



## Department of Energy

Ohio Field Office  
Fernald Area Office  
P. O. Box 538705  
Cincinnati, Ohio 45253-8705  
(513) 648-3155



2278

JUN 04 1999

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

DOE-0818-99

Mr. Tom Schneider, Project Manager  
Ohio Environmental Protection Agency  
401 East 5<sup>th</sup> Street  
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

### TRANSMITTAL OF RESPONSE TO COMMENTS DOCUMENTS AND PROPOSED CHANGE PAGES TO THE IMPACTED MATERIAL PLACEMENT PLAN

Enclosed please find the following documents for the On-Site Disposal Facility (OSDF) project:

- Response to Comments (RTC) Documents
- Proposed Change Pages to the Impacted Material Placement Plan for the On-Site Disposal Facility - Prepared: December 7, 1998, Revised: June 2, 1999

The RTC documents address both the Ohio Environmental Protection Agency (OEPA) and U.S. Environmental Protection Agency (U.S.EPA) comments on the "Proposed Change Pages to the Impacted Material Placement Plan (IMPP) for the On-Site Disposal Facility - December 7, 1998" (hereinafter referred to as "Proposed IMPP Changes"). Via letter dated January 7, 1999, the OEPA transmitted comments on the Proposed IMPP Changes. Via letter dated January 23, 1999, the U.S. EPA conditionally approved the Proposed IMPP Changes with some minor comments. Both sets of comments and related issues have been discussed with the regulatory agencies during the past few months. The enclosed RTC documents and revised Proposed IMPP Changes formally addresses the comments and discussions.

The revised text is shown as redline and strikeout. The redline and strikeout are based on the currently approved version of the IMPP (Revision 0). Upon concurrence from the

Mr. James A. Saric  
Mr. Tom Schneider

-2-

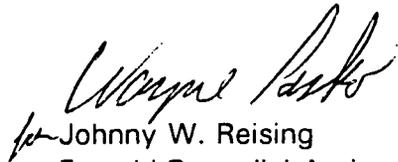
2278

JUN 04 1999

regulatory agencies, Fluor Daniel Fernald, Inc. (FDF) will formally issue Revision 1 of the IMPP and begin implementing the revised methods contained in the revised pages.

Please contact Jay Jalovec at (513) 648-3122 if you have any questions or require additional information.

Sincerely,

  
for Johnny W. Reising  
Fernald Remedial Action  
Project Manager

FEMP:Jalovec

#### Enclosures

##### cc w/enclosures:

N. Hallein, EM-42/CLOV  
G. Jablonowski, USEPA-V, SRF-5J  
R. Beaumier, TPSS/DERR, OEPA-Columbus  
T. Schneider, OEPA-Dayton (three copies of enclosures)  
F. Bell, ATSDR  
M. Schupe, HSI GeoTrans  
R. Vandegrift, ODH  
F. Barker, Tetra Tech  
AR Coordinator, FDF/78

##### cc w/o enclosures:

J. Reising, OH/FEMP  
A. Tanner, OH/FEMP  
D. Carr, FDF/52-2  
T. Hagen, FDF/65-2  
J. Harmon, FDF/90  
R. Heck, FDF/2  
M. Hickey, FDF/64  
S. Hinnefeld, FDF/31  
U. Kumthekar, FDF/64  
T. Walsh, FDF/65-2  
ECDC, FDF/52-7







2278

---

7. Commenting Organization: OEPA Commentor: OFFO  
Section #: 6.10 Page #: 6-6 Line #: 7 Code: c  
Original Comment #: 7

Comment: Add to this paragraph a limit of one grid and a height restriction of five feet. Also, add a commitment for erosion and fugitive dust control. The wording of the sentence should be modified to state that only materials for road construction may be staged (e.g., gravel, concrete, rock, and similar aggregate materials) other Category 2 materials may not be staged.

Response: Agreed. During certain times, it may be necessary to stage material to build a complete road in the cell(s). The material will be staged in one grid per cell not to exceed 5 feet in height. These areas will be used sparingly and should be regulated and approved by the CM.

Action: The paragraph will be modified to read as follows:  
During the active construction season, March through December, Category 2 material may be staged in the cell (s) so material is readily available for building cell roads and ramps. Only material for road construction may be staged (e.g. gravel, asphalt, concrete, rock, and similar aggregate materials). This Category 2 material shall be staged in one grid per cell to a maximum height of 5 feet. Grids in the cell for staging of this Category 2 material will be identified and inspected weekly to assure the staging configuration has remained the same.

---

8. Commenting Organization: OEPA Commentor: OFFO  
Section #: Page #: 4-3 Line #: 33 Code: c  
Original Comment #: 8

Comment: A distinction should be made between surface water drainage conduit that is in service and pipes that are dug up from fill areas (that is, pipes that are not in service when they are excavated but have been previously disposed of). Pipes that have been disposed of are very likely packed full of dirt and will not be able to be visually verified that they are free from process residues. This is especially important for vitrified clay pipes which may be process related of surface water drainage conduit.

Response: Agreed. The intent of the request is to allow surface water, electrical conduit, steam lines, potable water line, etc. to be disposed and placed in the OSDF in accordance with the WAC Attainment Plan.

Action: None.

G:\Administration\COMMENTS\OEPA\impp1298.com.wpd

9. Commenting Organization: OEPA                      Commentor: OFFO  
Section #: 8.3.2                      Page #: 8-2                      Line #: 2                      Code: c  
Original Comment #: 9

Comment: The rut depth specification (three inches plus or minus one inch) in the change pages is not consistent with a 90% Proctor density. If two inch deep rut in a lift of Category 2 material with a Category 1 cover is compacted to a 95% Proctor, we maintain that a lift compacted to the extent it yields a four inch rut is compacted to less than 90% Proctor. Our reasoning is as follows:

- Given: Soil compacted to the extent that it yields under tire pressure to give a two inch deep rut is compacted to 95% Proctor. Soil compacted to the extent that it yields a three inch rut is compacted to less than 95% Proctor. How much less? One additional inch out of a 25 inch total lift thickness or very near 4% less. Soil compacted to the extent that it yields a 4 inch deep rut is by the same argument 2 parts in 24 less dense, call it 8% less dense. This is less than the criterion that the soils be compacted to 90% Proctor.

Change to specification from 3 inches plus or minus one inch to, "Soft spots indicated by tire ruts deeper than 3 inches in depth or visible deflection under the moving proof rolling equipment will be stabilized by additional passes of the compactor."

Response: Comment Noted.

Action: Text in Sections 8.3.2, 8.4.2 and 8.5.2 will be modified to read as follows:  
Soft spots indicated by tire ruts more than 3 inches (76mm) in depth or visible deflection more than 3 inches (76 mm) under moving proof rolling equipment shall be stabilized through additional passes of the compactor.

10. Commenting Organization: OEPA                      Commentor: OFFO  
Section #: 8.3                      Page #: 8-2                      Line #: 27                      Code: c  
Original Comment #: 10

Comment: Leave in the criterion that soft spots indicated by visible deflection under the moving proof rolling equipment shall be stabilized by additional passes of the compactor. Reinsert this criterion on Pages 8-4 and 8-5, Line 22, and wherever else it has been struck out.

Response: Agree. The deflection limit should be quantified.

Action: See action for original OEPA Comment No. 9.

2278

---

11. Commenting Organization: OEPA                      Commentor: OFFO  
Section #:                      Page #: A-3-2                      Line #: 7                      Code: c  
Original Comment #: 11

Comment: This change does not explain how OSDF or WAO personnel will determine how a pressurized container has been "processed to eliminate future potential for pressurization". A clarifying sentence should be added. A pressurized gas cylinder should be processed in such a fashion that it is immediately obvious that it obtains no pressure.

Response: Agreed. Currently presurizable gas cylinders are prohibited items in the OSDF. A clarifying sentence will be added to the statement to clarify the process.

Action: The beginning of the paragraph will be modified to read as follows:  
Tanks that cannot be placed such that the void space can be filled and Category 1 material placed and compacted around them shall not be placed in the OSDF. Cylinders that have not been processed to remove pressurized material and processed to eliminate future potential for pressurization will not be accepted at the OSDF. A visual inspection of cylinders shall be performed prior to placement in the OSDF. Cylinders that have either the cylinder cap or valve attached shall be removed and returned to the point of generation. Cylinders with nominal diameter of 12 inches (300 mm) or greater will be crushed or split in half.

Response to U. S. Environmental Protection Agency Comments on the  
"Proposed Change Pages to the Impacted Material Placement Plan  
for the On-Site Disposal Facility"  
dated January 28, 1999  
Prepared June 2, 1999

1. Commenting Organization: US EPA Commentor: OFFO  
Section #: Page #: 6-6 Line #: 7 Code: c  
Original Comment #: 1

Comment: On proposed change page 6-6 line 7 the word approximately should be replaced with the phrase "a minimum of " as stated on page 2 of US DOE's cover letter.

Response: Agreed, however at this time US DOE has withdrawn the request for modifying the daily cover requirements from 12 inches to 6 inches. See response to original OEPA Comment No. 6.

Action: None.

---

2. Commenting Organization: US EPA Commentor: OFFO  
Section #: Page #: 8-2, 8-4, 8-5 Line #: Code: c  
Original Comment #: 1

Comment: On proposed change pages 8-2, 8-4, and 8-5, it is unclear why US DOE removed the requirement to stabilize soft spot indicated by visible deflection under the moving proof rolling equipment. Stabilization of soft spots during compactor is important to minimize differential settlement in the final OSDF cover and should be implemented during OSDF operation.

Response: US DOE agrees that stabilizing soft spots during compaction is important to minimize differential settlement in the final OSDF cover. DOE is committed to stabilize soft spots during placement activities. Currently, there are two indicators for stabilizing soft spots. One is a tire rut size and the other is a visible deflection under the moving proof rolling equipment. The intent of the proposed change is to have verifiable (e.g. measured) data to achieve the stabilization specified (e.g. 90 percent) in the Impacted Material Placement Plan.

Action: See action for original OEPA Comment Nos. 9 and 10.

2278

**PROPOSED CHANGE PAGES TO IMPACTED  
MATERIALS PLACEMENT PLAN FOR THE  
ON-SITE DISPOSAL FACILITY**

**December 7, 1998**

**Revised: June 2, 1999**

**Fernald Environmental Management Project  
Fernald, Ohio**

**June, 1999**

**United States Department of Energy  
Fernald Area Office**

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

*SUBSTANTIVE CHANGES*

2278

## 5.0 IMPACTED MATERIAL DESCRIPTIONS

### 5.1 General

The OSDF will be the final repository for a majority of the impacted material from the five operable units of the integrated FEMP remediation. Construction debris (*i.e.*, waste originating during the construction of the OSDF) will also be disposed in the OSDF. The materials requiring OSDF disposal are expected to vary considerably in their composition, handling, placement, and compaction characteristics. Given this variability, it is useful to develop a categorization framework wherein materials with similar characteristics are assigned to the same category. The purpose of this section of the IMP Plan is to describe and categorize the various impacted materials using a common categorization framework.

### 5.2 Impacted Material Categories

Impacted materials to be disposed in the OSDF shall be assigned to one of five categories, depending on the procedures that will be used to place them into the OSDF:

Category 1 - Category 1 impacted materials are soils and soil-like materials that do not contain hard agglomerations greater than 12 in. (300 mm) in greatest dimension. If the material is other than till or ash, it must also have at least 80 percent of its particles finer than a 1 in. (25 mm) particle size. If this latter criterion is not met, the material should be classified as a Category 2 material. These impacted materials are expected to be readily compactible using standard construction equipment.

Category 2 - Category 2 impacted materials are materials that can be transported, placed, spread, and compacted *en masse*. These materials can be spread in loose lifts of 18 to 21 in. (450 to 533 mm) ~~21 in. (533 mm) ± 3 in. (25 mm)~~ thick and are moderately compactible under the action of equipment similar to the Caterpillar D-8 bulldozer or 815C compactor ~~826 compactor or approved equal~~. Examples of these materials include broken-up concrete foundations or impacted soil mixed with broken-up concrete. This category also includes general building rubble and debris of irregularly shaped metals or other components of the superstructure or substructure with a maximum length of 10 ft. (3 m) and a maximum thickness of 18 in. (450 mm) which can be transported, placed, spread, and compacted *en masse*.

Category 3 - Category 3 impacted materials are materials that must be individually handled and placed in the OSDF, and that are suitable for having Category 1 material placed around and against them. These impacted materials have maximum cross-sectional dimension of no more than 4 ft. (1.2 m), are shaped such that Category 1 material to be compacted around and against them, and are essentially incompressible using standard compaction equipment. Examples of these

2278

Impacted material placement shall generally proceed from east to west and north to south within each OSDF cell. Maximum compacted lift thicknesses for soil, soil-like-materials, and other impacted materials shall be 1.0 ft. (0.3 m), except as provided in Section 8.0 of this IMP Plan. Each lift of topmost select impacted material shall be controlled to line and grade such that cell perimeter contours are within 0.2 ft. (60 mm) of the design grade for the bottom of the contouring layer.

Figure 6-1 illustrates the sequencing of impacted material placement and slope development within the first OSDF cell, looking west to east. Select impacted material layers on the cell base and sideslopes shall be advanced at least 2 ft. (0.6 m) ahead of general impacted material layers. Similarly, Figure 6-2 illustrates the sequencing of impacted material placement and slope development in subsequent cells.

**6.8 Compaction**

Each lift of Category 1 impacted material placed in the OSDF shall be compacted by the Subcontractor to the minimum criteria given in Sections 7.0 and 8.0 of this IMP Plan. Monitoring and testing activities are described in Appendix A of this IMP Plan.

**6.9 Daily Surface Conditions and Drainage**

On a daily basis, the Subcontractor shall maintain the impacted material surface in active OSDF cells to limit fugitive dust and control and detain impacted runoff. The Subcontractor shall establish stormwater runoff routing in each active cell to convey runoff to the impacted runoff catchment area within the cell. The Subcontractor shall use smooth rolling to seal the surface, silt fences, and other means to limit impacted material erosion. At the end of each working day, the uppermost layer of impacted material shall be sloped at a minimum grade of 2 percent to the south catchment basin. The southern impacted material face shall be constructed to a slope not steeper than 3.5H:1V (horizontal:vertical). The Subcontractor shall perform temporary erosion control requirements in accordance with the *OSDF SWMEC Plan*.

At the end of each working day, the Subcontractor shall prepare exposed impacted material surfaces of soil and soil like Category 1 and Category 2 material in a manner that satisfactorily controls the generation of fugitive dust. Preparation may include smooth rolling to seal the surface, application of water, application of crusting agents, or covering with geosynthetics. Fugitive dust control actions shall be sufficient to achieve compliance with the BAT determination for remedial construction activities on the FEMP site. At all times, the Subcontractor shall be prepared to implement the measures mentioned in this paragraph to reduce fugitive dust based on the Subcontractor's approved fugitive dust plan or as directed by the CM.

The following daily surface conditions will apply for Categories 2, 3, and 4:

Category 2 D&D debris not containing soil like material will be covered with Category 1 material no later than 5 work days, weather permitting, after initial placement of the Category 2 material.

13

2278

2. Category 3 material will not require a daily cover but will be covered with Category 1 material on a continuous basis once the Category 3 grid is full. The contractor shall make every effort to cover the Category 3 material within 5 work days, weather permitting. Banded transite panels that have been "locked down" to mitigate friable asbestos will be inspected during placement and daily until covered with soil to ensure the "lock down" integrity is maintained. If exposed friable asbestos is observed, additional "lock down" will be applied to the suspected area.
3. Category 4 material will require a cover of approximately 12 in. of Category 1 material which will be sealed with a smooth drum roller daily.

Impacted material slopes shall be protected from excessive material erosion through the use of silt fences spaced at a maximum vertical spacing of 10 ft. (3 m) as shown in Figure 6-3. The base of the slope of impacted material, along the perimeter of the impacted runoff catchment area in the cell shall be lined with straw bales to limit the washing of fines into the cell impacted runoff detention area. The impacted runoff catchment area at the southwest corner of each cell has been sized to provide adequate capacity for the detention of the impacted runoff from the 25-year, 24-hour storm event, with 6 in. (150 mm) of freeboard. The catchment area in a current active cell shall be fully maintained until the next active cell becomes operational and the Subcontractor has routed all impacted runoff from the current active cell such that impacted runoff from the 25-year, 24-hour storm event will always be contained within the cells.

Runoff in the impacted runoff catchment area may be pumped into the FEMP former production area stormwater management system or be allowed to percolate through the granular protection layer into the underlying cell leachate collection system. Requirements for maintaining unimpeded infiltration from the impacted runoff catchment area into the leachate collection system are given in the *OSDF Systems Plan*.

#### 6.10. Material Staging

During the active construction season, March through December, Category 2 material may be staged in the cell(s) so material is readily available for building cell roads and ramps. Only material for road construction may be staged (e.g., gravel, asphalt, concrete, rock and similar aggregate materials). This Category 2 material shall be staged in one grid per cell to a maximum height of 5 feet. Grids in the cells for staging of this Category 2 material will be identified and inspected weekly to assure that the staging configuration has remained the same.

## 8.0 SPECIAL PLACEMENT REQUIREMENTS

2278

### 8.1 Introduction

This IMP Plan requires special procedures for the placement of the non-soil-like materials (Categories 2 through 5). The non-soil-like materials consist primarily of impacted materials from the Solid Waste Landfill, the Lime Sludge Ponds, and impacted debris resulting from demolition of structures within the FEMP former production area. The impacted debris consists primarily of building superstructure (*i.e.*, steel, masonry, transite, and other finish components), concrete floor slabs, and building substructure (*i.e.*, concrete footings, pads, and other components).

### 8.2 Location Recording and Surveying

The Subcontractor shall identify the locations of placement of each zone or horizon of Categories 2 through 5 impacted material as it is placed in the OSDF. For each zone or horizon or other placement unit, the Subcontractor shall establish the horizontal location within 100 ft. (30 m) gridlines and the vertical location by lift. The Subcontractor shall survey the surface of impacted material compacted in place on a 100 ft. by 100 ft. (30 m by 30 m) grid after each week's placement activities. This survey will locate the grid corners to facilitate testing and record keeping. The coordinates used for this survey shall be with respect to the permanent coordinate system established for the OSDF. Where appropriate, sketches of disposal of Category 3 through 5 materials should be provided to show the general orientation and layout of individual and special items.

The Subcontractor shall maintain the grid markers around the perimeter of the cell(s) receiving impacted material. These grid markers are to be placed to a 1 ft. horizontal tolerance.

### 8.3 Category 2 Material (*En Masse* Placement)

#### 8.3.1 Placement Procedures

Materials conforming to the Category 2 (*en masse* placement) definition shall be placed in the OSDF in loose lifts not exceeding 21 in. (533 mm) ~~± 3 in. (76 mm)~~ in thickness. ~~The ± 3 in. tolerance is to allow for the occasional piece of rebar, structural steel, or other material that may protrude from the material placed and material that cannot be readily removed or replaced within the 21 in. limit.~~ Prior to placement of a lift of Category 2 material, the placement unit shall be designated such that the unit can be isolated horizontally on all sides with a minimum of 10 ft. (3 m) of Category 1 material. Category 2 material shall then be placed within the designated placement unit to a loose thickness of not more than 21 in. (533 mm) ~~± 3 in. (76 mm)~~. Initial compaction shall be accomplished as the material is spread by tracking with a bulldozer of a minimum total weight of 50,000 lbs (220 kN) producing a ground pressure of at least 10 psi (70 kPa). After spreading and initial compaction, Category 1 material (of a granular nature when available) shall be spread over the Category 2 material to bring the layer thickness to approximately 24 in. (610 mm). Prior to placement of a second lift of Category 2 material, Category 1 material shall be constructed at the perimeter of Category 2 material to the height of the Category 2 material and to a width of approximately 10 ft (3 m).

As Category 2 material is expected to be less compressible than the majority of the materials contained in the OSDF, the material should be spread laterally prior to placing the material vertically above other Category 2 material. However, as it is also expected to be more permeable than other OSDF material, Category 2 material shall not be spread laterally more than 100 ft. (30 m). In all cases, Category 2 material is to be surrounded in the horizontal directions by at least 10 ft. (3 m) of less permeable Category 1 material. This will reduce the potential for significant lateral migration of leachate. Not more than one lift of Category 2 material shall be placed on top of another lift of Category 2 material without a minimum 4 ft. (1.2 m) thick intervening horizon of Category 1 material.

The Subcontractor should mix Category 1 material as much as practicable with the Category 2 material during excavation and placement activities. The objective of this mixing is to fill voids within the Category 2 material, increase the density of the material placed in the OSDF, and aid in the homogenizing of building rubble, demolition debris, and soils.

### 8.3.2 Compaction Procedures

After each lift of Category 2 material is placed, the material shall be compacted by four passes of a self-propelled, static pad-foot compactor (*e.g.*, Caterpillar 815C 826, or equivalent approved equal). Soil (Category 1 material) spread on top of the Category 2 material shall be compacted to at least 90 percent of the standard Proctor dry density determined as described in Section 7.4.2 of this IMP Plan. It is anticipated that the soil compaction moisture content will be within  $\pm 3$  percentage points of the material's optimum moisture content. Specific requirements for compaction moisture content will be established by the CM during construction. These requirements will take into account the workability of the soil, the required soil shear strength to obtain adequate levels of OSDF stability, moisture contents needed to achieve dust and other fugitive dust control, and material trafficability. After compacting the Category 1 material over the Category 2 material, the Category 1 material shall be proof rolled. Soft spots indicated by tire ruts more than 2 (50 mm) 3 in. (76 mm) in depth or visible deflection more than 3 inches (76 mm) under the moving proof rolling equipment shall be stabilized through additional passes of the compactor. The proof rolling equipment shall have a minimum gross vehicle weight of 20 tons (180 kN) and exert a ground pressure of at least 65 psi (450 kPa). Any soft spot that cannot be stabilized with further compactive effort shall be cause for additional treatment to the satisfaction of the CM. This treatment shall consist of removal, replacement, and recompaction of the soil material, and, if needed, infilling soft spots/areas in the Category 2 material with grout or other material approved by the CM.

## 8.4 Category 3 Items (Individual Items)

### 8.4.1 Placement Procedures

Items not more than 4 ft. (1.2 m) in maximum cross-sectional dimension and of regular geometry can be placed as individual members or packages in the OSDF. As much as possible, groups of individual members or packages shall be similarly and regularly sized to enable their placement in the OSDF in regular patterns. Items shall be placed at least 8 ft. (2.4 m) apart. Figure 8-1 illustrates the placement of several bundles of packaged transite panels.

Items having voids with a volume larger than 1 ft<sup>3</sup> (0.03 m<sup>3</sup>) shall be filled with a quick-set grout, or flowable cohesionless material approved by the CM. If a grout is used in this manner, it shall be allowed to set for a minimum of 4 hours prior to the commencement of placement of fill around the item.

Prior to placement of the Category 3 items, the surface of the in-place Category 1 impacted material shall be prepared by rolling with a smooth-drum roller in the area of item placement. The Category 3 items or packages shall be placed on the surface in a regular pattern with an adequate spacing between individual members or packages to allow Category 1 material placement and compaction with available equipment. The space between each member or package shall be filled with Category 1 material placed in maximum 12 in. (300 mm) thick compacted lifts. A final 12 in. (300 mm) thick compacted lift of Category 1 material shall be placed over each grouping of Category 3 items.

As the Category 3 materials are expected to be less compressible than the majority of the impacted materials placed in the OSDF, the Category 3 items should be placed toward the center of the cell and not in the same horizontal elevation horizon within 100 ft. (30.5 m.) laterally with of more compressible materials (*i.e.*, Category 4 materials, and sludges and double-bagged asbestos of Category 5 materials). Horizons of Category 3 materials shall be separated by at least a 4 ft. (1.2 m) thick intervening horizon of Category 1 material.

#### 8.4.2 Compaction Procedures

Each lift of soil (Category 1 material) between and above the Category 3 items shall be compacted using equipment capable of achieving compaction to at least 90 percent of the standard Proctor dry density, determined as described in Section 7.4.2 of this IMP Plan. It is anticipated that the compaction moisture content for this Category 1 material will be within  $\pm 3$  percentage points of the material's optimum moisture content. Specific requirements for compaction moisture content will be established by the CM during construction. These requirements will take into account the workability of the soil, the required soil shear strength to obtain adequate levels of OSDF stability, moisture contents needed to achieve dust and other fugitive dust control, and material trafficability.

A final 12-in. (300-mm) thick compacted lift of soil (Category 1 material) shall be placed above the Category 3 material. This final compacted lift shall be proof-rolled using equipment with a minimum gross vehicle weight of 20 tons (180 kN) and exert a ground pressure of at least 65 psi (450 kPa). Soft spots indicated by tire ruts more than ~~2 in. (50 mm)~~ 3 in. (76 mm) in depth or visible deflection ~~more than 3 inches (76 mm)~~ under the moving proof rolling 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 CM. This treatment shall consist of removal, replacement, and recompaction of the soil (Category 1 material), and, if needed, infilling soft spots/areas around the Category 3 material with grout or other material approved by the CM.

#### 8.5 Category 4 Materials (Highly Compressible)

##### 8.5.1 Placement Procedures

2278

Soil (Category 1 material) berms which are a minimum of 12 in. (300 mm) high shall be placed around Category 4 material. The lateral extent of each Category 4 material placement shall not exceed 100 ft. (30 m). Category 4 material shall be placed adjacent to the berms to a loose thickness of approximately 18 in. (450 mm). Green waste shall be reduced in size, as necessary, to enable placement in the lift. Initial compaction shall be accomplished as the material is spread by tracking with a bulldozer of a minimum total weight of 50,000 lbs (220 kN) producing a ground pressure of at least 10 psi (70 kPa). Prior to placement of the succeeding lifts of Category 4 material, a minimum 12 in. (300 mm) thick loose lift of soil (Category 1 material) shall be placed over the Category 4 material and compacted as indicated below. Compaction of the second lift of Category 4 materials shall be identical to the first lift. Not more than two lifts of Category 4 material shall be placed in a horizon. Category 4 horizons shall not be in the same vertical plane as previously placed Category 4 horizons.

### 8.5.2 Compaction Procedures

After spreading and initial compaction, the Category 4 material shall be compacted by minimum of four passes of a self-propelled, static pad-foot compactor having a nominal weight of at least 45,000 pounds (*e.g.*, Caterpillar 815C, or equivalent). After each sequence of Category 4 material compaction and covering soil (Category 1 material) placement, the cover soil shall be compacted as required for the soil cover of Category 2 material. The soil cover shall then be proof-rolled. The proof rolling equipment shall have a minimum gross vehicle weight of 20 tons (180 kN) and exert a ground pressure of at least 65 psi (450 kPa). Soft spots indicated by tire ruts more than ~~2 in. (50 mm)~~ 3 in. (76 mm) in depth or visible deflection ~~more than 3 inches (76 mm)~~ under the moving proof rolling 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 CM. This treatment shall consist of removal, replacement, and recompaction of the soil (Category 1 material), and, if needed, infilling soft spots/areas in the Category 4 material with grout or other material approved by the CM.

## 8.6 Category 5 Materials (Special Handling, Placement and Compaction)

### 8.6.1 Introduction

Category 5 materials are materials that require special handling, placement and compaction procedures. These materials will be classified and designated in accordance with the approved RODs and the WAC. This section of the IMP Plan establishes procedures for disposal of impacted material that require special handling.

Materials either nominally larger than the physical criteria for the OSDF as identified in Section 4.3 Physical Criteria of this IMP Plan, or not reasonably anticipated by the currently identified categories in this IMP Plan, will require specialized placement plans to be developed on an as needed basis. Such plans would be developed by the OSDF project team with the assistance of the resident engineer as appropriate, and submitted to the regulatory agencies for review and approval prior to utilization. It is anticipated that such plans would be submitted concurrent with remedial action planning documents which identify items for special handling, or following the discovery of unexpected materials outside the current

2278

Broken Concrete

Most concrete demolition debris will fall into Category 2 (*en masse* placement). Loads of concrete containing concrete pieces that cannot be spread into ~~18 in. (450 mm)~~ 21 in. (533 mm)  $\pm$  3 in. (76 mm) loose lifts will be classified as Category 5 materials.

Steel or Transite Sidings

Steel or transite sidings that arrive at the OSDF in neatly packaged stacks not greater than 4 ft. (1.2 m) high will be classified as Category 3 items (individual placement). Loose truck loads of miscellaneous demolition debris containing steel sidings that can be spread in lifts not higher than ~~18 in. (450 mm)~~ 21 in. (533 mm)  $\pm$  3 in. (76 mm) will be classified as Category 2 materials (*en masse* placement).

Steel Beams

Steel beams which can be spread or placed into a lift no higher than ~~18 in. (450 mm)~~ 21 in. (533 mm)  $\pm$  3 in. (76 mm) will be classified as Category 2 materials (*en masse* placement).

Wood

Loads of demolition debris consisting primarily of wood and that can be spread in lifts no higher than 18 in. (450 mm) will be classified as Category 4 materials (highly compressible).

Miscellaneous Demolition Debris

Loads of miscellaneous demolition debris (doors, plumbing, wiring, etc.) that can be spread in lifts no higher than ~~18 in. (450 mm)~~ 21 in. (533 mm)  $\pm$  3 in. (76 mm) will be classified as Category 2 materials (*en masse* placement). Miscellaneous demolition debris that can be placed individually such that the highest part of the debris is not more than 4 ft. (1.2 m) above the ground surface will be classified as Category 3 items (individual items).

Tanks

Tanks that cannot be placed such that the void space can be filled and Category 1 material placed and compacted around them shall not be placed in the OSDF. ~~Pressurized or pressurizable cylinders which have not been cut in half such that they cannot contain pressurized materials that have not been processed to remove pressurized material and processed to eliminate future potential for pressurization will not be accepted at the OSDF. A visual inspection of cylinders shall be performed prior to placement in the OSDF. Cylinders that have either the cylinder cap or valve attached shall be removed and returned to the point of generation. Cylinders with nominal diameter of 12 inches (300 mm) or greater will be split in half.~~ Tanks acceptable for placement in the OSDF and which are less than 5 ft. (1.5 m) in diameter and 4 ft. (1.2 m) high will be classified as Category 3 items (individual items).

2278

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12

*Pipes*

Steel pipes which can be spread or placed into a lift no higher than 18 in. (1.5 ft.) 21 in. (533 mm)  $\pm$  3 in. (76 mm) will be classified as Category 2 materials (*en masse* placement). Process piping with a nominal diameter of 12 in. (300 mm) or greater will be split in half before disposal. Piping used as surface water drainage conduit (e.g., corrugated metal pipe, concrete pipe, vitrified clay pipe) and non-processing piping will be crushed or split in half in length to reduce void space; maximum size will be 10 ft. (3.0 m.) in length and 18 in. (450 mm) thick.

At locations where the field testing indicates densities below the requirements of the *IMP Plan*, the failing area shall be reworked.

*Lines and Grades*

Surveying of lines and grades shall be conducted by the Subcontractor on a periodic basis during the depositing of the impacted materials. The CQC Consultant shall monitor the surveying to ensure that slopes are properly constructed to promote proper drainage and assure that required separation distances are maintained. Any deviation from the *IMP Plan* procedures shall be reported to the CM for corrective action.

**A.4.2 Category 2 Materials (*En Masse* Placement)**

*Placement Quality Control*

The CQC Consultant shall monitor and document that the placement of Category 2 materials is in accordance with the *IMP Plan*.

Monitoring of placement by the CQC Consultant shall include verification that:

- loose lift thickness is no more than ~~18 in. (450 mm) to 21 in. (533 mm)~~ 21 in. (533 mm) ± 3 in. (76 mm);
- category 1 materials are worked into the lift as much as practical;
- horizontal extent of a lift is no more than 100 ft. (30 m) and each lift is surrounded with 10 ft. (3 m) of Category 1 material; and;
- horizons are limited to two lifts and separated vertically by a 4 ft. (1.2 m) horizon of Category 1 materials

*Compaction Quality Control*

The CQC Consultant shall monitor and document that the Category 2 materials have received the compaction effort specified by the *IMP Plan*. Category 1 materials used to cover each lift of Category 2 material shall be tested in accordance with Section A.4.1.

Compaction testing of Category 1 materials covering the Category 2 material shall be documented in accordance with procedures established in the *CQA Plan*.

*Rework*

2278

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

*IMPROVEMENTS*

2278

## 9.0 IMPACTED RUNOFF AND FUGITIVE DUST CONTROL

### 9.1 General

This section of the IMP Plan provides the requirements for impacted runoff and fugitive dust control within the OSDF battery limit as it relates to impacted material placement. Within the OSDF battery limit, all impacted material placement activities shall be confined to within the OSDF cell lined area. Activities related to the collection, handling, staging, loading, and transportation of impacted materials outside the OSDF battery limit are addressed as part of other work plans prepared as a part of the integrated FEMP remediation.

### 9.2 Runoff Control

#### 9.2.1 OSDF Cell

Impacted runoff will be generated whenever precipitation comes in contact with impacted materials. Impacted runoff generated within the OSDF cell shall be managed as stated in Section 6.9 of this plan and in general conformance with the requirements of the *OSDF SWMEC Plan*. Impacted runoff shall be conveyed using temporary surface-water management structures to the impacted-runoff catchment area in the southwest corner of the most southerly active cell. As previously described in this plan, layers of impacted material shall be placed from north to south and east to west within each cell. As these layers are placed, the impacted-runoff catchment area shall be preserved until a more southerly cell is made active.

#### 9.2.2 Impacted Material Haul Road

Impacted runoff from an impacted material haul road ~~west of the cells~~ shall be contained within the boundaries of the road ~~until it enters a sump at the western most end of the road. From this sump, the impacted runoff and~~ shall be routed to the storm water drainage system control of the FEMP former production area, OSDF equipment wash facility, or to other on-site wastewater collection/conveyance points acceptable to the CM.

### 9.3 Fugitive Dust Control

#### 9.3.1 General

Fugitive dust may result from impacted material handling and hauling activities. Material handling covers such activities as excavation, dumping, spreading, compacting, and short-term storage. These activities may generate fugitive emissions in the form of particulate matter released to the air (*i.e.*, dust). These activities will comply with the BAT determination for remedial construction activities on the FEMP site that was developed to control fugitive dust (see Appendix B). The appropriate records shall be kept when visible emissions observations are performed in accordance with Appendix A of 40 CFR Part 60, and the FEMP procedure for fugitive dust control requirements, which is currently being developed.

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

*CLARIFICATIONS*

3.3.3 Impacted Material Staging Transfer Areas

2278

Impacted material staging transfer areas consist of gravel or concrete hardstands constructed to temporarily store impacted structural members and other building demolition debris. These areas will be used to temporarily stage any material not able to go directly from the material source to an active OSDF cell. Impacted material staging areas constructed outside the limits of the FEMP former production area shall have positive runoff control. Any runoff from these areas will be directed to the storm drainage control system of the FEMP former production area or to other on-site wastewater collection conveyance points acceptable to the CM.

1  
2  
3  
4  
5  
6  
7  
8  
9

2278

- the maximum cross-sectional dimension of an individual concrete member or other component of a building slab or substructure shall be 4 ft. (1.2 m) when the item is handled individually and is a regular, rectangular shape having no concrete protrusions greater than 18 in. (450 mm);
- concrete reinforcement bars shall be cut within a nominal 12 in. (300 mm) of the concrete mass;
- the maximum thickness of uniform pallets of building cladding (e.g., transite panels) properly banded into rectangular shapes shall be 4 ft. (1.2 m);
- regulated asbestos containing material (ACM) shall be double-bagged at the source and delivered unmixed with other materials;
- ACM brick and commingled debris shall be double-contained and segregated at the source;
- piping having insulation of ACM shall be segregated at the source and delivered unmixed with other materials;
- general building rubble consisting of wood, drywall, HVAC systems, electrical systems, plumbing systems, and minor equipment shall be sufficiently reduced in size to be gradeable into a 18 in. (450 mm) 21 in. (533 mm) ± 3 in. (76 mm) lift by equipment similar to a Caterpillar D-8 bulldozer;
- equipment shall be drained of all oils and liquids;
- ~~process~~ piping with a nominal diameter of 12 in. (300 mm) or greater will be split in half; and
- ~~piping used as a surface water drainage conduit (e.g., corrugated metal pipe, concrete pipe, vitrified clay pipe) and non-process piping will be crushed or split in half in length to reduce void space; maximum size will be 10 ft. (3.0 m) in length and 18 in. (450 mm) thick;~~
- the maximum dimension of general building rubble consisting of concrete, masonry, and other similar materials shall be 18 in. (450 mm).

Impacted materials brought to the OSDF should not be at such a high moisture content that impacted material placement and compaction activities are impeded. Generally, soil should have a moisture content that allows the material to be compacted to the required relative compaction using standard soil compaction equipment and procedures. Soil should also have a moisture content that does

- potentially burnable wastes - respirator cartridges, asphalt roofing materials, medical wastes, fire hoses, and rubber hoses/belts; and
- non-burnable wastes - unidentified high-activity waste, medicine vials, bagged asbestos, ceramic tiles, possible magnesium fluoride, glass acid bottles, steel cables/cans, paint cans, and copper tubing.

### 5.3.3 Lime Sludge Ponds

The Lime Sludge Ponds are two unlined, rectangular ponds, each measuring approximately 125 by 225 ft. (38 x 69 m). Wastes that were disposed in the Lime Sludge Ponds originated from water treatment plant operations, coal pile stormwater runoff, and boiler plant blowdown. Although this waste is from three distinct waste streams, the bulk of the slurry is lime sludge from the water treatment process. Over time, the solids in the slurry settled in the Lime Sludge Ponds and the remaining decant was pumped from the ponds. The lime sludge is, therefore, considered to be relatively homogenous.

The volume of sludge and berm material contained within the two lime sludge ponds is estimated to be approximately 16,500 yd<sup>3</sup> (12,500 m<sup>3</sup>) of lime sludge and 5,600 yd<sup>3</sup> (4,300 m<sup>3</sup>) of berm material making a total of 22,100 yd<sup>3</sup> (17,100 m<sup>3</sup>) of material. The South Lime Sludge Pond is full and has been inactive since the mid-1960's; it is now overgrown with grasses and shrubs. The North Lime Sludge Pond is not currently active, but was in use as late as January 1995. The west side of the North Lime Sludge Pond is usually covered with 1 to 2 ft. (0.3 to 0.6 m) of water, depending mainly on precipitation. The remaining area is dry and covered with sparse vegetation.

### 5.3.4 Building Debris

Debris from demolition of buildings in the FEMP former production area is expected to constitute the largest volume of impacted material for OSDF disposal after soil and soil-like material. The OU3 ROD indicates that impacted debris can be assigned to one of ten material categories. The OU3 ROD indicates that material from seven of these categories will be disposed in the OSDF; material from three other categories (C, F, and J) are to be dispositioned off-site (*i.e.*, expressly prohibited in total from on-site disposal), while a subset of a ~~third~~ ~~fourth~~ category (D) cannot be disposed in the OSDF without first undergoing treatment (lead flashing). Description of the seven OU3 debris material categories resulting from decontamination and dismantlement of the former production and associated process facilities that can be disposed of in the OSDF are defined in Table 5-1.

### 5.3.5 Inactive Flyash Pile

The Inactive Flyash Pile is located approximately 2000 ft. (610 m) southwest of the former production area. The Inactive Flyash Pile received flyash and bottom ash from boiler plant operations starting in 1951. It has been inactive since the mid-1960s and is covered with soil and natural vegetation. The total quantity of ash disposed in this area has been estimated at 43,600 yd<sup>3</sup> (33,300 m<sup>3</sup>). Materials such as building rubble, concrete, asphalt, steel rebar, and asbestos-containing transite were also discarded

6.0 GENERAL PLACEMENT PROCEDURES

6.1 Introduction

This section of the IMP Plan describes the general procedures that the Subcontractor shall follow for placement of impacted material in the OSDF. Specific procedures for placement of Category 1 materials (soil and soil-like) are presented in Section 7.0 of this IMP Plan. Specific placement procedures for Category 2 through 5 materials (non soil-like materials) are addressed in Section 8.0 of this IMP Plan.

6.2 Manifesting

The remediation project originating the impacted material shall prepare an impacted material transportation "manifest" for each load of material to be transported to the OSDF. The purpose of the "manifest" is to provide a tracking mechanism for impacted material from the remediation project of origin to placement in the OSDF. The originating remediation project shall be responsible for providing the following required information on the "manifest" as detailed in Section 10.2 of this Plan:

- ~~• originating remediation project (the operable unit and project);~~
- ~~• brief description of the impacted material in the load;~~
- ~~• classification of the impacted material into one of the five material categories of this IMP Plan; and~~
- ~~• documentation that the material meets the criteria in Section 4.0 of this IMP Plan.~~
- ~~The CQC Consultant shall be responsible for recording on the "manifest":~~
- ~~• the OSDF cell identifier where the material is placed.~~

~~The Subcontractor shall develop a system acceptable to the CM for identifying the category of impacted material being hauled. This system shall indicate the category of material in the truck (or container as appropriate) and whether the truck/container is carrying special items such as asbestos, extremely heavy items, extremely compressible items, impacted materials requiring special dust mitigation procedures, sludge, or landfill waste.~~

~~At the OSDF battery limit, each truck load (or container, as appropriate) of impacted material will be monitored by the CQC Consultant in accordance with Appendix A of this plan. The monitoring will include monitoring for asbestos, visual verification that the impacted material matches the description on the manifest, visual checking that the material meets the OSDF physical criteria, and visual checking that prohibited items are not included in the load.~~

A visual inspection of the impacted material will be performed in accordance with Section A.3 of Appendix A of this IMP Plan. The CQC Consultant will be required to sign the "manifest" and retain a copy. The Subcontractor shall fully comply with these quality control activities and account for them in its planning and scheduling.

After trucks/containers are cleared at the OSDF battery limit, the Subcontractor shall route the impacted material to a location within the OSDF (e.g., the active face, a stockpile area, or an area where further screening will take place) for disposal. The Subcontractor will be provided with flexibility in routing trucks/containers for efficient operations. However, the CM will provide the Subcontractor with specific instructions for routing of impacted materials in Categories 2 through 5. The Subcontractor shall be responsible for following these instructions.

The placement and compaction procedure to be used by the Subcontractor for each load of impacted material shall be based on the impacted material category. Placement and compaction procedures for the five material categories listed in Section 5.2 of this IMP Plan are presented in Sections 7.0 and 8.0 of this plan.

**6.3 Protection of Facilities**

Impacted material placement activities shall be conducted in a manner that protects and maintains the integrity of the OSDF liner system, leachate management system, and final cover system, and all OSDF ancillary facilities and equipment. Impacted material placement activities shall not commence in a cell until liner system construction has been completed in accordance with the contract documents and only after cell construction has been certified in accordance with the requirements of the *OSDF CQA Plan* and all other subcontract requirements.

**6.4 Placement Oversight and Quality Assurance**

Impacted material placement for all categories of material shall be conducted under the direct oversight of Subcontractor personnel versed in all aspects of this plan and having qualifications meeting the requirements of the *OSDF CQA Plan*. The Subcontractor shall provide on-the-ground spotters who shall observe each load that is placed to monitor that the work is performed in compliance with the requirements of this plan. The Subcontractor shall be assisted by surveyors and quality control personnel, as required, to control lift thickness and grades, record the coordinates of the impacted material placement, and perform other necessary functions.

The Subcontractor shall be aware that monitoring of the placement and monitoring and testing of impacted material for specified compaction in the OSDF will be performed by the CQC Consultant in accordance with the requirements of the contract documents.

**6.5 Conformance with OSDF Specifications**

The Subcontractor shall comply with the project specifications, which shall be used in conjunction with this plan, and these shall be referenced for specific details regarding the labor, material, and supervision at the OSDF.

2278

Items having voids with a volume larger than 1 ft<sup>3</sup> (0.03 m<sup>3</sup>) shall be filled with a quick-set grout, or flowable cohesionless material approved by the CM. If a grout is used in this manner, it shall be allowed to set for a minimum of 4 hours prior to the commencement of placement of fill around the item.

Prior to placement of the Category 3 items, the surface of the in-place Category 1 impacted material shall be prepared by rolling with a smooth-drum roller in the area of item placement. The Category 3 items or packages shall be placed on the surface in a regular pattern with an adequate spacing between individual members or packages to allow Category 1 material placement and compaction with available equipment. The space between each member or package shall be filled with Category 1 material placed in maximum 12 in. (300 mm) thick compacted lifts. A final 12 in. (300 mm) thick compacted lift of Category 1 material shall be placed over each grouping of Category 3 items.

As the Category 3 materials are expected to be less compressible than the majority of the impacted materials placed in the OSDF, the Category 3 items should be placed toward the center of the cell and not in the same horizontal elevation horizon within 100 ft. (30.5 m.) laterally with of more compressible materials (*i.e.*, Category 4 materials, and sludges and double-bagged asbestos of Category 5 materials). Horizons of Category 3 materials shall be separated by at least a 4 ft. (1.2 m) thick intervening horizon of Category 1 material.

#### 8.4.2 Compaction Procedures

Each lift of soil (Category 1 material) between and above the Category 3 items shall be compacted using equipment capable of achieving compaction to at least 90 percent of the standard Proctor dry density, determined as described in Section 7.4.2 of this IMP Plan. It is anticipated that the compaction moisture content for this Category 1 material will be within  $\pm 3$  percentage points of the material's optimum moisture content. Specific requirements for compaction moisture content will be established by the CM during construction. These requirements will take into account the workability of the soil, the required soil shear strength to obtain adequate levels of OSDF stability, moisture contents needed to achieve dust and other fugitive dust control, and material trafficability.

A final 12-in. (300-mm) thick compacted lift of soil (Category 1 material) shall be placed above the Category 3 material. This final compacted lift shall be proof-rolled using equipment with a minimum gross vehicle weight of 20 tons (180 kN) and exert a ground pressure of at least 65 psi (450 kPa). Soft spots indicated by tire ruts more than 2 in. (50 mm) 3 in (76 mm) in depth or visible deflection more than 3 inches (76 mm) under the moving proof rolling 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 CM. This treatment shall consist of removal, replacement, and recompaction of the soil (Category 1 material), and, if needed, infilling soft spots/areas around the Category 3 material with grout or other material approved by the CM.

### 8.5 Category 4 Materials (Highly Compressible)

#### 8.5.1 Placement Procedures

2278

The Subcontractor shall maintain written records of all monitoring, inspections, and repairs in accordance with recordkeeping and reporting requirements of Section 10.4 of this IMP Plan.

1  
2

**TABLE 11-1**  
**SEASONAL COVER**  
**INSPECTION AND MONITORING ACTIVITIES**

Component	Inspections	Condition	Maintenance
	Seasonal-Closure Period		
Seasonal Clover	Bi-weekly	<ul style="list-style-type: none"> <li>unacceptable surface or slope erosion</li> <li>unacceptable fugitive emissions</li> </ul>	<ul style="list-style-type: none"> <li>regrade material surfaces; reroute runoff; compacted soil surface, apply crusting agents or geosynthetic erosion control matting</li> <li>apply surface crushing agent or geosynthetic erosion control matting; install wind screen fencing</li> </ul>
Impacted-Runoff Retention Area (in cell)	Bi-weekly	<ul style="list-style-type: none"> <li>excessive sediment deposited on top of drainage area</li> <li>lack of timely percolation of drainage into the LCS</li> </ul>	<ul style="list-style-type: none"> <li>remove and deposit sediment outside of drainage area</li> <li>replace clogged protective layer granular material with new clean material; replace clogged geotextile filter layer</li> </ul>
Protection of Liner System	Bi-weekly	<ul style="list-style-type: none"> <li>system must be protected against frost and mechanical damage by at least 2 ft Category 1 material</li> </ul>	<ul style="list-style-type: none"> <li>add suitable soil cover over anchor trench, intercell berm, or temporary liner system termination as required geosynthetics</li> </ul>

2278

**A.4 IMPACTED MATERIAL PLACEMENT AND COMPACTION****A.4.1 Category 1 Materials (Soils and Soil-Like)***General Monitoring Requirements*

Monitoring the placement and compacting of impacted soil and soil-like materials includes the following:

- testing to determine the water content and other physical properties of the impacted soil materials during processing, placement, and compaction;
- monitoring the thickness of lifts as loosely placed and as compacted; and
- monitoring the action of the compaction and heavy hauling equipment on the construction surface (sheepsfoot penetration, pumping, cracking, etc.).

*Placement and Compaction Quality Control*

The standard Proctor test (ASTM D 698) shall be used for the determination of moisture/density relationships on the Category 1 material to be disposed in the OSDF. The standard Proctor tests will be performed in the on-site geotechnical laboratory established per the *CQA Plan*. Additional Proctor testing will be performed with each change in material type.

The dry density, moisture content, and loose lift thickness of Category 1 materials shall be measured at a minimum frequency of once per 10,000 ft<sup>2</sup> (930 m<sup>2</sup>) or once per 100 ft. by 100 ft. (30 m by 30 m) grid element per lift; measurement of dry density and moisture content are to be in accordance with ASTM D 2922 and D 3017 (nuclear methods). To establish correlations of moisture and density with the nuclear methods, the sand cone test method (~~ASTM D 1556 shall be used once per day (ASTM D1556, Density and Unit Weight of Soil in Place by the Sand Cone) or the Drive Cylinder Method (ASTM D2937, Density of Soil in Place by the Drive Cylinder Method) shall be used once per 25 nuclear density tests~~ when Category 1 materials are placed. ~~The sand cone~~ This correlation will also be used to evaluate the effect impacted materials may have on the nuclear densiometer.

Compaction testing for Category 1 materials will be documented in accordance with procedures established in the *CQA Plan*.

*Rework*

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

*CONFORMANCE WITH THE WASTE ACCEPTANCE  
CRITERIA ATTAINMENT PLAN*

2278

"grid"	refers to a 100 ft. by 100 ft. (30 m by 30-m) grid system for each cell, which provides the control for management of impacted material placement	1 2 3
"horizon"	a horizontal stratum limited horizontally to a 100 ft. by 100 ft. (30 m by 30 m) grid element, and limited vertically by either the maximum height of the item(s) therein or by the maximum number of lifts therein	4 5 6 7

### 1.5 Plan Responsibilities

This plan describes work to be conducted by three separate organizations:

- *Construction Manager (CM)* — Responsibilities include: overall coordination between all the parties to the FEMP; directing the construction management team; contractual management responsibility over the Subcontractor; specifying the materials requiring OSDF disposal; providing security for OSDF operations; implementing construction safety; providing emergency health and safety response teams; and oversight of the OSDF Construction Quality Assurance Plan.
- *Subcontractor* — Responsibilities include: separating impacted materials into categories; loading and hauling impacted materials to the OSDF; routing impacted materials within the OSDF battery limit; placing impacted material in the OSDF; obtaining final grade lines as shown on the Certified-For-Construction (CFC) Drawings; compacting (or compacting around and over) impacted material in the OSDF; and controlling the generation of fugitive dust and managing impacted stormwater runoff.
- *CQC Consultant* — Responsibilities include: checking the Subcontractor's impacted material category classification; spot-checking impacted material shipments for conformance with the OSDF WAC ~~prior to those shipments arriving at the OSDF battery limit~~; verifying the Subcontractor's choice of location for impacted material placement; documenting that the Subcontractor followed the placement and compaction procedures required by this IMP Plan; and conducting compaction tests of materials placed in the OSDF.

### 1.6 Related Plans

Several other plans have been prepared and should be used in conjunction with this IMP Plan. The other plans containing information relevant to this IMP Plan are listed below along with a brief statement of the relationship to this plan.

- *OSDF Construction Quality Assurance (CQA) Plan* [GeoSyntec, 1997a]: describes the quality assurance procedures that will be followed by CQC Consultant during construction, filling, and closure of the OSDF;

## 10.0 REQUIRED DOCUMENTATION

### 10.1 General

This section of the IMP Plan contains information on the documentation required for each truck load of impacted materials to be placed in the OSDF.

### 10.2 Manifesting System

No impacted material will be accepted at the OSDF without an accompanying impacted material transportation "manifest". The purpose of the "manifest" is to provide a tracking mechanism for impacted material from the remediation project of origin to placement in the OSDF.

Information ~~anticipated~~ required to be included on the "manifest" include:

- ~~originating remediation project (e.g., operable unit and project) project number and name;~~
- date and time of origination (e.g., loading for debris, excavation for other materials);
- ~~brief visual description of the impacted material in the load source~~  
Material Tracking Location (MTL);
- ~~classification of the impacted material into one of the five material categories of this IMP Plan material type, profile number, and estimated volume of material;~~
- signature by originating remediation project representative that the material meets the criteria in Section 4.0 of this IMP Plan;
- ~~Subcontractor (transporter) signature the OSDF cell identifier for Category 1 material and the cell, grid, and lift identifier for Categories 2 through 5 material;~~
- date and time of receipt; and
- WAO and CQC Consultant signature.

### 10.3 Impacted Materials Tracking

To aid in tracking impacted material, each impacted material transportation "manifest" will have a unique serial number and ~~two carbon copies up to five carbon copies~~. One copy of each manifest shall

be given to the CQC consultant daily. Other copies will be distributed in accordance with FDF procedures. ~~One carbon copy each will be forwarded to the remediation project from which the impacted material originated and to the OSDF Subcontractor. The original will be retained by the CQC Consultant verifying that the impacted material has been disposed in the OSDF.~~

1  
2  
3  
4  
5  
6