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**TRANSMITTAL OF DEWATERING EXCAVATION EVALUATION PROGRAM
TREATABILITY STUDY WORK PLAN ADDENDUM**

10/19/94

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DOE-FN EPAS
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LETTER



Department of Energy
Fernald Environmental Management Project
P. O. Box 398705
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OCT 19 1994

DOE-0056-95

Mr. James A. Saric, Remedial Project Director
U.S. Environmental Protection Agency
Region V - 5HRE-8J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Thomas A. Schneider
Ohio Environmental Protection Agency
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

**TRANSMITTAL OF DEWATERING EXCAVATION EVALUATION PROGRAM TREATABILITY STUDY
WORK PLAN ADDENDUM**

Enclosed, please find the Dewatering Excavation Evaluation Program (DEEP) Treatability Study Work Plan Addendum. The Work Plan Addendum provides for the completion of an additional seven standard penetration tests and eighteen additional cone penetrometer tests. The additional testing will be completed in the area of the Modular Process Area building(s) to provide geotechnical data for foundation design.

While collection of data for building foundations was not in the original scope of the DEEP program, the Department of Energy, Fernald Area Office (DOE-FN) believes that it is the most cost-effective mechanism available to obtain the required information. Utilization of the DEEP program will reduce subcontractor mobilization charges, as well as costs associated with producing this project documentation.

If you or your staff have any questions, please contact Dave Lojek at (513) 648-3127. Thank you for your time and cooperation in this matter.

Sincerely,

for Jack R. Craig
Fernald Remedial Action
Project Manager

FN:Hall

Enclosure: As Stated

cc w/enc:

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DEWATERING EXCAVATION
EVALUATION PROGRAM (DEEP)
TREATABILITY STUDY WORK PLAN
ADDENDUM NO. 1

1.0 Introduction and Objectives

This Addendum to the DEEP Treatability Study Work Plan provides for the completion of seven additional standard penetration tests and 18 additional cone penetrometer tests in the Modular Process Area to be constructed during remediation of Operable Unit 1. These additional tests will generate geotechnical data for use in design of processing building foundations and new rail line design.

2.0 Scope

This geotechnical sampling plan consists of standard penetration (SPT) and cone penetrometer tests (CPT) in the Pit 6 area. The 7 SPTs will be sampled around the Modular Process Area (MPA) to provide geotechnical information for the MPA facility foundations. These facilities are shown on figure 1. The SPTs will consist of using a split spoon sampler and the use of undisturbed sampling equipment, ie. shelby, dennison sampler. The borings will be at a depth of 30 ft, except for boring #4 which will be 50 ft. The laboratory soil tests will consist of grain size distribution, atterberg limits, moisture contents, unit weights, specific gravity, unconfined compressive strength test, consolidated undrained triaxial compression test with pore pressure measurements, and five point standard and modified proctor test. These tests will enable the structural engineer to select sizes and types of foundations for the MPA facility and the design of roads in the area. See Figure A for the sampling schedule and Table 1 for the soil tests that will be performed. The 12 CPTs will be performed in the MPA facilities near Pit 6 and east of Pit 2, and the new rail line. See Figure 1 and 2 for CPT locations. The CPTs will be used for rail design to check the strength of the subbase material to handle the rail loads; CPTs in the MPA near Pit 6 will be used to correlate all CPT data to SPT data; and the CPTs in the MPA due east of Pit 2 (see figure 2) will be used to provide information to select foundation types and sizes. The CPT probe will yield tip, sleeve, and pore pressure measurements for the soil material. The CPTs in the MPA facilities and along the rail line will be 30 and 20 ft. deep, respectively.

3.0 Testing Methodologies

All sample collection and testing methodologies will be consistent with those described in the Final DEEP Treatability Study Work Plan (August 1994).

4.0 Supporting Documentation

Supporting documentation will be addressed as described in Section 6.0 of the DEEP Treatability Study Work Plan. This activities addressed by this addendum are anticipated to occur between October 17, 1994 and October 28, 1994.

Table 1 - Estimated Drilling, Sampling and Geotechnical Testing Requirements for Proposed OUI Waste Drying and Packaging Facility

Boring No.	Purpose	Boring Depth (ft)	Sample Sequence (See Fig. 1)	Approximate Depth Interval (ft)	BULK Samples	Natural MC	AL	GS	UCS	TX-CUpp	Consol.	Std. Proc.	Mod. Proc.	CBR	
1	Foundation Analysis and Design, Road Design	30	A	0 - 10	1	2	2	2	1			1		1	
				10 - 20		1	1	1							
				20 - 30		1	1	1				1			
2	Foundation Analysis and Design	30	B	0 - 10		1	1	1			1				
				10 - 20		1	1	1							
				20 - 30		1	1	1							
3	Foundation Analysis and Design,	30	B	0 - 10		1	1	1	1						
				10 - 20		2	2	2			1	1			
				20 - 30		1	1	1							
4	Foundation Analysis and Design, Top of Aquifer Formation, Liquefaction Potential Analysis	30	C	0 - 10	1	2	2	2	1		1		1		
				10 - 20		1	1	1							
				20 - 30		1	1	1							
5	Foundation Analysis and Design	30	A	0 - 10		1	1	1			1				
				10 - 20		2	2	2			1	1			
				20 - 30		1	1	1							
6	Foundation Analysis and Design, Road Design	30	A	0 - 10	1	2	2	2			1	1		1	
				10 - 20		1	1	1							
				20 - 30		1	1	1							
7	Foundation Analysis and Design	30	B	0 - 10		1	1	1	1						
				10 - 20		1	1	1							
				20 - 30		1	1	1				1			
TOTAL:				230	3	26	26	26	7	2	9	2	1	2	

Explanation
for Table 1:

BULK Samples = Number of Bulk samples (5 gal. drum, typical) of auger cuttings

MC = Moisture Content Test (ASTM D 2216)

AL = Atterberg Limits Test (ASTM D 4318)

GS = Grain Size Analyses (ASTM D 422 and ASTM D 1140). Note: These analyses shall include Specific Gravity Tests (ASTM D 854) for each different type of soil material encountered

UCS = Unconfined Compressive Strength Tests (ASTM D 2166)

TX-CUpp = Consolidated, Undrained Triaxial Compression Test with Pore Pressure Measurements (ASTM D 4767)

Consol. = One-Dimensional Consolidation Test (ASTM D 2435)

Std. Proc. = Standard Proctor Compaction Test (ASTM D 698). Note: The compaction curve should consist of 5 points. Standard Proctor tests will be conducted on bulk (drum) samples of auger cuttings.

Mod. Proc. = Modified Proctor Compaction Test (ASTM D 1557). Note: The compaction curve should consist of 5 points. Modified Proctor tests will be conducted on bulk (drum) samples of auger cuttings.

CBR = California Bearing Ratio Test (ASTM D 1883). Note: CBR tests will be conducted on bulk (drum) samples of auger cuttings.

Notes for Table 1:

1. The number of tests to be performed and the depth interval for the test within the boring are estimates only. The actual samples selected for laboratory will be specified by the Field Geotechnical Engineer based on conditions encountered in the field. For example, if a low-strength, compressible natural strata is encountered during field penetration testing, the Field Geotechnical Engineer will specify laboratory tests (i.e., strength and consolidation) for samples of the material.
2. See FERMCO Figure entitled "Civil - Proposed Boring Locations Waste Pit #6 Area" for boring locations. Figure 1 shows the proposed sampling sequence. Laboratory tests should be assigned to specific samples by the field Geotechnical Engineer to provide areal and elevational distribution of samples to be tested for the site. Adequate coverage of strata encountered should also be considered.
3. For Boring No. 4, collect bulk (drum) sample of auger cuttings. Perform UCS (ASTM D 2166) and Consolidation (ASTM D 2435) tests on remolded (95% Modified Proctor, at or near optimum moisture content) test specimens of the bulk sample from the boring.
4. Depth is approximate.
5. Standard Penetration Test (SPT) (ASTM D 1586) will be performed in conjunction with sampling with 18-in. sample intervals. The samples will be visually classified (ASTM D 2488) by the field Geologist.
6. Thin-walled sampling will be conducted per ASTM D 1587 with 3-in. diameter, 30 inch long Shelby tubes. Advance auger 0.5 ft. below the preceding sample bottom depth prior to pushing Shelby tube
7. Where lenses of sand or gravel are encountered within the till, the split spoon sampler should be used to obtain samples for grain size distribution and Atterberg Limits tests. SPT Blowcounts will be logged per ASTM D 1586. These data provide information regarding liquefaction potential of the material.
8. The laboratory tests listed in this table will be performed primarily on sample material obtained from Shelby tube samples. It is desirable to perform Atterberg Limits tests in conjunction with Grain Size Analysis Tests to allow for classification of soils for engineering purposes (ASTM D 2487). Grain size analysis and Atterberg limits tests should be performed on the samples undergoing physical properties testing (UCS tests, Consolidation tests, Proctor tests and CBR tests)
9. Two temporary piezometers will be installed in borings (specified by the field Geologist) encountering perched groundwater. Other borings shall remain open for a minimum of 24 hours to allow for groundwater observation. Borings not completed as piezometers will be abandoned by grouting.
10. The TX-CUpp tests will consist of individual tests on three specimens from a Shelby Tube Sample conducted at three different confining pressures. The confining pressures will be specified by communication with the Geotechnical Testing Laboratory. The confining pressures should consider the existing overburden pressure at the sample's depth.

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P099/SAMP_PROG.DGN

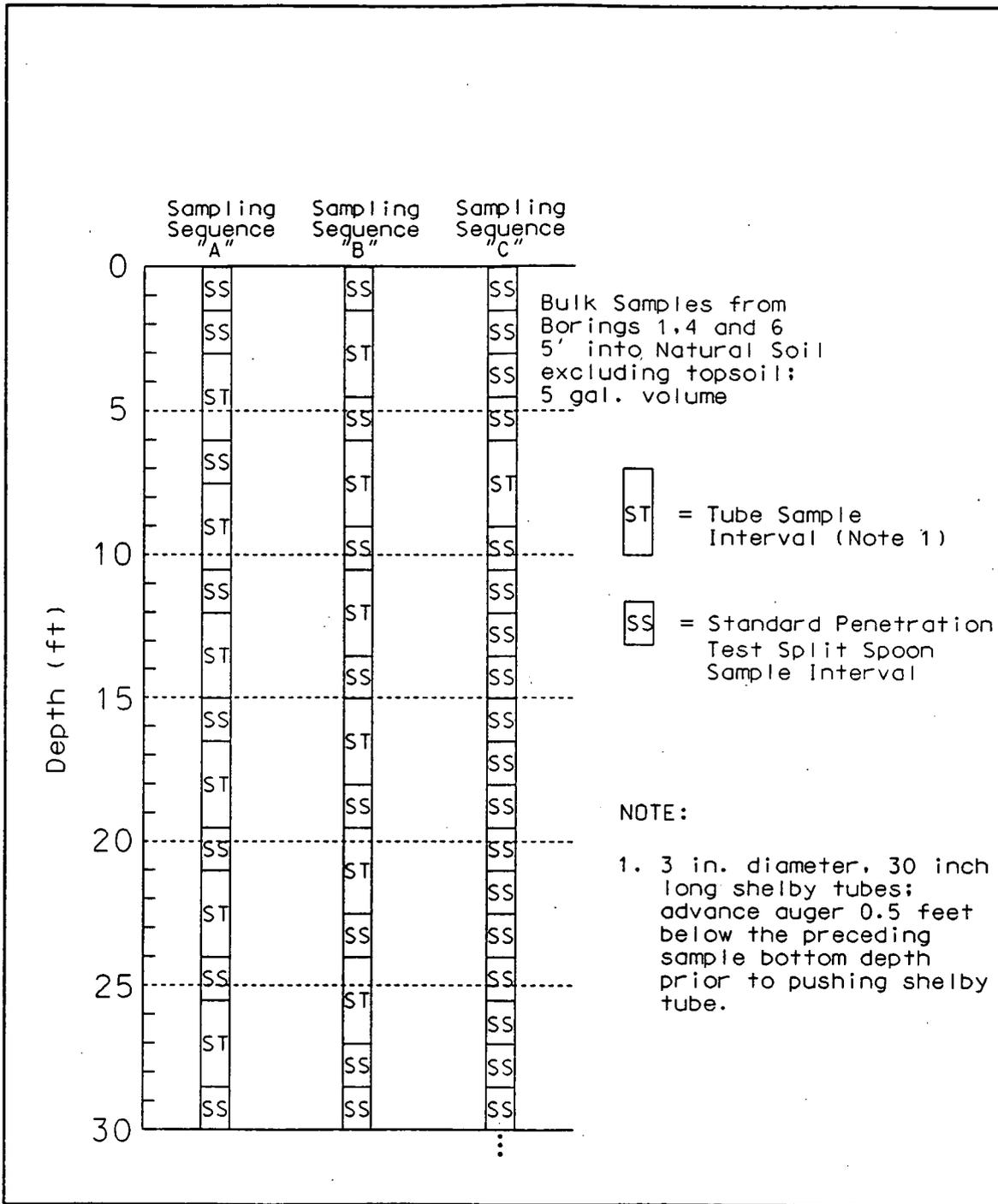
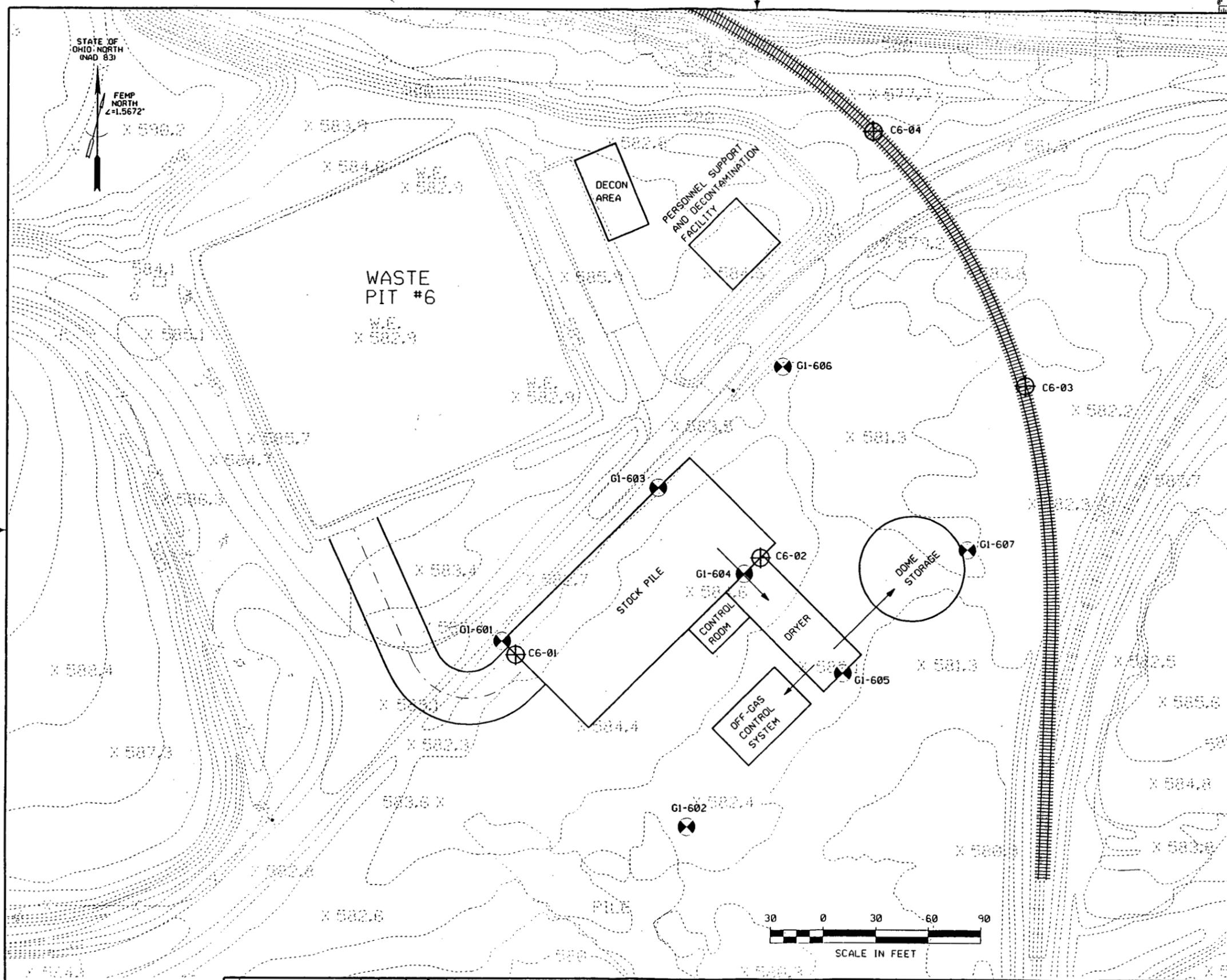


FIGURE . SAMPLE TYPE AND SAMPLING INTERVALS



LEGEND

CPT PROBE		C6-02
PROPOSED BORING		G1-604

PROPOSED BORING

BORING ID	NO	NORTH	EAST
11506	G1-601	481,750.0	1,347,754.0
11507	G1-602	481,644.0	1,347,860.0
11508	G1-603	481,839.0	1,347,842.0
11509	G1-604	481,789.0	1,347,892.0
11510	G1-605	481,733.0	1,347,948.0
11511	G1-606	481,909.0	1,347,913.0
11512	G1-607	481,803.0	1,348,018.0

CPT PROBE

BORING ID	NO	NORTH	EAST
11513	C6-01	481,742.5	1,347,761.0
11514	C6-02	481,798.0	1,347,901.0
11515	C6-03	481,899.0	1,348,051.0
11516	C6-04	482,044.6	1,347,963.5

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NO.	REVISIONS	DATE	DWN. B.	APPD. NO.	NO.	REVISIONS	DATE	DWN. B.	APPD. NO.	REF. DWG. NO.

NOTE:
FERMCO C.A.D.
DRAWING NOT
TO BE REVISED
MANUALLY

APPROVALS

CIVIL & SURVEYING	SAFETY ENGINEER
ELECTRICAL ENGINEER	MAINTENANCE
INSTRUMENTATION ENGINEER	ENVIRONMENTAL PROTECT
MECHANICAL ENGINEER	WASTE MGMT
CHEMICAL ENGINEER	SECURITY
CHECKED	APPROVED

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

Fernald
Environmental Management Project

U.S. DEPARTMENT OF ENERGY

CIVIL BORING LOCATIONS WASTE PIT #6 AREA

FIGURE 1

FILE NAME: P099/T05/SKX03263.DGN