30 BY 60
6.5	12-21-94 940	NA	6	SAA	CI	2.5	PID 30 BY 60
	12-21-94 940	NA	6	Very stiff SAA, with some fine to medium gravel	CI	2.5	PID 30 BY 60

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000387

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11493

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-21-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-21-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.5	12-21-94 930	NA	6	Stiff 10yr 3/3 Dark Brown Silty Clay trace fine sand and medium gravel. Slightly moist, medium plasticity	CI	1.5	PID 17 BY 50
1.0	12-21-94 930	NA	6	Stiff 10yr 5/4 Yellowish Brown Silty clay trace fine sand and medium gravel slightly moist, medium plasticity	CI	1.5	PID 17 BY 50
1.5	12-21-94 930	NA	6	Stiff-10yr 3/2 Dark Grayish Brown Silty clay, with roots, trace sand (fine), slight to medium plasticity, slightly moist	CI	1.5	PID 17 BY 50
2.0	12-21-94 930	NA	6	Very Stiff SAA	CI	2.5	PID 17 BY 50
2.5	12-21-94 930	NA	6	SAA	CI	2.5	PID 17 BY 50
3.0	12-21-94 930	NA	6	SAA	CI	2.5	PID 17 BY 50
	12-21-94 930	NA	6	Very Stiff 10yr 5/4 Yellowish Brown Silty Clay with iron and manganese staining, trace of sand	CI	2.5	PID 17 BY 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	2.9	12-21-94	830
ALPHA	NA	NA	NA
BETA / GAMMA	50	12-21-94	930

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

000388

G:/WPSC/94-778.DRW (11-23-94)

WELL NUMBER: 11492

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: CRU2 Pre Design

PROJECT NUMBER:

GEOLOGIST: K Geiger

DRILLING METHOD: Rotosonic

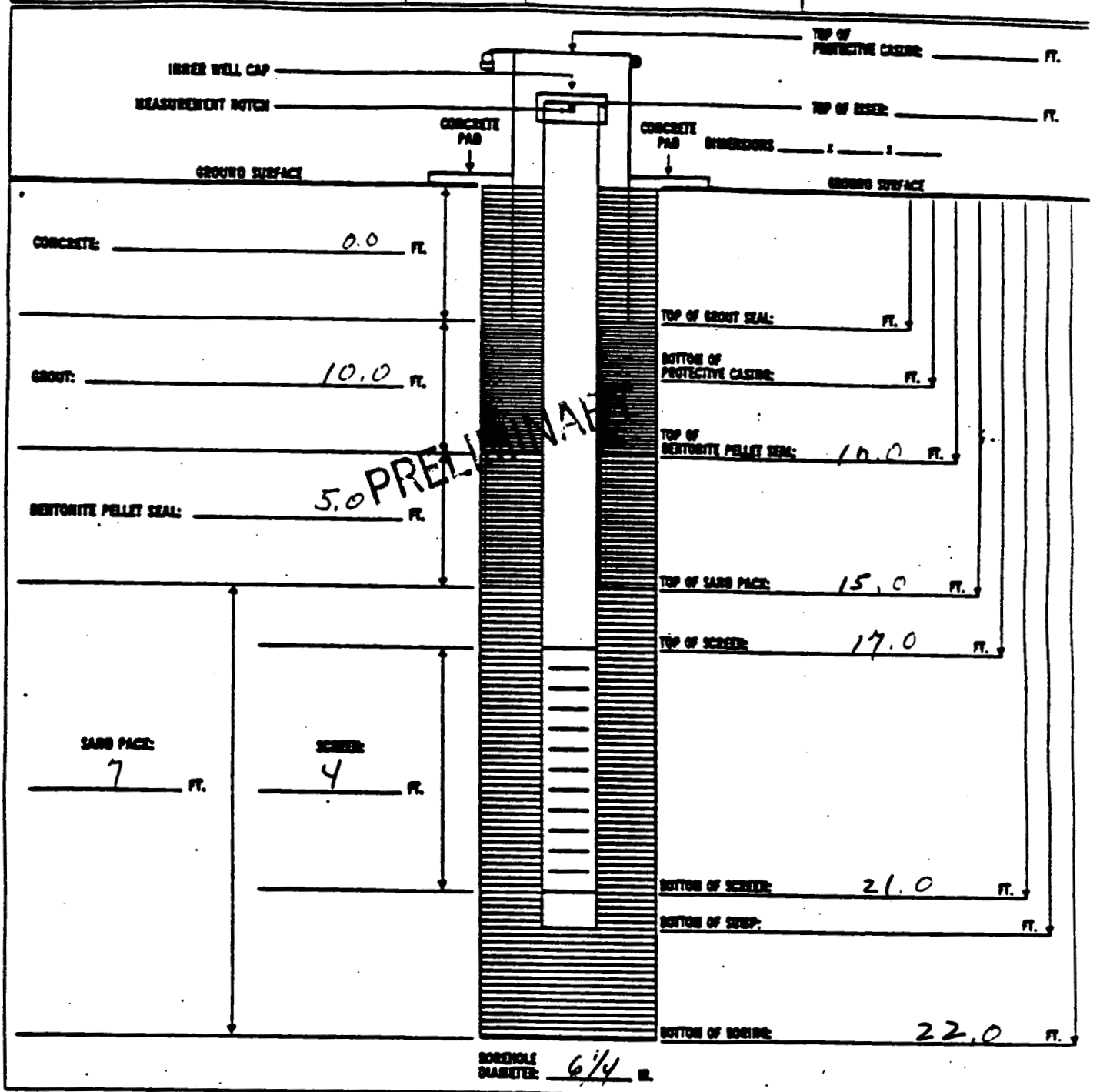
DATES OF INSTALLATION: 12-15-94 - 12-16-94

WATER LEVEL (R.)

DATE:

RELATED FAL NUMBERS:

CHECKED BY:



PRELIMINARY

TYPE AND AMOUNT OF GROUT USED: 40 lbs Volclay.	BENTONITE PELLETS (5-GALLON BUCKETS): 75 lb	DEEPEST TEMPORARY DRILLING CASING PENETRATION: 22.0 FT.
VOLUME OF WATER USED DURING DRILLING: ~~50~~ 8.5 GAL	RISER MATERIAL: 20'	VOLUME OF WATER USED FOR GROUT HYDRATION: 20 GAL

RISER WALL THICKNESS: Sch 40	TYPE OF SAND PACK: 10/20 Sand	SCREEN MATERIAL: S.S	DRILLING CASING DIAMETER: 6 3/4 IN.
RISER/SCREEN DIAMETER: 2.0 IN.	SCREEN SLOT SIZE: 10 Slot IN.	SCREEN TYPE: Screen Type Flush	DEPTH OF CENTRALIZER(S): N/A FT.

FS-F-3684 (9/10/93)

000389

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.:

BORING NUMBER: 11492

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED:

WATER USED DURING DRILLING: 8.5 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
12.5							
14.0	12/15/94 1530 402631	NA	6	5Y 5/1 GRAY CLAY, some med sand and fine gravel med. plasticity sl. moist *FE-stained" IN FRACTURED CLAY	CL	1.5	βγ = 60 pid = 17.5
16.0	12/15/94 1530 402631	NA	6	SAA, BUT NO FRACTURED CLAY W/ FE-STAIN	CL	1.5	βγ = 50 pid = 13.1
17.5	12/15/94 1543 402631	NA	6	SAA PRELIMINARY	CL	1.5	βγ = 40 pid = 13.5
19.0	12/15/94 1543 402631	NA	6	SAA	CL	1.5	βγ = 50 pid = 14.5
20.0	12/15/94 1543 402631	NA	6	Slight increase in med. sand SUBROUNDED Clay w/ med, subrounded gravel	CL	1.5	βγ = 50 pid = 14.2
20.5	12/15/94 1543 402631	NA	6	5Y 5/1 GRAY CLAY, AS ABOVE, W LESS SAND	CL	0.5	βγ = 60 TCLP-402631 TCLP-402632 pid = 12.6
21.0	12/15/94 402631 end 15:43	NA	6	5Y 5/1 GRAY CLAY W/ COARSE GRAVEL & COBBLES (3" x 1½" x 1") → PROB. LIMESTONE ↳ SUBANGULAR	CL	1.0	βγ = 60 pid = 13.1

21' to 22' No Recovery

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	NA	NA	NA
BETA / GAMMA			

NOTES: Bottom of Boring at 22 Feet

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 5 20.03.07

BORING NUMBER: 1149V

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-15-94

GEOLOGIST:

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-16-94

WATER USED DURING DRILLING: 8.5 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Dracula / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0							
14.5	NA	NA	0		NA	NA	NA
15.0		NA	0	No Recovery			
15.5		NA	0				
16.0		NA	0				
16.5		NA	0				
17.0	NA	NA	0		NA	NA	NA
17.2	1530 402631 12/15/94	NA	6	soft 5Y 5/1 GRAY CLAY, V. SANDY (med. grained) + subangular gravel, med. plasticity, slightly moist	CL	1.0	Bγ = 60 pid = 12.1

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See p91		
ALPHA	NA	NA	NA
BETA / GAMMA	See p91		

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

000391

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 4 OF 6

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11492

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-15-94

GEOLOGIST: K Geiger

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED:

WATER USED DURING DRILLING: 8.5 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5							
11.0	1510 NA	NA		PRELIMINARY	NA	NA	NA
11.5	1510 NA	NA					
12.0	1510 NA	NA					
12.5	1510 NA	NA					
13.0	1510 NA	NA					
13.5	1510 NA	NA					
14.0	1510 NA	NA			NA	NA	NA

INSTRUMENT	BACKGROUND	DATE	TIME
PID	Sept 1		
ALPHA	NA	NA	NA
BETA / GAMMA	Sept 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 210.03.07

BORING NUMBER: 11492

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: KG 12/15/94 K Geigel

GROUNDWATER LEVEL: | DATE: | TIME:

DATE STARTED: 12-15-94

GEOLOGIST: K Geigel

GROUNDWATER LEVEL: | DATE: | TIME:

DATE COMPLETED:

WATER USED DURING DRILLING: 8.5 ~~50 gal~~ per hole

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER:

PRELIMINARY

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 Inch)	RECOVERY (Inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	14:50 12/15/94 402630	NA	6	VERY DARK GRAY SANDY CLAY. 10YR 4/4 some med. gravel subangular to angular med. plasticity, slightly moist stiff	CL	.25	βγ = 35 pid = 11.0
2.5	12/15/94 1459 402630	NA	6	10YR 4/4 CLAY, SL. SILTY, some SAND (med.), COARSE GRAVEL, slightly moist, medium plasticity stiff ~~COBBLES~~	CL	1.5	βγ = 50 pid = 16.2
5.0	15:10 12/15/94 402630	NA	6	MASSIVE GRAVEL 6" x 4" x 2" WITH CLAY AS ABOVE, SL. SILTY, SL. MOIST, MED. plasticity	CL	1.5	βγ = 30 pid = 13.4
7.5	1510 12/15/94 402630	NA	6	VERY DARK GRAY 5Y 3/1 GRAY CLAY, SILTY, SOME MED. SUBROUNDED GRAVEL, SL. moist, med. plasticity	CL	2.0	βγ = 60 pid = 16.0
9.5	1510 12/15/94 402630	NA	6	VERY DARK GRAY 5Y 3/1 GRAY CLAY, SILTY, some med. sand, med. subrounded gravel, sl. moist, med. plasticity v. hard	CL	3.5	βγ = 60 pid = 14.2
10.0	1510 12/15/94 402630	NA	6	SAA	CL	3.0	βγ = 70 pid = 14.8
10.5	1510 12/15/94 402630	NA	6	SAA	CL	3.0	βγ = 60 pid = 14.6

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See log		
ALPHA	NA	NA	NA
BETA / GAMMA	See log		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11492

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED: 12-15-94

GEOLOGIST: K Geiger

GROUNDWATER LEVEL:

DATE: 12-15-94

TIME: START 14:34

DATE COMPLETED: 12/16/94

WATER USED DURING DRILLING: 8.5 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brunner / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5				PRELIMINARY			
4.0	14:47 12/15/94 402624	NA	6	10YR 4/4 Dark yellowish brown clay, silt w/ fine gravel med. plastic, slightly moist, v. hard	CL	3.5	βγ = 30 pid = 11.0
4.5	1447 12/15/94 402624	NA	6	stiff SAA	CL	2.0	βγ = 40 pid = 10.2
5.0	1447 12/15/94 402624	NA	6	very stiff SAA, plus Med. Gravel well rounded IRON STAIN IN blotches	CL	2.5	βγ = 50 pid = 15.1
5.5	~14:52 12/15/94 402624	NA	6	SAA IRON STAIN IN blotches & spots v. hard	CL	3.5	βγ = 20 pid = 12.3
6.0	1452 12/15/94 402624	NA	6	SAA	CL	—	—
6.5	12/15/94 1452 NA	NA	0	No Recovery			
7.0	12/15/94 1452 NA	NA	0				

INSTRUMENT	BACKGROUND	DATE	TIME
PID	5.1-7.8*	12-15-94	14:30
ALPHA	NA	NA	NA
BETA / GAMMA	40	12-15-94	14:40

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

* Truck Running

G:/WPSC/94-776.DRW (11-23-9

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11492

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL:

DATE:

TIME:

DATE STARTED: 12-15-94

GEOLOGIST: Ken Geiger, Cliff Lee Recorder

GROUNDWATER LEVEL:

DATE: 12-15-94

TIME: START 14:34

DATE COMPLETED: 12-16-94

WATER USED DURING DRILLING: 8.5 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

PRELIMINARY

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
SURFACE							
0.5	14:35 12/15/94 402624	NA	6	stiff 10YR 4/4 Dark yellowish brown clay, silty w/ rocks, med. plasticity sl. moist	CL	.26	Bγ = 30 pid = 9.4
1'	12/15/94 1435 402624	NA	6	very soft SAA stiff	CL	.26	Bγ = 35 pid = 9.2
1st bag 1.5	12/15/94 1435 402624	NA	6	10YR 4/4 Dark yellowish brown clay, silty, med. plasticity, sl. moist some fine to med. subangular gravel	CL	1.0	Bγ = 35 pid = 9.1
2.0	12/15/94 1435 NA	NA	0	No	NA	NA	NA
2.5	12/15/94 1435 NA	NA	0	Recovery	NA	NA	NA
Y 3.0	12/15/94 1435 NA	NA	0		NA	NA	NA
3.5	14:42 12/15/94 402624	NA	6	very soft 10YR 4/4 Dark yellow Brown clay, silty med. plasticity sl. moist to moist	CL	.26	Bγ = 30 pid = 13.0

INSTRUMENT	BACKGROUND	DATE	TIME
PID	5.1 → 7.2*	12-15-94	14:30
ALPHA	NA	NA	NA
BETA / GAMMA	40	12-15-94	14:40

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3581

* Truck running

G:/WPSC/94-776.DRW (11-23-94)

000395

WELL NUMBER: 11491

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: Phase I + II of The OU2 PA2 Design Investigation

PROJECT NUMBER: 29 03.07

GEOLOGIST: Ken Coliger

DRILLING METHOD: Roto Sonic

DATES OF INSTALLATION:	WATER LEVEL (R.I.):	DATE:	RELATED FAL NUMBERS:	CHECKED BY:
12-14-94 - 12-15-94	10 Feet	12-16-94	N/A	

TOP OF PROTECTIVE CASING: _____ FT.

INNER WELL CAP

MEASUREMENT NOTCH

TOP OF RISER: _____ FT.

CONCRETE PAD

CONCRETE PAD DIMENSIONS _____ x _____ x _____

GROUND SURFACE

GROUND SURFACE

CONCRETE: .5 FT.

GROUT: 19.5 FT.

BENTONITE PELLET SEAL: 5.0 FT.

SAND PACK: 4.5 FT.

SCREEN: 2.0 FT.

TOP OF GROUT SEAL: .5 FT.

BOTTOM OF PROTECTIVE CASING: _____ FT.

TOP OF BENTONITE PELLET SEAL: 20.0 FT.

TOP OF SAND PACK: 25.0 FT.

TOP OF SCREEN: 27.0 FT.

BOTTOM OF SCREEN: 29.0 FT.

BOTTOM OF SUMP: 29.5 FT.

BOTTOM OF BORING: 47 FT.

BOREHOLE DIAMETER: 6 1/4 IN.

PRELIMINARY

TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS):	DEEPEST TEMPORARY DRILLING CASING PENETRATION:
Volclay 65 lbs	7 Bags	47.0 FT.
VOLUME OF WATER USED DURING DRILLING:	**RISER MATERIAL:**	**VOLUME OF WATER USED FOR GROUT HYDRATION:**
34 32 As of 12-16-94 (12-17-94) 200 GAL	30' Riser 21 10 Slot Screen SS 316	32 GAL
RISER WALL THICKNESS:	**TYPE OF SAND PACK:**	**SCREEN MATERIAL:**	**DRILLING CASING DIAMETER:**
3/16 Gauge Sch 40	10/20 Sand	S.S.	6 1/4 IN.
RISER/SCREEN DIAMETER:	**SCREEN SLOT SIZE:**	**SCREEN TYPE:**	**DEPTH OF CENTRALIZER(S):**
2.0 IN.	10 Slot IN.	S.S. Screw Type Flush	NA FT.

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FEMP
LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME:

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-14-94

GEOLOGIST: K Geiger

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 3x200x 12-14-94

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: RoToSonic

DRILLER / HELPER: Brouer / Gaim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
45.0	12-14-94 1600 402628	NR	6	SAME ~~ANOTHER~~ PRELIMINARY	CL	1.0	BK 20 PID 7.0
45.5	12-14-94 1600 402629		6	~~SAME~~	CL	1.0	BK 25 PID 6.5
46.0	12-14-94 1600 402628		6	SAME	CL	1.5	BK 20 PID 6.7
46.5	12-14-94 1600 402628		6	SAME	CL	1.5	BK 25 PID 4.7
47.0	12-14-94 1600 402628	NR	6	SAME	CL	1.5	BK 20 PID 4.9
				Bottom of Boring 47.0 FeET			

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	5 2	1991	
BETA / GAMMA			

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3691

G:/WPSC/94-776.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: 11491 KG 12-14-94 See pg 1

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-14-94

GEOLOGIST: K. Geiger

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 34 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Gerlin

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
41.5	12-14-94 1550 402627	NA	6	SAME PRELIMINARY	CL	1.0	Bq 30 PID 8.2
42.0	12-14-94 1550 402627		6	SAME	CL	1.0	Bq 39 PID 7.2
42.5	12-14-94 1550 402627		6	SAME	CL	1.0	Bq 20 PID 7.8
43.0	12-14-94 1550 402627		6	SAME	CL	1.0	Bq 20 PID 7.6
43.5	12-14-94 1550 402628		6	SAME	CL	1.5	Bq 20 PID 6.8
44.0	12-14-94 1550 402628		6	SAME	CL	1.5	Bq 20 PID 5.7
	12-14-94 1550 402628	NA	6	SAME 6x5x4 VERY BIG ORGANIC POSSIBLY CHERT	CL	1.0	Bq 20 PID 8.0

INSTRUMENT	BACKGROUND	DATE	TIME
PID		See pg 1	
ALPHA			
BETA / GAMMA			

NOTES: none

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: See Pg 1

PROJECT NO.:

BORING NUMBER: 1149

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-14-94

GEOLOGIST: K Geigle

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 34 300 gal 94

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brewer / Gleim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
38.0	12-14-94 1535 402626	NA	6	Soft SAME	CL	0.25	BZ 35 PID 8.0
38.5	12-14-94 1535 402627		6	SAME	CL	0.25	BZ 35 PID 9.6
39.0	12-14-94 1535 402627		6	Stiff SAME (STIFFER)	CL	1.0	BZ 30 PID 6.6
39.5	12-14-94 1540 402627		6	SAME SHAFFER	CL	1.5	BZ 35 PID 7.7
40.0	12-14-94 1540 402627		6	SAME BUT INCREASED SAND PERCENTAGE 10% APPROX	CL	1.0	BZ 40 PID 7.9
40.5	12-14-94 1540 402627		6	SAME	CL	1.0	BZ 30 PID 8.8
	12-14-94 1540 402627	NA	6	SAME	CL	1.0	BZ 35 PID 8.4

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	5 2 19		
BETA / GAMMA			

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: See Pg 1

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-14-94

GEOLOGIST: K Geiger

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 34 200 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Green

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.2	12-14-94 1530 402625	NA	6	Soft PRELIMINARY	CL	0.5	BG 35 PID 18.2
35.0	12-14-94 1530 402625		6	SAME	CL	0.5	BG 30 PID 19.8
35.5	12-14-94 1530 402625		6	Stiff SAME	CL	1.0	BG 30 PID 25.0
36.0	12-14-94 1530 402625		6	Soft SAME	CL	0.5	BG 25 PID 18.6
36.5	12-14-94 1530 402625		6	SAME	CL	0.5	BG 35 PID 20.2
37.0	12-14-94 1530 402625		6	SAME BIG LIMESTONE COBBLE 4x3x3	CL	0.5	BG 35 PID 19.0
	12-14-94 1535 402626	NA	6	SAME	CL	.25	BG 35 PID 8.5

INSTRUMENT	BACKGROUND	DATE	TIME
PID	18.0	12-14-94	1540
ALPHA	NA	NA	NA
BETA / GAMMA	See Pg 1		

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-9

000400

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: See Pg 1

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-14-94

GEOLOGIST: K Geiger

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 34 gal 12/14/94

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.2	12-14-94 1510 402624	NA	6	SAME PRELIMINARY	CL	0.25	BG 25 PID 14.0
31.5	12-14-94 1510 402624		6	SAME	CL	0.25	BG 30 PID 14.6
32.0	12-14-94 1510 402624		6	SAME	CL	0.25	BG 35 PID 15.0
32.5	12-14-94 1520 402625 ~~402624~~ 12/14/94		6	Add STIFF 10YR 3/1 DARK GRAY SILTY CLAY WITH APPROX 5% SAND, FEW MEDIUM ~~SAND~~ SUBANGULAR GRAVEL, AND PLASTICITY, SLIGHTLY MOIST	CL	0.5	BG 35 PID 15.0
33.0	12-14-94 1520 402625		6	STIFF SAME	CL	1.5	BG 35 PID 15.8
33.5	12-14-94 1520 402625		6	STIFF SAME FEW LARGER PIECES OF GRAVEL	CL	2.0	BG 35 PID 15.8
	12-14-94 1520 402625	NA	6	SOFT SAME ~~[illegible]~~ SPARSE FINE TO MED GRAVEL	CL	0.5	BG 30 PID 16.2

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	See pg 1		
BETA / GAMMA			

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3891

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: See Pg. 1

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-14-94

GEOLOGIST: K Geiger

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 74 [illegible]

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Grim / Brown

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
27.5	12-14-94 1500 402624	WA	6	Soft 10YR 3/1 DARK GRAY SILTY/SANDY CLAY, (10%) [illegible] GRAVEL, MEDIUM PLASTICITY, VERY MOIST TO WET	CL	0.25	BZ 20 PID 15.6 TCLP 402637 TOTAL 402636
28.0	12-14-94 1500 402624		6	SAME AS 27.0-27.5 FOOT	CL	0.25	BZ 20 PID 14.8
28.5	12-14-94 1500 402624		6	SAME	CL	0.25	BZ 20 PID 15.2
29.0	12-14-94 1500 402624		6	SAME	CL	0.25	BZ 25 PID 14.9
29.5	12-14-94 1510 402624		6	Soft 10YR 3/1 DARK GRAY SILTY CLAY WITH TRACE OF MEDIUM ANGULAR GRAVEL AND A ~~SLIGHT TRACE~~ KEY LIMY OF FINE TO MED SAND MED. PLASTICITY, SLIGHTLY MOIST	CL	0.25	BZ 30 PID 14.6
30.0	12-14-94 1510 402624		6	SAME	CL	0.25	BZ 20 PID 16.2
	12-14-94 1510 402624	WA	6	SAME	CL	0.25	BZ 30 PID 16.2

WELL?

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID		See Pg 1	
ALPHA	See Pg 1		
BETA / GAMMA			

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-778.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: See pg 1

PROJECT NO.:

BORING NUMBER: 1149E

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-14-94

GEOLOGIST: K. Geiger

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 34 ~~Lec 6/27/94~~

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5	12-14-94 1430 402623	NA	6	~~SAME~~ PRELIMINARY AS ABOVE (17.0-17.5) LARGE COBBLE OF SHALE 2"x3"x2"	CL	1.0	BG 35 PID 14.4
18.0	12-14-94 1430 402623		6	Med Stiff SAME AS ABOVE (17.5-18.0) (NO LARGE COBBLES)	CL	0.5	BG 39. PID 16.0
18.5	12-14-94 1430 402623		6	Stiff SAME AS 18.0-18.5 FT	CL	1.0	BG 30 PID 14.0
19.0	12-14-94 1440 402623		6	SAME AS 18.5-19.0 FT	CL	1.0	BG 35 PID 13.0
19.5	12-14-94 1440 402623		6	SAME AS 19.0-19.5 FT LARGE LIMESTONE	CL	1.0	BG 30 PID 12.5
20.0	12-14-94 1450 NA		0	No Recovery } 20-27 FT	NA	NA	NA
27.0	12-14-94 1450 NA	NA	0	No Recovery } 20-27 FT	NA	NA	NA

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	See pg 1		
BETA / GAMMA			

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FB-F-3881

G:/WPSC/94-778.DRW (11-23-9

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.:

BORING NUMBER: 11491

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-14-94

GEOLOGIST: Ken Geiger

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-15-94

WATER USED DURING DRILLING: 34 ~~200~~ 26 gal 12-14-94

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Geiger

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.5	12-14-94 1415 NA	NA	0	NO Recovery PRELIMINARY	NA	NA	NA
15.0	12-14-94 1415 NA	NA	0	NO Recovery	NA	NA	NA
15.5	12-14-94 1415 NA	NA	0	NO Recovery	NA	NA	NA
16.0	12-14-94 1415 NA	NA	0	NO Recovery	NA	NA	NA
16.5	12-14-94 1415 NA	NA	0	NO Recovery	NA	NA	NA
17.0	12-14-94 1415 NA	NA	0	NO Recovery	NA	NA	NA
17.5	12-14-94 1430 402623	NA	6	Stiff 10YR 3/1 Dark Gray Silty clay with Some Medium Gravel (10%), Trace of Fine Sand Med. Plasticity Slightly Moist	CL	1.0	PID 30 BJ 9.6

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-23-9

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 1149Y

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 12.8 ~~75 gal.~~

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5	12-27-94 1340	NA	0	NR	NA	NA	PID 8.5 BY TC
15.0	12-27-94 1340	NA	0	PRELIMINARY	NA	NA	PID 8.5 BY TC
15.5	12-27-94 1340	NA	0	NR	NA	NA	PID 8.5 BY TC
16.0	12-27-94 1340	NA	0	NR	NA	NA	PID 8.5 BY TC
16.5	12-27-94 1340	NA	0	NR	NA	NA	PID 8.5 BY TC
17.0	12-27-94 1340	NA	0	NR	NA	NA	PID BY
17.5	12-27-94 1340 402680	NA	6	STIFF SYSTEM Dark Gray silty clay with some Gravel and plasticity, slightly moist	CI	1.0	PID BY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000405

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11497

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 128 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Gilim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0	12-27-94 1345 402680	NA	6	SAA	CI	1.0	PID 8.5 BY 50
18.0 – 18.5	12-27-94 1345 402680	NA	6	SAA	CI	1.0	PID 8.5 BY 50
18.5 – 19.0	12-27-94 1345 402680	NA	6	SAA PRELIMINARY	CI	1.0	PID 8.5 BY 50
19.0 – 19.5	12-27-94 1345 402680	NA	6	SAA	CI	1.0	PID 8.5 BY 50
19.5 – 20.0	12-27-94 1345 402680	NA	6	SAA	CI	1.0	PID 8.5 BY 50
20.0 – 20.5	12-27-94 1345 402680	NA	6	SAA	CI	1.0	PID 8.5 BY 50
20.5 – 21.0	12-27-94 1345 402680	NA	6	SAA	CI	1.0	PID 8.5 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000406

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11497

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Griffin / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 12.8 Bbl 95 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0							
22.5	1350 402680	NA	6	SAA	CI	1.0	PID 8.5 BY 50
22.0	1350 402680	NA	6	SAA	CI	1.0	PID 8.5 BY 50
22.5	1350 402680	NA	6	SAA	CI	1.0	PID 8.5 BY 50
23.0	1350 402680	NA	6	SAA	CI	1.0	PID 8.5 BY 50
23.5	1350 402683	NA	6	SAA	CI	1.0	PID 8.5 BY 50
24.0	1350 402683	NA	6	SAA	CI	1.0	PID 8.5 BY 50
24.5	1350 402683	NA	6	KB 12-27-94 ~~NR~~ SAA	CI	1.0	PID 8.5 BY 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11497

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 12.8 ~~1/4 25 gal~~

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5 – 25.0	12-27-94 1350 402683	NA	6	SAA	CI	1.0	PID 8.5 By 50
25.0 – 25.5	12-27-94 1350 402683	NA	6	SAA	CI	1.0	PID 8.5 By 50
25.5 – 26.0	12-27-94 1350 402683	NA	6	SAA	CI	1.0	PID 8.5 By 50
26.0 – 26.5	12-27-94 1350 402683	NA	6	SAA	CI	1.0	PID 8.5 By 50
26.5 – 27.0	12-27-94 1350 402683	NA	6	SAA	CI	1.0	PID 8.5 By 50
27.0 – 27.5	12-27-94 1350 402682	NA	0	NR	NA	NA	PID By NA
27.5 – 28.0	12-27-94 1350 402682	NA	0	NR	NA	NA	PID By NA

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681 000408

G:/WPSC/94-776.DRW (11-23-9

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11497

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 12.8 ~~7591~~ gal 11/3/95

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
26.0 – 26.5	12-27-94 1400 402682	NA	6	SAA 26.5'-27.0'	CI	1.0	PID 8.5 BY 50
26.5 – 27.0	12-27-94 1400 402682	NA	6	SAA	CI	1.0	PID 8.5 BY 50
27.0 – 27.5	12-27-94 1400 402682	NA	6	SAA	CI	1.0	PID 8.5 BY 50
27.5 – 28.0	12-27-94 1400 402682	NA	6	SAA	CI	1.0	PID 8.5 BY 50
28.0 – 28.5	12-27-94 1400 402682	NA	6	SAA	CI	1.0	PID 8.5 BY 50
28.5 – 29.0	12-27-94 1400 402682	NA	6	SAA	CI	1.0	PID 8.5 BY 50
29.0 – 29.5	12-27-94 1400 402682	NA	6	SAA	CI	1.0	PID 8.5 BY 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000409

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11497

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Gorgik / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 12.8 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.5	12-27-94 1400	NA	6	SAA	CI	1.0	PID 8.5 BY 50
32.0	402682						
32.5	12-27-94 1400 402685	NA	6	very stiff SY 4/1 Dark Gray Silty Clay with Gravel and Plasticity Slightly Moist	CI	2.5	PID 8.5 BY 50
33.0	12-27-94 1400 402685	NA	6	stiff SAA PRELIMINARY	CI	1.0	PID 8.5 BY 50
33.5	12-27-94 1400 402685	NA	6	SAA	CI	1.0	PID 8.5 BY 50
34.0	12-27-94 1400 402685	NA	6	SAA	CI	1.0	PID 8.5 BY 50
34.5	12-27-94 1400 402685	NA	6	~~NR~~ SAA KG 12-27-94	CI	1.0	PID 8.5 BY 50
35.0	12-27-94 1400 402685	NA	6	~~NR~~ SAA KG 12-27-94	CI	1.0	PID 8.5 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID		See pg 1	
ALPHA	NA	NA	NA
BETA / GAMMA	000410	See pg 1	

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME:

PROJECT NO.: 20.03.04

BORING NUMBER: 11497

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-27-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-27-94

WATER USED DURING DRILLING: 128 gals

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Gaim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
33.0	12-27-94 1400	NA	6	SAA	CI	1.0	PID 8.5 BY 50
35.5	402685						
	12-27-94 1400	NA	6	SAA	CI	1.0	PID 8.5 BY 50
36.0	402685						
	12-27-94 1400	NA	6	SAA	CI	1.0	PID 8.5 BY 50
36.5	402685						
	12-27-94 1400	NA	6	SAA	CI	1.0	PID 8.5 BY 50
37.0	402685						
				Bottom of Boring 37.0 BGS			PID BY
							PID BY
							PID BY

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	See Pg 1		
BETA / GAMMA			

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3581

G:/WPSC/94-776.DRW (11-23-94

WELL NUMBER: 11497

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

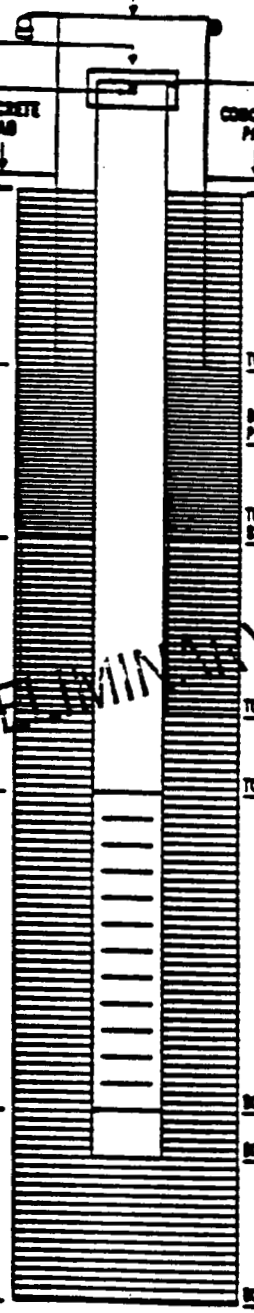
PROJECT NAME: OU2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NUMBER: 20.03.07

GEOLOGIST: Geiger / Riley

DRILLING METHOD: Rotosonic

DATES OF INSTALLATION:	WATER LEVEL (R.I.:	DATE:	RELATED FAL NUMBERS:	CHECKED BY:
12-27-94	+			



TOP OF PROTECTIVE CASING: 2.5 FT.

INNER WELL CAP

MEASUREMENT NOTCH

TOP OF RISER: FT.

CONCRETE PAD

CONCRETE PAD DIMENSIONS ___ x ___ x ___

GROUND SURFACE

GROUND SURFACE

CONCRETE: 1.0 FT.

GROUT: 22.0 FT.

BENTONITE PELLET SEAL: 5.0 FT.

SAND PACK: 4.0 FT.

SCREEN: 2.0 FT.

TOP OF GROUT SEAL: 1.0 FT.

BOTTOM OF PROTECTIVE CASING: 2.5 FT.

TOP OF BENTONITE PELLET SEAL: 23.0 FT.

TOP OF SAND PACK: 28.0 FT.

TOP OF SCREEN: 30.0 FT.

BOTTOM OF SCREEN: 32.0 FT.

BOTTOM OF SUMP: 32.0 FT.

BOTTOM OF BORING: 37.0 FT.

PRELIMINARY

BOREHOLE DIAMETER: 6 1/4 IN.

TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS):	DEEPEST TEMPORARY DRILLING CASING PENETRATION:
Volclay 40 lbs	12.5 lb	37.0 FT.
VOLUME OF WATER USED DURING DRILLING:	**RISER MATERIAL:**	**VOLUME OF WATER USED FOR GROUT HYDRATION:**
12.8 ~~9.5~~ per 1/3/95 GAL	Stainless Steel	20 ~~25~~ Actual GAL
RISER WALL THICKNESS:	**TYPE OF SAND PACK:**	**SCREEN MATERIAL:** / **DRILLING CASING DIAMETER:**
Sch 40	20/40	Stainless Steel / 6 1/4 IN.
RISER/SCREEN DIAMETER:	**SCREEN SLOT SIZE:**	**SCREEN TYPE:** / **DEPTH OF CENTRALIZER(S):**
2.0 IN.	10 slot IN	Flush Screw Type Stainless Steel / N/A FT.

000412

FS-F-3686 (9/10/93)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 1149S

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 12 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	12-28-94 905 402725	NA	6	soft 10YR, 3/3 DARK BROWN SILTY CLAY WITH ROOTS MED. PLAST. SLIGHTLY MOIST.	CI	.25	PID 0.0 BY 60
.5							
	12-28-94 905 402725	NA	6	SAA	CI	.25	PID 0.0 BY 60
1.0				stiff			
	12-28-94 905 402725	NA	6	10YR, 3/3 DARK BROWN SILTY CLAY, TRACE OF GRAVEL MED. PLAST. SLIGHTLY MOIST	CI	1.0	PID 0.0 BY 60
1.5				very stiff			
	12-28-94 905 402725	NA	6	10YR, 4/4 DARK YELLOWISH BROWN SILTY CLAY, TRACE OF GRAVEL MED PLAST. SLIGHTLY MOIST	CI	2.5	PID 0.0 BY 60
2.0							
	12-28-94 905 402725	NA	6	SAA	CI	2.5	PID 0.0 BY 60
2.5							
	12-28-94 905 402725	NA	6	SAA	CI	2.5	PID 0.0 BY 60
3.0							
	12-28-94 905 402726	NA	6	STIFF 10YR, 5/6 YELLOWISH BROWN WITH GRAY MOTTLING, SILTY CLAY, WITH A TRACE OF SAND AND GRAVEL	CI	1.0	PID 0.0 BY 60
3.5							

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12-28-94	800
ALPHA	NA	NA	NA
BETA / GAMMA	60	12-28-94	900

NOTES: None

000413

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11498

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 12 Total gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5 – 4.0	12-28-94 915 402726	NA	6	SAA	CI	1.0	PID 0.0 BY 50
4.5	12-28-94 915 402726	NA	6	SAA	CI	1.0	PID 0.0 BY 50
5.0	12-28-94 915 402726	NA	6	SAA	CI	1.0	PID 0.0 BY 50
5.5	12-28-94 915 402726	NA	6	SAA	CI	1.0	PID 0.0 BY 50
6.0	12-28-94 915 402726	NA	6	SAA	CI	1.0	PID 0.0 BY 50
6.5	12-28-94 915 402726	NA	6	STIFF 10YR 3/4 DARK YELLOWISH BROWN, SILTY CLAY WITH A TRACE OF SAND AND GRAVEL, MED PLAST, SLIGHTLY MOIST	CI	2.0	PID 0.0 BY 50
7.0	12-28-94 915 402726	NA	6	SAA	CI	2.0	PID 0.0 BY 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000414

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11498

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 12 Total Bbls

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
2.0 – 2.5	12-28-94 930 402727	NA	6	~~SAA~~ 10 12-28-94 VLAY STIFF 5Y 4/1 - DARK GRAY SILTY CLAY WITH SOME SAND AND GRAVEL, MED. PLAST. SLIGHTLY MOIST	CI	2.5	PID 0 BY 10
5.0	12-28-94 930 402727	NA	6	SAA PRELIMINARY	CI	2.5	PID 0 BY 10
5.5	12-28-94 930 402727	NA	6	SAA	CI	2.5	PID 0 BY 10
9.0	12-28-94 930 402727	NA	6	SAA	CI	2.0	PID 0 BY 10
9.5	12-28-94 930 402727	NA	6	SAA	CI	2.0	PID 0 BY 10
10.0	12-28-94 930 402727	NA	6	SAA	CI	2.5	PID 0 BY 10
10.5	12-28-94 930 402727	NA	6	SAA	CI	2.5	PID 0 BY 10

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000415

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11498

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 12-70 gal 12-28-94

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 – 11.0	12-28-94 945 402727	NA	6	SAA - WITH COBBEL 2x3x1	CI	2.5	PID 0 BY 10
11.5	12-28-94 945 402722	NA	6	SAA. 10.0 - 10.5	CI	2.5	PID 0 BY 10
12.0	12-28-94 945 402722	NA	6	SAA	CI	2.5	PID 0 BY 10
12.5	12-28-94 945 402722	NA	6	SAA	CI	2.5	PID 0 BY 10
13.0	12-28-94 945 402722	NA	6	SAA	CI	2.5	PID 0 BY 10
13.5	12-28-94 945 402723	NA	6	SAA STIFF	CI	1.0	PID 0 BY 10
14.0	12-28-94 945 402723	NA	6	SAA	CI	1.0	PID 0 BY 10

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See Pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See Pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11498

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: Well

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5	12-28-94 1000 402723	NA	6	SAA	CI	1.0	PID 0 BY 10
15.0	12-28-94 1000 402723	NA	6	SAA	CI	1.0	PID 0 BY 10
15.5	12-28-94 1000 402723	NA	6	SAA - with more gravel and sand	CI	1.5	PID 0 BY 10
16.0	12-28-94 1000 402723	NA	6	SAA	CI	1.5	PID 0 BY 10
16.5	12-28-94 1000 402723	NA	6	SAA	CI	1.5	PID 0 BY 10
17.0	12-28-94 1000 402723	NA	6	SAA	CI	1.5	PID 0 BY 10
17.5	12-28-94 1000 402724	NA	6	Soft same color 5Y 4/1 silty clay with some sand and gravel med. plast, slightly moist to moist	CI	.25	PID 0 BY 10

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000412

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: –

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 12 Fed/1

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0	12-28-94 1015 402724	NA	6	SAA	CI	.25	PID 0 BY 10
18.5	12-28-94 1015 402724	NA	6	SAA	CI	.25	PID 0 BY 10
19.0	12-28-94 1015 402724	NA	6	SAA	CI	.25	PID 0 BY >60
19.5	12-28-94 1015 402719	NA	6	SAA	CI	.25	PID 0 BY 0
20.0	12-28-94 1015 402719	NA	6	SAA	CI	.25	PID 0 BY 0
20.5	12-28-94 1015 402719	NA	6	SAA	CI	.25	PID 0 BY 0
21.0	12-28-94 1015 402719	NA	6	SAA	CI	.25	PID 0 BY 0

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11494

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 12 70 gal 12-29-94

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0	12-28-94 1025 402719	NA	6	SAA	CI	.25	PID 0 BY 0
22.5	12-28-94 1025 402719	NA	6	SAA	CI	.25	PID 0 BY 0
22.0	12-28-94 1025 402719	NA	6	SAA	CI	.25	PID 0 BY 0
23.0	12-28-94 1025 402719	NA	6	SAA - WITH COBBLE 4/4 2 X 1	CI	.25	PID 0 BY 0
23.5	12-28-94 1025 402719	NA	6	SAA 22 to 22 1/2 VERY STIFF	CI	.25	PID 0 BY 0
24.0	12-28-94 1025 402719	NA	6	SAA	CI	2.5	PID 0 BY 0
24.5	12-28-94 1025 402719	NA	6	SAA VERY STIFF	CI	2.5	PID 0 BY 0

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000419

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11498

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 12 Jugs / 12-28-94

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5 – 25.0	12-28-94 1045 402719	NA	6	SAA	CI	2.5	PID 0 BY 0
25.0 – 25.5	12-28-94 1045 402719	NA	6	SAA	CI	2.5	PID 0 BY 0
25.5 – 26.0	12-28-94 1045 402719	NA	0	NR	CI	2.5	PID 0 BY 0
26.0 – 26.5	12-28-94 1045 402719	NA	0	NR	CI	2.5	PID 0 BY 0
26.5 – 27.0	12-28-94 1045 402719	NA	0 / 6 RB 12-28-94	NR	CI	.25	PID 0 BY 0
27.0 – 27.5	12-28-94 1045 402720	NA	6	Soft 5Y 4/1 Dark Gray silty sandy clay with gravel and cobbel 4/x4x2 - moist with med. plast.	CI	.25	PID 0 BY 0
27.5 – 28.0	12-28-94 1045 402720	NA	6	SAA very stiff	CI	2.5	PID 0 BY 0

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See log		
ALPHA	NA	NA	NA
BETA / GAMMA	See log		

NOTES: None

000420

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11498

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 12 Total gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
25.0 – 25.5	12-28-94 1100 402720	NA	6	SAA	CI	2.5	PID 0 BY 0
29.0	12-28-94 1100 402720	NA	6	SAA	CI	2.5	PID 0 BY 0
29.5	12-28-94 1100 402721	NA	6	SAA	CI	2.5	PID 0 BY 0
30.0	12-28-94 1100 402721	NA	6	SAA - SLIGHTLY MOIST	CI	3.0	PID 0 BY 0
30.5	12-28-94 1100 402721	NA	6	SAA	CI	3.0	PID 0 BY 0
31.0	12-28-94 1100 402721	NA	6	SAA	CI	3.0	PID 0 BY 0
31.5	12-28-94 1100 402721	NA	6	SAA	CI	3.0	PID BY

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	Sol	pg/	
ALPHA	NA	NA	NA
BETA / GAMMA	Sol	pg/	

NOTES: NONE

000421

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11498

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-28-94

GEOLOGIST: Geigle / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 12 70 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.5 – 32.0	12-28-94 1100 402721	NA	6	SAA	CI	3.0	PID 0 BY 0
32.5	12-28-94 1100 402721	NA	6	Soft 5Y 4/1 Dark Gray Silty clay with some small gravel, med. plast. slightly moist. PRELIMINARY	CI	.25	PID 0 BY 0
33.0	12-28-94 1100 402721	NA	6	SAA	CI	.25	PID 0 BY 0
33.5		NA		Bottom of boring 33'			PID BY
34.0		NA					PID BY
34.5		NA					PID BY
35.0		NA					PID BY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See log		
ALPHA	NA	NA	NA
BETA / GAMMA	See log		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

WELL NUMBER: 11498

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 Pre Design Field Investigation

PROJECT NUMBER: 20.03.04

GEOLOGIST: Geiger/Riley

DRILLING METHOD: Rotosonic

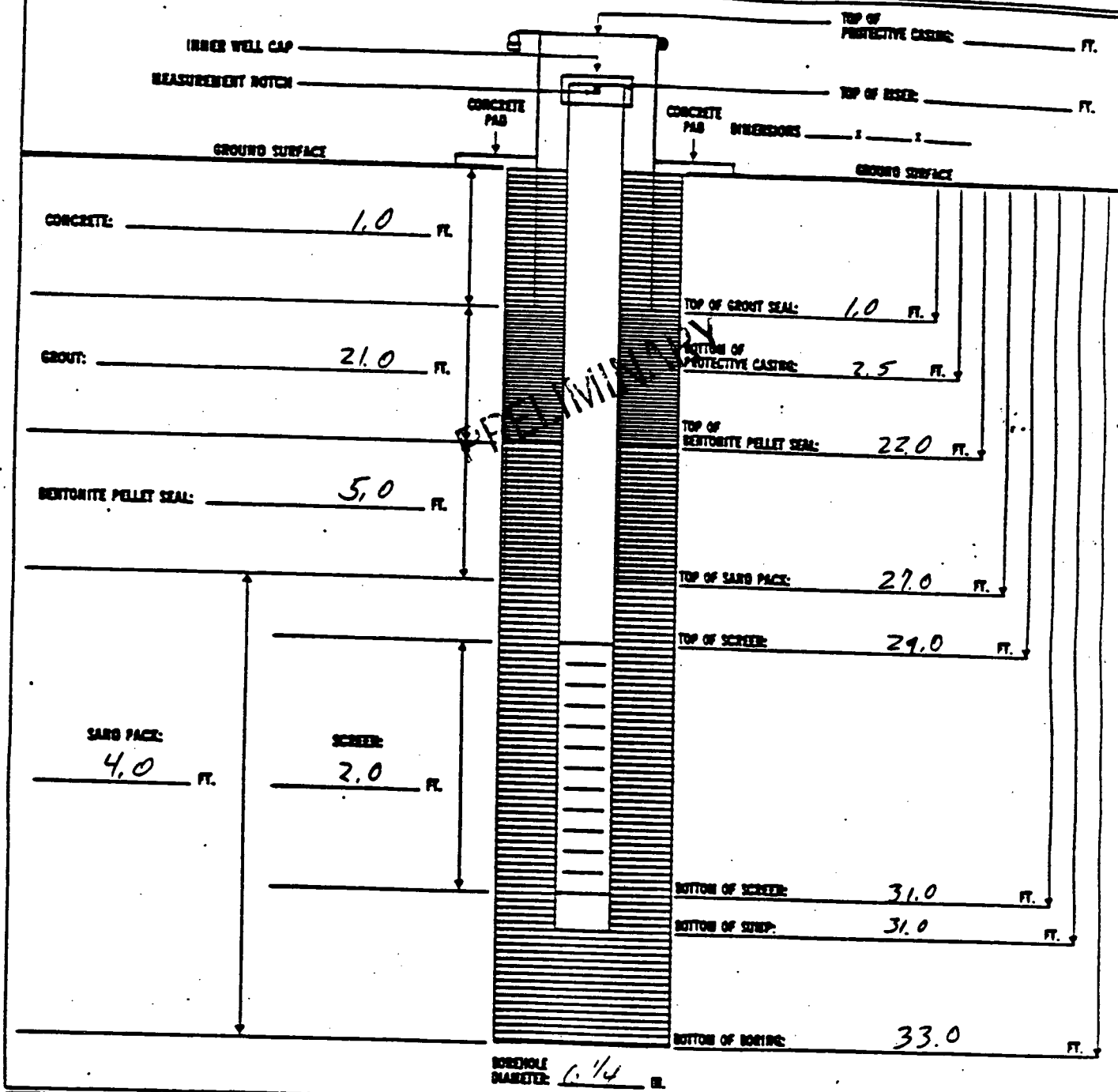
DATES OF INSTALLATION: 12-28-94

WATER LEVEL (R.L): —

DATE:

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay 80 lbs	BENTONITE PELLETS (5-GALLON BUCKETS): 125 lbs		DEEPEST TEMPORARY DRILLING CASING PENETRATION: 33.0 FT.
VOLUME OF WATER USED DURING DRILLING: ~~14~~ 12 GAL	RISER MATERIAL: Stainless 316 Steel		VOLUME OF WATER USED FOR GROUT HYDRATION: 40 GAL
RISER WALL THICKNESS: Sch 40	TYPE OF SAND PACK: 20/10	SCREEN MATERIAL: Stainless 316 Steel	DRILLING CASING DIAMETER: 6 1/4 IN.
RISER/SCREEN DIAMETER: 2.0 IN.	SCREEN SLOT SIZE: 10 SLOT IN	SCREEN TYPE: Flush Threaded	DEPTH OF CENTRALIZER(S): NA FT.

FS-F-3684 (9/10/93)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11499

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 5.1 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0 .5	12-28-94 1405 402753	NA	6	Soft 10YR 3/2 Dark Brown Silty Clay with Roots, Slightly Moist, Medium Plasticity PRELIMINARY	CL	.25	PID 0.0 BY 10
1.0	12-28-94 1405 402753	NA	6	Stiff (10YR 3/4) Dark Yellowish Brown, Silty Clay Slight Iron Staining, Slightly Moist, Med. Plasticity	CL	1.5	PID 0.0 BY 10
1.5	12-28-94 1405 402753	NA	6	Same with some (5-10%) Medium to Fine Gravel	CL	1.5	PID 0.0 BY 10
2.0	12-28-94 1405 402753	NA	6	Same	CL	1.5	PID 0.0 BY 10
2.5	12-28-94 1405 402753	NA	6	Same ~~Same~~ as 12/28/94 Trace of Sand	CL	1.5	PID 0.0 BY 10
3.0	12-28-94 1405 402753	NA	6	Same	CL	1.5	PID 0.0 BY 10
3.5	12-28-94 1405 402752	NA	6	Very Stiff Same		2.25	PID 0.0 BY 10

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12-28-94	900
ALPHA	NA	NA	NA
BETA / GAMMA	60	12-28-94	900

NOTES: None

000424

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 23.03.01

BORING NUMBER: 11499

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 5.1 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Gilim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5 – 4.0	12-28-94 1410 402752	NA	6	Very Stiff (10YR 5/4) Yellowish Brown Silty Clay with some gravel and sand, slightly gray mottled, med. plasticity, slightly moist. RC 12-28-94	CL	2.5	PID 0.0 BY 10
4.5	12-28-94 1410 402752	NA	6	Soft Same more sand less silt	CI	0.25	PID 0.0 BY 10
5.0	12-28-94 1410 402752	NA	6	Same	CI	0.25	PID 0.0 BY 10
5.5	12-28-94 1410 402752	NA	6	Same	CI	0.25	PID 0.0 BY 10
6.0	12-28-94 1410 402752	NA	6	Same	CI	0.5	PID 0.0 BY 10
6.5	12-28-94 1410 402752	NA	6	Same	CI	0.25	PID 0.0 BY 10
7.0	12-28-94 1410 402752	NA	6	Same	CI	0.5	PID 0.0 BY 10

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11499

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: Sline

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0 – 9.5	12-28-94 1415 402755	NA	6	Stiff SAA PRELIMINARY	CI	2.0	PID 0 BY 0
8.0	12-28-94 1415 402755	NA	6	SAA	CI	2.0	PID 0 BY 0
8.5	12-28-94 1415 402755	NA	6	SAA	CI	2.0	PID 0 BY 0
9.0	12-28-94 1415 402755	NA	6	SAA	CI	2.0	PID 0 BY 0
9.5	12-28-94 1415 402755	NA	6	Very Stiff 5Y - 4/1 DARK GRAY SILTY CLAY with some sand and gravel MED. PLAST. SLIGHTLY MOIST	CI	2.5	PID 0 BY 0
10.0	12-28-94 1415 402755	NA	6	SAA	CI	2.5	PID 0 BY 0
10.5	12-28-94 1415 402755	NA	6	SAA	CI	2.5	PID 0 BY 0

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA*	See pg 1		

NOTES: NONE

000426

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11499

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 5.1 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 – 11.0	12-28-94 1420 402755	NA	6	SAA	CI	2.5	PID 0 BY 0
11.0 – 11.5	12-28-94 1420 402755	NA	6	SAA	CI	2.5	PID 0 BY 0
11.5 – 12.0	12-28-94 1420 402754	NA	6	SAA	CI	2.5	PID 0 BY 0
12.0 – 12.5	12-28-94 1420 402754	NA	6	Soft 5Y 4/1 Dark Gray Silty Clay, with a trace of sand + gravel	CI	.5	PID 0 BY 0
12.5 – 13.0	12-28-94 1420 402754	NA	6	SAA	CI	.5	PID 0 BY 0
13.0 – 13.5	12-28-94 1420 402754	NA	6	SAA	CI	.5	PID 0 BY 0
13.5 – 14.0	12-28-94 1420 402754	NA	6	SAA	CI	.5	PID 0 BY 0

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11499

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 5.1 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5	12-28-94 1425 402754	NA	6	SAA	CI	.5	PID 0 By 0
15.0	12-28-94 1425 402754	NA	6	SAA	CI	.5	PID 0 By 0
15.5	12-28-94 1425 402754	NA	6	SAA	CI	.5	PID 0 By 0
16.0	12-28-94 1425 402754	NA	6	SAA	CI	.5	PID 0 By 0
16.5	12-28-94 1425 402754	NA	6	SAA	CI	.5	PID 0 By 0
17.0	12-28-94 1425 402754	NA	6	SAA	CI	.5	PID 0 By 0
17.5	12-28-94 1425 402756	NA	6	SAA - with more sand.	CI	.25	PID 0 By 0

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000428

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 6 of 8

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: –

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: 5.1 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0	12-28-94 1430 402756	NA	6	SAA	CI	.25	PID 0 BY 0
18.0 – 18.5	12-28-94 1430 402756	NA	6	SAA	CI	.25	PID 0 BY 0
18.5 – 19.0	12-28-94 1430 402756	NA	6	SAA	CI	.25	PID 0 BY 0
19.0 – 19.5	12-28-94 1430 402756	NA	6	SAA, with 1" sand seam "wet"	CI	.25	PID 0 BY 0
19.5 – 20.0	12-28-94 1430 402756	NA	6	SAA	CI	.5	PID 0 BY 0
20.0 – 20.5	12-28-94 1430 402756	NA	6	SAA	CI	.5	PID 0 BY 0
20.5 – 21.0	12-28-94 1430 402756	NA	6	SAA, with less sand	CI	.5	PID 0 BY 0

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11499

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-28-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-28-94

WATER USED DURING DRILLING: 5.1 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0	12-28-94 1430 402756	NA	6	SAA	CI	.5	PID 0 By 0
22.5	12-28-94 1430 402756	NA	6	SAA	CI	.5	PID 0 By 0
22.5		NA		Bottom of Boring 22'			PID By
23.0		NA					PID By
23.5		NA					PID By
24.0		NA					PID By
24.5		NA					PID By

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000430

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP
WELL COMPLETION LOG

WELL NUMBER: 11499

CONTROL NUMBER:

PROJECT NAME: OU2 Pre-Design Field Investigation

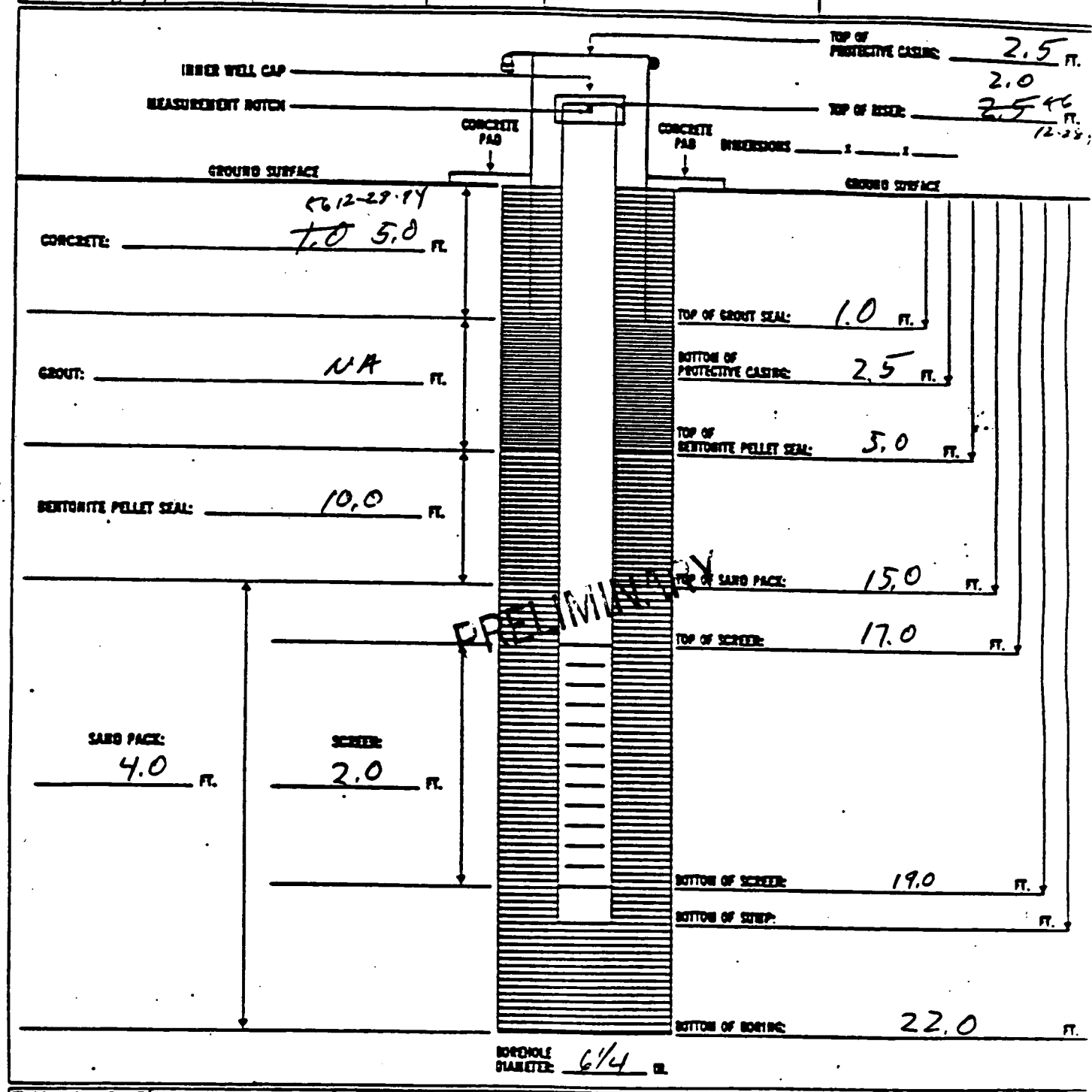
PROJECT NUMBER: 20.03.07

GEOLOGIST: Ken Geiger

DRILLING METHOD: Roto Sonic

DATES OF INSTALLATION: 12-28-94

WATER LEVEL (R.I.): | DATE: | RELATED P&L NUMBERS: | CHECKED BY:



TOP OF PROTECTIVE CASING: 2.5 FT.

TOP OF RISER: ~~2.5~~ 2.0 FT. KG 12-28-94

CONCRETE: ~~1.0~~ 5.0 FT. KG 12-28-94

GROUT: NA FT.

BENTONITE PELLET SEAL: 10.0 FT.

SAND PACK: 4.0 FT.

SCREEN: 2.0 FT.

TOP OF GROUT SEAL: 1.0 FT.

BOTTOM OF PROTECTIVE CASING: 2.5 FT.

TOP OF BENTONITE PELLET SEAL: 5.0 FT.

TOP OF SAND PACK: 15.0 FT.

TOP OF SCREEN: 17.0 FT.

BOTTOM OF SCREEN: 19.0 FT.

BOTTOM OF STEM: FT.

BOTTOM OF BORING: 22.0 FT.

BOREHOLE DIAMETER: 6 1/4 IN.

TYPE AND AMOUNT OF GROUT USED: ~~Dot~~ NA KG 12-28-94	BENTONITE PELLETS (5-GALLON BUCKETS): 100 lb	DEEPEST TEMPORARY DRILLING CASING PENETRATION: 22.0 FT.
VOLUME OF WATER USED DURING DRILLING: 5.1 ~~30~~ 30 gal GAL	RISER MATERIAL: 316 Stainless Steel	VOLUME OF WATER USED FOR GROUT HYDRATION: NA GAL
RISER WALL THICKNESS: Sch 40	TYPE OF SAND PACK: 20/10	SCREEN MATERIAL: 316 Stainless Steel
DRILLING CASING DIAMETER: 6 1/4 IN.	RISER/SCREEN DIAMETER: 2.0 IN.	SCREEN SLOT SIZE: 10 ~~SLT~~ SLOT IN
SCREEN TYPE: Flush Screen Type	DEPTH OF CENTRALIZER(S): NA FT.	

200431

KG 12/28/94

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 3

BORING NUMBER: 115CC

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-19-94

GEOLOGIST: KING Eigir

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-20-94

WATER USED DURING DRILLING: Rainy 7 12 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Roto sonic

DRILLER / HELPER: L. Brown B. Cain

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0 .5	0940 402703	NA	6	10YR 4/4 DARK YELLOWISH BROWN SILTY CLAY W/ SOME ROOTS. MED PLAST SLIGHTLY MOIST		.25	PID 11.7 BZ 6.0
1.0	0940 402703	NA	6	SAME AS ABOVE W/ SOME ROOTS		.25	PID 12.0 BZ 6.0
1.5	0940 402703	NA	6	SAME AS ABOVE W/ SAND AND GRAVEL		1.5	PID 12.9 BZ 6.0
2.0	0940 402703	NA	6	10YR 3/4 DARK BROWN SILTY CLAY W/ SOME SAND & GRAVEL MED PLAST. SLIGHTLY MOIST		1.25	PID 12.4 BZ 6.0
2.5	0940 402703	NA	6	10YR 4/4 DARK YELLOWISH BROWN SILTY CLAY MED PLAST SLIGHTLY MOIST		1.25	PID 12.7 BZ 7.0
3.0	0940 402703	NA	6	SAME AS ABOVE		1.5	PID 12.7 BZ 7.0
3.5	0950 402709	NA	6	SAME AS ABOVE		1.5	PID 13.7 BZ 6.0

INSTRUMENT	BACKGROUND	DATE	TIME
PID	11.0 ppm	12/19/94	0957
ALPHA	NA	NA	NA
BETA / GAMMA	30 cpm	12/19/94	0957

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-23-9

PRELIMINARY

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.:

BORING NUMBER:

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: Well

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5-4.0							
4.0	0950 402707	NA	6	10YR 4/4 DARK YELLOWISH BROWN w/ LIGHTER BROWN MOTTLING SILTY CLAY w/ SAND & GRAVEL MED PLAST. SLIGHTLY MOIST	CL	2.0	PID 14.1 BY SO
4.5	0950 402707	NA	6	SAME AS ABOVE	CL	2.0	PID 14.2 BY SO
5.0	0950 402707	NA	6	SAME AS ABOVE			PID 14.5 BY SO
5.5	0950 402707	NA	6	10YR 4/4 DARK YELLOWISH BROWN SILTY CLAY, WITH SOME FINE TO MED. ANGULAR GRAVEL, (<5%), TRACE OF SAND, SOME LIGHT GRAY MOTTLING, SLIGHTLY MOIST MED PLASTICITY	CL	2.5	PID 14.6 BY SO
6.0	0950 402707	NA	6	SAME AS ABOVE			PID 14.7 BY SO
6.5	0950 402709	NA		SAME AS ABOVE ~~NO REC~~			PID 15.2 BY SO
7.0	0950 402709	NA		SAME AS ABOVE ~~NO REC~~			PID 15.0 BY SO

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See log		
ALPHA	NA	NA	NA
BETA / GAMMA	See log		

NOTES: None

PRELIMINARY

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-9

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.:

BORING NUMBER:

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: Bottled

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.5	1000 402710	NA	6	10 YR 5/4 YELLOWISH BROWN SILTY CLAY WITH TRACE OF SAND AND ANGULAR GRAVEL, MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	2.25	PID 16.1 BJ 55
8.0	1000 402710	NA	6	SAME AS ABOVE LARGE LIMESTONE COBBLE 2x3x2	CL	2.25	PID 16.6 BJ 55
8.5	1000 402712	NA	6	SAME AS ABOVE	CL	1.5	PID 16.3 BJ 55
9.0	1000 402712	NA	6	SAME AS ABOVE	CL	1.5	PID 16.9 BJ 55
9.5	1010 402712	NA	6	SAME AS ABOVE	CL	1.5	PID 19.3 BJ 55
10.0	1010 402712	NA	6	SAME AS ABOVE LIMESTONE COBBLE 2x4x1	CL	2.0	PID 21.2 BJ 55
	1010 402712	NA	6	SAME AS ABOVE	CL	2.0	PID 22.1 BJ 55

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: none

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-778.DRW (11-23-94)

PRELIMINARY

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.:

BORING NUMBER:

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED:

WATER USED DURING DRILLING: 12 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
11.0	1020 402712	NA	6	SAME AS ABOVE PRELIMINARY	CL	2.5	PID 18.5 TCLP-402644 TOTU-402645 BZ 55
11.5	1020 402712	NA	6	10YR 5/4 YELLOWISH BROWN SILTY CLAY WITH A LARGER % OF SAND (FINE) 10-15%, TRACE OF FINE NON CHARGE MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	2.25	PID 19.0 Kd-402644 BZ 55
BREAK 12.0	1020 402712	NA	6	SAME AS ABOVE	CL	2.5	PID 19.0 BZ 55
13.5	1030 402712	NA	6	5Y 4/1 DARK GRAY SILTY CLAY WITH SOME SAND AND GRAVEL (FINE TO MED SAND), MED PLASTICITY, SLIGHTLY MOIST, DOLOMITE COBBLE	CL	2.5	PID 19.5 Kd-402643 BZ 55
13.2	1030 402713	NA	6	SAME AS ABOVE	CL	1.25	PID 16.0 TCLP-402646 TOTU-402647 BZ 55
15.5	1040 402713	NA	6	SAME AS ABOVE	CL	1.25	PID 16.4 BZ 55
	1040 402713	NA	6	SAME AS ABOVE	CL	1.25	PID 16.2 BZ 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	—	See pg 1	—
ALPHA	NA	NA	NA
BETA / GAMMA		See pg 1	

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME:

PROJECT NO.:

BORING NUMBER: 11500

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: 12 gal

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.5	1050 402713			SAME AS ~~ABOVE~~ PRELIMINARY	CL	1.25	PID 17.3 BS 55
15.0	1050 402713			SAME AS ABOVE	CL	1.25	PID 16.8 BS 55
15.5	1050 402713			SAME AS ABOVE	CL	1.25	PID 16.5 BS 60
16.0	1050 402713			SAME AS ABOVE	CL	1.25	PID 16.5 BS 60
16.5	1050 402713			SAME AS ABOVE	CL	1.25	PID 16.3 BS 60
17.0	1050 402713			SAME AS ABOVE DOLOMITE COBBLE 2x1x3/4 in	CL	1.25	PID 15.9 BS 60
	1055 402714		6	SAME AS ABOVE	CL	1.0	PID 16.1 BS 75

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	5cc/19		
BETA / GAMMA			

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-23-94

FEMP

LITHOLOGIC LOG

CONTROL NO.:	
PROJECT NAME:	PROJECT NO.:
BORING NUMBER:	COORDINATES: / RELATED FAL NO.s:
SURFACE ELEVATION:	GROUNDWATER LEVEL: / DATE: / TIME: / DATE STARTED:
GEOLOGIST:	GROUNDWATER LEVEL: / DATE: / TIME: / DATE COMPLETED:
WATER USED DURING DRILLING: 12 gal	DRILLING CONTRACTOR: / DRILLING EQUIPMENT: / DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
100	1050 402714			SAME AS ABOVE	CL	1.25	PID 16.7 BZ 40
125	1050 402714			SAME AS ABOVE	CL	1.25	PID 16.4 BZ 40
150	1050 402714			BLUISH GREEN FAT CLAY WITH TRACE OF PINE AND MOD ALIGNATE GRAVEL, LARGE CHUNKS OF SPRUCE?, LARGE COBBLE 4x4x2, HIGH PLASTICITY SLIGHTLY MOIST	CH	0.25	PID 16.8 BZ 60
175	1105 402714			SAME AS ABOVE	CH	0.25	PID 15.8 BZ 40
200	1105 402714			SAME AS ABOVE NO WOOD, COBBLES	CH		PID 16.4 BZ 50
225	1105 402714			SAME AS ABOVE	CH	0.25	PID 16.4 BZ 45
	1110 402714			SILT W/ ~~SOME~~ CLAY DRY WITH SOME GRAVEL, LARGE 4x4x2" COBBLE NON-PLASTIC, SLIGHTLY MOIST	SC	NA	PID 16.7 BZ 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA			
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-23-94)

PRELIMINARY

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FEMP

LITHOLOGIC LOG

CONTROL NO.:					
PROJECT NAME:				PROJECT NO.:	
BORING NUMBER:	COORDINATES:	RELATED FAL NO.s:			
SURFACE ELEVATION:	GROUNDWATER LEVEL:	DATE:	TIME:	DATE STARTED:	
GEOLOGIST:	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED:	
WATER USED DURING DRILLING: 12 gal	DRILLING CONTRACTOR:	DRILLING EQUIPMENT:	DRILLER / HELPER:		

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
22.0	1110 402714		6	SAME AS ABOVE			PID 16.9 BS 50 TCLP-402665 TOTU-402667
	1110 NA			NO RECOVERY PRELIMINARY			
24.0	1110 NA			RECOVERY PROBABLY SAND			
25.5	1115 402707		6	5Y 4/1 DARK GREY SILTY CLAY WITH SOME SAND AND GRAVEL, MEDIUM PLASTICITY SLIGHTLY MOIST (5-10% SAND)		0.25	PID 16.0 BS 50
26.2	1115 402707		6	SAME AS ABOVE COBBLE 3x3x1/2 IN	CL	0.25	PID 16.2 BS 50
26.5	1115 402707		6	SAME AS ABOVE ≥10% SAND	CL	0.25	PID 16.3 BS 50
	1115 402707		6	SAME AS ABOVE	CL	0.25	PID BS 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	15.4	12/13/94	1110
ALPHA			
BETA / GAMMA			

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:					
PROJECT NAME:				PROJECT NO.:	
BORING NUMBER:	COORDINATES:	RELATED FAL NO.:			
SURFACE ELEVATION:	GROUNDWATER LEVEL:	DATE:	TIME:	DATE STARTED:	
GEOLOGIST:	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED:	
WATER USED DURING DRILLING: None	DRILLING CONTRACTOR:	DRILLING EQUIPMENT:	DRILLER / HELPER:		

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.5	1115 402707		6	Same as Above	CL	0.25	PID 16.3 BS 50
22.0	1115 402707		6	Same as Above	CL	0.25	PID 16.3 BS 55
22.5	1115 402707		6	Same as Above	CL	0.25	PID 16.3 BS 50
23.0	1115 402707		6	Same as Above	CL	0.25	PID 16.3 BS 60
23.5	1120 402711		6	Same as Above	CL	0.25	PID 16.2 BS 30
24.0	1120 402711		6	Same as Above	CL	0.25	PID 16.2 BS 50
	1120 402711		6	Same as Above ~~Same Case~~	CL	0.25	PID 16.2 BS 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	See pg 1		
BETA / GAMMA			

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 9 OF 12

PROJECT NAME:

PROJECT NO.:

BORING NUMBER: 11500

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: Well

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.2	1120 402711			SAME AS ABOVE LARGE LIMESTONE COBBLE 2x2x2			PID 16.3 BJ 50
31.5	1120 402711			SAME AS ABOVE COBBLES PRELIMIN.			PID 16.1 BJ 45
32.0	1120 402711			SAME AS ABOVE COBBLE 2x2x2			PID 16.2 BJ 55
32.5	1120 402711			SAME			PID 16.5 BJ 40
33.0	1130 402711			SAME			PID 16.5 BJ 45
33.5	1130 402715			SAME			PID 16.1 BJ 45
	1130 402715			SAME			PID 16.8 BJ 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	5.0/91		
BETA / GAMMA			

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-778.DRW (11-23-9

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME:

PROJECT NO.:

BORING NUMBER:

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: 12 gal

DRILLING CONTRACTOR:

DRILLING EQUIPMENT:

DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
34.0	1130			Same			PID 16.9
34.5	402715						By 45
	1130			Same			PID 16.7
35.0	402715						By 40
	1130			Same			PID 16.7
35.5	402715						By 40
	1130			Same			PID 16.9
36.0	402715						By 45
	1130			Same			PID 16.9
36.0	402715						By 40
	1130			Same			PID 16.5
36.5	402715						By 40
	1130			Same			PID 16.7
38.0	402715						By 40

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	Scan 1		
BETA / GAMMA			

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-9

FEMP

LITHOLOGIC LOG

CONTROL NO.:	PAGE 11 OF 12
PROJECT NAME: Phase I - II of the OU2 Area Designated Field Investigation	PROJECT NO.:
BORING NUMBER:	COORDINATES: /	RELATED FAL NO.:
SURFACE ELEVATION: —	GROUNDWATER LEVEL:	DATE:	TIME:	DATE STARTED:
GEOLOGIST:	GROUNDWATER LEVEL:	DATE:	TIME:	DATE COMPLETED:
WATER USED DURING DRILLING: 12 gal	DRILLING CONTRACTOR:	DRILLING EQUIPMENT:	DRILLER / HELPER:

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
33.0	1135			Same			BZ 40 PID 16.5
33.5	402715						
35.0	1135 402715			Same			PID 16.7 BZ 40
36.5	1135 402715			Same			PID 16.5 BZ 40
37.0	1135 NA			NA			PID 16.5 BZ 40
				Bottom of Boring at 39.0'			

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	5.0 cpm	/	
BETA / GAMMA			

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G: / WPSC / 94-776.DRW (11-23-94)

WELL NUMBER: 1:500

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: Phase I+II of The OU2 Pre Design Field Investigation

PROJECT NUMBER: 20.03.07

GEOLOGIST: K Geiger / P Riley

DRILLING METHOD: Rotosonic

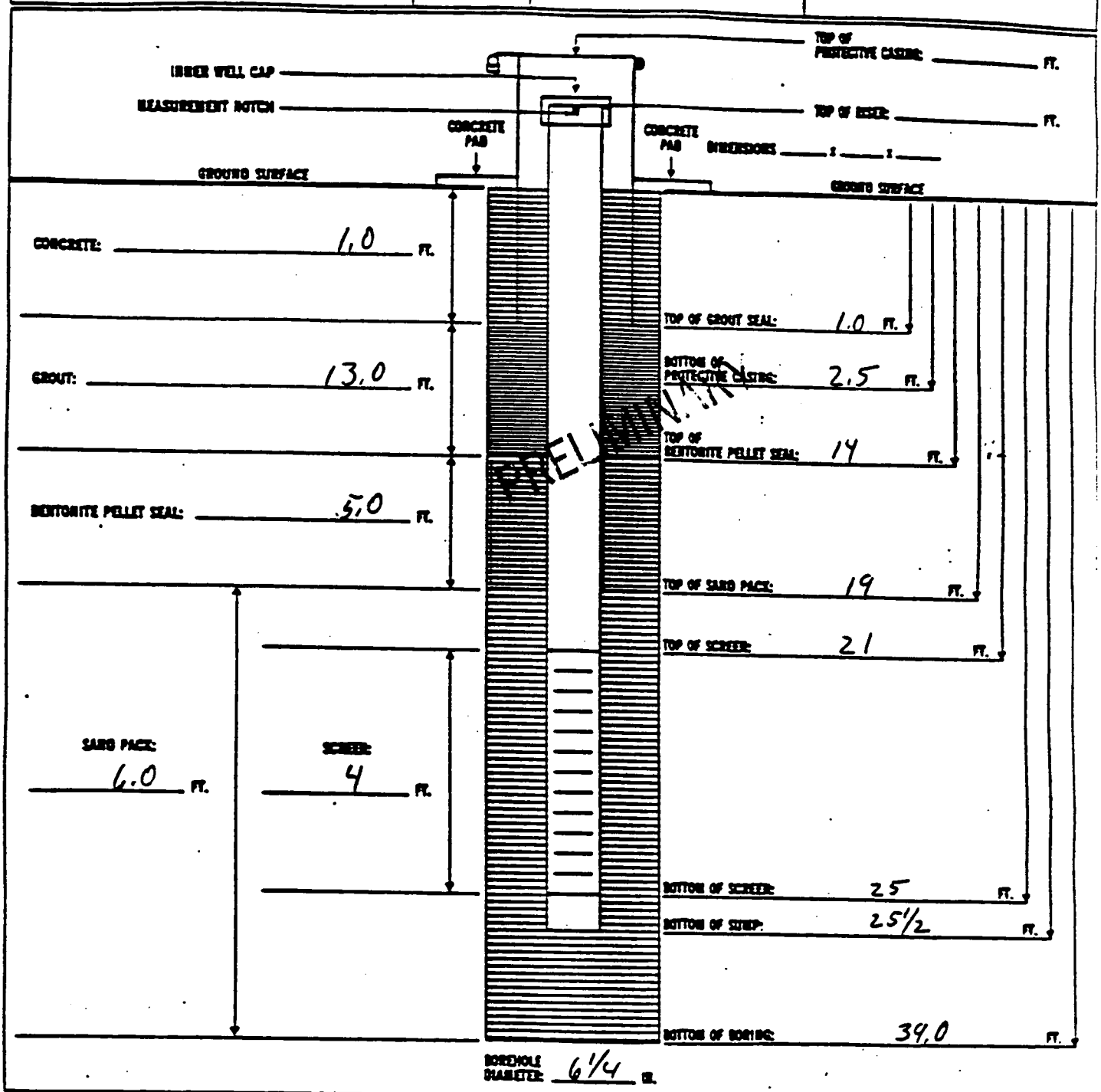
DATES OF INSTALLATION: 12-20-94

WATER LEVEL (R.)

DATE:

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: Volclay 60 lbs	BENTONITE PELLETS (3-GALLON BUCKETS): 75 lbs	DEEPEST TEMPORARY DRILLING CASING PENETRATION: 39.0 FT.
VOLUME OF WATER USED DURING DRILLING: 12-20-94 70.0 12-21-94 30.0 GAL	RISER MATERIAL: Stainless Steel	VOLUME OF WATER USED FOR GROUT HYDRATION: 30.0 GAL
RISER WALL THICKNESS: Sch 40	TYPE OF SAND PACK: 10/20	SCREEN MATERIAL: Stainless Steel
DRILLING CASING DIAMETER: 6 1/4 IN.	RISER/SCREEN DIAMETER: 2.0 IN.	SCREEN SLOT SIZE: 10 slot IN
SCREEN TYPE: Flush Screw Stainless Steel	DEPTH OF CENTRALIZER(S): NA FT.	

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11501

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-30-94

GEOLOGIST: Grigsby / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-30-94

WATER USED DURING DRILLING: 12.0 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	12-30-94 855	NA	6	Soft (10YR 4/4) Dark Yellowish Brown Silty Clay with trace of sand gravel, med plast, slightly moist PRELIMINARY	CL	.5	PID 0.0 By 40
.5	12-30-94 855	NA	6	SAA	CL	.5	PID 0.0 By 40
1.0	12/30/94 855	NA	6	Stiff (10YR 3/3) Dark Brown Silty Clay, med. plast, slightly moist.	CL	1.5	PID 0.0 By 40
1.5	12/30/94 855	NA	6	SAA	CL	1.5	PID 0.0 By 40
2.0	12/30/94 855	NA	6	Stiff (10YR 4/4) Dark Yellowish Brown Silty Clay, trace of sand, medium plasticity, slightly moist	CL	2.0	PID 0.0 By
2.5	12/30/94 855	NA	6	SAA	CL	2.0	PID 0.0 By 40
3.0	12/30/94 855	NA	6	SAA with some gravel	CL	2.0	PID 0.0 By 40
3.5							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12-30-94	530
ALPHA	NA	NA	NA
BETA / GAMMA	40	12-30-94	530

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11501

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/30/94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/30/94

WATER USED DURING DRILLING: 12 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5 – 4.0	12/30/94 0905	NA	6	SAA PRELIMINARY	CL	2.0	PID 0.0 BY 40
4.5	12/30/94 0905	NA	6	STIFF (BY R SM) MEDIUM BROWN SILTY CLAY WITH SOME GRAVEL AND A TRACE OF SAND, IRON AND MANGANESE STAINING, SLIGHTLY MOIST MEDIUM PLASTICITY	CL	2.0	PID 0.0 BY 40
5.0	12/30/94 0905	NA	6	SAA	CL	2.0	PID 0.0 BY 40
5.5	12/30/94 0905	NA	6	SAA	CL	2.0	PID 0.0 BY 40
6.0	12/30/94 0905	NA	6	SAA SOME LIGHT GRAY MOTTLING	CL	2.0	PID 0.0 BY 40
6.5	12/30/94 0905	NA	6	SAA	CL	1.5	PID 0.0 BY 40
7.0	12/30/94 0905	NA	6	SAA	CL	2.0	PID 0.0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See log		
ALPHA	NA	NA	NA
BETA / GAMMA	See log		

NOTES: None

000445

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

ES-F-3681

G:/WPSC/34778 DRW 11-23

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11501

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12/30/94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12/30/94

WATER USED DURING DRILLING: Ingel

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0 – 7.5	12/30/94 0915	NA	6	SAA Large limestone fragments	CL	2.0	PID 0.0 BY 40
7.5 – 8.0	12/30/94 0915	NA	6	SAA	CL	2.0	PID 0.0 BY 40
8.0 – 8.5	12/30/94 0915	NA	6	SAA	CL	2.0	PID 0.0 BY 40
8.5 – 9.0	12/30/94 0915	NA	6	Very stiff SAA	CL	2.5	PID 0.0 BY 40
9.0 – 9.5	12/30/94 0915	NA	6	SAA	CL	2.5	PID 0.0 BY 40
9.5 – 10.0	12/30/94 0915	NA	6	SAA	CL	2.5	PID 0.0 BY 40
10.0 – 10.5	12/30/94 0915	NA	6	SAA	CL	2.5	PID 0.0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

PRELIMINARY

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC:34778 CFW 11-23

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11501

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED: 12/30/94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED: 12/30/94

WATER USED DURING DRILLING: 12 gal.

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 – 11.0	12/30/94 0915	NA	6	STIFF (5Y 4/1) DARK GRAY SILTY CLAY WITH SOME MEDIUM SUBANGULAR GRAVEL, TRACE OF SAND. — (INTERBEDDED WITH VERY SA MEDIUM SILTY CLAY) MEDIUM PLASTICITY, MOIST	CL	1.5	PID 0.0 BY 40
11.5	12/30/94 0915	NA	6	STIFF (5Y 4/1) DARK GRAY SILTY CLAY WITH TRACE OF SAND AND SOME GRAVEL, MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	1.5	PID 0.0 BY 40
12.0	12/30/94 0915	NA	6	SAA	CL	2.0	PID 0.0 BY 40
12.5	12/30/94 0915	NA	6	SAA	CL	2.0	PID 0.0 BY 40
13.0	12/30/94 0915	NA	6	SAA	CL	2.0	PID 0.0 BY 40
13.5	12/30/94 0915	NA	6	SAA	CL	2.0	PID 0.0 BY 40
14.0	12/30/94 0915	NA	6	SAA	CL	2.0	PID 0.0 BY 40

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See col		
ALPHA	NA	NA	NA
BETA / GAMMA	See col		

NOTES: None

000447

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC:94778 DFW 11-23

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11501

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12/30/94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12/30/94

WATER USED DURING DRILLING: 12 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5	12/30/94 0915	NA	6	SAA	CL	1.5	PID 0.0 BY 40
14.5 – 15.0	12/30/94 0915	NA	6	SAA PRELIMINARY	CL	1.5	PID 0.0 BY 40
15.0 – 15.5	12/30/94 0915	NA	6	SAA LIMESTONE COBBLE 2x2x1"	CL	1.5	PID 0.0 BY 40
15.5 – 16.0	12/30/94 0915	NA	6	SAA	CL	1.5	PID 0.0 BY 40
16.0 – 16.5	12/30/94 0915	NA	6	SAA	CL	1.5	PID 0.0 BY 40
16.5 – 17.0	12/30/94 0915	NA	6	SAA	CL	1.5	PID 0.0 BY 40
17.0 – 17.5	12/30/94	NA	6	SAA	CL	1.5	PID 0.0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000448

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11501

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/30/94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/30/94

WATER USED DURING DRILLING: 12 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.0 – 18.0	12/30/94 0930	NA	6	SAA	CL	1.5	PID 0.0 BY 40
18.0 – 18.5	12/30/94 0930	NA	6	SAA PRELIMINARY	CL	1.5	PID 0.0 BY 40
18.5 – 19.0	12/30/94 0930	NA	6	SAA 3x4x1/2 m with Limestone cobble	CL	1.5	PID 0.0 BY 40
19.0 – 19.5	12/30/94 0930	NA	6	SAA	CL	1.5	PID 0.0 BY 40
19.5 – 20.0	12/30/94 0930	NA	6	SAA wood fragments (photos taken)	CL	1.5	PID 0.0 BY 40
20.0 – 20.5	12/30/94 0930	NA	6	SAA	CL	1.5	PID 0.0 BY 40
20.5 – 21.0	12/30/94 0930	NA	6	SAA	CL	1.5	PID 0.0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See p. 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See p. 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 1150

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/30/94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/30/94

WATER USED DURING DRILLING: 12 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0	12/30/94 0930	NA	6	SAA	CL	1.5	PID 0.0 BY 40
22.5	12/30/94 0930	NA	6	SAA PRELIMINARY	CL	1.5	PID 0.0 BY 40
22.0	12/30/94 0930	NA	6	SAA	CL	1.5	PID 0.0 BY 40
23.0	12/30/94 0930	NA	6	SAA	CL	1.5	PID 0.0 BY 40
23.5	12/30/94 0930	NA		SAA	CL	1.5	PID 0.0 BY 40
24.0	12/30/94 0930	NA		SAA	CL	1.5	PID 0.0 BY 40
24.5	12/30/94 0930	NA		SAA	CL	1.5	PID 0.0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See Pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See Pg 1		

NOTES: None

000450

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11521

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/30/94

GEOLOGIST: Cooper / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/30/94

WATER USED DURING DRILLING: Well

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
25.0 – 25.5	12/30/94 0930	NA	6	SAA	CL	1.5	PID 0.0 BY 40
25.5 – 26.0	12-30-94 0930	NA	6	SAA PRELIMINARY	CL	1.5	PID 0.0 BY 40
26.0 – 26.5	12/30/94 0930	NA	6	SAA	CL	1.0	PID 0.0 BY 40
26.5 – 27.0	12/30/94 0930	NA	6	SAA	CL	0.5	PID 0.0 BY 40
27.0 – 27.5	12/30/94 0930	NA	6	SAA	CL	0.5	PID 0.0 BY 40
27.5 – 28.0	12/30/94 0945	NA	6	STICK SAA	CL	1.0	PID 0.0 BY 40
28.0 – 28.5	12/30/94 0945	NA	6	SAA	CL	1.0	PID 0.0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See log		
ALPHA	NA	NA	NA
BETA / GAMMA	See log		

NOTES: Alliance

000451

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11501

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12/30/94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12/30/94

WATER USED DURING DRILLING: Fresh

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Gillim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
25.0 – 25.7	12/30/94 0945	NA	6	Soft (5Y 4/1) Dark Gray Silty Sandy Clay with some gravel, medium plasticity moist	CL	0.5	PID 0.0 BY 40
24.0	12/30/94 0945	NA	6	Stiff (5Y 4/1) Dark Gray Silty Clay with some gravel, and a trace of sand, medium plasticity, slightly moist	CL	1.5	PID 0.0 BY 40
29.5	12/30/94 0945	NA	6	SAA PRELIMINARY	CL	1.5	PID 0.0 BY 40
30.0	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
30.5	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
31.0	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
31.5	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000452

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11501

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/30/94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/30/94

WATER USED DURING DRILLING: Depl

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.5 – 32.0	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
32.5	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
33.0	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
33.5	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
34.0	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
34.5	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
35.0	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11501

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12/30/94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12/30/94

WATER USED DURING DRILLING: 12 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
35.0 – 35.5	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
36.0	12/30/94 0945	NA	6	SOFT ~~[illegible]~~ PR 12/30/94 (5Y 4/1) DARK GRAY SILTY CLAY WITH LITTLE OR NO GRAVEL MEDIUM PLASTICITY, MOIST PRELIMINARY	CL	1.5	PID 0.0 BY 40
36.5	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
37.0	12/30/94 0945	NA	6	SAA	CL	1.5	PID 0.0 BY 40
37.5	~~12/30/94 0945~~ PR 12/30/94	NA	~~6~~ PR	BOTTOM OF BORING 37.0 FT	~~CL~~ PR	~~1.5~~ 12/30/94	PID ~~0.0~~ PR 12/30 BY ~~40~~
38.0	12/30/94 ~~0945~~ PR 12/30/94	NA	~~6~~ PR		~~CL~~ PR	~~1.5~~ 12/30/94	PID ~~0.0~~ BY ~~40~~ PR 12/30
38.5	12/30/94 ~~0945~~ PR 12/30/94	NA	~~6~~ PR		~~CL~~ PR	~~1.5~~	PID ~~0.0~~ PR 12/30/94 BY ~~40~~

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000054

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER:

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING: Liquid

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
38.5 – 39.0		NA					PID By
39.5		NA					PID By
40.0		NA					PID By
		NA					PID By
		NA					PID By
		NA					PID By
		NA					PID By

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID			
ALPHA	NA	NA	NA
BETA / GAMMA			

NOTES:

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681 000455

G:/WPSC/94-778.DRW (11-23-94)

FEMP
WELL COMPLETION LOG

WELL NUMBER: 11501

CONTROL NUMBER:

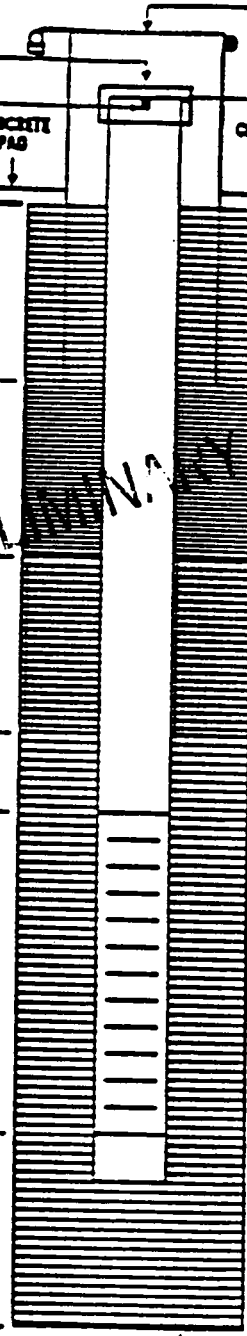
PROJECT NAME: OU2 Pre Designed Field Investigation

PROJECT NUMBER: 20.03.07

GEOLOGIST: Ken Cooper

DRILLING METHOD: Rotosonic

DATES OF INSTALLATION	WATER LEVEL (ft)	DATE	RELATED FAL NUMBERS	CHECKED BY:



TOP OF PROTECTIVE CASING: 2.5 ft.

TOP OF RISER: 2.0 ft.

DIMENSIONS ___ x ___ x ___

CONCRETE: 5.0 ~~2.5~~ (26.12.30.94) ft.

GROUT: NA ft.

BENTONITE PELLET SEAL: 28.0 ft.

SAND PACK: 4.0 ft.

SCREEN: 2.0 ft.

TOP OF GROUT SEAL: NA ft.

BOTTOM OF PROTECTIVE CASING: 2.5 ft.

TOP OF BENTONITE PELLET SEAL: 5.0 ft.

TOP OF SAND PACK: 33.0 ft.

TOP OF SCREEN: 35.0 ft.

BOTTOM OF SCREEN: 37 ft.

BOTTOM OF SUMP: 37 ft.

BOTTOM OF BORING: 37.0 ft.

BOREHOLE DIAMETER: 6 1/4 in.

TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS):	DEEPEST TEMPORARY DRILLING CASING PENETRA
NA	25 1/2	37.0

VOLUME OF WATER USED DURING DRILLING:	RISER MATERIAL:	VOLUME OF WATER USED FOR GROUT HYDRATION
12.0 + 2 gal (26.12.30.94) GAL	316 Stainless Steel	NA

RISER WALL THICKNESS:	TYPE OF SAND PACK:	SCREEN MATERIAL:	DRILLING CASING DIAMETER:
Sch 40	20/40	316 Stainless Steel	6 1/4

RISER/SCREEN DIAMETER:	SCREEN SLOT SIZE:	SCREEN TYPE:	DEPTH OF CENTRALIZER(S):
2.0 IN.	10 Slot IN	Flush Screen	NA

000456

FS-1.2004 (9/10/93)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11502-B

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0 – .5	12-29-94 845	NA	6	Soft 10YR 4/3 Brown Silty Clay Roots slightly moist, mod - slight plasticity	CI	.5	PID 0.0 BY 0.0
.5 – 1.0	12-29-94 845	NA	6	Stiff 10YR 4/3 Brown Silty Clay Roots slightly moist mod - slight plasticity	CI	1.0	PID 0.0 BY 0.0
1.0 – 1.5	12-29-94 845	NA	6	Stiff 10YR 5/4 Yellowish Brown Silty Clay with trace sand + Fe stains med plast. slightly moist	CI	1.0	PID 0.0 BY 0.0
1.5 – 2.0	12-29-94 845	NA	6	SAA	CI	1.75	PID 0.0 BY 0.0
2.0 – 2.5	12-29-94 845	NA	6	SAA with manganese stains	CI	2.0	PID 0.0 BY 0.0
2.5 – 3.0	12-29-94 845	NA	6	SAA	CI	2.0	PID 0.0 BY
3.0 – 3.5	12-29-94 845	NA	6	SAA with Gravel	CI	2.0	PID 0.0 BY

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	50	12-29-94	800
ALPHA	NA	NA	NA
BETA / GAMMA	0.0	12-29-94	800

NOTES: UCN2

000457

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation	PROJECT NO.: 20.03.07
BORING NUMBER: 11502 B	COORDINATES: / RELATED FAL NO.s:
SURFACE ELEVATION:	GROUNDWATER LEVEL: / DATE: / TIME: / DATE STARTED: 12-29-94
GEOLOGIST: Geiger / Riley	GROUNDWATER LEVEL: / DATE: / TIME: / DATE COMPLETED: 12-29-94
WATER USED DURING DRILLING: 13.6 gal	DRILLING CONTRACTOR: Alliance / DRILLING EQUIPMENT: Rotosonic / DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5 – 4.0	12-29-94 900	NA	6	PRELIMINARY SAA	CI	2.0	PID 0 BY 50
4.5	12-29-94 900	NA	6	SAA with Gray mottling	CI	2.0	PID 0 BY 50
5.0	12-29-94 900	NA	6	SAA	CI	2.0	PID 0 BY 50
5.5	12-29-94 900	NA	6	SAA	CI	2.0	PID 0 BY 50
6.0	12-29-94 900	NA	6	SAA	CI	2.0	PID 0 BY 50
6.5	12-29-94 900	NA	6	SAA	CI	2.0	PID 0 BY 50
7.0	12-29-94 900	NA	6	SAA	CI	2.0	PID 0 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000458

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 1150 2B

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0 – 3.5	12-29-94 910	NA	6	SAA PRELIMINARY	CI	3.0	PID 0 BY 50
3.5 – 5.0	12-29-94 910	NA	6	SAA	CI	3.0	PID 0 BY 50
5.0 – 5.5	12-29-94 910	NA	6	SAA	CI	2.25	PID 0 BY 40
5.5 – 6.0	12-29-94 910	NA	6	SAA	CI	2.25	PID 0 BY 40
6.0 – 9.5	12-29-94 910	NA	6	SAA	CI	2.25	PID 0 BY 40
9.5 – 10.0	12-29-94 910	NA	6	SAA	CI	2.25	PID 0 BY 40
10.0 – 10.5	12-29-94 910	NA	6	SAA with more silt	CI	3.25	PID 0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000459

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 1502B

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 – 11.0	12-29-94 910	NA	6	SAA	CI	2.0	PID 0 BY 40
11.5	12-29-94 910	NA	6	PRELIMINARY	CI	2.0	PID 0 BY 40
12.0	12-29-94 910	NA	6	SAA	CI	2.0	PID 0 BY 40
12.5	12-29-94 910	NA	6	SAA	CI	2.0	PID 0 BY 40
13.0	12-29-94 910	NA	6	SAA	CI	2.0	PID 0 BY 40
13.5	12-29-94 910	NA	6	SAA	CI	2.0	PID 0 BY 40
14.0	12-29-94 910	NA	6	Stiff 5Y 4/1 Dark Gray silty clay ~~silt~~ KG 12-29-94 with some sand mod plasticity slightly moist	CI	2.0	PID 0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 5 OF 11

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11502B

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-29-94

GEOLOGIST: Geigik / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gals

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5	12-29-94 920	NA	6	5Y 4/1 Dark Gray Silty Clay with Some Gravel (+ Sand) Mod Plasticity Slightly Moist	CI	2.0	PID 0 BY 40
14.5 – 15.0	12-29-94 920	NA	6	SAA	CI	2.0	PID 0 BY 40
15.0 – 15.5	12-29-94 920	NA	6	SAA	CI	2.0	PID 0 BY 40
15.5 – 16.0	12-29-94 920	NA	6	SAA	CI	2.0	PID 0 BY 40
16.0 – 16.5	12-29-94 920	NA	6	SAA	CI	2.0	PID 0 BY 40
16.5 – 17.0	12-29-94 920	NA	6	SAA	CI	2.0	PID 0 BY 40
17.0 – 17.5	12-29-94 920	NA	6	SAA	CI	2.0	PID 0 BY 40

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000461

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11502 B

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0	12-29-94 930	NA	6	SAA	CI	2.6	PID 0 BY 30
18.5	12-29-94 930	NA	6	SAA	CI	2.6	PID 0 BY 30
19.0	12-29-94 930	NA	6	SAA	CI	2.0	PID 0 BY 30
19.5	12-29-94 930	NA	6	SAA	CI	2.0	PID 0 BY 30
20.0	12-29-94 930	NA	6	SAA	CI	2.0	PID 0 BY 30
20.5	12-29-94 930	NA		SAA	CI	2.0	PID 0 BY 30
21.0	12-29-94 930	NA		SAA	CI	2.0	PID 0 BY 30

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See log		
ALPHA	NA	NA	NA
BETA / GAMMA	See log		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11502 B

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0	12-29-94 940	NA	6	SAA with more sand wet and stringers of brown sand	CI	1.0	PID 0 BY 30
22.5	12-29-94 940	NA	6	SAA with cobbles	CI	1.0	PID 0 BY 30
22.0	12-29-94 940	NA	6	SAA (20.5 - 21.0 Feet)	CI	2.5	PID 0 BY 30
22.5	12-29-94 940	NA	6	SAA	CI	2.5	PID 0 BY 30
23.0	12-29-94 940	NA	6	SAA	CI	2.5	PID 0 BY 30
23.5	12-29-94 940	NA	6	SAA	CI	2.5	PID 0 BY 30
24.0	12-29-94 940	NA	6	SAA	CI	2.5	PID 0 BY 30
24.5	12-29-94 940	NA	6	SAA	CI	2.5	PID 0 BY 30

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000663

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11502 B

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5 – 25.0	12-29-94 945	NA	6	SAA	CI	2.0	PID 0 BY 40
25.0 – 25.5	12-29-94 945	NA	6	SAA	CI	2.0	PID 0 BY 40
25.5 – 26.0	12-29-94 945	NA	6	SAA	CI	2.0	PID 0 BY 40
26.0 – 26.5	12-29-94 945	NA	6	SAA	CI	2.0	PID 0 BY 40
26.5 – 27.0	12-29-94 945	NA	6	SAA	CI	2.0	PID 0 BY 40
27.0 – 27.5	12-29-94 945	NA	6	SAA	CI	2.0	PID 0 BY 40
27.5 – 28.0	12-29-94 945	NA	6	SAA	CI	2.0	PID 0 BY 40

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11502 B

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
25.0 – 25.7	12-29-94 950	NA		SAA	CI	2.0	PID 0 BY 40
26.0	12-29-94 950	NA		SAA	CI	2.0	PID 0 BY 40
26.5	12-29-94 950	NA		SAA	CI	2.0	PID 0 BY 40
30.0	12-29-94 950	NA		with cobble 5" x 4" x 3"	CI	2.0	PID 0 BY 40
30.5	12-29-94 950	NA	0	NR	NA	NA	PID BY NA
31.0	12-29-94 950	NA	0	NR	NA	NA	PID BY NA
31.5	12-29-94 950	NA	0	NR	NA	NA	PID BY NA

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See log		
ALPHA	NA	NA	NA
BETA / GAMMA	See log		

NOTES: None

000465

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 10 OF 11

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11502B

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 Inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.5 – 32.0	12-29-94 950	NA	0	NR	NA	NA	PID By NA
32.5	12-29-94 950	NA	0	PRELIMINARY	NA	NA	PID By NA
33.0	12-29-94 950	NA	0	NR	NA	NA	PID By NA
33.5	12-29-94 950	NA	0	NR	NA	NA	PID By NA
34.0	12-29-94 950	NA	0	NR	NA	NA	PID By NA
34.5	12-29-94 950	NA	0	NR	NA	NA	PID By NA
35.0	12-29-94 950	NA	0	NR Bottom of Boring at 35.0'	NA	NA	PID By NA

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

WELL NUMBER: 11502-B

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 Pre Design Field Investigation

PROJECT NUMBER: 20.03.07

GEOLOGIST: Ken Geiger

DRILLING METHOD: Rotosonic

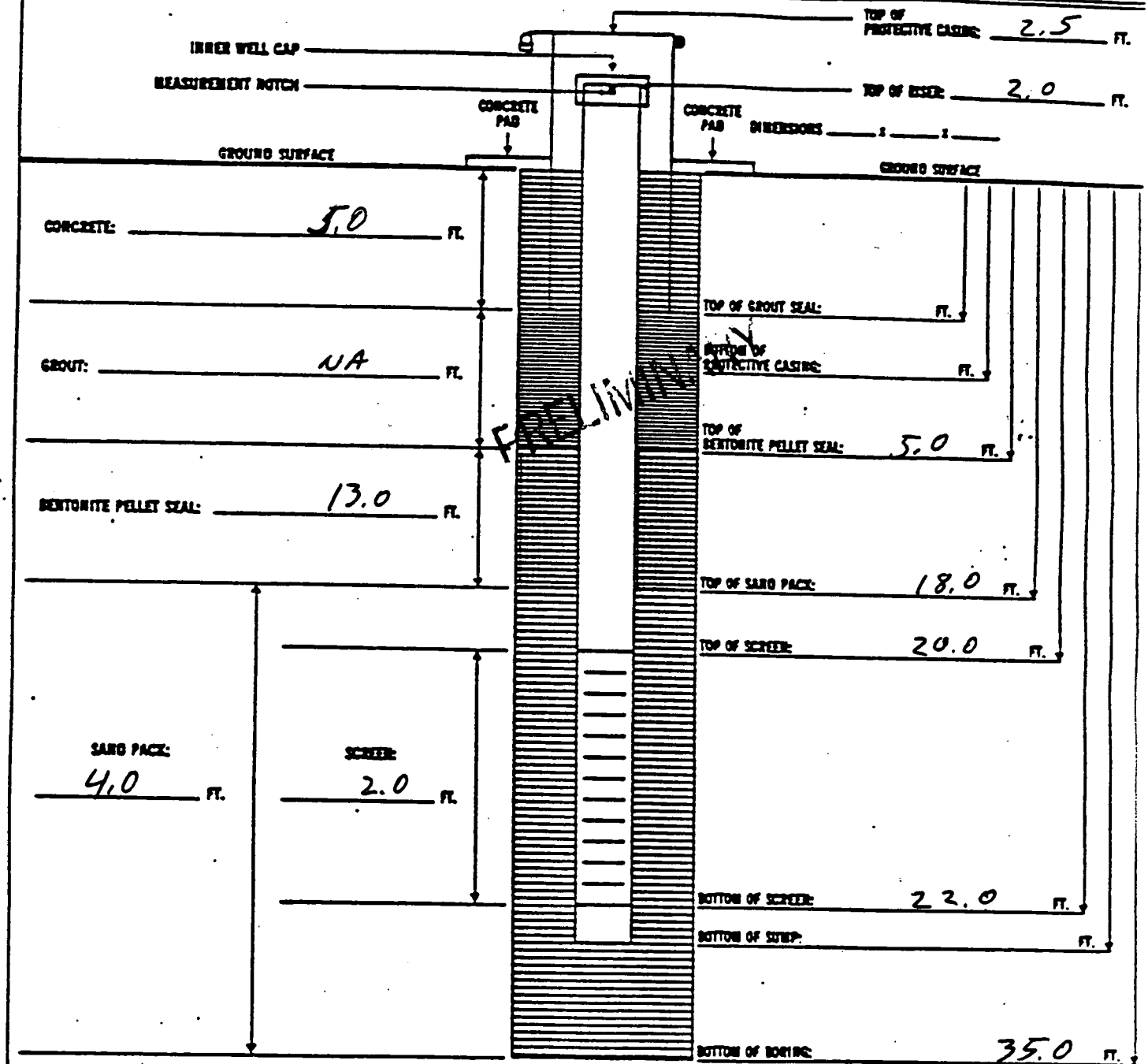
DATES OF INSTALLATION: 12-29-94

WATER LEVEL (R.I.): —

DATE:

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: NA	BENTONITE PELLETS (5-GALLON BUCKETS): 200 ~~+75~~ lb SKU 12-29-94		DEEPEST TEMPORARY DRILLING CASING PENETRATION: 35.0 FT
VOLUME OF WATER USED DURING DRILLING: 13.6 ~~80.0~~ 1/12/95 GAL	RISER MATERIAL: 25' 316 Stainless Steel		VOLUME OF WATER USED FOR GROUT HYDRATION: NA GAL
RISER WALL THICKNESS: Sch 40	TYPE OF SAND PACK: 20/40	SCREEN MATERIAL: 316 Stainless	DRILLING CASING DIAMETER: 6 1/4 IN
RISER/SCREEN DIAMETER: 2.0 IN.	SCREEN SLOT SIZE: 10 slot IN	SCREEN TYPE: Flush Scan	DEPTH OF CENTRALIZER(S): NA FT

FS-F-3684 (9/10/93)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11503

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 134 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart) PRELIMINARY	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0 – .5	12-29-94 1315	NA	6	Soft 10YR 4/4 Dark yellowish Brown silty clay with Roots Med Plasticity Slightly moist	CI	.5	PID 0.0 BY 40
.5 – 1.0	12-29-94 1315	NA	6	Stiff SAA with Fe + Manganese	CI	1.0	PID 0.0 BY 40
1.0 – 1.5	12-29-94 1315	NA	6	10YR 4/4 Dark yellowish Brown silty clay with Trace of sand + Gravel med. plast. slightly moist	CI	1.0	PID 0.0 BY 40
1.5 – 2.0	12-29-94 1315	NA	6	SAA	CI	1.0	PID 0.0 BY 40
2.0 – 2.5	12-29-94 1315	NA	6	SAA	CI	1.0	PID 0.0 BY 40
2.5 – 3.0	12-29-94 1315	NA	6	SAA	CI	1.0	PID 0.0 BY 40
3.0 – 3.5	12-29-94 1315	NA	6	SAA	CI	1.0	PID 0.0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12-29-94	1300
ALPHA	NA	NA	NA
BETA / GAMMA	50	12-29-94	1300

NOTES: None

000468

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94778.DRW (11-23-9

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.01

BORING NUMBER: 11503

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
3.5 – 4.0	12-29-94 1315	NA	6	SAA PRELIMINARY	CL	1.0	PID 0.0 BY 40
4.0 – 4.5	12-29-94 1315	NA	6	very stiff SAA	CL	3.5	PID 0.0 BY 40
4.5 – 5.0	12-29-94 1315	NA	6	SAA	CL	3.5	PID 0.0 BY 40
5.0 – 5.5	12-29-94 1315	NA	6	SAA	CL	3.0	PID 0.0 BY 40
5.5 – 6.0	12-29-94 1315	NA	6	SAA	CL	3.0	PID 0.0 BY 40
6.0 – 6.5	12-29-94 1315	NA	6	SAA	CL	3.5	PID 0.0 BY 40
6.5 – 7.0	12-29-94 1315	NA	6	SAA	CL	3.5	PID 0.0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000469

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-9

6521

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11503

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Gorak / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0 – 7.5	12-29-94 1320	NA	6	very stiff 10YR 5/4 yellowish brown silt clay with some sand + gravel med plast slightly moist	CL	3.0	PID By
8.0	12-29-94 1320	NA	6	PRELIMINARY	CL	3.0	PID By
8.5	12-29-94 1320	NA	6	SAA	CL	3.0	PID By
9.0	12-29-94 1320	NA	6	SAA	CL	3.0	PID By
9.5	12-29-94 1320	NA	6	SAA	CL	3.0	PID By
10.0	12-29-94 1320	NA	6	SAA	CL	3.0	PID By
10.5	12-29-94 1320	NA	6	SAA	CL	3.0	PID By

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000470

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11503

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: –

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13 Gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 – 11.0	12-29-94 1320	NA	6	SAA	CI	3.0	PID 0.0 BY 40
11.5	12-29-94 1320	NA	6	~~SAA~~ PRELIMINARY	CI	3.0	PID 0.0 BY 40
12.0	12-29-94 1320	NA	6	SAA with Fe stains	CI	3.5	PID 0.0 BY 40
12.5	12-29-94 1320	NA	6	Stiff 5Y 4/1 Dark Gray silty clay with a trace of sand + Gravel, mod. plast, slightly moist	CI	1.5	PID 0.0 BY 40
13.0	12-29-94 1320	NA	6	SAA	CI	2.0	PID 0.0 BY 40
13.5	12-29-94 1320	NA	6	Very stiff SAA with Fe Stains	CI	2.5	PID 0.0 BY 40
14.0	12-29-94 1320	NA	6	SAA	CI	2.5	PID 0.0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000471

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-778.DRW (11-23-9

FEMP

LITHOLOGIC LOG

CONTROL NO.:	
PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation	PROJECT NO.: 20.03.07
BORING NUMBER: 11503	COORDINATES: / RELATED FAL NO.:
SURFACE ELEVATION: —	GROUNDWATER LEVEL: / DATE: / TIME: / DATE STARTED: 12-24-94
GEOLOGIST: Geiger / Riley	GROUNDWATER LEVEL: / DATE: / TIME: / DATE COMPLETED: 12-29-94
WATER USED DURING DRILLING: B. Legal	DRILLING CONTRACTOR: Alliance / DRILLING EQUIPMENT: Rotosonic / DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5	12-24-94 1330	NA	6	SAA	CI	2.5	PID 0.0 BY 40
15.0	12-24-94 1330	NA	6	PRELIMINARY	CI	2.5	PID 0.0 BY 40
15.5	12-24-94 1330	NA	6	SAA	CI	2.0	PID 0.0 BY 40
16.0	12-24-94 1330	NA	6	SAA	CI		PID 0.0 BY 40
16.5	12-24-94 1330	NA	6	SAA	CI		PID 0.0 BY 40
17.0	12-24-94 1330	NA	6	SAA	CI		PID 0.0 BY 40
17.5	12-24-94 1330	NA	6	SAA	CI	2.5	PID 0.0 BY 40

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-9

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11503

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: –

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 17.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0	12-29-94 1330	NA	6	very stiff 5Y 4/1 Dark Gray silty clay with some sand + gravel med plasticity slightly moist	CI	2.5	PID 0.0 BY 40
18.0 – 18.5	12-29-94 1330	NA	6	SAA	CI	2.5	PID 0.0 BY 40
18.5 – 19.0	12-29-94 1330	NA	6	SAA	CI	2.5	PID 0.0 BY 40
19.0 – 19.5	12-29-94 1330	NA	6	SAA	CI	2.5	PID 0.0 BY 40
19.5 – 20.0	12-29-94 1330	NA	6	SAA	CI	2.5	PID 0.0 BY 40
20.0 – 20.5	12-29-94 1330	NA	6	SAA	CI	2.5	PID 0.0 BY 40
20.5 – 21.0	12-29-94 1330	NA	6	SAA	CI	2.5	PID 0.0 BY 40

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11503

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: | DATE: | TIME: | DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: | DATE: | TIME: | DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13 Gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0 – 21.5	12-29-94 1340	NA	6	SAA	CI	2.5	PID 0.0 BY 40
21.5 – 22.0	12-29-94 1340	NA	6	SAA	CI	2.5	PID 0.0 BY 40
22.0 – 22.5	12-29-94 1340	NA	6	SAA	CI	2.0	PID 0.0 BY 40
22.5 – 23.0	12-29-94 1340	NA	6	SAA	CI	2.0	PID 0.0 BY 40
23.0 – 23.5	12-29-94 1340	NA	6	SAA	CI	2.0	PID 0.0 BY 40
23.5 – 24.0	12-29-94 1340	NA	6	SAA	CI	2.5	PID 0.0 BY 40
24.0 – 24.5	12-29-94 1340	NA	6	SAA	CI	2.0	PID 0.0 BY 40

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000474

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94778.DRW (11-23-9

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11503

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13 Gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5 – 25.0	12-29-94 1345	NA	6	SAA	CI	2.0	PID 0.0 BY 40
25.0 – 25.5	12-29-94 1345	NA	6	SAA	CI	2.0	PID 0.0 BY 40
25.5 – 26.0	12-29-94 1345	NA	6	SAA	CI	2.0	PID 0.0 BY 40
26.0 – 26.5	12-29-94 1345	NA	6	SAA	CI	2.0	PID 0.0 BY 40
26.5 – 27.0	12-29-94 1345	NA	6	SAA	CI	2.0	PID 0.0 BY 40
27.0 – 27.5	12-29-94 1345	NA	6	Stiff 5Y 4/1 Dark Gray silty Clay with a Small Gray Sand Seam ~1" med plasticity, slightly moist	CI	2.0	PID 0.0 BY 40
27.5 – 28.0	12-29-94 1345	NA	6	Soft 5Y 4/1 Dark Gray silty Sandy clay with Gravel med plasticity slightly moist to moist	CI	.25	PID 0.0 BY 40

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11503

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13 Gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
25.0 – 25.5	12-29-94 1350	NA	6	Stiff 5Y 4/1 Dark Gray Silty Clay with some Sand + Gravel med. plasticity slightly moist.	CI	1.0	PID 0.0 BY 40
24.0	12-29-94 1350	NA	6	SAA	CI	1.0	PID 0.0 BY 40
29.5	12-29-94 1350	NA	6	SAA	CI	1.0	PID 0.0 BY 40
30.0	12-29-94 1350	NA	6	SAA	CI	2.0	PID 0.0 BY 40
30.5	12-29-94 1350	NA	6	SAA	CI	2.0	PID 0.0 BY 40
31.0	12-29-94 1350	NA	6	SAA	CI	2.0	PID 0.0 BY 40
31.5	12-29-94 1350	NA	6	Very Stiff SAA	CI	3.0	PID 0.0 BY 40

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: NONE

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94776.DRW (11-23-9

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11503

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: –

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-29-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-29-94

WATER USED DURING DRILLING: 13.6 gal

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.5 – 32.0	12-29-94 1350	NA	6	Stiff SAA	CI	2.0	PID 0.0 BY 40
32.0 – 32.5	12-29-94 1350	NA	6	SAA	CI	2.0	PID 0.0 BY 40
32.5 – 33.0	12-29-94 1350	NA	6	SAA	CI	2.0	PID 0.0 BY 40
33.0 – 33.5	12-29-94 1350	NA	6	SAA	CI	2.0	PID 0.0 BY 40
33.5 – 34.0	12-29-94 1350	NA	6	SAA	CI	2.0	PID 0.0 BY 40
34.0 – 34.5	12-29-94 1350	NA	6	SAA	CI	2.0	PID 0.0 BY 40
34.5 – 35.0	12-29-94 1350	NA	6	SAA Bottom of Boring at 35.0'	CI	2.0	PID 0.0 BY 40

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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Pg 5 1 of 11

WELL NUMBER: 11503

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 Pre-Design Field Investigation

PROJECT NUMBER: 20.03.07

GEOLOGIST: Ken Geiger

DRILLING METHOD: Rotosonic

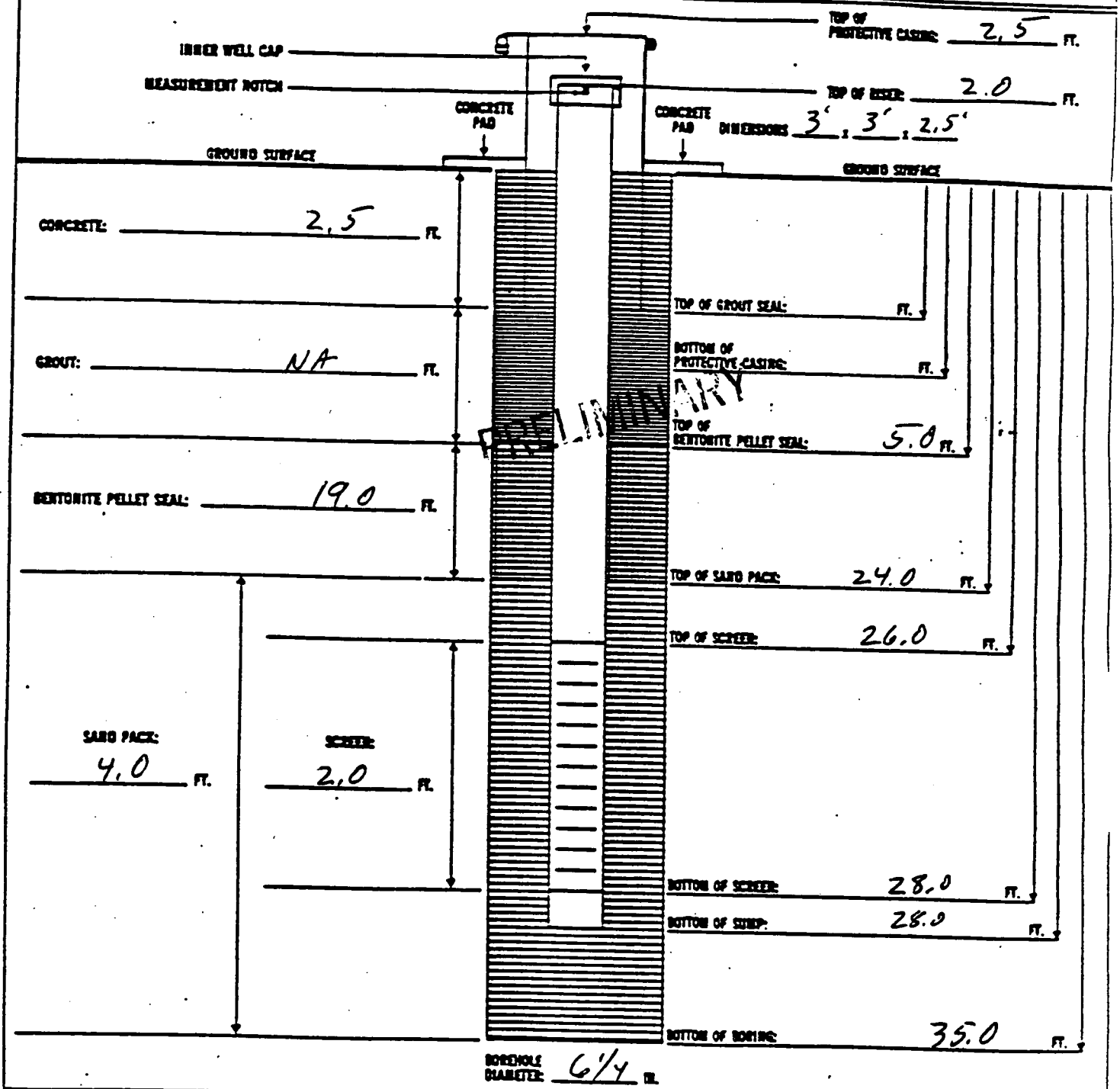
DATES OF INSTALLATION: 12-28-94

WATER LEVEL (ft.): -

DATE:

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: NA	BENTONITE PELLETS (5-GALLON BUCKETS): 250 lbs	DEEPEST TEMPORARY DRILLING CASING PENETRATION: 35.0 FT.
VOLUME OF WATER USED DURING DRILLING: 13.6 ~~20~~ ~~60~~ gal GAL	RISER MATERIAL: 316 Stainless Steel	VOLUME OF WATER USED FOR GROUT HYDRATION: NA GAL
RISER WALL THICKNESS: Sch 40	TYPE OF SAND PACK: 20/10	SCREEN MATERIAL: 316 Stainless Steel Flush Thread	DRILLING CASING DIAMETER: 6 1/4 IN.
RISER/SCREEN DIAMETER: 2.0 IN.	SCREEN SLOT SIZE: 10 SLOT IN	SCREEN TYPE: Stainless Flush Thread	DEPTH OF CENTRALIZER(S): NA

00078

FEMP

LITHOLOGIC LOG

CONTROL NO.:	
PROJECT NAME:	Phase I + II of The OU2 Pre-Design Field Investigation
PROJECT NO.:	20.03.07
BORING NUMBER:	11502
COORDINATES:	
RELATED FAL NO.s:	
SURFACE ELEVATION:	—
GROUNDWATER LEVEL: / DATE: / TIME:	
DATE STARTED:	12-20-94
GEOLOGIST:	Geiger / Riley
GROUNDWATER LEVEL: / DATE: / TIME:	
DATE COMPLETED:	12-20-94
WATER USED DURING DRILLING:	75 gallons
DRILLING CONTRACTOR:	Alliance
DRILLING EQUIPMENT:	Rotosonic
DRILLER / HELPER:	Brown / Grim

PRELIMINARY

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.5	12-20-94 1300	NA	6	Very Soft, Stiff 5/4 Yellowish Brown Silty Clay Roots Medium plasticity, Moist	CI	.25	PID 5.2 BY 50
1.0	12-20-94 1300	NA	6	Soft Same	CI	.5	PID 5.2 BY 50
1.5	130 12-20-94	NA	6	Soft Same	CI	.5	PID 5.2 BY 50
2.0	1300 12-20-94	NA	6	Soft Same	CI	.5	PID 5.2 BY 50
2.5	1300 12-20-94	NA	6	Stiff 10YR 5/4 Yellowish Brown silty clay Trace of Sand mod plasticity Slightly Moist	CI	1.0	PID 5.2 BY 50
3.0	1300 12-20-94	NA	6	Same	CI	2.0	PID 5.2 BY 50
	1300 12-20-94	NA	6	Same	CI	2.0	PID 5.2 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	2.6	12-20-94	1300
ALPHA	NA	NA	NA
BETA / GAMMA	50-70	12-20-94	1300

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11502

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-20-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-20-94

WATER USED DURING DRILLING: 75 gallons

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.5	12-20-94 1300	NA	6	very soft, CYR 5/4 Yellowish Brown silty clay Roots medium plasticity, moist	CL	.25	PID 5.2 BY 50
1.0	12-20-94 1300	NA	6	Soft Same	CL	.5	PID 5.2 BY 50
1.5	130 12-20-94	NA	6	soft Same	CL	.5	PID 5.2 BY 50
2.0	1300 12-20-94	NA	6	soft Same	CL	.5	PID 5.2 BY 50
2.5	1300 12-20-94	NA	6	Stiff 10YR 5/4 yellowish Brown silty clay Trace of Sand mod plasticity Slightly Moist	CL	1.0	PID 5.2 BY 50
3.0	1300 12-20-94	NA	6	Same	CL	2.0	PID 5.2 BY 50
	1300 12-20-94	NA	6	Same	CL	2.0	PID 5.2 BY 50

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	2.6	12-20-94	1300
ALPHA	NA	NA	NA
BETA / GAMMA	50-70	12-20-94	1300

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11502

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-20-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-20-94

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
4.0	12-20-94 1310	NA	6	Stiff 10YR/5/4 yellowish brown silty clay with some manganese concretions, medium plasticity slightly moist	CI	2.0	PID 6.2 BY 60
4.5	12-20-94 1310	NA	6	Same	CI	2.75	PID 6.2 BY 60
5.0	12-20-94 1310	NA	6	Same	CI	2.75	PID 6.2 BY 60
5.5	12-20-94 1310	NA	6	Very stiff 10YR, 5/4 yellowish brown silty clay with some gravel med plasticity, slightly moist	CI	2.75	PID 6.2 BY 60
6.0	12-20-94 1310	NA	6	Same	CI	2.75	PID 10.5 BY 60
6.5	12-20-94 1310	NA	6	Same	CI	2.75	PID 10.5 BY 60
7.0	12-20-94 1310	NA	6	Same	CI	2.75	PID 10.5 BY 60

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-776.DRW (11-23-94)

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11502

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-20-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-20-94

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.0	12-20-94 1320	NA	6	Very stiff 10YR 5/4 Yellowish Brown Silty Clay w/ Some Gravel Med Plasticity Slight Moist	CI	2.5	PID 7.0 BY 50
7.5	12-20-94 1320	NA	6	Same	CI	2.5	PID 7.0 BY 50
8.0	12-20-94 1320	NA	6	Same	CI	2.75	PID 7.0 BY 50
8.5	12-20-94 1320	NA	6	Same	CI	2.5	PID 7.0 BY 50
9.0	12-20-94 1320	NA	6	Same	CI	2.5	PID 7.0 BY 50
9.5	12-20-94 1320	NA	6	Same	CI	2.5	PID 7.5 BY 50
10.0	12-20-94 1320	NA	6	Same	CI	2.5	PID 7.5 BY 50
10.5							

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11502

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-20-94

GEOLOGIST: Geigik / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-20-94

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
10.5 – 11.0	12-20-94 1320	NA	6	Same	CI	2.0	PID 7.5 BY 60
11.0 – 11.5	12-20-94 1320	NA	6	Same	CI	2.0	PID 7.0 BY 60
11.5 – 12.0	12-20-94 1320	NA	6	Same	CI	2.0	PID 7.5 BY 60
12.0 – 12.5	12-20-94 1320	NA	6	Same with cobble 2"x2"x1"	CI	2.0	PID 7.0 BY 60
12.5 – 13.0	12-20-94 1320	NA	6	very stiff 5Y,5/1 Gray silty clay with some Gravel med plasticity slightly moist	CI	3.2	PID 7.0 BY 60
13.0 – 13.5	12-20-94 1320	NA	6	Same	CI	3.0	PID 7.5 BY 60
13.5 – 14.0	12-20-94 1320	NA	6	Same	CI	3.0	PID 7.5 BY 60

BROWN

GRAY

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11502

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-20-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-20-94

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0 – 14.5	12-20-94 1330	NA	6	Same with Sand	CI	2.75	PID 10.5 BY 50
14.5 – 15.0	12-20-94 1330	NA	6	Same with some brown smears	CI	2.75	PID 10.5 BY 60
15.0 – 15.5	12-20-94 1330	NA	6	Same	CI	2.5	PID 10.5 BY 60
15.5 – 16.0	12-20-94 1330	NA	6	Same	CI	2.5	PID 10.5 BY 60
16.0 – 16.5	12-20-94 1330	NA	6	Same	CI	2.5	PID 10.5 BY 50
16.5 – 17.0	12-20-94 1330	NA	6	Same	CI	2.75	PID 10.0 BY 60
17.0 – 17.5	12-20-94 1335	NA	6	Same	CI	2.75	PID 10.5 BY 60

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

000433

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881

G:/WPSC/94-776.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11502

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-20-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-20-94

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
17.5 – 18.0	12-20-94 1335	NA		Same	CL	1.75	PID 7.5 BY 60
18.0 – 18.5	12-20-94 1335	NA		Same	CL	1.75	PID 7.5 BY 60
18.5 – 19.0	12-20-94 1335	NA		Same	CL	1.75	PID 7.5 BY 50
19.0 – 19.5	12-20-94 1335	NA		Same	CL	1.75	PID 7.5 BY 50
19.5 – 20.0	12-20-94 1335	NA		Same	CL	1.5	PID 7.0 BY 60
20.0 – 20.5	12-20-94 1335	NA		Same with More Gravel	CL	2.0	PID 7.5 BY 60
20.5 – 21.0	12-20-94 1335	NA		Same	CL	1.75	PID 7.0 BY 60

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See	Pg 1	
ALPHA	NA	NA	NA
BETA / GAMMA	See	Pg 1	

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-776.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11502

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED: 12-20-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED: 12-20-94

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
21.0 – 21.5	12-20-94 1335	NA	6	Same	CI	1.75	PID 10.5 BY 60
22.0	12-20-94 1335	NA	6	Same	CI	1.75	PID 10.0 BY 60
27.5	12-20-94 1335	NA	6	5Y 5/4 Olive Gray ~~Silty~~ Silt with some clay slightly moist RG 12-20-94	ML	NA	PID 10.0 BY 60
23.0	12-20-94 1335	NA	6	Same	ML	NA	PID 10.5 BY 60
23.5	12-20-94 1335	NA	6	Stiff 5Y 5/4 Olive Gray silty clay with some Gravel Trace of Sand med plasticity slightly moist	CI	1.75	PID 10.0 BY 60
24.0	12-20-94 1335	NA	6	Same	CI	1.5	PID 10.0 BY 60
24.5	12-20-94 1335	NA	6	Same		1.75	PID 10.5 BY 60

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: NONE

PRELIMINARY

000485

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER:

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-20-94

GEOLOGIST: Geiger / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-20-94

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
24.5 – 25.0	12-20-94 1335	NA	6	Same	CI	1.75	PID 7.5 BY 60
25.0 – 25.5	12-20-94 1335	NA	6	Same	CI	1.25	PID 7.5 BY 60
25.5 – 26.0	12-20-94 1335	NA	6	Same	CI	1.75	PID 7.5 BY 60
26.0 – 26.5	12-20-94 1335	NA	6	5Y, 5/1 Olive Gray Silt with Some clay + Trace of Gravel Slightly Moist	ML	NA	PID 7.5 BY 60
26.5 – 27.0	12-20-94 1335	NA	6	Same	ML	NA	PID 7.0 BY 60
27.0 – 27.5	12-20-94 1335	NA	6	Same	ML	NA	PID 7.5 BY 60
27.5 – 28.0	12-20-94 1335	NA	6	Same	ML	NA	PID 7.5 BY 60

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3881 000486

G:/WPSC/94-778.DRW (11-23-94)

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER:

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-20-94

GEOLOGIST: Geigle / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-20-94

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
28.0 – 28.5	12-20-94 1340	NA	6	Stiff 5Y, 5/4 olive gray silty clay with some gravel med plasticity, slightly moist	CI	2.0	PID 7.5 BY 60
29.0	12-20-94 1340	NA	6	Same	CI	2.75	PID 7.5 BY 60
29.5	12-20-94 1340	NA	6	Same	CI	2.0	PID 7.0 BY 60
30.0	12-20-94 1340	NA	6	Same	CI	2.0	PID 7.5 BY 60
30.5	12-20-94 1340	NA	6	Same	CI	2.0	PID 7.5 BY 60
31.0	12-20-94 1340	NA	6	Same	CI	2.0	PID 7.0 BY 60
31.5	12-20-94 1340	NA	6	Same	CI	2.0	PID 7.5 BY 60

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See pg 1		
ALPHA	NA	NA	NA
BETA / GAMMA	See pg 1		

NOTES: NONE

OU0487

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

FS-F-3681

G:/WPSC/94-778.DRW (11-23-94

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: Phase I + II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER:

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12-20-94

GEOLOGIST: Geigle / Riley

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12-20-94

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: Alliance

DRILLING EQUIPMENT: Rotosonic

DRILLER / HELPER: Brown / Grim

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31.5 – 32.0	12-20-94 1340	NA	6	Same	CI	2.0	PID 75 By 60
32.0 – 32.5	12-20-94 1340	NA	6	Same	CI	2.0	PID 70 By 60
		NA		Bottom of Boring 32.5 Feet Bore Hole collapsed when casing was removed			PID By
		NA					PID By
		NA					PID By
		NA					PID By
		NA					PID By

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	See	pg 1	
ALPHA	NA	NA	NA
BETA / GAMMA	See	pg 1	

NOTES: None

* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

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G:/WPSC/94-778.DRW (11-23-94)

6521

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PAGE 1 OF 2

PROJECT NAME: PHASE I + II OF THE OU2 PRE-DESIGN INVESTIGATION

PROJECT NO.: 2003.07

BORING NUMBER: PL (Line #2) / 1543

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/27/94

GEOLOGIST: RILEY

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/27/94

WATER USED DURING DRILLING: PRELIMINARY NONE

DRILLING CONTRACTOR: EFI

DRILLING EQUIPMENT: GEOPROBE

DRILLER / HELPER: GIZOB / DEMO

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
2.0	12/27/94 0850	NA	24	VERY STIFF (10YR 5/4) YELLOWISH BROWN SILTY CLAY WITH ROOTS AND TRACE OF FINE SAND, SOME MED TO FINE GRAVELS, MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	2.5	PID 0.0 BG 50
4.0	12/27/94 0850	NA	24	SAME AS PRELIMINARY	CL	2.5	PID 0.0 BG 50
6.0	12/27/94 0905	NA	24	SAME AS 2.0 - 4.0	CL	2.0	PID 0.0 BG 50
5.0	12/27/94 0905	NA	24	SAME AS 4.0 - 6.0 FEET UNTIL 7.5 FEET, GRADING INTO A MEDIUM STIFF (10YR 4/1) DARK YELLOWISH BROWN SAND SILT WITH SOME GRAVEL, NON PLASTIC NOT	CL / ML	1.0	PID 0.0 BG 50
8.0	12/27/94 0922	NA	24	STIFF (10YR 5/4) YELLOWISH BROWN SILTY CLAY WITH TRACE GRAVEL AND SAND, MED. PLASTICITY, SLIGHTLY MOIST	CL	1.5	PID 0.0 BG 50
Clay → 10.0	12/27/94 0922	NA	24	STIFF (5Y 4/1) DARK GRAY SILTY CLAY WITH SOME MEDIUM TO FINE GRAVEL, MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	1.5	PID 0.0 BG 50
12.0	12/27/94 0936	NA	24	SAME AS 10.0 - 12.0	CL	2.0	PID 0.0 BG 50
14.0							

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/27/94	0845
ALPHA	NA	NA	NA
BETA / GAMMA	50	12/27/94	0845

NOTES:

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* ~~SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST~~

12/27/94

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FEMP

LITHOLOGIC LOG

PR 12/27

CONTROL NO.:

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PROJECT NAME: PHASE I + II OF THE OU2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: ~~11543~~ 11573

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/27/94

GEOLOGIST: RILEY

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/27/94

WATER USED DURING DRILLING: NONE

DRILLING CONTRACTOR: EFO

DRILLING EQUIPMENT: GEOPROBE

DRILLER / HELPER: GROB / DEHO

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16.0	12/27/94 0935	NA	24	VERY STIFF (5YR 4/1) DARK GRAY CLAYEY SILT WITH LITTLE % OF SAND. NON PLASTIC, VERY MOIST, GRADING INTO A SILTY/CLAYEY SAND, WET	ML SM	3.0 NA	PID 0.0 BS 50
18.0	12/27/94 1030	NA	24	SAMPLE AS 14.0-16.0 MOIST	SM	NA	PID 0.0 BS 50
20.0	12/27/94 1030	NA	~~24~~ PR 12/27/94 0	NO RECOVERY	NA	NA	PID NA BS NA
				20.0 BOTTOM OF BORING			

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/27/94	0845
ALPHA	NA	NA	NA
BETA / GAMMA	50	12/27/94	0845

NOTES:

~~SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.~~ PR 12/27/94

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WELL NUMBER: 11543

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NUMBER: 20.03.07

GEOLOGIST: P. RILEY

DRILLING METHOD: GEOPROBE

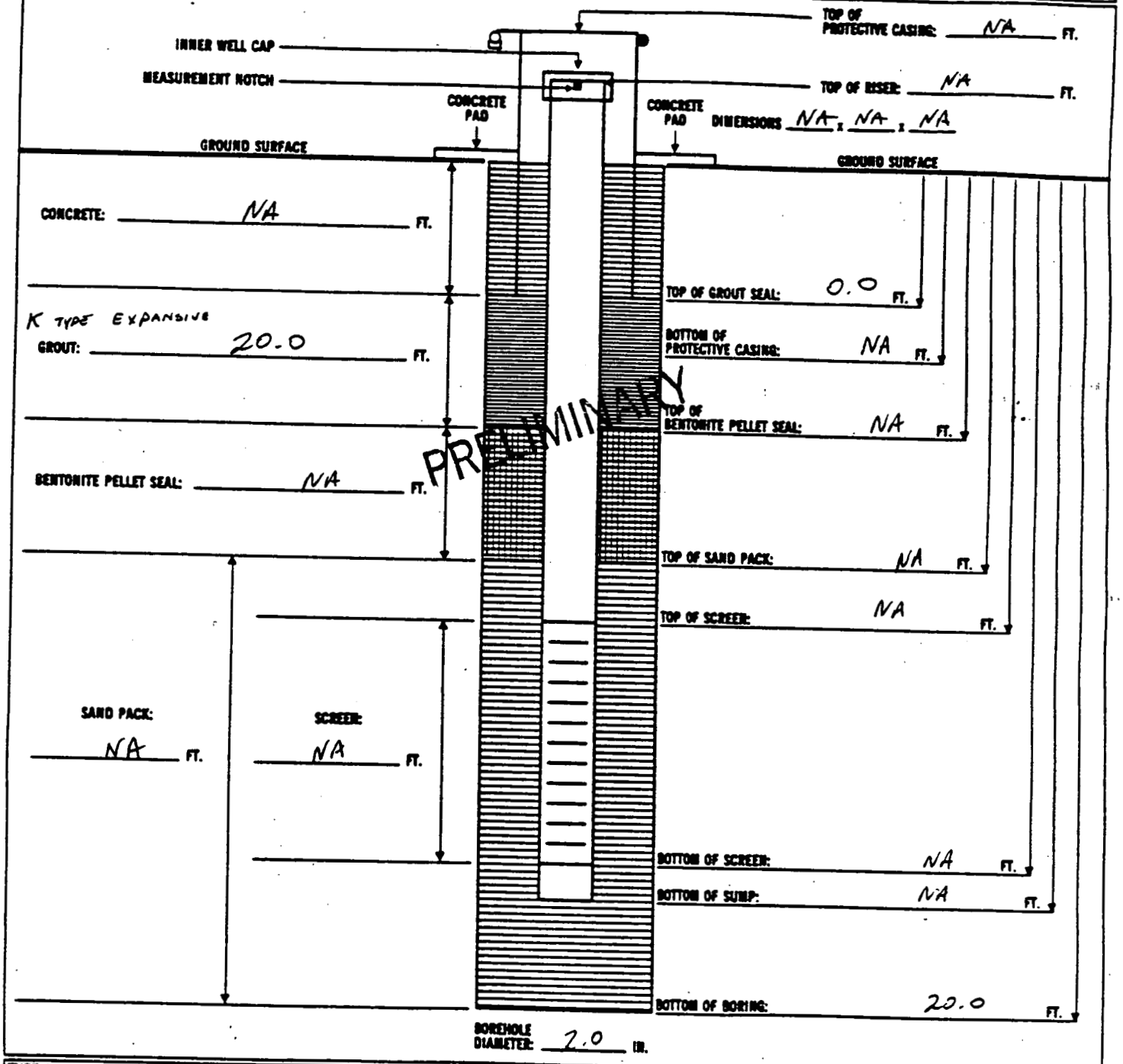
DATES OF INSTALLATION: 12/27/94

WATER LEVEL (ft.): —

DATE:

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS): NA	DEEPEST TEMPORARY DRILLING CASING PENETRATION: 20.0 FT.	
VOLUME OF WATER USED DURING DRILLING: NONE GAL.	RISER MATERIAL: NA	VOLUME OF WATER USED FOR GROUT HYDRATION: GAL.	
RISER WALL THICKNESS: NA	TYPE OF SAND PACK: NA	SCREEN MATERIAL: NA	DRILLING CASING DIAMETER: 2.0 IN.
RISER/SCREEN DIAMETER: NA IN.	SCREEN SLOT SIZE: NA IN.	SCREEN TYPE: NA	DEPTH OF CENTRALIZER(S): NA FT.

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LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11542

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/28/94

GEOLOGIST: RILEY

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/28/94

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: EFO ~~Alliance~~ PR 12/23/94

DRILLING EQUIPMENT: GEOPROBE ~~Rotogania~~ #3 12/28/94

DRILLER / HELPER: GROB / REYNOLDS

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1.0	12/28/94 1330	NA	12	STIFF (10YR 3/4) DARK YELLOWISH BROWN SILTY CLAY WITH ROOTS AND TRACE OF SAND SLIGHT TO MEDIUM PLASTICITY PRELIMINARY	CL	1.0	PID 0.0 BY 60
2.0	12/28/94 1345	NA	6 / 6	STIFF (10YR 5/4) YELLOWISH BROWN SILTY CLAY WITH TRACE OF SAND, MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	1.5	PID 0.0 BY 60
3.0		NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 60
4.0	12/28/94 1357	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 6.0
5.0	12/28/94 1405	NA	6 / 6	SAME AS ABOVE SOME GRAVEL	CL	1.5	PID 0.0 BY 60
6.0	12/28/94 1405	NA	12	SAME AS ABOVE	CL	1.25	PID 0.0 BY 60
7.0	12/28/94 1420	NA	12	LOOSE (10YR 5/6) YELLOWISH BROWN FINE CLAYEY SILTY SAND, NON-PLASTIC, WET	SC	NA	PID 0.0 BY 60

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/28/94	1315
ALPHA	NA	NA	NA
BETA / GAMMA	~~50~~ 60 PR 12/28/94	12/28/94	1315

NOTES:

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* ~~SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST~~

PR 12/28/94

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LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11542

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/28/94

GEOLOGIST: RILEY

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/28/94

WATER USED DURING DRILLING: NONE

DRILLING CONTRACTOR: ~~Alliance~~ EFO

DRILLING EQUIPMENT: GEOPROBE ~~Rotosonic~~

DRILLER / HELPER: GROB / REYNOLDS

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
	12/28/94 1420	NA	6	STIFF (10YR 5/6) YELLOWISH BROWN CLAYEY SANDY SILT, NON-PLASTIC, WET	ML	2.0	PID 0.0 BY 60
8.0	12/28/94 1425		6				
	12/28/94 1425	NA	12	SAME AS ABOVE	ML	2.0	PID 0.0 BY 60
9.0				LOOSE (10YR 5/4) PRELIMINARY			
	12/28/94 1500	NA	12	VERY STIFF (5Y 4/1) DARK GRAY SILTY CLAY, WITH SOME SAND AND GRAVEL, MEDIUM PLASTICITY, SLIGHTLY MOIST			PID 0.0 BY 60
10.0	12/28/94 1500	NA	6	VERY STIFF (5Y 4/1) DARK GRAY, SILTY CLAY SOME SAND AND GRAVEL, MEDIUM PLASTICITY, SLIGHTLY	CL	2.5	PID 0.0 BY 60
11.0				BOTTOM OF BORING			
12.0		NA					PID BY
13.0		NA					PID BY
14.0		NA					PID BY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/23/94	1315
ALPHA	NA	NA	NA
BETA / GAMMA	~~50~~ 60 PL 12/28/94	12/28/94	1315

NOTES:

* ~~SAMPLES COLLECTED~~ PER ASTM STANDARD PENETRATION TEST.

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PL 12/28/94

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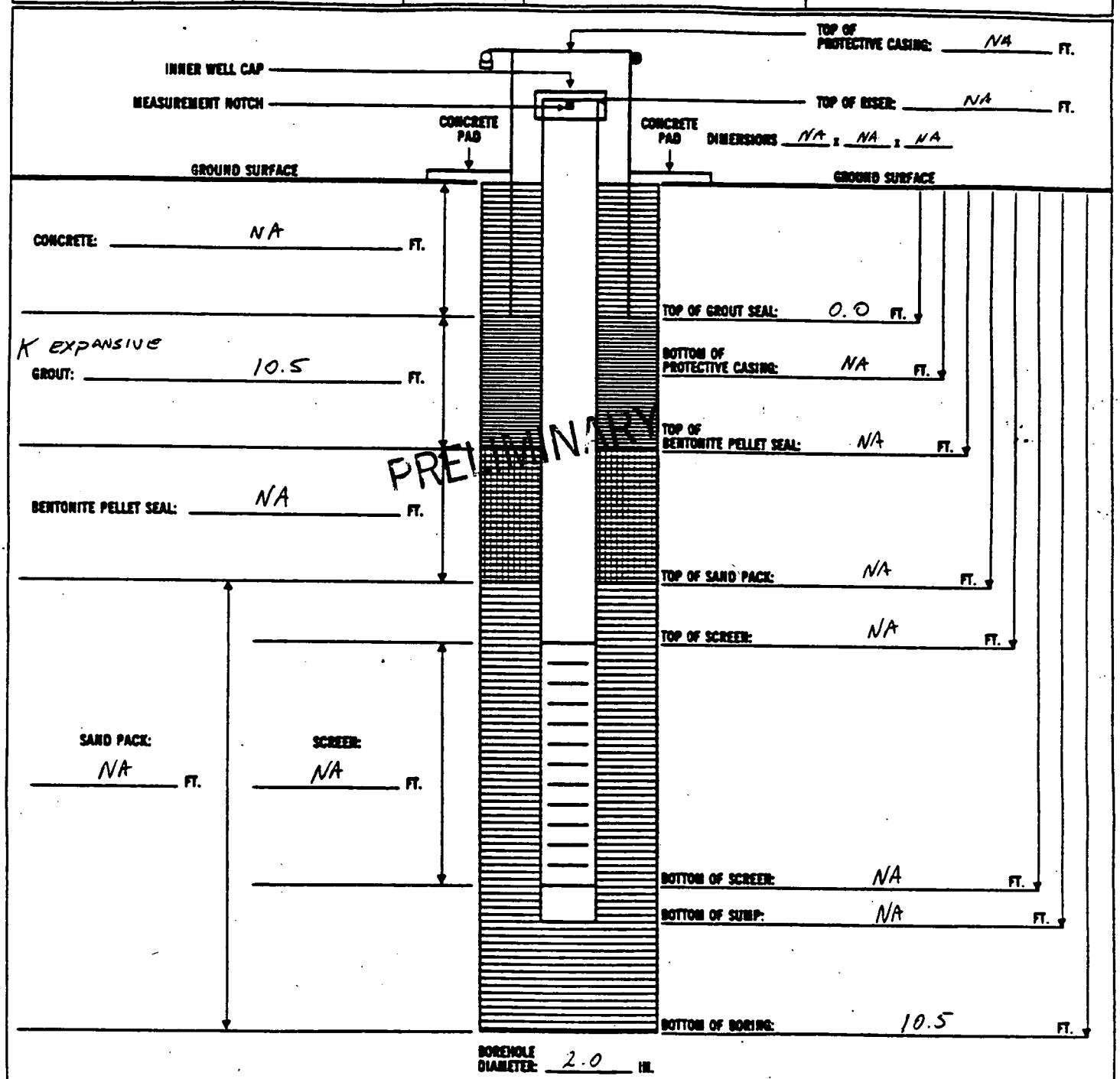
WELL COMPLETION LOG

WELL NUMBER: 11542	CONTROL NUMBER:
PROJECT NAME: PHASE I + II OF THE OU2 PRE-DESIGN FIELD INVESTIGATION	PROJECT NUMBER: 20.03.07
GEOLOGIST: PATRICK RILEY	DRILLING METHOD: GEOPROBE
DATES OF INSTALLATION: 12/28/94	WATER LEVEL (ft.): ~6.0 DATE: 12/28/94
RELATED FAL NUMBERS:	CHECKED BY:



TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS): NA	DEEPEST TEMPORARY DRILLING CASING PENETRATION: 10.5 FT.
VOLUME OF WATER USED DURING DRILLING: NONE GAL.	RISER MATERIAL: NA	VOLUME OF WATER USED FOR GROUT HYDRATION: GAL.

RISER WALL THICKNESS: NA	TYPE OF SAND PACK: NA	SCREEN MATERIAL: NA	DRILLING CASING DIAMETER: NA IN.
RISER/SCREEN DIAMETER: NA IN.	SCREEN SLOT SIZE: NA IN.	SCREEN TYPE: NA	DEPTH OF CENTRALIZER(S): N/A FT.

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11541

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/22/94

GEOLOGIST: RILEY

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/22/94

WATER USED DURING DRILLING: NON

DRILLING CONTRACTOR: ~~Alliance~~ EFO PR 12/22/94

DRILLING EQUIPMENT: GEOPROBE ~~Rotosonic~~ PR 12/22/94

DRILLER / HELPER: GROB / NEYER

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1.0	12/22/94 0930	NA	12 ~~6~~ PR 12/22/94	STIFF (10YR 4/3) BROWN SILTY CLAY WITH ROOTS, SLIGHT TO MEDIUM PLASTICITY, SLIGHTLY MOIST TO DRY PRELIMINARY	CL	1.5	PID 0.0 BY 60
2.0	12/22/94 0930	NA	12	STIFF (10YR 5/4) YELLOWISH BROWN SILTY CLAY WITH TRACE OF SAND, ROOTS, SLIGHTLY MOIST, SLIGHT TO MEDIUM PLASTICITY	CL	1.0	PID 0.0 BY 50
3.0	12/22/94 0930	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50
4.0	12/22/94 0930	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50
5.0	12/22/94 0940	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50
6.0	12/22/94 0940	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 55
7.0	12/22/94 0940	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/22/94	0930
ALPHA	NA	NA	NA
BETA / GAMMA	50	12/22/94	0930

NOTES:

000495

~~* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.~~

PR 12/22/94

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LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME: Phase I+II of The OU2 Pre-Design Field Investigation

PROJECT NO.:

BORING NUMBER: 11541-

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: EFO ~~Alliance~~ P.R. 12/22/94

DRILLING EQUIPMENT: GeoProbe ~~Rotosonic~~ P.R. 12/22/94

DRILLER / HELPER: GROB / NEYER

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
8.0	12/22/94 0940	NA	12	SAME AS ABOVE PRELIMINARY	CL	1.5	PID 0.0 BY 50
9.0	12/22/94 0952	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50
10.0	12/22/94 0952	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50
11.0	12/22/94 0952	NA	6	SAME AS ABOVE	CL	1.0	PID 0.0 BY 50
			6	STIFF (5Y 4/1) DARK GRAY SILTY CLAY WITH SOME GRAVEL (FINE TO MED.), TRACE OF SAND, MEDIUM PLASTICITY, MOIST	CL	1.0	
12.0	12/22/94 0952	NA	6	SAME AS ABOVE	CL	1.0	PID 0.0 BY 50
			6	(5Y 4/1) DARK GRAY GRAVELLY SAND, WITH SOME FINES, WET	SC	NA	
13.0	12/22/94 1002	NA	12	SAME AS ABOVE	SC	NA	PID 0.0 BY 50
14.0	12/22/94 1002	NA	12	SAME AS ABOVE	SC	NA	PID 0.0 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/22/94	0930
ALPHA	NA	NA	NA
BETA / GAMMA	50	12/22/94	0930

NOTES:

~~* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.~~

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P.R. 12/22/94

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LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME: PHASE I + II OF THE OU2 PRE-DESIGN INVESTIGATION

PROJECT NO.: 20-0307

BORING NUMBER: 11541

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/22/94

GEOLOGIST: RILEY

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/22/94

WATER USED DURING DRILLING: NONE

DRILLING CONTRACTOR: EFO

DRILLING EQUIPMENT: GEOPROBE

DRILLER / HELPER: GROB / NEYER

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0	12/22/94 1002	NA	12	SAME AS ABOVE	SC	NA	BG 50 PID 0.0
15.0	12/22/94 1002	NA	12	SAME AS ABOVE	SC	NA	BG 60 PID 0.0
16.0	12/22/94 1030	NA ~~12~~ PID 0.0	12	SAME AS ABOVE	SC	NA	BG 50 PID 0.0
17.0	12/22/94 1030	NA ~~12~~ PID 0.0	12	SAME AS ABOVE	SC	NA	BG 50 PID 0.0
18.0				BOTTOM OF BORING 18.0 FT PR 12/22/94			

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/22/94	0930
ALPHA	NA	NA	NA
BETA / GAMMA	50	12/22/94	0930

NOTES:

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* ~~SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.~~

PR 12/22/94

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WELL NUMBER: 11541

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

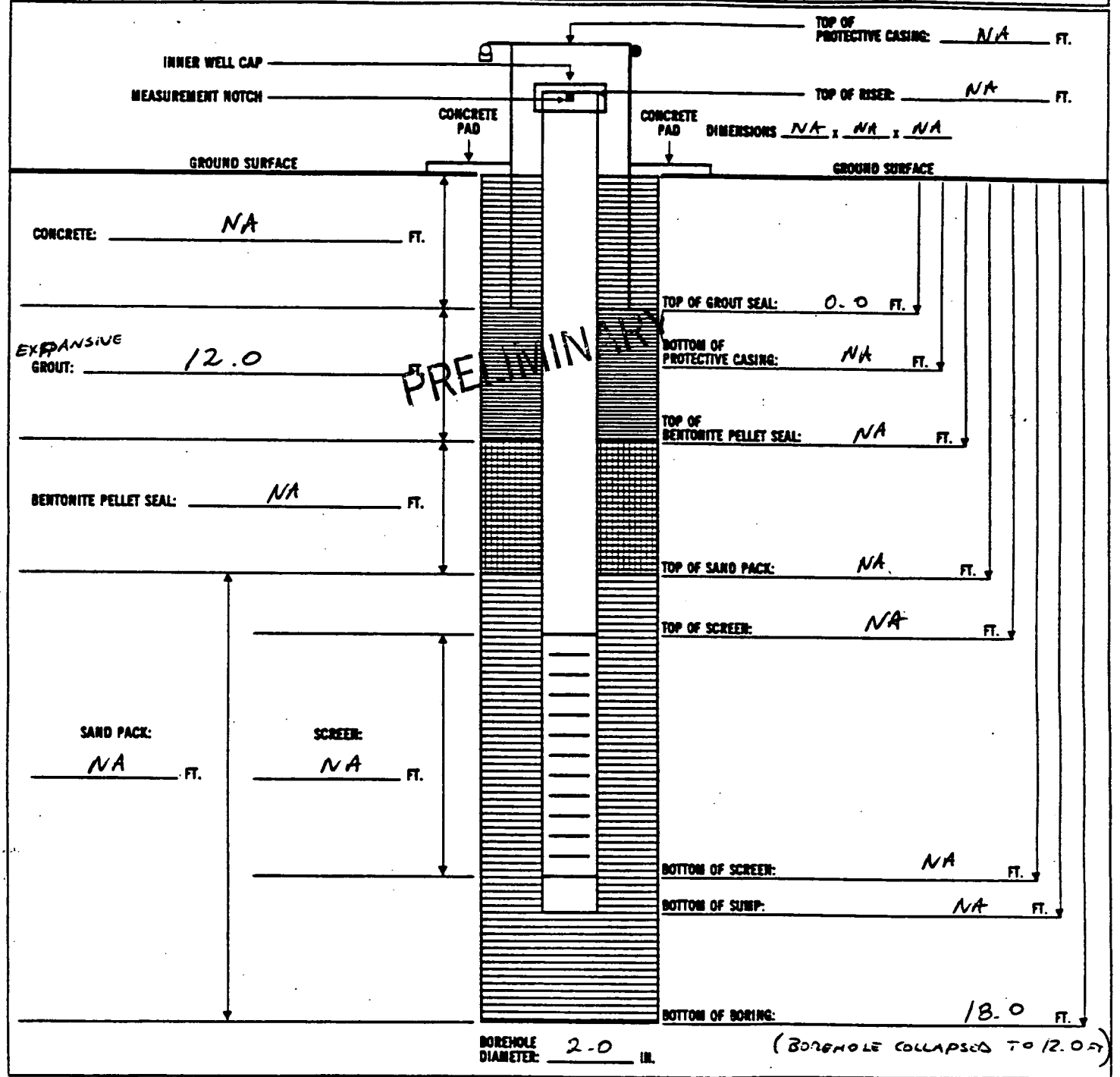
PROJECT NAME: OU2 PRE-DESIGN INVESTIGATION

PROJECT NUMBER: 20.03.07

GEOLOGIST: PATRICK RILEY

DRILLING METHOD: GEOPROBE

DATES OF INSTALLATION:	WATER LEVEL (ft.):	DATE:	RELATED FAL NUMBERS:	CHECKED BY:
12/22/94	1~~6~~8	12/22/94		



TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS):	DEEPEST TEMPORARY DRILLING CASING PENETRATION:
	NA	18.0 FT.
VOLUME OF WATER USED DURING DRILLING: NONE GAL.	RISER MATERIAL: NA	VOLUME OF WATER USED FOR GROUT HYDRATION: GAL.

RISER WALL THICKNESS:	TYPE OF SAND PACK:	SCREEN MATERIAL:	DRILLING CASING DIAMETER:
NA	NA	NA	PR 12/22/94 ~~NA~~ 2.0 IN.
RISER/SCREEN DIAMETER:	SCREEN SLOT SIZE:	SCREEN TYPE:	DEPTH OF CENTRALIZER(S):
NA IN.	NA IN.	NA	NA FT.

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LITHOLOGIC LOG

CONTROL NO.:

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PROJECT NAME: Phase I+II of the OU2 Pre-Design Field Investigation

PROJECT NO.: 20.03.07

BORING NUMBER: 11541

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/22/94

GEOLOGIST: RILEY

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/22/94

WATER USED DURING DRILLING: NON

DRILLING CONTRACTOR: ~~Allignce~~ EFO PR 12/22/94

DRILLING EQUIPMENT: GEOPROBE ~~Rotosonic~~ PR 12/22/94

DRILLER / HELPER: GROB / NEYER

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1.0	12/22/94 0930	NA	12	STIFF (10YR 4/3) BROWN SILTY CLAY WITH ROOTS, SLIGHT TO MEDIUM PLASTICITY, SLIGHTLY MOIST TO DRY PR 12/22/94 PRELIMINARY	CL	1.5	PID 0.0 BY 60
2.0	12/22/94 0930	NA	12	STIFF (10YR 5/4) YELLOWISH BROWN SILTY CLAY WITH TRACE OF SAND, ROOTS, SLIGHTLY MOIST, SLIGHT TO MEDIUM PLASTICITY	CL	1.0	PID 0.0 BY 50
3.0	12/22/94 0930	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50
4.0	12/22/94 0930	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50
5.0	12/22/94 0940	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50
6.0	12/22/94 0940	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 55
7.0	12/22/94 0940	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/22/94	0930
ALPHA	NA	NA	NA
BETA / GAMMA	50	12/22/94	0930

NOTES:

~~1 SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.~~

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LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: Phase I + II of The OU2 Pre-Design Field Investigation

PROJECT NO.:

BORING NUMBER: 1154E

COORDINATES:

RELATED FAL NO.:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME: DATE STARTED:

GEOLOGIST:

GROUNDWATER LEVEL: DATE: TIME: DATE COMPLETED:

WATER USED DURING DRILLING:

DRILLING CONTRACTOR: EFO ~~Alliance~~ PR 12/22/94

DRILLING EQUIPMENT: GEOPROBE ~~Rotosonic~~ PR 12/22/94

DRILLER / HELPER: GROB / NEYER

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
9.0	12/22/94 0940	NA	12	SAME AS ABOVE (PRELIMINARY)	CL	1.5	PID 0.0 BY 50
9.0	12/22/94 0952	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50
10.0	12/22/94 0952	NA	12	SAME AS ABOVE	CL	1.5	PID 0.0 BY 50
11.0	12/22/94 0952	NA	6	SAME AS ABOVE	CL	1.0	PID 0.0 BY 50
			6	STIFF (5Y 4/1) DARK GRAY SILTY CLAY WITH SOME GRAVEL (FINE TO MED.), TRACE OF SAND, MEDIUM PLASTICITY, MOIST	CL	1.0	
12.0	12/22/94 0952	NA	6	SAME AS ABOVE	CL	1.0	PID 0.0 BY 50
			6	(5Y 4/1) DARK GRAY GRAVELLY SAND, WITH SOME FINES, WET	SC	NA	
13.0	12/22/94 1002	NA	12	SAME AS ABOVE	SC	NA	PID 0.0 BY 50
14.0	12/22/94 1002	NA	12	SAME AS ABOVE	SC	NA	PID 0.0 BY 50

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/22/94	0930
ALPHA	NA	NA	NA
BETA / GAMMA	50	12/22/94	0930

NOTES:

~~* SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.~~

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FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: PHASE I + II OF THE OU2 PRE-DESIGN INVESTIGATION

PROJECT NO.: 20-0307

BORING NUMBER: 11541

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/22/94

GEOLOGIST: RILEY

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/22/94

WATER USED DURING DRILLING: NONE

DRILLING CONTRACTOR: EFO

DRILLING EQUIPMENT: GEOPROBE

DRILLER / HELPER: GROB / NEYER

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.0	12/22/94 1002	NA	12	SAME AS ABOVE	SC	NA	BG 50 PID 0.0
15.0	12/22/94 1002	NA	12	SAME AS ABOVE	SC	NA	BG 60 PID 0.0
16.0	12/22/94 1030	NA ~~12~~ PID	12	SAME AS ABOVE	SC	NA	BG 50 PID 0.0
17.0	12/22/94 1030	NA ~~12~~ PID	12	SAME AS ABOVE	SC	NA	BG 50 PID 0.0
18.0				BOTTOM OF BORING 18.0 FT PR 12/22/94			

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/22/94	0930
ALPHA	NA	NA	NA
BETA / GAMMA	50	12/22/94	0930

NOTES:

* ~~SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.~~

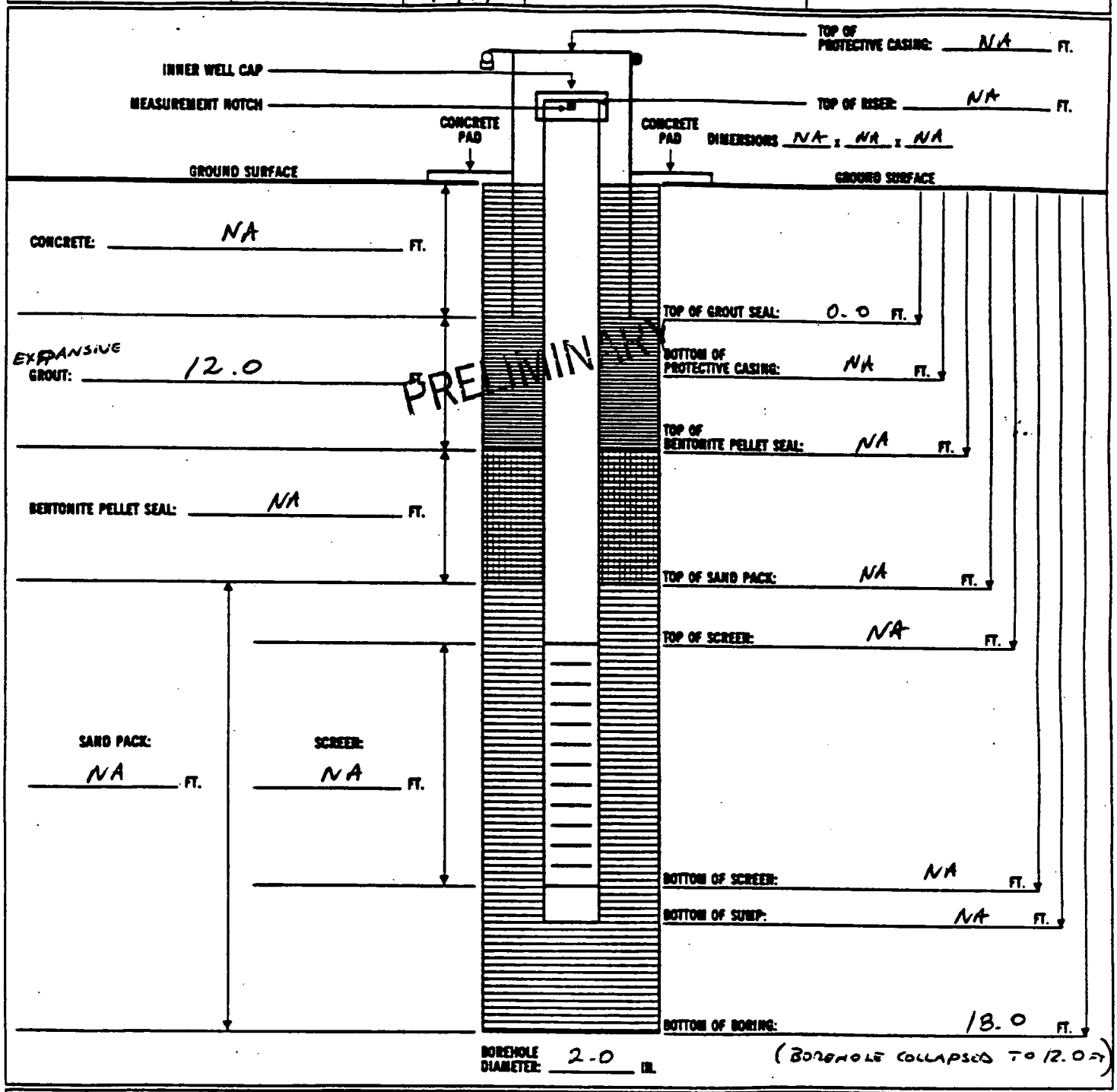
PR 12/22/94

FS-F-3681

G:/WPSC / 94-778.DRW (11-23-94

FEMP
WELL COMPLETION LOG

WELL NUMBER: 11541	CONTROL NUMBER:
PROJECT NAME: OU2 PRE-DESIGN INVESTIGATION	PROJECT NUMBER: 20.03.07
GEOLOGIST: PATRICK RILEY	DRILLING METHOD: GEOPROBE
DATES OF INSTALLATION: 12/22/94	WATER LEVEL (ft.): 17.8 DATE: 12/22/94
RELATED FAL NUMBERS:	CHECKED BY:



TYPE AND AMOUNT OF GROUT USED:	BENTONITE PELLETS (5-GALLON BUCKETS): NA	DEEPEST TEMPORARY DRILLING CASING PENETRATION: 18.0 FT.
VOLUME OF WATER USED DURING DRILLING: NONE GAL	RISER MATERIAL: NA	VOLUME OF WATER USED FOR GROUT HYDRATION: GAL

RISER WALL THICKNESS: NA	TYPE OF SAND PACK: NA	SCREEN MATERIAL: NA	DRILLING CASING DIAMETER: PR 12/22/94 ~~NA~~ 2.0 IN.
RISER/SCREEN DIAMETER: NA 00702 IN.	SCREEN SLOT SIZE: NA IN.	SCREEN TYPE: NA	DEPTH OF CENTRALIZER(S): NA FT.

FS-F-3684 (9/10/93)

CONTROL NO.:

FEMP
LITHOLOGIC LOG

PROJECT NAME: PHASE I + II OF THE OU2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11544

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/28/94

GEOLOGIST: RILEY

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/28/94

WATER USED DURING DRILLING: NONE

DRILLING CONTRACTOR: EFO

DRILLING EQUIPMENT: GEOPROBE

DRILLER / HELPER: GROB / REYNOLDS

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
8.0	12/28/94 0846	NA	12	SAME AS ABOVE	CL	1.0	PID 0.0 BZ 60
9.0	12/28/94 0915	NA	12	STIFF (10YR 5/4) YELLOWISH BROWN, SILTY CLAY WITH SOME [illegible] SANDS AND MEDIUM TO FINE ANGULAR GRAVEL, MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	1.25	PID 0.0 BZ 60
10.0	12/28/94 0915	NA	12	SAME AS ABOVE	CL	1.0	PID 0.0 BZ 60
11.0	12/28/94 0915	NA	12	SAME AS ABOVE	CL	1.0	PID 0.0 BZ 60
12.0	12/28/94 0915	NA	10	SAME AS ABOVE	CL	1.25	PID 0.0 BZ 60
13.0	12/28/94 0940	NA	12	SAME AS ABOVE	CL	1.25	PID 0.0 BZ 55
14.0	12/28/94 0940	NA	12	SAME AS ABOVE	CL	1.0	PID 0.0 BZ 60

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/28/94	0830
ALPHA	N.A	N.A	N.A
BETA / GAMMA	6.0	12/28/94	0830

NOTES:

SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST.

P.2 12/29/94

FS-F-3681

G:/WPSC / 94-778.DRW (11-23-94)

CONTROL NO.:

FEMP

LITHOLOGIC LOG

PROJECT NAME: OU2 PRE-DESIGN INVESTIGATION

PROJECT NO.: 20.03.07

BORING NUMBER: 11544

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION:

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/28/94

GEOLOGIST: RILEY

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/28/94

WATER USED DURING DRILLING: (0 GALLONS)

DRILLING CONTRACTOR: EFO

DRILLING EQUIPMENT: GEOPROBE

DRILLER / HELPER: GROB / REYNOLDS

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1.0	12/28/94 0835	NA	12	VERY STIFF (10YR 4/4) DARK YELLOWISH BROWN SILTY CLAY WITH ROOTS, MEDIUM PLASTICITY, SLIGHTLY MOIST, IRON AND MANGANESE STAINING	CL	2.5	PID 0.0 BG 60
2.0	12/28/94 0835	NA	12	SAME AS ABOVE	CL	2.0	PID 0.0 BG 60
3.0	12/28/94 0835	NA	12	SAME AS ABOVE	CL	2.0	PID 0.0 BG 60
4.0	12/28/94 0835	NA	12	STIFF (10YR 3/4) BROWN SILTY CLAY WITH A TRACE OF FINE SAND, MEDIUM TO LOW PLASTICITY, IRON AND MANGANESE STAINING, SLIGHTLY MOIST	CL	1.0	PID 0.0 BG 60
5.0	12/28/94 0846	NA	12	SAME AS ABOVE	CL	1.25	PID 0.0 BG 60
6.0	12/28/94 0846	NA	12	SAME AS ABOVE	CL	1.25	PID 0.0 BG 60
7.0	12/28/94 0846	NA	12	SAME AS ABOVE	CL	1.0	PID 0.0 BG 60

PRELIMINARY

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/28/94	0830
ALPHA	NA	NA	NA
BETA / GAMMA	60	12/28/94	0830

NOTES:

* ~~SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST~~

12/28/94

FS-F-3681

G:/WPSC/94-776.DRW (11-23-94)

000504

FEMP

LITHOLOGIC LOG

CONTROL NO.:

PROJECT NAME: PHASE I + II OF THE

PROJECT NO.: 20-03-07

BORING NUMBER: 11544

COORDINATES:

RELATED FAL NO.s:

SURFACE ELEVATION: —

GROUNDWATER LEVEL: DATE: TIME:

DATE STARTED: 12/23/94

GEOLOGIST: RILEY

GROUNDWATER LEVEL: DATE: TIME:

DATE COMPLETED: 12/23/94

WATER USED DURING DRILLING: NONE

DRILLING CONTRACTOR: EFO

DRILLING EQUIPMENT: GEOPROBE

DRILLER / HELPER: GROB / REYNOLDS

DEPTH (FEET)	SAMPLE TIME, DATE, AND NUMBER	BLOWS (per 6 inch)	RECOVERY (inches)	DESCRIPTION (Colors identified per Munsell Color Chart)	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
15.0	12/23/94 0940	NA	12	SAME AS ABOVE	CL	1.0	PID 0.0 BG 60
16.0	12/23/94 0940	NA	12	SAME AS ABOVE	CL	1.0	PID 0.0 BG 50
17.0	12/23/94 1045	NA	12	VERY STIFF (5Y 4/1) DARK GRAY SILTY CLAY WITH TRACE OF FINE SAND AND MEDIUM TO FINE ANGULAR GRAVEL, MEDIUM PLASTICITY, SLIGHTLY MOIST	CL	2.5	PID 0.0 BG 50
18.0	12/23/94 1045	NA	12	SOFT (5Y 4/1) DARK GRAY SILTY CLAY WITH SIGNIFICANTLY MORE SAND AND GRAVEL, LOW PLASTICITY, SLIGHTLY MOIST	CL	0.25	PID 0.0 BG 55
19.0	12/23/94 1045	NA	10	SAME AS ABOVE BOTTOM OF BORING 18.5 FT	CL	0.25	PID 0.0 BG 50
20.0	NA	NA	NA	NA	NA	NA	PID NA BG NA

INSTRUMENT	BACKGROUND	DATE	TIME
PID	0.0	12/23/94	0830
ALPHA	NA	NA	NA
BETA / GAMMA	60	12/23/94	0830

NOTES:

* ~~SAMPLES COLLECTED PER ASTM STANDARD PENETRATION TEST~~

PL 12/23/94

FS-F-3681

G:/WPSC/94-776.DRW (11-23-94)

PRELIMINARY

WELL NUMBER:

FEMP
WELL COMPLETION LOG

CONTROL NUMBER:

PROJECT NAME: OU2 PRE-DESIGN FIELD INVESTIGATION

PROJECT NUMBER: 20.03.07

GEOLOGIST: PATRICK RILEY

DRILLING METHOD: GEOPROBE

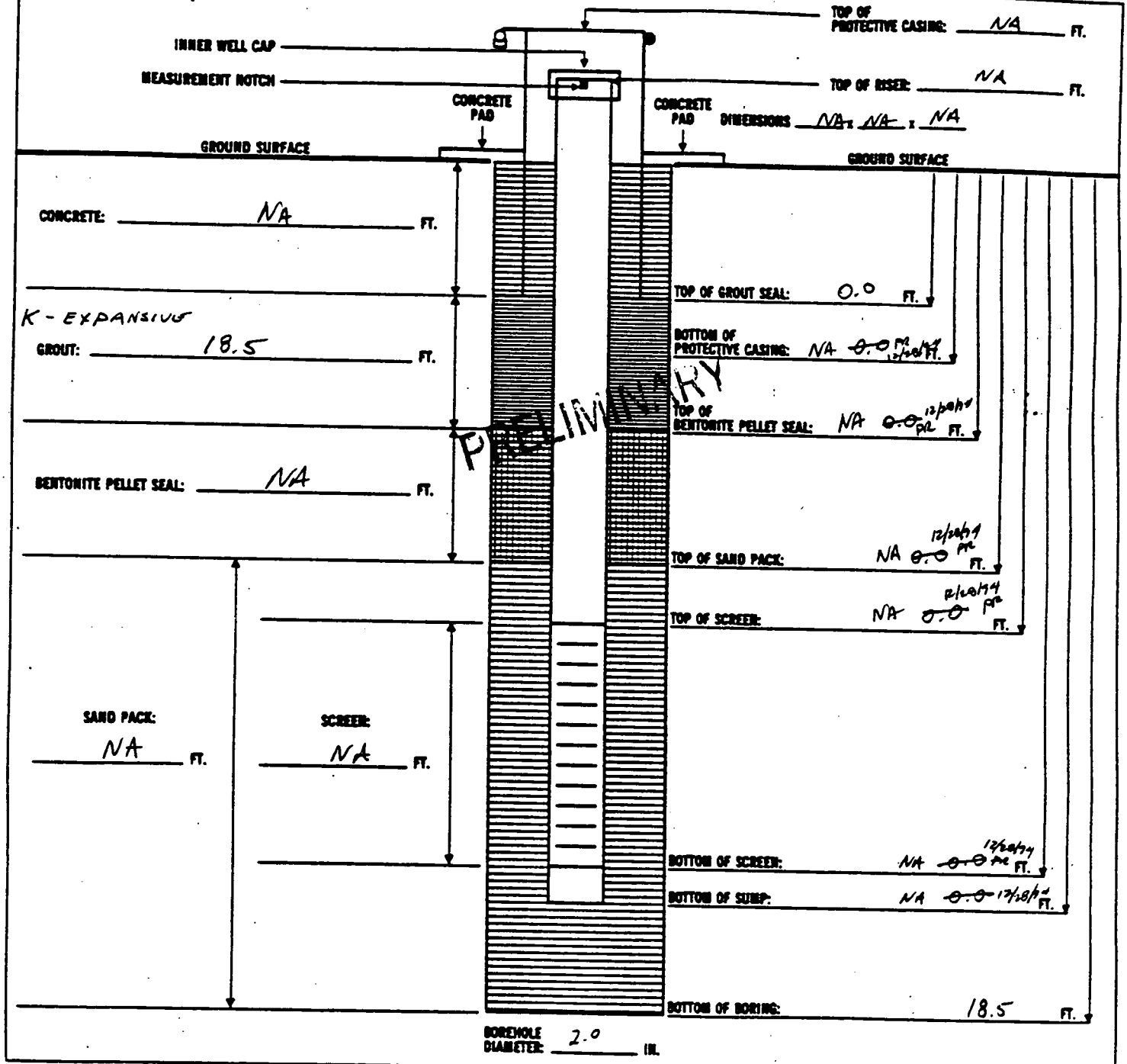
DATES OF INSTALLATION: 12/28/94

WATER LEVEL (R.):

DATE: 12/28/94

RELATED FAL NUMBERS:

CHECKED BY:



TYPE AND AMOUNT OF GROUT USED: EXPANSIVE K-GROUT	BENTONITE PELLETS (5-GALLON BUCKETS): NA	DEEPEST TEMPORARY DRILLING CASING PENETRATION: 18.5 FT.
VOLUME OF WATER USED DURING DRILLING: NONE GAL.	RISER MATERIAL: NA	VOLUME OF WATER USED FOR GROUT HYDRATION: ~~N/A~~ PR 12/28/94 GAL.

RISER WALL THICKNESS: 000506	TYPE OF SAND PACK: NA	SCREEN MATERIAL: NA	DRILLING CASING DIAMETER: 2.0 IN.
RISER/SCREEN DIAMETER: NA IN.	SCREEN SLOT SIZE: NA IN.	SCREEN TYPE: NA	DEPTH OF CENTRALIZER(S): NA FT.

FS-F-3684 (9/10/93)