U-004-306.8

3285

RESPONSES TO OHIO EPA COMMENTS ON THE OPERABLE UNIT 2 (OU 2) WORK PLANS FOR TRENCHING IN THE SOLID WASTE

05-01-92

DOE-FN/EPA
50
RESPONSE

[redacted]

RESPONSES TO
OHIO EPA COMMENTS

ON THE

OPERABLE UNIT 2 (OU 2) WORK PLANS FOR TRENCHING IN THE SOLID WASTE LANDFILL, AND SOUTH FIELD AREA 2

MAY 1992

OPERABLE UNIT 2 (OU 2) WORK PLAN ADDENDUM FOR EXCAVATION OF TRENCHES IN THE SOLID WASTE LANDFILL

1 ▸ **COMMENT:** **Ohio EPA Comment #1 -- Section 2.0, Page 1: Please attach logs for the five borings referenced in this section of the work plan. Also, be more specific regarding the sample recovery problems encountered with three of these borings (i.e. what may have caused the non-recovery?).**

RESPONSE: The logs for borings 1718 through 1722 are attached with this response (Attachment I). The sample recovery problems for the referenced three borings can be attributed to the sampling apparatus and the heterogeneous nature of the landfill material. The apparatus used to obtain samples was a split spoon sampler.

A split-spoon sampler consists of heavy-wall tubing, usually 18 or 24" long, threaded on both ends and then split in half longitudinally. It is designed so that the two halves mate together and the unit can be secured as a tube when special couplings are placed over the threaded ends. One end of the split-spoon is then fitted with a tapered shoe and the other with a drivehead that will adapt to threaded pipe used to transmit the driving action. A sample is obtained by driving the split-spoon sampler into an augured hole, forcing soil into the tube. When the sampler is removed from the hole, the couplings at both ends are removed and the tube pulled apart to expose the soil sample.

Sample recovery problems can occur if the sampler encounters a piece of solid material larger than the inside diameter of the tube. The large material does not enter the tube, and prevents the entry of some amount of soil below it. Continued penetration will typically move the obstruction aside, allowing soils at lower depths to be obtained. An area of non-recovery may result from this scenario. This type of situation is believed to have caused the non-recovery problems in borings 1719, 1721 and 1722.

ACTION: The boring logs have been included as an attachment to the comments.

2 ▸ **COMMENT:** **Ohio EPA Comment #2 -- Section 4.0, pg. 4, paragraph 2: While it is understood that any sampling conducted during this event will not be incorporated into the RI report, the collection of soil samples from areas of obvious contamination (i.e., staining, field instrument readings) should be included in the work plan. This information will then be available for use in the RD/RA phase.**

RESPONSE: Leachate and groundwater samples will be collected if encountered. This would adequately assist in further characterizing the leachability of the waste material, which is one of the primary objectives for the Remedial Investigation (RI). The soil sampling that has been conducted for the RI is considered adequate for characterization of the soils in the Solid Waste Landfill, and therefore, additional soil sampling was not considered for the trenching. The intent of excavating trenches in the landfill is to visually characterize the waste and other material deposited in the area.

ACTION: No action.

3 ▸ **COMMENT:** **Ohio EPA Comment #3 -- Section 4.0, pg. 4, paragraph 2: Define and discuss a SPA-3 probe and what it measures.**

RESPONSE: The Model SPA-3 is a rugged instrument manufactured by Eberline. The SPA-3 is a scintillation probe designed for high sensitivity detection of gamma radiation. It contains a 2-inch diameter, 2-inch long NaI(Tl) crystal, a 2-inch, 10-stage photomultiplier tube, tube socket with a dynode resistor string, and a magnetic shield. The SPA-3 is connected to a multichannel analyzer.

ACTION: No action.

4 ▸ **COMMENT:** **Ohio EPA Comment #4 -- Section 4.0, pg. 4, paragraph 2: Provide more specific information regarding determination of trench depth. Measurements should be taken at regular intervals along the length of the trench. Such detail needs to be incorporated into the text.**

RESPONSE: Page 4, paragraph 1 states that Trench 1 will be approximately 11 feet in depth, trench 2 will be approximately 11.5 feet in depth, and trench 3 will be approximately 10 feet in depth. Page 4, paragraph 2 states that the depth of the trenches will be measured during excavation using surveying rods or a weighted tape.

ACTION: No action.

5 ▸ **COMMENT:** **Ohio EPA Comment #5 -- Section 4.0, pg. 4, paragraph 3:**
a) Please address the issue of water collection in the trench more thoroughly. Will the water simply be left in the trench no matter what its source? What if the trench has "zones with high counts" as indicated by field instrument readings? Water collecting in the trenches may lead to the leaching of contaminants deeper into the soil.
b) Efforts need be made to prevent rainwater from entering trenches. Procedures to prevent rainwater entry should be described in the text.

RESPONSE: Previous borings have detected little or no water. Care will be taken not to excavate the trenches below the clay liner. In addition, efforts will be made to conduct trenching activities during periods when no precipitation is expected. If precipitation is encountered while a trench is exposed, plastic tarps and wood sheets will be used to prevent rainwater from entering. The trenches will not be exposed for an extended period of time.

ACTION: No action.

6 ▸ **COMMENT:** **Ohio EPA Comment #6 -- Section 4.0, pg. 4, paragraph 5:**
Please provide more detail in regards to backfilling the trench. Typically, excavation activities such as this lead to areas of higher permeability than was originally present. The trenches will likely be underfilled or overfilled. Compaction and potentially the addition of less permeable fill material needs to be discussed in this work plan.

RESPONSE: Efforts will be made to assure that the same amount of material that is excavated is returned to the trenches. If necessary, minor compaction will be performed to return the area to its original elevation and drainage.

ACTION: No action.

RESPONSES TO OHIO EPA COMMENTS ON THE 3285

OPERABLE UNIT 2 (OU 2) WORK PLAN ADDENDUM FOR EXCAVATION OF TRENCHES IN SOUTH FIELD AREA 2

1 ▸ **COMMENT:** **General Comment: The issue of water collecting in the trench is not addressed. Will any accumulated water simply be left in the trenches regardless of its source, zones of contamination, or possible leaching? Efforts need to be made to prevent rainwater from entering the trenches. Discuss these procedures in the text.**

RESPONSE: This plan does not propose leachate collection and analysis. Efforts will be made to conduct trenching activities during periods when no precipitation is expected. If precipitation is encountered while a trench is exposed, plastic tarps and wood sheets will be used to prevent rainwater from entering. The trenches will not be exposed for an extended period of time. Because this work plan is an excerpt from the October 4, 1989 RI/FS Work Plan Addendum, previously approved by the U. S. EPA, no change to the actual text is proposed.

ACTION: No action.

2 ▸ **COMMENT:** **Specific comment # 1 -- Section 5.1, page 5-1, paragraph 2: Are details of the Characterization Investigation Study such as instruments used and the specific results obtained reported in another document? Either refer to this document or, if no such document exists, provide the information here.**

RESPONSE: Details and results of the Characterization Investigation Study pertaining to Operable Unit 2 are provided in the following CIS reports: Geophysical Survey (Weston 1987a), Chemical and Radiological Analysis of Waste Pits (Weston 1987b), Radiological Characterization of Surface Soils in Waste Storage Area (Weston 1987c) and the Geotechnical Evaluation of Material Properties of Waste Pit Materials (Weston 1988).

ACTION: No action.

3 ▸ **COMMENT:** **Specific comment # 2 – Section 5.1, Figure 5-1: This figure provides insufficient detail. The boundaries of the southfield area as described in the text should be indicated on the figure as will as the suspect areas. If this cannot be accomplished with one figure, two figures should be included: one indicating the southfield boundaries, the other depicting the suspect areas. Is the drainage that constitutes the western boundary of the southfield represented by the incomplete lines to the left of the figure? If so, they should be labeled as such. The location of Borings 1046 and 1047 (referred to on page 5-2) should be included on the figure. If they are in the same location as monitoring wells 2046 and 2047, explain this in the text as well. Generally, all areas discussed in the document should be described in full detail both in the text and on the figures.**

RESPONSE: More detailed figures showing the South Field boundaries and the location of borings 1046 and 1047, and wells 2046 and 2047 is enclosed for your information. These figures have been prepared for inclusion in the draft Remedial Investigation Report for Operable Unit 2. Figure 2-9 shows surface and subsurface soil sampling locations in the Inactive Flyash Pile Area, and Figure 2-18 shows subsurface soil sampling locations in the South Field Area (Attachment II). As shown in the original figure 5-1, the South Field Area 2 is located in the vicinity of boring 1047, on the north side of the gravel road.

Because this work plan is an excerpt from the October 4, 1989 RI/FS Work Plan Addendum, previously approved by the U. S. EPA, no change to the actual text is proposed.

ACTION: Figures have been included as an attachment to these comments.

ATTACHMENT I

BORING 1718

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Field Form
Page 1 of 2

Qu2 - Boring 1718
JCS 8/28/91

Subsurface Soil Sample Collection Log

Task 3.16

Computer Entry	Date	Int.
1st Key	9-11-91	LAB
2nd Key	9-11-91	JT
ManVer		

Field Check by Dmi Date 9.5.91

Unique Sample Number	Well / Boring ID No.	Collectors Initials	Collection Date MM	DD	YY	Collection Time HH	MM	Sample Depth Interval	Preservative	Sequence	Blank	Spike	Duplicate	Duplicate of Sample Number	Split	General Comments
67265	1718	Th. AC	7	31	91	15	00	0.0-1.5'	N	1	N	N	N	N/A	N	ARCHIVE
67266	1718	Th AC	7	31	91	15	05	1.5'-3.0'	N	2	N	N	N	N/A	N	FULL RAD
67267	1718	Th AC	7	31	91	15	10	3.0'-4.5'	Y	3	N	N	N	N/A	N	EXT HSL
67268	1718	Th AC	7	31	91	15	15	4.5'-6.0'	Y	4	N	N	N	N/A	N	TCLP (SEMIVOL, VOL
67269	1718	Th AC	7	31	91	15	20	6.0-7.5'	N	5	N	N	N	N/A	N	ARCHIVE
67271	1718	Th AC	7	31	91	15	25	7.5'-9.0'	Y	6	N	N	N	N/A	N	EXT HSL
67272	1718	Th AC	7	31	91	13	45	NA	Y	7	Y	N	N	N/A	N	FIELD BLANK
67273	1718	Th. AC	7	31	91	13	45	NA	Y	8	Y	N	N	N/A	N	FIELD BLANK APP. IX
67274	1718	Th. AC	8	1	91	08	30	9.0'-10.5	N	9	N	N	N	N/A	N	FULL RAD
67275	1718	Th AC	8	1	91	08	~~35~~ 30	9.0-10.5	N	10	N	N	N	N/A	N	ARCHIVE
67276	1718	Th AC	8	1	91	08	~~40~~ 35	10.5'-12.0'	N	11	N	N	N	N/A	N	ARCHIVE
67277	1718	Th AC	8	1	91	08	~~45~~ 40	12.0'-13.5'	N	12	N	N	N	N/A	N	ARCHIVE
67278	1718	Th AC	8	1	91	08	~~00~~ 45	13.5'-15.0'	Y	13	N	N	N	N/A	N	EXT HSL
67279	1718	Th AC	8	1	91	09	00	15.0'-16.5'	N	14	N	N	N	N/A	N	FULL RAD
67280	1718	Th AC	8	1	91	10	30	COMPOSITE	Y	15	N	N	N	N/A	N	TCLP (HERB, METALS POST)

REVIEWED BY QA MPz DATE 9-10-91

Field Form
Page 2 of 2

3285 Du-2 Boring 1718

Subsurface Soil Sample Collection Log

Task 3.16.

Computer Entry	Date	Int.
1st Key	9-11-91	SAB
2nd Key	9-11-91	RT
ManVer		

Field Check by Jim Date 9.5.91

Unique Sample Number	Well / Boring ID No.	Collectors Initials	Collection Date MM	DD	YY	Collection Time HH	MM	Sample Depth Interval	Preservative	Sequence	Blank	Spike	Duplicate	Duplicate of Sample Number	Split	General Comments
67281	1718	Jh AC	8	1	91	10	30	COMPOSITE	Y	16	N	N	N	N/A	N	SRLP
67282	1718	Jh AC	8	1	91	10	30	COMPOSITE	Y	17	N	N	N	N/A	N	IGNITE, CORR. TOX REACT
67283	1718	Jh AC	8	1	91	10	40	DRUMMED CUTTING	Y	18	N	N	N	N/A	N	TCLP (DRUM)
67284	1718	Jh AC	8	1	91	10	30	COMPOSITE	N	19	N	N	N	N/A	N	ARCHIVE
67322	1718	Jh AC	8	8	91	17	00	DRUMMED CUTTING	N	20	N	N	N	N/A	N	TREATABILITY

REVIEWED BY QA MB DATE 9-10-91

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FERNALD
RI/FS

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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER Fernald RI/FS 3.16	PROJECT NAME OU 2		
BORING NUMBER 1713	COORDINATES N482144.49 E1379619.44	DATE 7-31-91	
ELEVATION: 587.5	GWL: Depth Date/Time	DATE STARTED [illegible]	
ENGINEER/GEOLOGIST J. Lear	Depth Date/Time	DATE COMPLETED 8-7-91	
DRILLING METHODS Mobile 53 Auger		PAGE 1 OF 1	

DEPTH	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 6 in	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
				S.A.A - Some No Brown. Mix No [illegible]			
1	67265 1500 7-31-91	4 24 33	14	Loose, light yellowish brown, (10yr 6/4) silty clay trace gravel & trace sand. No plasticity, dry	CL	NA	Hnu - 0 ppm BG - 150 cpm ∞ - 0 cpm
2	67266 1505 7-31-91	14 17 19	18	Dense, brown, (10yr 5/3) silty clay, some gravel, trace sand, No plasticity, dry	CL	NA	Hnu - 0 ppm BG - 150 cpm ∞ - 0 cpm
3	67267 1510 7-31-91	19 24 23	18	S.A.A	CL	NA	Hnu - 0 ppm BG - 150 cpm ∞ - 0 cpm
4	67268 1515 7-31-91	12 19 21	16	Med. dense, light yellowish brown, (10yr 6/4) silty clay some gravel, no plast. dry	CL	NA	Hnu - 0 ppm BG - 150 cpm ∞ - 0 cpm
5	67269 1520 7-31-91	9 11 10	16	V. stiff, (10yr 5/4) yellowish brown silty clay some gravel some sand med plast. slt moist	CL	2.5	Hnu - 0 ppm BG - 150 cpm ∞ - 0 cpm
6	67270 1525 7-31-91	6 7 9	18	Firm, dark gray to yellowish brown, (10yr 4/1 to 10yr 5/8) silty clay some sand some gravel, med plast moist.	CL	.75	Hnu - 0 ppm BG - 150 cpm ∞ - 0 cpm
7	67271 1530 7-31-91	6 8 9	18	Soft olive (5y 4/3) clay, trace clay, med plast., moist.	CL	.25	Hnu - 0 ppm BG - 150-200 cpm ∞ - 0 cpm
8	67274 67275 0830 8-1-91	6 8 9	17	S.A.A. add pumice	CL	.5	Hnu - 0 ppm BG - 150 cpm ∞ - 0 cpm
9	67276 0835 8-1-91	10 9 11	18	Soft olive, dark gray to olive, 2.5y, 4/1 to 2.5y, 4/3) clay trace sand, med to high plasticity w/moist	CL	.5	Hnu - 0 ppm BG - 150 cpm ∞ - 0 cpm
10	67277 0840 8-1-91	11 16 18	18	S.A.A	CL	.5	Hnu - 0 ppm BG - 150 cpm ∞ - 0 cpm
11	67278 0845 8-1-91	18 22 50	18	12.75' Firm, dark yellowish brown to gray, 10yr 4/6 to 10yr 5/1) silty clay, low to med. plasticity moist / very hard, brown mottled (10yr 5/3) silty clay, some gravel, some sand low plast. moist.	CL	1.5	Hnu - 0 ppm BG - 150 cpm ∞ - 0 cpm
12					CL	4.5	Hnu - 0 ppm BG - 150-200 cpm ∞ - 0 cpm

NOTES: Drilling Equipment - Mobile 53 Auger
Drilling Contractor - Penn Drilling
Driller Bob Yost
Asst. Mark Rebold

Background
Hnu - 0 ppm
BG - 150-200 cpm
∞ - 0 cpm

Landfill ends at App 12.75'

REVIEWED BY QA [signature] DATE 9/10-91

402-11-86

FERNALD
RI/FS

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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 60[illegible]	PROJECT NAME: [illegible] DU-2	
BORING NUMBER: 1718	COORDINATES: See p 1	DATE: [illegible]
ELEVATION: See p 1	GWL: Depth Date/Time	DATE STARTED: [illegible]
ENGINEER/GEOLOGIST: [illegible]	Depth Date/Time	DATE COMPLETED: 8-2-91
DRILLING METHODS: 53 Mobile Auger		PAGE 2 OF 4

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
Full Rad 1[illegible]	67279 0900 8-1-91	13 50 39		S.A.A	[illegible]	[illegible]	Hnu [illegible] ppm BG 150-200 cpm α 0 cpm
				Drilling & Sampling Ends at 16.5' all Samples Taken according to the DU-2 Sampling plan Landfill ends at Appx 12.75' 67272 - Field Blank 67273 - Field Blank Appx 67280 - TCLP [illegible] 67281 - SRCP 67282 - Tp etc 67283 - TCLP Drum 67284 - Archive comp			

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Mobile 53 Auger

Driller: Bob Yost
Mark Rebold

Background
Hnu - 0 ppm
BG - 150-200 cpm
α - 0 cpm

REVIEWED BY QA MB DATE 9-10-91

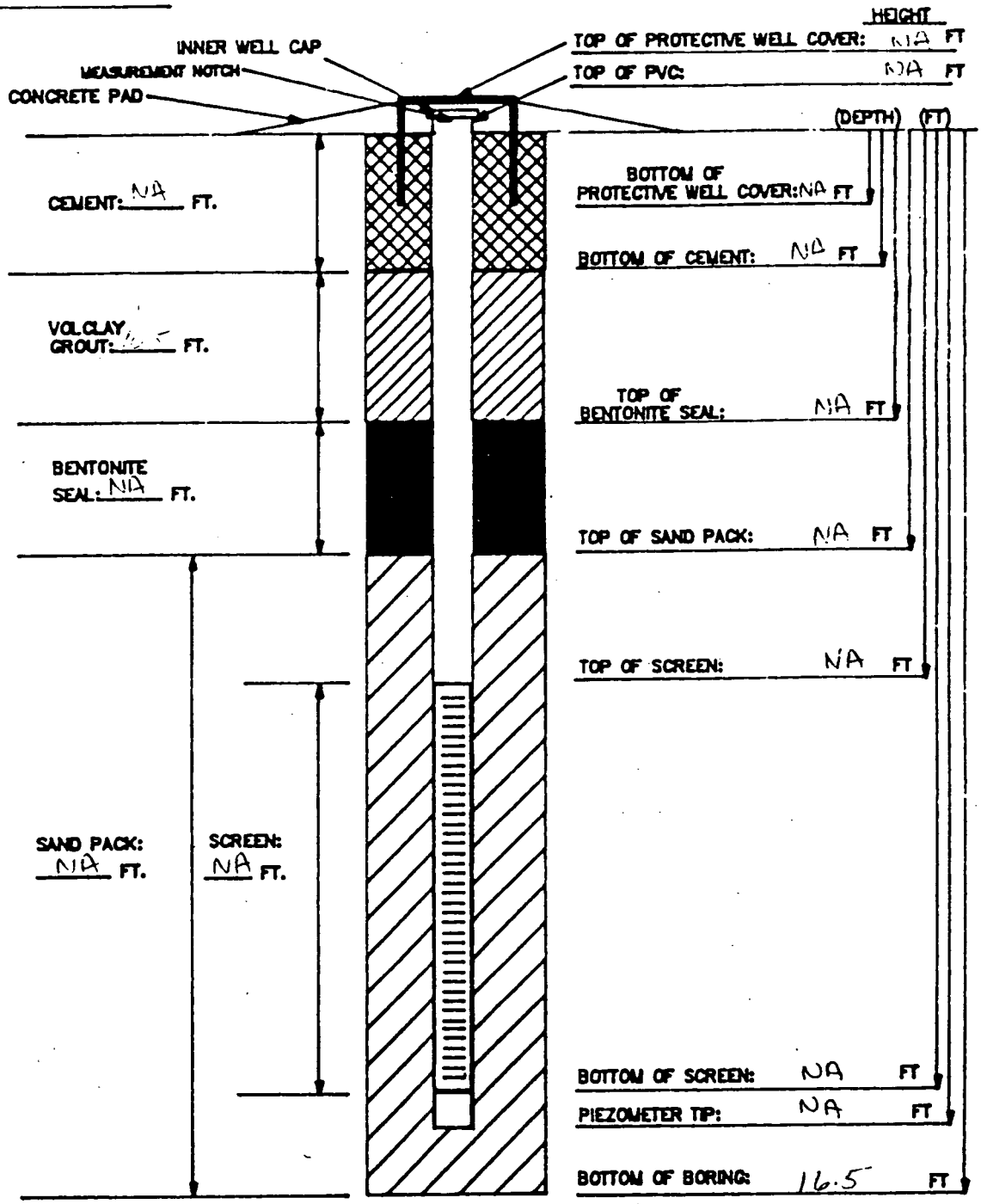
2438-3-86

FERNALD RI/FS

INSTALLATION DIAGRAM
MONITORING WELL NO.

INSTALLATION DATE: 7

3285



BOREHOLE DIAMETER: 10 INCHES

MATERIALS USED:
SAND TYPE AND QUANTITY: NA
BENTONITE PELLETS (5-GALLON BUCKETS): NA
BAGS OF VOLCLAY GROUT: 1 1/2
AMOUNT OF CEMENT: NA
AMOUNT OF WATER USED: 55 gals
OTHER: NA

NOTES: NA
1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SUMP.
4) WATER DEPTH/DATE:
5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 602.26.91 GEOLOGIST/ENGINEER: J Lear

REVIEWED BY GL AB DATE 9/10/91

BORING 1719

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Field Form
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Qu-2 BORING 1719
DCS 8/28/91

Subsurface Soil Sample Collection Log

Task 3.16

Field Check by JM Date 9.5.91

Computer Entry	Date	Int.
1st Key	9-11-91	KT
2nd Key	9-11-91	SAB
ManVer		

Unique Sample Number	Well / Boring ID No.	Collectors Initials	Collection Date MM	DD	YY	Collection Time HH	MM	Sample Depth Interval	Preservative	Sequence	Blank	Spike	Duplicate	Duplicate of Sample Number	Split	General Comments
67285	1719	JL AC	8	7	91	14	30	0.0'-1.5'	N	1	N	N	N	N/A	N	ARCHIVE
67286	1719	JL AC	8	7	91	14	35	1.5'-3.0'	N	2	N	N	N	N/A	N	FULL RAD
67287	1719	AC JL	8	7	91	14	40	3.0'-4.5'	Y	3	N	N	N	N/A	N	EXT HSL
67288	1719	JL AC	8	7	91	14	45	4.5'-6.0'	N	N	N	N	N	N/A	N	NO RECOVERY
67289	1719	JL AC	8	7	91	15	15	6.0'-7.5'	Y	4	N	N	N	N/A	N	TCLP (VOL)
67290	1719	JL AC	8	7	91	15	20	7.5'-9.0'	N	N	N	N	N	N/A	N	NO RECOVERY
67291	1719	JL AC	8	7	91	15	25	9.0-10.5'	N	N	N	N	N	N/A	N	NO RECOVERY
67292	1719	JL AC	8	7	91	15	30	10.5-12.0'	N	5	N	N	N	N/A	N	FULL RAD
67293	1719	JL AC	8	8	91	08	30	12.0'-13.5'	N	8	N	N	N	N/A	N	ARCHIVE
67294	1719	JL AC	8	8	91	08	40	13.5-15.0'	Y	9	N	N	N	N/A	N	EXT HSL APP. IX
67295	1719	JL AC	8	8	91	08	50	15.0'-16.5'	N	10	N	N	N	N/A	N	ARCHIVE
67296	1719	JL AC	8	8	91	08	55	16.5-18.0'	N	11	N	N	N	N/A	N	FULL RAD
67297	1719	JL AC	8	8	91	13	55	COMPOSITE	Y	12	N	N	N	N/A	N	SRLP
67298	1719	JL AC	8	8	91	08	00	NA	Y	6	Y	N	N	N/A	N	FIELD BLANK. APP. IX
67299	1719	JL AC	8	8	91	08	00	NA	Y	7	Y	N	N	N/A	N	FIELD BLANK

JND DATE 9-9-91

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Form
Page 2 of 2

Du-2 BORING 1719
DCS 8/28/91

Subsurface Soil Sample Collection Log

Task 3.16

Computer Entry	Date	Int.
1st Key	9-11-91	JT
2nd Key	9-11-91	LAB
ManVer		

Field Check by Jm Date 9.5.91

Unique Sample Number	Well / Boring ID No.	Collectors Initials	Collection Date MM	DD	YY	Collection Time HH	MM	Sample Depth Interval	Preservative	Sequence	Blank	Spike	Duplicate	Duplicate of Sample Number	Split	General Comments
67300	1719	JL AC	8	8	91	09	00	18.0-19.5	Y	13	N	N	N	N/A	N	EXT HSL
67301	1719	JL AC	8	8	91	14	00	COMPOSITE	Y	14	N	N	N	N/A	N	TCLP (HERB/PEST/METAL)
67302	1719	JL AC	8	8	91	14	05	COMPOSITE	Y	15	N	N	N	N/A	N	Inj. CORR, TOX, REACT
67303	1719	JL AC	8	8	91	14	30	DRUMMED CUTTING	Y	17	N	N	N	N/A	N	TCLP (DRUM)
67304	1719	JL AC	8	8	91	14	10	COMPOSITE	N	16	N	N	N	N/A	N	ARCHIVE
67321	1719	JL AC	8	10	91	17	00	DRUMMED CUTTING	N	18	N	N	N	N/A	N	TREATABILITY

REVIEWED BY QA MB DATE 9-9-91

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FERNALD RI/FS

3285

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.26.91	PROJECT NAME: FMPC RI/FS	
BORING NUMBER: 1719	COORDINATES: N 482215.57 E 1379699.88	DATE: 8-7-91
ELEVATION: 590.5	GWL: Depth 17.71 Date/Time 8-11-91 @ 1000	DATE STARTED: 8-7-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED: 8-10-91
DRILLING METHODS: Mobile 53 Auger		PAGE 1 OF 4

S.A.A. Same As Above

N.R. No Recovery

DEPTH	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	67285 1430 8-7-91	4 14 19	18	stiff, brown, (10yr 4/3) silty clay, some organics trace cobbles, low plasticity, moist. .75 v. hard, lightyellowish brown, (10yr, 6/4) silty clay, trace gravel, trace cobble, dry	CL CL	2.0 4.5	Hnu - 0ppm Bγ - 90cpm α - 0
2	67286 1435 8-7-91	02 64 4	7	v dense, brown, (10yr, 5/3) trace sand, silt Styraphome insallation. sl. moist	ML	NA	Hnu < 2.0ppm Bγ - 100-150cpm α - 0cpm
3 4	67287 1440 8-7-91	13 13 15	16	stiff, dark gray, (2.5y, 4/1) silty clay, trace sand & Trace gravel, med plast., moist	CL	2.0	Hnu - 0ppm Bγ - 80-120cpm α - 0cpm
5	67288 1445 8-7-91	14 13 11	0	N.R	NA	NA	Hnu Bγ α NA
6 7	67289 1515 8-7-91	13 21 14	18	Dense, dark yellowish brown. (10yr, 4/4) silt, trace sand, Trace gravel, moist. .75 Soft, dark gray, (2.5y 4/1) clay, organics trace sand, med plast. moist.	ML CL	NA .5	Hnu - 1-5ppm Bγ - 80-150cpm α - 0cpm
8	67290 1520 8-7-91	13 15 19	0	N.R	NA	NA	Hnu Bγ α NA
9 10	67291 1525 8-7-91	13 19 21	0	S N.R	NA	NA	Hnu Bγ α NA
11	67292 1530 8-7-91	19 15 18	8	Soft, olive gray (2.5 4/2) clay, trace sand and trace gravel, med plast. moist	CL	.5	Hnu - < 2ppm Bγ - 80-150cpm α - 0cpm
12 13	67293 0830 8-8-91	43 13 15	3	m dense, brown, (10yr, 5/3) silty clay some gravel, Low to med Plasticity, moist to wet. * unable to use penetrometer	CL	NA	Hnu < 2.0ppm Bγ 80-100cpm α 0-cpm
14	67294 0840 8-8-91	11 13 24	14	Dense, dense, brown (10yr, 5/3) gravelly clay, trace cobbles, med plast. wet. organics * unable to use penetrometer	CL	NA	Hnu - 0-1 ppm Bγ - 80-100cpm α - 0cpm

NOTES:

Drilling Contractor - Penn Drilling
Driller - Bob Yost
Helper - Mark Rebold

Background
Hnu - 0 PPM
Bγ - 80-180cpm
α - 0cpm

67298 - Field Blank APP IX
67299 - Field Blank

REVIEWED BY QA NB DATE 9 9 91

402-11-8

FERNALD
RI/FS

3285

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER 602.26.91	PROJECT NAME FMPC RI/FS	
BORING NUMBER 1719	COORDINATES See p 1	DATE 8-8-91
ELEVATION: See p 1	GWL: Depth Date/Time	DATE STARTED 8-7-91
ENGINEER/GEOLOGIST J. Lear	Depth Date/Time	DATE COMPLETED 8-10-91
DRILLING METHODS Mobile 53 Auger		PAGE 2 OF 4

DEPTH	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16	67295 0850 8-8-91	13 44 50/5	14	hard, brown, (10yr, 5/3) Gravelly clay. Some organics, mod' plast. wet. -15.75 V. hard, brown to gray (10yr 5/3 to 10yr 5/1) silty clay, trace gravel. low plast., moist	CL	4.0	Hnu - 0 ppm BG - 80-100cpm α - 0cpm
17	67296 0855 8-8-91	28 47 50/5	14	S.A.A. all sl moist No gray (10yr. 5/1)	CL	4.5	Hnu - 0 ppm BG - 80-100cpm α - 0cpm
18 19	67300 0900 8-8-91	27 35 49	16	S.A.A all brown mottled (10yr. 5/1)	CL	4.5	Hnu - 0 ppm BG - 80-100cpm α - 0cpm
				Drilling & sampling Ends at 19.5' All samples taken according to OU-2 workplan.			
				Wet Zone 12.0' - 15.75			
				Landfill ends at Aprx 15.75'			
				67297 SBLP			
				67301 TCLP			
				67302 Ig. corr...			
				67303 TCLP Drum			
				67304 Archive			

REVIEWED BY QA [signature] DATE 9-9-91

NOTES

Background
Hnu - 0 ppm
BG - 80-100cpm

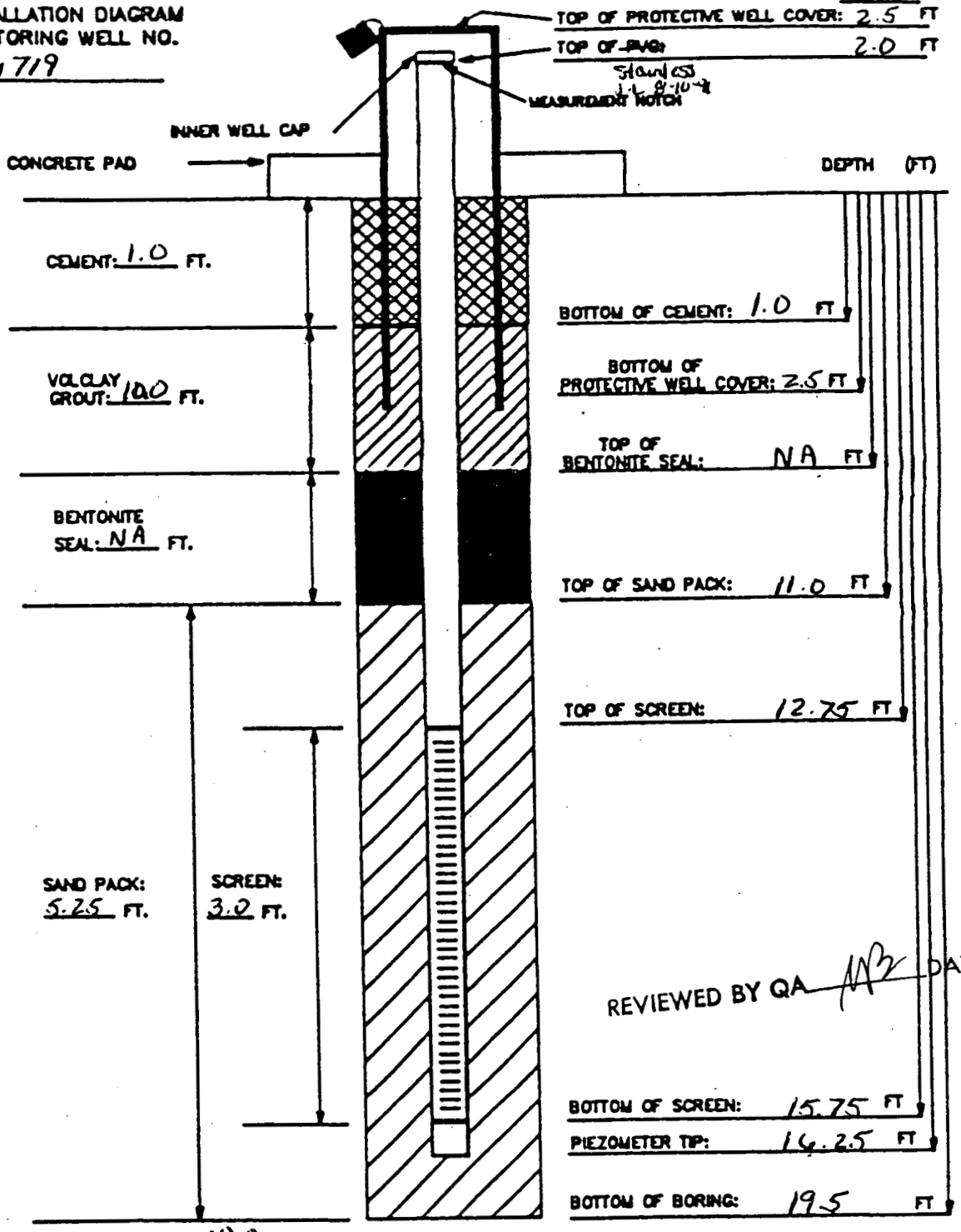
402-11-86

INSTALLATION DATE: 8-8-91, 8-10-91

FERNALD RI/FS

INSTALLATION DIAGRAM
MONITORING WELL NO.
1719

3285



REVIEWED BY QA AB DATE 9-9-91

BOREHOLE DIAMETER: 10.0 INCHES

MATERIALS USED:
SAND TYPE AND QUANTITY: 10x20, 4-80lb bags
BENTONITE PELLETS (5-GALLON BUCKETS): 1/2
BAGS OF VOLCLAY GROUT: 1.5
AMOUNT OF CEMENT:
AMOUNT OF WATER USED: 55 gals
OTHER:

NOTES:
1) RISER PIPE IS 2-INCH SCHEDULE-40 PVC PIPE, FLUSH-THREADED JOINTS.
2) SCREEN IS 2-INCH I.D. SCHEDULE-40 PVC PIPE WITH 0.020-INCH SLOTS.
3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SUMP.
4) WATER DEPTH/DATE:

4 in Stainless .010 in slots
J.L 8-10-91

TASK: 602.26.91

GEOLOGIST/ENGINEER: J. Lear

BORING 1720

3285

REVIEWED BY QA MB DATE 9-19-91

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Field Form
Page 1 of 2

Du-2 1720
DES 8/28/91

Subsurface Soil Sample Collection Log

Task 3.16

Computer Entry	Date	Int.
1st Key	9-20-91	SAB
2nd Key	9-20-91	[illegible]
ManVer		

Field Check by JMW Date 9.5.91

Unique Sample Number	Well / Boring ID No.	Collectors Initials	Collection Date MM	DD	YY	Collection Time HH	MM	Sample Depth Interval	Preservative	Sequence	Blank	Spike	Duplicate	Duplicate of Sample Number	Split	General Comments
67305	1720	AL AC	8	10	91	14	00	0.0'-1.5'	N	1	N	N	N	N/A	N	ARCHIVE
67306	1720	AL AC	8	10	91	14	05	1.5'-3.0'	N	2	N	N	N	N/A	N	FULL RAD
67307	1720	AL AC	8	10	91	14	10	3.0'-4.5	Y	3	N	N	N	N/A	N	EXT HSL
67308	1720	AL AC	8	10	91	14	15	4.5-6.0'	N	4	N	N	N	N/A	N	ARCHIVE
67309	1720	AL AC	8	10	91	15	15	6.0'-7.5'	Y	5	N	N	N	N/A	N	TCLP
67310	1720	AL AC	8	10	91	15	20	7.5'-9.0'	N	6	N	N	N	N/A	N	FULL RAD
67311	1720	AL AC	8	10	91	15	20	7.5'-9.0'	Y	7	N	N	N	N/A	N	EXT HSL APP. IX
67312	1720	AL AC	8	10	91	15	25	9.0'-10.5'	Y	8	N	N	N	N/A	N	EXT HSL
67313	1720	AL AC	8	10	91	15	25	9.0'-10.5'	N	9	N	N	N	N/A	N	FULL RAD.
67314	1720	AL AC	8	10	91	15	30	10.5'-12.0	N	10	N	N	N	N/A	N	ARCHIVE
67315	1720	AL AC	8	10	91	15	35	12.0'-13.5'	N	11	N	N	N	N/A	N	ARCHIVE
67316	1720	AL AC	8	10	91	17	00	COMPOSITE	Y	12	N	N	N	N/A	N	IGNITE, CORR, TOX, REACT.
67317	1720	AL AC	8	10	91	17	00	COMPOSITE	Y	13	N	N	N	N/A	N	SRLP
67318	1720	AL AC	8	10	91	17	00	COMPOSITE	Y	14	N	N	N	N/A	N	TCLP (HERB/PEST/METALS)
67319	1720	AL AC	8	10	91	17	15	DRUMMED CUTTING	Y	15	N	N	N	N/A	N	TCLP DRUM.

3285

REVIEWED BY QA NB DATE 9-19-91

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Field Form
Page 2 of 2
Du-2 B 1720
DCS 81281

Subsurface Soil Sample Collection Log

Task 3.16

Computer Entry	Date	Int.
1st Key	9-20-91	SAB
2nd Key	9-20-91	JT
ManVer		

Field Check by Jm Date 9.15.91

Unique Sample Number	Well / Boring ID No.	Collectors Initials	Collection Date MM	Collection Date DD	Collection Date YY	Collection Time HH	Collection Time MM	Sample Depth Interval	Preservative	Sequence	Blank	Spike	Duplicate	Duplicate of Sample Number	Split	General Comments
67320	1720	AL AC	8	12	91	12	00.	DRUMMED CUTTING	N	16	N	N	N	N/A	N	TREATABILITY.

FERNALD RI/FS

3285

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: FMPC RI/FS	PROJECT NAME: FMPC RI/FS OU-2	
BORING NUMBER: 1720	COORDINATES: N482218.22 E137976.16	DATE: 8-10-91
ELEVATION: 590.1	GWL: Depth Date/Time	DATE STARTED: 8-10-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED: 8-10-91
DRILLING METHODS: Mobile 53 Auger		PAGE 1 OF 3

S.A.A. Same As Above

DEPTH	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER (6 in)	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	67305 1400 8-10-91	3 7 15	15	m. dense, dark yellowish brown, (10yr, 4/4) clayey silt, Trace sand, glass, plastic, Moist.	ML	NA	Hnu - 0 ppm BD - 100 cpm α - 0 cpm
2	67306 1405 8-10-91	13 15 15	18	Hard; brown (10yr, 5/3) silty clay, trace gravel plastic, wood, brick, low plast., Sl. moist.	CL	4.0	Hnu - 0 BD - 100-150 cpm α - 0 cpm
3 4	67307 1410 8-10-91	16 13 17	18	Firm, olive, (2.5y, 4/3) silty clay, Trace gravel med plast. moist	CL	1.5	Hnu - 0 ppm BD - 80-100 cpm α - 0 cpm
5	67308 1415 8-10-91	10 12 12	18	S.A.A.	CL	1.5	Hnu - 0 ppm BD - 80-100 cpm α - 0 cpm
6 7	67309 1515 8-10-91	19 9 8	16	S.A.A plastic, paper, brick	CL	1.5	Hnu - 0 ppm BD - 80-100 cpm α - 0 cpm
8 9	67310 67311 1520 8-10-91	7 8 10	18	Firm, olive gray, (2.5y, 4/2) clay trace gravel, Pumice, med plast. moist.	CL	.75	Hnu - 0 ppm BD - 80-100 cpm α - 0 cpm
10	67312 67313 1525 8-10-91	23 20 21	18	Hard, yellowish brown to gray, (10yr, 5/8 to 10yr, 6/1) silty clay, trace gravel, Sl moist	CL	4.0	Hnu - 0 ppm BD - 80-100 cpm α - 0 cpm
11	67314 1530 8-10-91	20 21 22	18	S.A.A.	CL	4.0	Hnu - 0 ppm BD - 80-100 cpm α - 0 cpm
12 13	67315 1535 8-10-91	19 17 20	18	S.A.A.	CL	4.0	Hnu - 0 ppm BD - 80-100 cpm α - 0 cpm
14				Boring Plugged and Abandoned @ 13.5' All samples Taken According to OU-2 Work Plan			

NOTES:
Drilling Contractor - Penn Drilling
Drilling Eq. - Mobile 53 Auger
Driller - [illegible]
Ast - [illegible]
* [illegible]

Ignite etc. 67316
SELF 67317
TCLP 67318
[illegible] 67319

Background
Hnu - 0 ppm
BD - 80-100 cpm

402-11-88

REVIEWED BY QA [illegible] DATE 9-19-91

3285

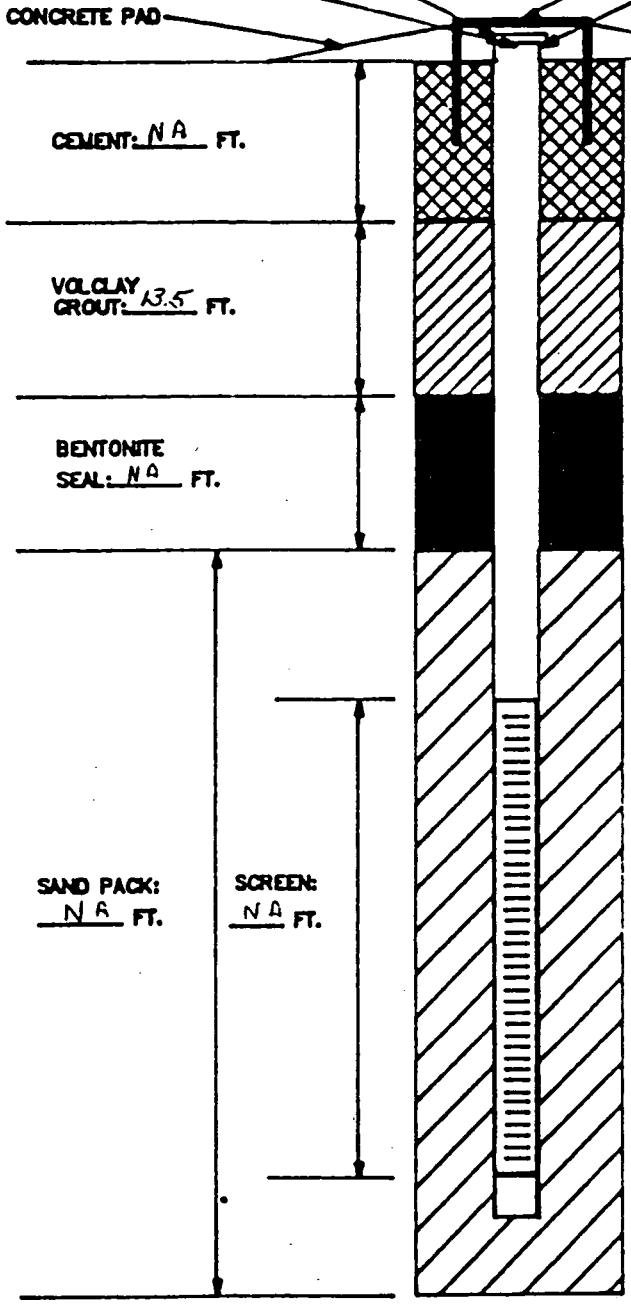
J.L 8-11-91

FERNALD RI/FS

INSTALLATION DIAGRAM

~~MONITORING WELL~~ Boring NO. 1720

INSTALLATION DATE: 8-11-91



	HEIGHT	(DEPTH)	(FT)
TOP OF PROTECTIVE WELL COVER:	NA FT		
TOP OF PVC:	NA FT		
BOTTOM OF PROTECTIVE WELL COVER:	NA FT		
BOTTOM OF CEMENT:	NA FT		
TOP OF BENTONITE SEAL:	NA FT		
TOP OF SAND PACK:	NA FT		
TOP OF SCREEN:	NA FT		
BOTTOM OF SCREEN:	NA FT		
PIEZOMETER TIP:	NA FT		
BOTTOM OF BORING:	13.5 FT		

BOREHOLE DIAMETER: 10 INCHES

MATERIALS USED:

SAND TYPE AND QUANITITY: NA
BENTONITE PELLETS (5-GALLON BUCKETS): NA
BAGS OF VOLCLAY GROUT: 2
AMOUNT OF CEMENT: NA
AMOUNT OF WATER USED: 55 gals
OTHER: NA

NOTES: NA

1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SUMP.
4) WATER DEPTH/DATE:
5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
6) PARENTHESIS INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 602 26-91 GEOLOGIST/ENGINEER: J [illegible]

REVIEWED BY QA [illegible] DATE 9/19/91

BORING 1721

3285

Field Form
Page 1 of 2

Qu-2 BORING 1721
DCS. 8/21/91

Sample Collection Log

Qu-2 602.3.16

Computer Entry	Date	Int.
1st Key	8-27-91	[illegible]
2nd Key	8-28-91	[illegible]
ManVer		

Field Check by [illegible] Date 8-27-91

Unique Sample Number	Well / Boring ID No.	Collectors Initials	Collection Date MM	DD	YY	Collection Time HH	MM	Depth Interval	Preservative	Sequence	Blank	Spike	Duplicate	Duplicate of Sample Number	Split	General Comments
67228	1721	J.L. AC	7	26	91	15	00	0.0'-1.5'	N	1	N	N	N	N/A	N	ARCHIVE
67229	1721	J.L. AC	7	26	91	15	05	1.5'-3.0'	N	2	N	N	N	N/A	N	ARCHIVE
67230	1721	J.L. AC	7	26	91	15	10	3.0'-4.5	N	3	N	N	N	N/A	N	FULL RAD
67231	1721	J.L. AC	7	26	91	15	15	4.5'-6.0	N	N/A	N	N	N	N/A	N	NO RECOVERY
67232	1721	J.L. AC	7	26	91	16	00	6.0'-7.5'	N	N/A	N	N	N	N/A	N	NO RECOVERY
67233	1721	J.L. AC	7	26	91	16	05	7.5'-9.0'	N	4	N	N	N	N/A	N	ARCHIVE
67234	1721	J.L. AC	7	26	91	16	10	9.0'-10.5'	4°C	5	N	N	N	N/A	N	EXTENDED HSL
67235	1721	J.L. AC	7	26	91	16	15	10.5'-12.0'	N	N/A	N	N	N	N/A	N	NO RECOVERY
67236	1721	J.L. AC	7	27	91	10	30	12.0'-13.5'	4°C	6	N	N	N	N/A	N	E.P. TOX
67237	1721	J.L. AC	7	27	91	10	35	13.5'-15.0'	4°C	7	N	N	N	N/A	N	EXTENDED HSL APP IX
67238	1721	J.L. AC	7	28	91	10	30	15.0'-16.5'	N	8	N	N	N	N/A	N	FULL RAD
67239	1721	J.L. AC	7	28	91	10	30	N/A	4°C	9	N	N	N	N/A	N	FIELD BLANK
67242	1721	J.L. AC	7	28	91	11	15	COMPOSITE	N	10	N	N	N	N/A	N	ARCHIVE
67243	1721	J.L. AC	7	28	91	11	15	N/A	4°C	11	N	N	N	N/A	N	FIELD BLANK
67244	1721	J.L. AC	7	28	91	11	15	COMPOSITE	4°C	12	N	N	N	N/A	N	IGNIT - CORRS TOX - REAC.

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Field Form
Page 2 of 2

Sample Collection Log

Du-2 BORING 1721
DCS 8/21/91

Du-2 602.3.16

Field Check by FTW Date 8.21.91

Computer Entry	Date	Int.
1st Key	8-27-91	FT
2nd Key	8-28-91	SAB
ManVer		

Unique Sample Number	Well / Boring ID No.	Collectors Initials	Collection Date MM	DD	YY	Collection Time HH	MM	Depth Interval	Preservative	Sequence	Blank	Spike	Duplicate	Duplicate of Sample Number	Split	General Comments
67245	1721	JL. AC	7	28	91	11	15	COMPOSITE	4°C	13	N	N	N	N/A	N	TCLP
67246	1721	JL. AC	7	28	91	11	15	COMPOSITE	4°C	14	N	N	N	N/A	N	SRLP
67247	1721	JL. AC	7	28	91	11	50	DRUMMED CUTTING	4°C	15	N	N	N	N/A	N	TCLP
67270	1721	JL. AC	7	28	91	16	00	DRUMMED CUTTING	N	16	N	N	N	N/A	N	TREATABILITY.

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REVIEWED BY QA 113

FERNALD
RI/FS

3285

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: ~~1721~~ 602.~~26-91~~ 3.16	PROJECT NAME: FMPC RI/FS		
BORING NUMBER: 1721	COORDINATES: [illegible]		DATE: 7-26-91
ELEVATION: [illegible]	GWL: Depth NA	Date/Time NA	DATE STARTED: 7-26-91
ENGINEER/GEOLOGIST: J. Lear	Depth NA	Date/Time NA	DATE COMPLETED: 7-[illegible]-91
DRILLING METHODS: Auger Mobile 53			PAGE 1 OF 4

S.A.A. Same as Above

N.R. No Recovery

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	67228 1500 7-26-91	17 39 28	18	V. Hard, brown (10yr, 5/3) silty clay, some cobbles, V. low plasticity, dry.	CL	4.5	Hnu - 0 ppm BD - 150-200cpm α - 2 cpm
2	67229 1505 7-26-91	14 21 19	8	S.A.A. add Hard, sl. moist	CL	3.0	Hnu - 0 ppm BD - 100cpm α - 0cpm
3 Full Rad 4	67230 1510 7-26-91	17 14 11	12	Hard, light olive brown, (2.5Y, 5/4) silty clay, Trace gravel, low to med. plast. moist	CL	2.5	Hnu - 1-3 ppm BD - 100cpm α - 0cpm
5 6	67231 1515 7-26-91	10 9 7	0	N.R	NA	NA	NA
7	67232 1600 7-26-91	14 10 12	0	N.R	NA	NA	NA
8 9	67233 1605 7-26-91	14 15 17	5	soft, very dark gray, (5Y, 3/1) silty clay, trace sand, med plast., moist to wet.	CL	.50	Hnu - 1-3 ppm BD - 100 cpm α - 0cpm
EXT HSL 10	67234 1610 7-26-91	16 17 18	16	soft, olive gray, (5Y, 4/2) silty clay, trace sand med plast., moist.	CL	.25	Hnu - 1-3 ppm BD - 100 cpm α - 0cpm
				firm, very dark gray, (5Y, 3/1) silty clay, trace sand med plast. moist	CL	1.0	
11 12	67235 1615 7-26-91	20 22 21	0	N.R	NA	NA	NA
EP TOK 13	67236 1030 7-27-91	21 20 24	16	firm, olive gray (5Y, 4/2) silty clay med plast. moist. 12.6'	CL	1.5	Hnu - < 1.0 ppm BD - 80-100cpm α - 0cpm
				firm, yellowish brown, (10yr, 5/6) silty clay trace sand, trace gravel, sl. moist, low plast.	CL	1.5	
EXT HSL APP II 14 15	67237 1035 7-27-91	13 10 11	8	firm, gray to yellowish brown (10yr, 5/1 to 10yr 5/6) mottled silty clay, trace sand & gravel, moist.	CL	1.0	Hnu - 0 ppm BD - 80 cpm α - 0 cpm

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Mobile 53 Auger

Driller: Bob Yost.
Mark Rebold

Background
Hnu - 0 ppm
BD - 80-200cpm
α - 0cpm

Landfill Liner App. 12.5'

REVIEWED BY QA [illegible] DATE 8-23-91

2438-3-86

FERNALD
RI/FS

3285

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.26.91 3.16 (ET 6-A-91)	PROJECT NAME: FMPC RI/FS OU-2	
BORING NUMBER: 1721	COORDINATES: [illegible]	DATE: 7-28-91
ELEVATION: [illegible]	GWL: Depth NA Date/Time NA	DATE STARTED: 7-26-91
ENGINEER/GEOLOGIST: J. Lear	Depth NA Date/Time NA	DATE COMPLETED: 7-28-91
DRILLING METHODS: Mobile 53 Auger		PAGE 2 OF 8

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (1 in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16	67238 1030 7-28-91	3 7 10	10	Firm, brown (10yr, 5/3) silty clay, Trace sand, Trace Gravel, moist, low plasticity	CL	2.0	Hnu - 0 ppm Bγ - 80 cpm α - 0 cpm
17	~~67234~~ 7-28-91			Landfill Ends at App. 12.5' Boring Ends at 16.5' No water encountered, Boring plugged and Abandoned			
18	~~67242~~						
19	J.L.			67243 - Archive 67243 - Field Blank 67244 - Ignite etc. 67245 - TCLP 67246 - [illegible] 67247 - TCLP drum			
20	~~67245~~						
21							
				All samples taken. According to the HSC Sampling plan & Sanitary Landfill Sample addendum			

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Mobile 53 Auger

Driller: Bob Yost
Bill Anderson

Background
Hnu - 0 ppm
Bb - 80-200 cpm
α - 0 cpm

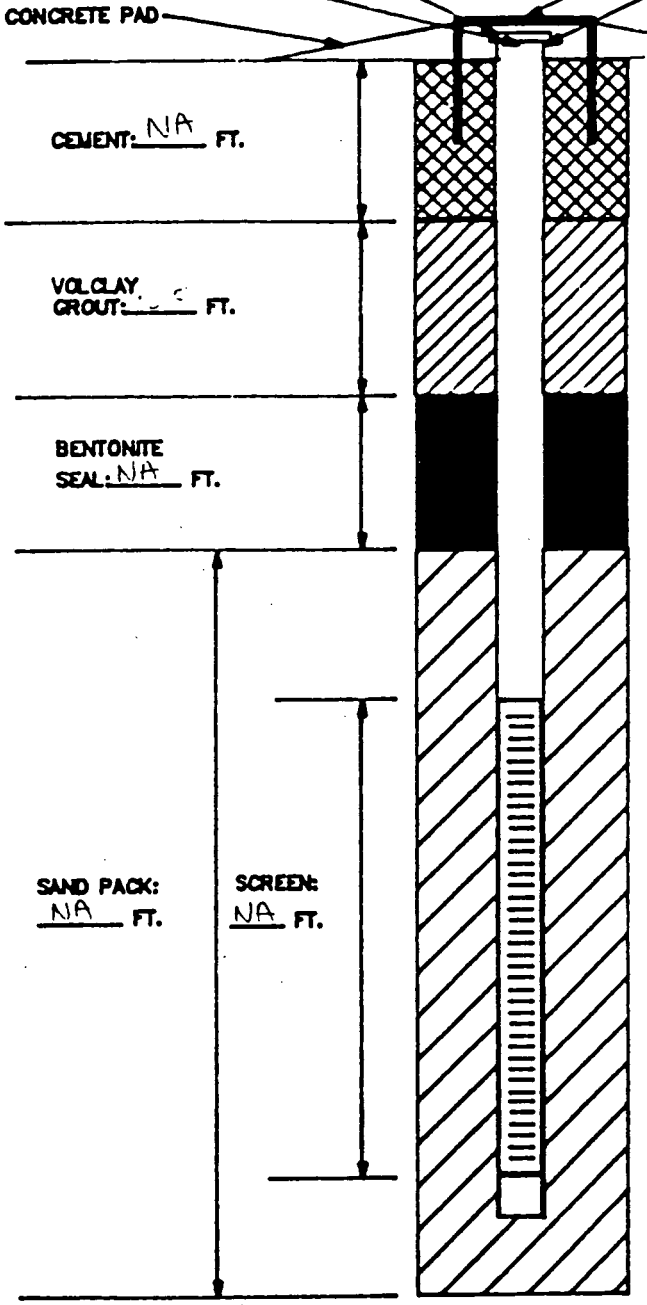
REVIEWED BY QA MS DATE 8-23-91

2438-3-86

FERNALD RI/FS

INSTALLATION DIAGRAM
MONITORING WELL NO.

INSTALLATION DATE: _____ 3285



	HEIGHT
TOP OF PROTECTIVE WELL COVER:	NA FT
TOP OF PVC:	NA FT

(DEPTH) (FT)

CEMENT: NA FT.

VOLCLAY GROUT: ___ FT.

BENTONITE SEAL: NA FT.

SAND PACK: NA FT.

SCREEN: NA FT.

BOTTOM OF PROTECTIVE WELL COVER:	NA FT
BOTTOM OF CEMENT:	NA FT
TOP OF BENTONITE SEAL:	NA FT
TOP OF SAND PACK:	NA FT
TOP OF SCREEN:	NA FT
BOTTOM OF SCREEN:	NA FT
PIEZOMETER TIP:	NA FT
BOTTOM OF BORING:	16.5 FT

BOREHOLE DIAMETER: 10 INCHES

MATERIALS USED:
SAND TYPE AND QUANTITY: NA
BENTONITE PELLETS (5-GALLON BUCKETS): NA
BAGS OF VOLCLAY GROUT: 1 1/2
AMOUNT OF CEMENT: NA
AMOUNT OF WATER USED: 55gals
OTHER: NA

NOTES: NA
1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SUMP.
4) WATER DEPTH/DATE:
5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
6) PARENTHESIS INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 602.~~26.9~~ ET 8-19-91 GEOLOGIST/ENGINEER: J. Lear

3.16

REVIEWED BY QA MB DATE 8-23-91

BORING 1722

3285

Field Form
Page 1 of 2

Ouz Boring 1722
DCS 9/3/91

Subsurface Soil Sample Collection Log

Computer Entry	Date	Int.
1st Key	9-11-91	SAB
2nd Key	9-11-91	[illegible]
ManVer		

Field Check by FRW Date 9.5.91

Unique Sample Number	Well / Boring ID No.	Collectors Initials	Collection Date MM	DD	YY	Collection Time HH	MM	Sample Depth Interval	Preservative	Sequence	Blank	Spike	Duplicate	Duplicate of Sample Number	Split	General Comments
67249	1722	JL AC	7	29	91	17	00	0.0'-1.5'	N	1	N	N	N	N/A	N	ARCHIVE
67250	1722	JL AC	7	29	91	17	05	1.5'-3.0'	Y	2	N	N	N	N/A	N	EXTEND HSL
67251	1722	JL AC	7	29	91	17	10	3.0'-4.5'	N	3	N	N	N	N/A	N	FULL RAD
67252	1722	JL AC	7	29	91	17	15	4.5'-6.0'	N	N	N	N	N	N/A	N	NO RECOVERY
67253	1722	JL AC	7	30	91	10	00	6.0'-7.5	Y	4	N	N	N	N/A	N	EP TOX
67254	1722	JL AC	7	30	91	14	10	8.0'-9.5	N	N	N	N	N	N/A	N	NO RECOVERY
67255	1722	JL AC	7	30	91	14	20	9.5'-11.0'	N	N	N	N	N	N/A	N	NO RECOVERY
67256	1722	JL AC	7	30	91	15	30	11.0'-12.5'	Y	5	N	N	N	N/A	N	EP TOX
67257	1722	JL AC	7	30	91	15	30	11.0'-12.5'	N	6	N	N	N	N/A	N	ARCHIVE
67258	1722	JL AC	7	30	91	15	45	12.5'-14.0'	N	7	N	N	N	N/A	N	ARCHIVE
67259	1722	JL AC	7	30	91	15	40	14.0'-16.5	Y	8	N	N	N	N/A	N	EXT HSL.
67260	1722	JL AC	7	30	91									DCS 9/5/91		NUMBER NOT USED
67261	1722	JL AC	7	30	91	16	30	COMPOSITE	Y	9	N	N	N	N/A	N	TCLP
67262	1722	JL AC	7	30	91	16	30	COMPOSITE	Y	10	N	N	N	N/A	N	SRLP
67263	1722	JL AC	7	30	91	16	30	COMPOSITE	Y	11	N	N	N	N/A	N	Inj. CORR TOX REACT.

REVIEWED BY QA [illegible] DATE 9-10-91

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Page 2 of 2

Du-2 Boring 1722
Des 9/3/91

Subsurface Soil Sample Collection Log

Computer Entry	Date	Int.
1st Key	9-11-91	SAB
2nd Key	9-11-91	[illegible]
ManVer		

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Field Check by JMW Date 9.5.91

Unique Sample Number	Well / Boring ID No.	Collectors Initials	Collection Date MM	Collection Date DD	Collection Date YY	Collection Time HH	Collection Time MM	Sample Depth Interval	Preservative	Sequence	Blank	Spike	Duplicate	Duplicate of Sample Number	Split	General Comments
67264	1722	1L AC	7	30	91	16	45	COMPOSITE	Y	14	N	N	N	N/A	N	TCLP DECONTAMINATION.
67323	1722	1L AC	8	12	91	09	00	COMPOSITE	N	15	N	N	N	N/A	N	TREATABILITY.

REVIEWED BY QA MB DATE 9-10-91

FERNALD RI/FS

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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.26.91 3.16 (ET 8-19-91)	PROJECT NAME: FMPC RI/FS Σ 1379739.45 Inv		
BORING NUMBER: 1722	COORDINATES: N 482114.81 E ~~1379739.45~~	DATE	7-30-91
ELEVATION: 588.4	GWL: Depth Date/Time	DATE STARTED	7-29-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED:	7-30-91
DRILLING METHODS: Mobile 53 Auger		PAGE	1 OF 4

DEPTH	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 6 in	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	67249 17008 7-29-91	9 37 46	16	V. dense, brownish yellow (10yr, 6/4) gravelly clay, some sand, V. low plasticity, some organic V. Dry	CL	NA	Hnu - 0 ppm; Bδ - 150-200 cpm; α - 0 cpm
2	67250 1705 7-29-91	27 23 12	14	Styraphore & woodchips. 1.75' v. hard, dark yellowish brown to dark gray (10yr 4/1) to (10yr, 4/1) silty clay, some gravel low plasticity, damp	CL	4.5	Hnu - 10-50 ppm; Bδ - 8000 cpm; α - 20 cpm
3	67251 1710 7-29-91	36 34 29	5	Hard, olive gray (5y, 4/2) silty clay, some gravel, low plast to med plast. sl. moist.	CL	3.75	Hnu - 5-10 ppm; Bδ - 10000-19000 cpm; α - 50-100 cpm
5	67252 1915 7-29-91	22 17 43	0	N.R.	NA	NA	Hnu, Bδ, α NA
6	67253 1000 7-30-91	50/6	6	dark olive gray (5y, 3/2) mud, saturated; 6.4' Limestone; Augering to 8.0 ft			Hnu - 5-10 ppm; Bδ - 15000 cpm; α - 50-100 cpm
8	67254 1410 7-30-91	14 23 17	0	N.R.			Hnu, Bδ, α NA
10	67255 1420 7-30-91	13 15 18	0	N.R. Augering to 11.0'			Hnu, Bδ, α NA
11	67256 67257 1530 7-30-91	6 6 13	14	m. dense, light yellowish brown, (10yr, 6/4) silt, some cobbles, dry	ML	NA	Hnu - 0 ppm; Bδ - 150 cpm; α - 0 cpm
12				very stiff, yellowish brown to dark gray, (10yr 4/1) to (10yr, 4/2) silty clay, low to med plast. moist	CL	2.5	
13	67258 1538 7-30-91	10 11 15	16	m. dense, light yellowish brown (10yr, 6/4) silt, some cobbles, trace sand, dry	ML	NA	Hnu - 0 ppm; Bδ - 150 cpm; α - 0 cpm
14							
15							

NOTES:

Drilling Contractor: Penn Drilling
Equipment: Mobile 53 Auger
Driller: Bob Yost
Asst: Mark Rebold

Background
Hnu - 0 ppm
Bδ - 100-200 cpm
α - 0 cpm

* Land fill Liner Located at App 11.0'

402-11-91

REVIEWED BY QA MB DATE 9-10-91

FERNALD RI/FS

3285

VISUAL CLASSIFICATION OF SOILS

ET 8-19-91

PROJECT NUMBER [illegible] 3.16	PROJECT NAME [illegible]		
BORING NUMBER [illegible]	COORDINATES See p 1		DATE [illegible]
ELEVATION: See p 1	GWL: Depth	Date/Time	DATE STARTED 7-29-91
ENGINEER/GEOLOGIST J Lear	Depth	Date/Time	DATE COMPLETED: 7-30-91
DRILLING METHODS Mobile 53 Auger			PAGE 2 OF 4

DEPTH ( )	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER ( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
15	[illegible] 1540 7-30-91	25 [illegible] 28	15	Hard, yellowish brown, to gray [illegible] to [illegible] [illegible] trace gravel, [illegible] [illegible]	CC	4.0	Hnu - [illegible] BX - 150 cpm α - 0 cpm
				Drilling & Sampling ends at 15.5' All samples taken according to [illegible] work plan.			
				67260			
				67261 TCC [illegible] 1630			
				67262 SELF 7-30 1630			
				67263 Tinite 1630			
				67264 TCC Drum [illegible]			
				Not Ample recovery to get second Sample interval thus App is switched to 1st interval			

NOTES

Drilling Contractor - Penn Drilling
Drilling equipment Mobile 53 Auger
Driller Bob Yost
Asst Mark Bebold

Background
Hnu - 0 ppm
BX - 150-200 cpm
α - 0 cpm

402-11-88

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REVIEWED BY QA [illegible] DATE 9.10.91

314 FW 8.9.91

FERNALD RI/FS

INSTALLATION DIAGRAM

~~MONITORING WELL~~ NO. 1722 Boring

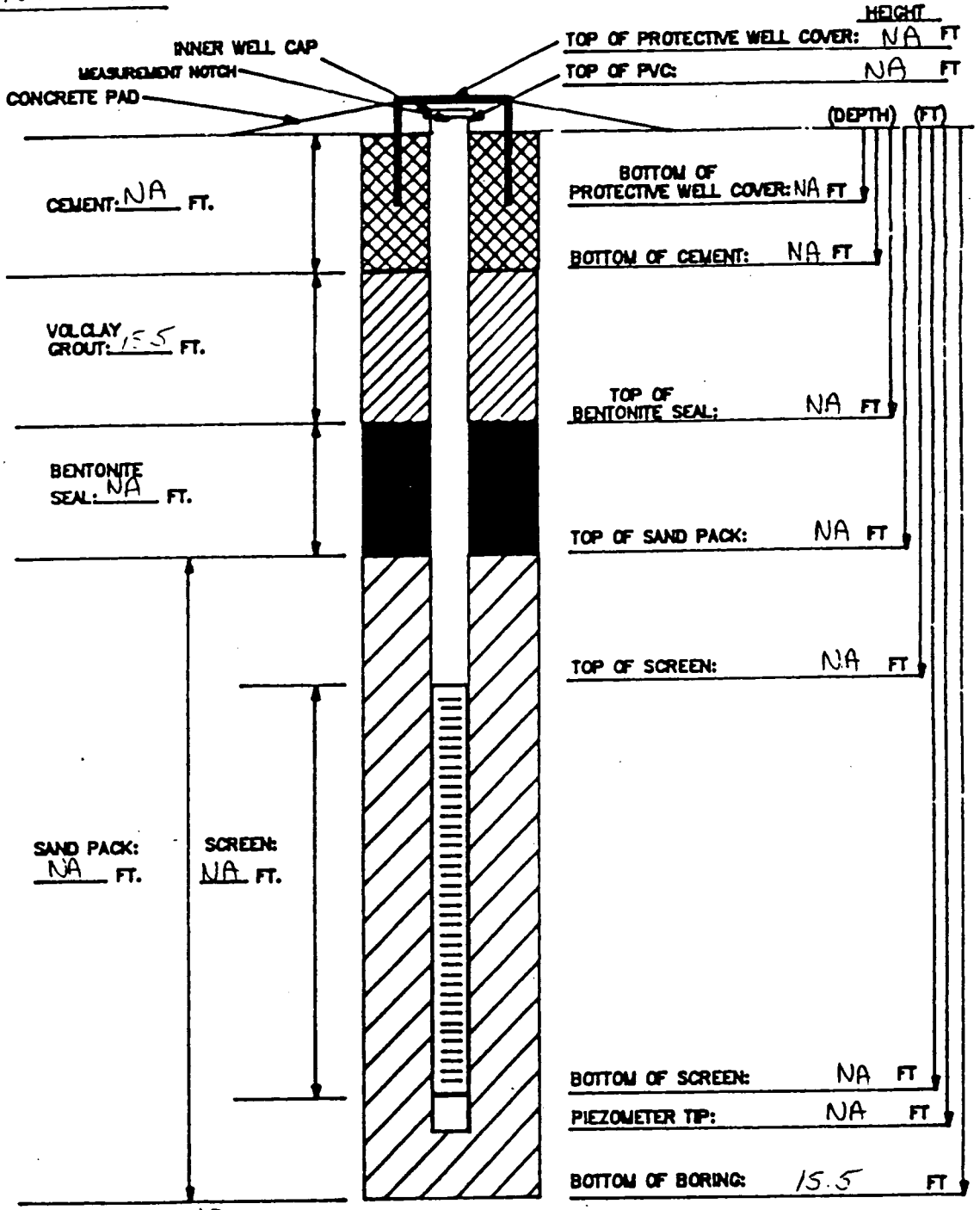
Plugged

INSTALLATION DATE: 7-31-91

J.L 7-31-91

3285

J.L 7-31-91



BOREHOLE DIAMETER: 10 INCHES

MATERIALS USED:

SAND TYPE AND QUANTITY: NA

BENTONITE PELLETS (5-GALLON BUCKETS): NA

BAGS OF VOLCLAY GROUT: 1 1/2

AMOUNT OF CEMENT: NA

AMOUNT OF WATER USED: 55 gals

OTHER: NA

NOTES: NA

1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SUMP.
4) WATER DEPTH/DATE:
5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 602.26 ET 8-19-91

GEOLOGIST/ENGINEER: J. Lear

3.16

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REVIEWED BY QA [illegible] DATE 9-10-91

ATTACHMENT II

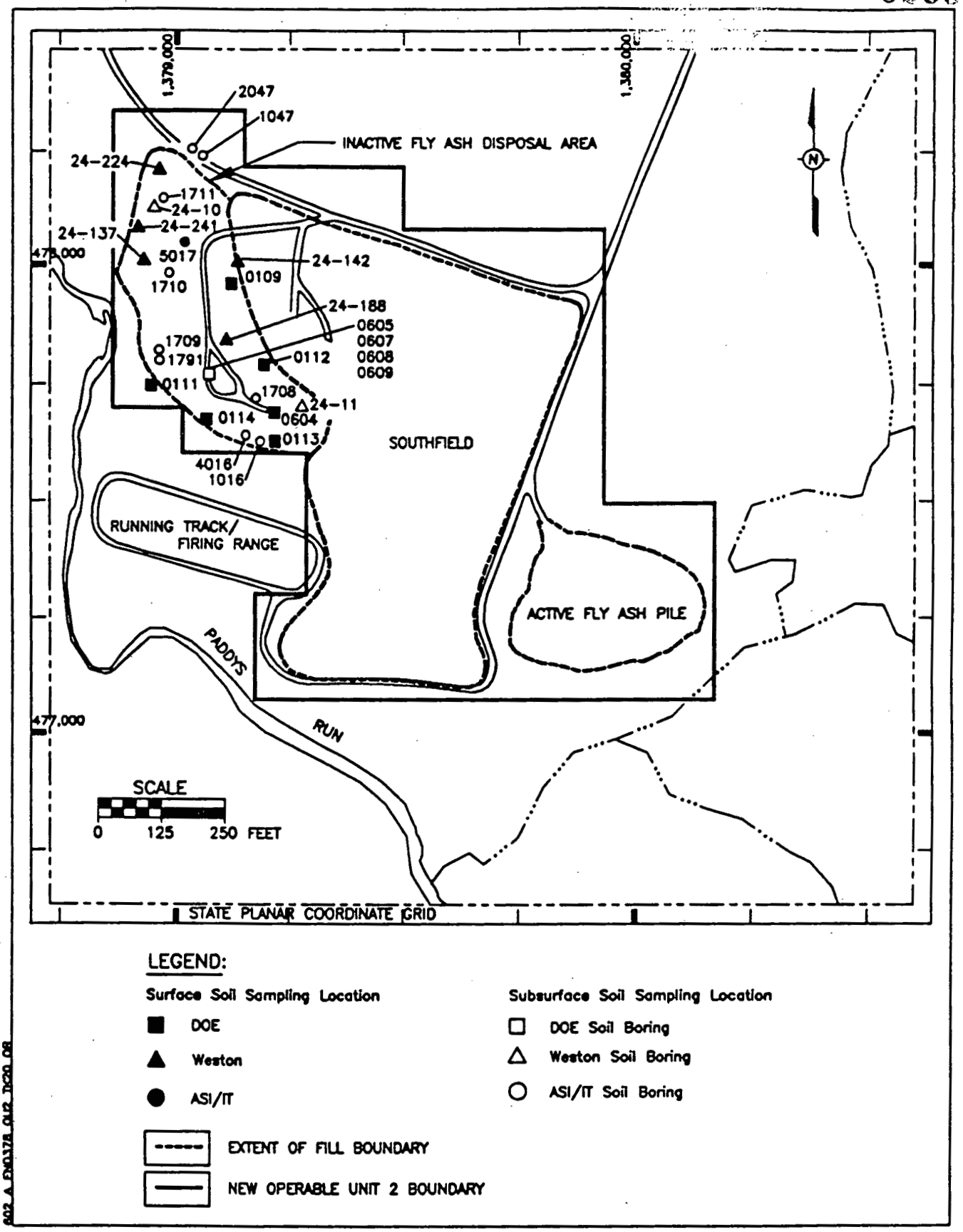

FIGURE 2-9. SURFACE AND SUBSURFACE SOIL SAMPLE LOCATIONS IN THE INACTIVE FLY ASH DISPOSAL STUDY AREA

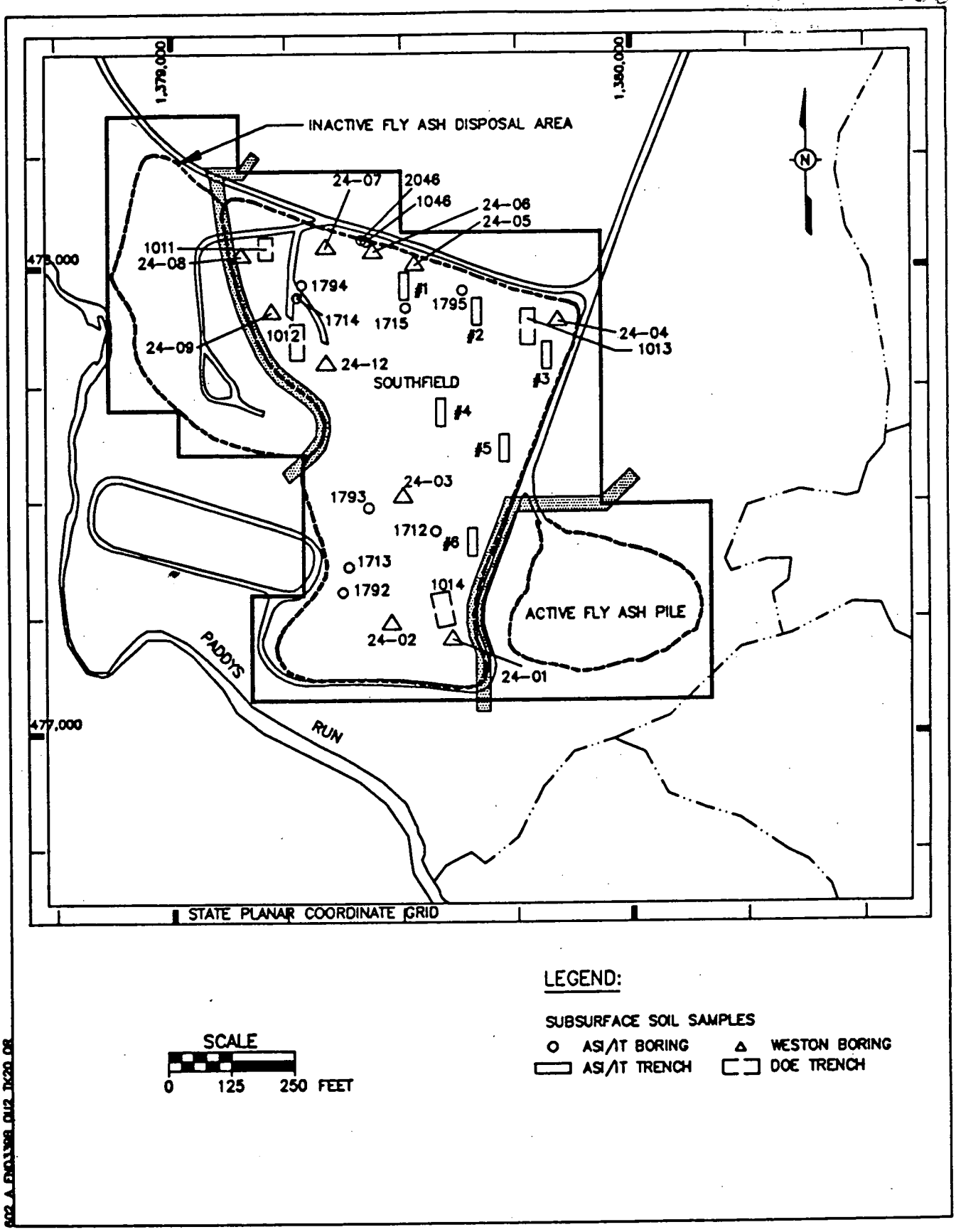

FIGURE 2-18. SUBSURFACE SOIL SAMPLE LOCATIONS IN THE SOUTHFIELD