

**IMPACTED MATERIALS PLACEMENT PLAN
ON-SITE DISPOSAL FACILITY**

Revision 2PCN1

June 2001

20100-PL-007

United States Department of Energy

Fernald Environmental Management Project

Fernald, Ohio

INFORMATION
ONLY

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Under

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Contract 95PS005028

FINAL
IMPACTED MATERIAL PLACEMENT PLAN

ON-SITE DISPOSAL FACILITY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

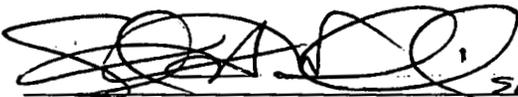
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26 June 2001
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6/26/01
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REVISION SUMMARY

<u>Revision</u>	<u>Dated</u>	<u>Description of Revision</u>
0	1/19/98	Initial issuance of Revision 0, <i>Impacted Material Placement Plan, On-Site Disposal Facility</i> (20100-PL-007)
PCN 1	7/7/98	Added Revision Summary page and revised physical waste acceptance criteria for debris (Page 4-1) to reflect that transite panels will not be size reduced before disposal in the On-Site Disposal Facility
0 ADD 1	2/17/99	Addendum 1: Issuance of Revision 0, <i>Specialized Placement Plan for Bagged Impacted Material</i> to discuss placement of bagged material into the On-Site Disposal Facility
1	10/99	Issuance of Revision 1 based on page changes approved by the U.S. EPA and OEPA. Addendum 1 incorporated into Appendix C
1ADD2	3/00	Addendum 2: Issuance of Revision 1, <i>Specialized Placement Plan for Thorium and Non-Bagged Impacted Material</i> to discuss placement of thorium debris and non-bagged material into the On-Site Disposal Facility
1ADD3C	3/00	Addendum 3: Issuance of Revision 1, <i>Alternative Trenching Method for Placement of Category 2 Impacted Material</i> to discuss placement of Category 2 items by trenching method into the On-Site Disposal Facility
1TBL1	3/00	Added <i>Placement Restrictions for Specialized Placement Plans</i> table to be inserted in front of Addendum 1 of Appendix C.
1 PCN 1	12/00	Revised Category 4 material definition to replace the words "very compressible" with "prone to decomposition" (page 5-2, 8-5).
2	5/01	Issuance of Revision 2 to incorporate lessons learned from OSDF Phase I and Phase II and DCN 20102-033 dated 1 July 1998. Addenda 2 and 3 incorporated into Appendix C.
2 PCN 1	6/01	Added lime sludge placement procedure to Section 8.6.5 based on RCI 20102-068R dated 20 June 2000.

- piping insulated with asbestos containing material (ACM); and
- sludges.

Placement and compaction procedures for these types of impacted materials are presented below or in Appendix C.

8.6.3 Highly Compressible Materials

Placement

The volume of highly compressible material, such as double-bagged asbestos, requiring OSDF disposal is very limited. The primary criterion regarding the placement of asbestos is that the material be placed in a manner protective of the health of OSDF personnel and the public. A secondary criterion is to prevent significant differential settlement of the OSDF final cover system resulting from compression of this material.

Prior to placement of any highly compressible material in the OSDF, a trench shall be dug into previously placed and compacted Category 1 material. Material excavated from this trench shall be stockpiled at least 6 ft away from the trench opening. No trenches shall be dug into layers containing Category 2 through 5 material, nor through the protective, contouring, or select impacted material layers. Trenches shall be of uniform width (between 2.0 and 3.0 ft wide) and of a uniform depth (between 3.0 and 4.0 ft deep). The final sizing of the trench shall depend on the nature and size of the material to be disposed. The trenches shall be at a minimum 6 ft apart from one another. Highly compressible material, such as double-bagged asbestos, shall be deposited in the lower half of the trench.

Compaction

An initial Category 1 material cover between 12 and 18 in. loose thickness shall be placed on top of the highly-compressible material in the trench. The initial Category 1 material cover layer shall be compacted with a minimum of four passes of a portable flat-plate or miniature roller compactor. Intermediate 6- to 12-in. thick loose Category 1 material lifts shall be placed in the trench and compacted to at least 90 percent of the standard Proctor maximum dry density determined as described in Section 7.4.2 of this IMP Plan. A final trench Category 1 material lift shall be placed and compacted to at least 90 percent of the standard Proctor maximum dry density. The surface of the compacted final lift shall be at least 2 in. above the trench shoulders. The sequencing of material placement is illustrated in Figure 8-2.

8.6.4 Piping Containing ACM Insulation

Placement

The disposal of ACM-insulated piping in the OSDF shall be performed in a manner protective of the health of OSDF personnel and the public. These materials must be segregated from other demolition debris at the source and delivered to the OSDF in a condition suitable for placement in an excavation dug into previously placed and compacted Category 1 material. The size and shape of the excavation will be based on the predominant dimension and condition of the piping. If the piping comes to the OSDF in relatively straight lengths, the pipes shall be placed in trenches similar to those required for double bagged asbestos. If the piping comes to the OSDF in random shapes, bends, or curvatures, the pipes shall be placed in a rectangular excavation sized to accommodate the pipe but not greater than 20 foot by 20 foot square and 4 foot deep. Pipe should be cut to lengths allowing placement in the 20-ft square excavation and be placed such that Category 1 material can be filled around pipes. The number of pipes placed in the 20-ft square excavation is limited to that number that can be placed such that Category 1 material infilling around the pipes is possible. The ACM-insulated piping shall be placed in the lower half of the excavation.

Compaction

An initial Category 1 material loose lift between 12 and 18 in. thick shall be placed on top of the ACM-insulated piping in the excavation. The initial Category 1 material cover layer shall be compacted with a minimum of four passes of a portable flat-plate or miniature roller compactor or a pad-foot compactor such as the Caterpillar 815C as appropriate. Intermediate 6 to 12 in. loose Category 1 material lifts shall then be placed in the excavation and compacted to at least 90 percent of the standard Proctor maximum dry density, determined as described in Section 7.4.2 of this IMP Plan. A final excavation Category 1 material lift shall be placed and compacted to at least 90 percent of the standard Proctor maximum dry density. The surface of the compacted final lift shall be at least 2 in. above the excavation shoulders.

8.6.5 Sludges

The placement, spreading, and compaction of the sludge material from the Lime Sludge Ponds or the AWWT will depend on the water content of the sludge when delivered to the OSDF. Prior to delivery for OSDF placement, sludge materials from the Lime Sludge Ponds should be mixed with soils from the berms of the ponds or other soil material as much as practicable during excavation and handling. The sludge material shall be dried until excessive moisture is removed. The objective of this activity is to decrease the moisture content of the sludges and thereby improve their handling and subsequent compaction characteristics. The Construction Manager may specify additional source(s) of materials for mixing with the sludges to achieve the required handling and placement characteristics.

The following two procedures are alternatives (Procedures 1 and 2) for sludge placement. They both assume the sludge can be placed and compacted with conventional construction equipment, either by mixing as above in the case of the Lime Sludge Ponds, or by proper preconditioning

(dewatering or drying) in the case of the AWWT sludges. In no case shall mixing and preconditioning be performed in the OSDF active cell to achieve the criteria identified in Section 4.3 of the IMP Plan. The Construction Manager will select the appropriate procedure of placement based on availability of Category 1 soils or Category 2 D&D debris, consistency of sludge material, and location of placement within the cell.

Procedure 1

Placement

Sludges or sludges mixed with soils (hereafter referred to as sludges), with a moisture content which does not result in excessive "bleeding" of liquids, may be placed to a maximum loose lift thickness of 12 inches within starter (or perimeter) berms. These berms shall be constructed of Category 1 soil material; they shall be approximately 24 inches high and have a width of approximately 10 feet. The berms shall be placed and compacted in 12- to 15-inch thick loose lifts in accordance with the IMP Plan. A trackhoe may be used to spread the in-place sludge to achieve the maximum loose lift thickness requirement. Category 2 material (D&D debris) may then be placed on top of the sludges and inside the starter berms.

Compaction

The Category 2 material shall be placed and compacted (including proof rolling) in accordance with Section 8.3 of the IMP Plan. Category 1 soil material cover shall be placed and compacted on top of the Category 2 material as described in Section 8.3 of the IMP Plan. After placement and compaction of the Category 1 material, a second lift of sludge material followed by Category 2 material may be placed by constructing a second starter berm, as shown on Figure 8-3. The second lift of sludge/Category 2/Category 1 materials shall be constructed in the same sequence as the first lift. After the second lift of sludge/Category 2/Category 1 materials, there shall be a minimum 4 foot thickness of an intervening horizon of Category 1 material before placement of either Category 2 or sludge/Category 2 materials, as described in Section 8.3 of the IMP Plan.

Procedure 2

Placement

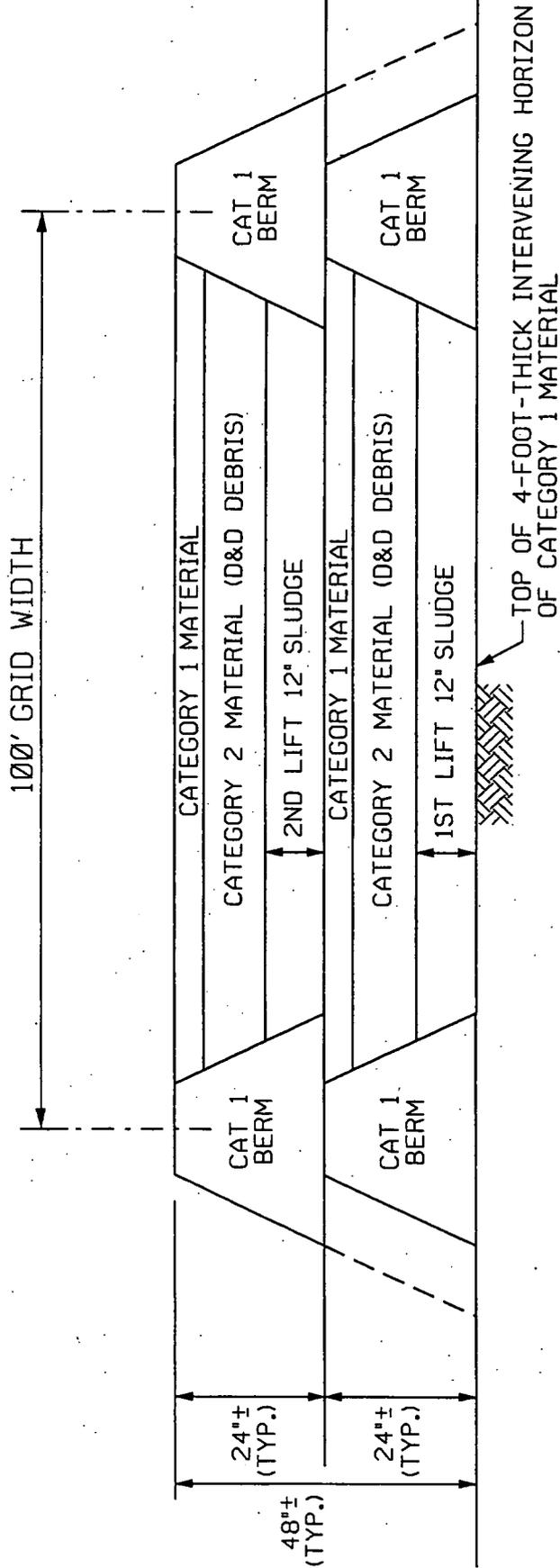
Sludges or sludges mixed with soils (hereafter referred to as sludges) that are free of liquids may be placed to a maximum loose lift thickness of 12-inches within starter (or perimeter) berms. These berms shall be constructed of Category 1 material; they shall be approximately 24 inches high and have a width of approximately 10 feet. The berms shall be placed and compacted in 12- to 15-inch thick loose lifts in accordance with the IMP Plan. A trackhoe may be used to spread the in-place sludge to achieve the maximum loose lift thickness requirement.

Compaction

Initial compaction of sludges shall be accomplished as the material is spread. After spreading and initial compaction, the sludge material shall be compacted by a minimum of four passes of a bulldozer of a minimum total weight of 50,000 lbs. producing a ground pressure of at least 10 psi. Prior to placement of the second and succeeding lifts of sludge materials, a 12 inches to 15 inches thick lift of Category 1 material shall be placed above the sludge lift and compacted to at least 85 percent of the standard Proctor maximum dry density. After placement of the Category 1 material lift, another starter berm shall be constructed as with the first lift of sludge material. Compaction of all succeeding lifts of sludge materials shall be identical to the first lift. Not more than two lifts of sludge material shall be placed in a horizon without at least the minimum 4 feet required thickness of intervening horizon of Category 1 material.

After each sequence of sludge and covering Category 1 material placement, the cover Category 1 material shall be proofrolled. The proofrolling equipment shall have a minimum gross vehicle weight of 20 tons and exert a ground pressure of at least 65 psi. Soft spots indicated by tire ruts more than 3 inches in depth or visible deflection under the moving proofrolling equipment shall be stabilized through additional passes of the compactor. Any soft spot that cannot be stabilized with further compactive effort shall be cause for additional treatment to the satisfaction of the Construction Manager. This treatment shall consist of removal, replacement, and recompaction of the Category 1 material, and, if needed, infilling soft spots/areas in the sludge material with grout or other material approved by the Construction Manager.

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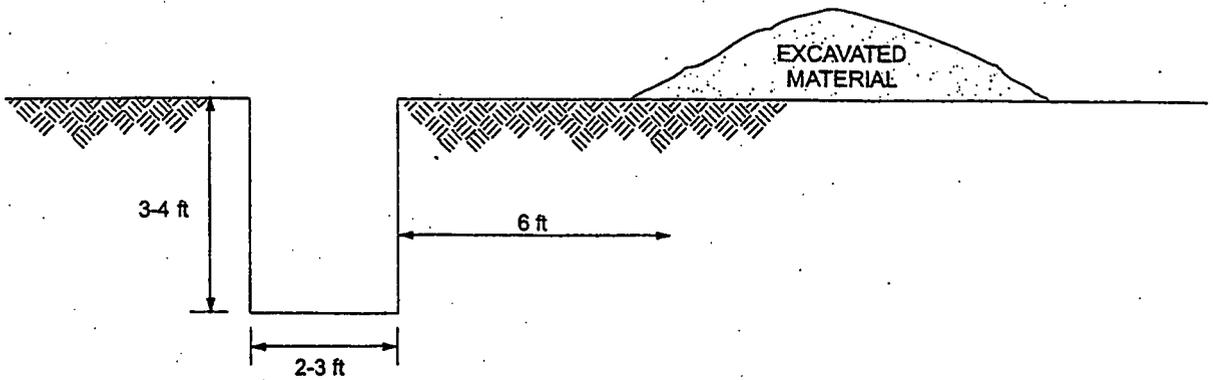
TYPICAL CROSS SECTION

NOT TO SCALE

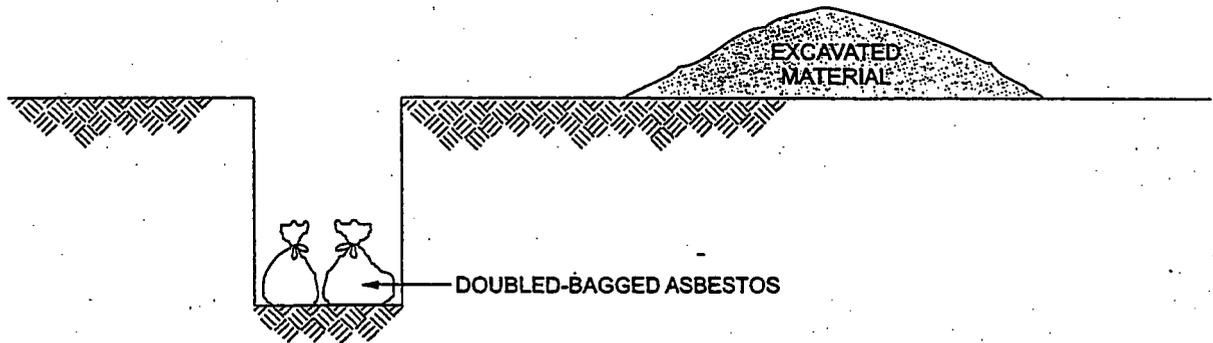
FIGURE 8-3
ON-SITE DISPOSAL FACILITY
IMPACTED MATERIAL PLACEMENT PLAN
PROCEDURE 1 - SLUDGE PLACEMENT

8

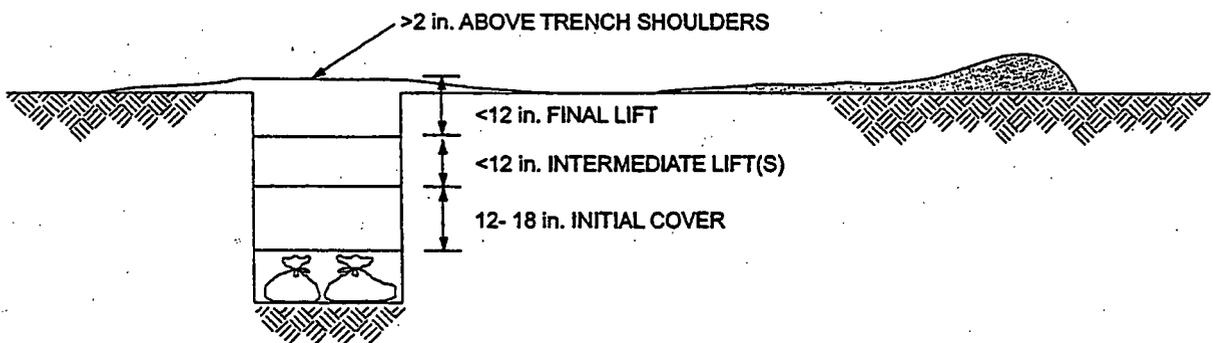
CATEGORY 5 MATERIAL PLACEMENT SEQUENCE



1. TRENCH DUG AND EXCAVATED MATERIAL STOCKPILED



2. CATEGORY 5 MATERIAL DEPOSITED IN TRENCH



3. FINAL TRENCH LIFT PLACED

NOTE: THIS FIGURE FOR ILLUSTRATION ONLY. CONSTRUCTION CONTRACTOR SHALL PLACE IMPACTED MATERIAL LAYERS TO THE LIMITS SHOWN ON CONSTRUCTION DRAWINGS



FIGURE NO.	8 - 2
PROJECT NO.	GQ1001-03
DOCUMENT NO.	F9620002.2
FILE NO.	FIGS.cdr