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**DISPOSAL COST ESTIMATES**

**03/24/97**

**DOE-0682-97  
DOE-FEMP      FDF  
13  
LETTER**



## Department of Energy

Ohio Field Office  
Fernald Area Office

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



MAR 24 1997

DOE-0682-97

Mr. John Bradburne, President  
Fluor Daniel Fernald, Inc.  
P.O. Box 538704  
Cincinnati, Ohio 45253-8704

Dear Mr. Bradburne:

### DISPOSAL COST ESTIMATES

Recently, several Department of Energy (DOE) efforts have been initiated to review costs associated with both on-site and off-site disposal. One program by DOE Headquarters (DOE-HQ) has established a team to collect data for disposal facility and site generator costs. A data call has been sent out by this team requesting this cost information from sites across the DOE complex, including Fernald, with a due date of March 21, 1997. This data call (see enclosure) has already been distributed to your staff in order to expedite data collection.

Another, similar, data request has been made by the DOE Office of the Inspector General (OIG). The OIG has asked that a cost analysis be prepared comparing the cost of the on-site disposal facility to the cost of shipping and disposing all wastes off-site.

Initial meetings have taken place between DOE, Fernald Environmental Management Project (DOE-FEMP) and Fluor Daniel Fernald (FDF) staff to discuss how to best respond to the DOE-HQ and OIG data requests. It is clear that an integrated effort involving FDF staff from the Waste Pits Remedial Action Project, On-Site Disposal Facility group, and the Low Level Waste Projects is necessary. The DOE-FEMP requests that FDF identify members from these groups, as well as any other needed FDF staff, to work as a team with DOE to prepare the information to satisfy the cost data needs of the OIG and the DOE-HQ.

Please have your staff contact John Sattler at 648-3145 no later than close of business April 4, 1997.

Sincerely,

for Jack R. Craig  
Director

FEMP:Sattler

Enclosure: As Stated

cc w/enc:

N. Hallein, EM-42/CLOV  
J. Hall, DOE-FEMP  
J. Reising, DOE-FEMP  
R. Warner, DOE-FEMP  
W. Benson, FDF/52-1  
J. Gnoose, FDF/73  
M. Hickey, FDF/64  
U. Kumthekar, FDF/64  
J. Lester, FDF/52-3  
W. Weddendorf, FDF/52-1  
M. West, FDF/35-1  
AR Coordinator/78

## Informal Note

Date: March 4, 1997

To: Jim Orban, DOE/AL  
 Karl Hugo, DOE/ID  
 Carol Shelton, DOE/NV  
 Don Hodge, DOE/OH  
 Bill Gilbert, DOE/OR  
 Patty Ensign, DOE/RL  
 Scott Cannon, DOE/SR  
 Mark Janaskie, EM-44  
 Ken Alkema, Envirocare

Mike Pearson, LANL  
 Gerald Barbery, DOE/ID  
 Sydney Gordon, HAZMED/NV  
 John Sattler, DOE/Fernald

From: Celinda Crawford, EM-33 C-

Re: Low Level Waste Disposal Cost Team - Disposal Facility  
 Cost Template

As discussed during our team meeting on February 24-25, 1997, attached is a copy of the disposal facility cost template each disposal facility is requested to complete. The template has been revised to reflect the changes the team agreed upon during our meeting last week. The major changes include: 1) the cost elements now match the Data Dictionary definitions for disposal operations; 2) only two columns/sets of data are required for each year (fixed costs and variable costs); and 3) the amount charged back to generators is provided on a total annual basis (will not be broken out into each cost element). The template is provided electronically (Excel 5.0 format) and in hard copy for your use and convenience.

Also attached are a set of instructions for completing the template (2 pages) and a list defining the activities associated with each cost element (Detailed Work Plan - Appendix C). These attachments also reflect the discussion and agreement the team reached last week.

Please note the instructions request all assumptions, bases, methodologies, and backup material be provided on a separate sheet(s). The costs provided should reflect the fully-burdened cost of each activity.

The schedule, approved as part of our Team Charter, established March 21, 1997 as the due date for the submission of all cost data (disposal facility costs plus generator costs). During last weeks meeting, it was agreed that the generator and disposal scenario costs collection phase would begin approximately two weeks late (the week of 3/17/97). Please provide the disposal facility cost data by COB March 21 to myself so these data can be compiled concurrently with the development and data collection of the generator cost and the "scenarios" cost templates.

If you have any questions, feel free to call me at 301/903-5273. Thank you for your participation.

cc:

Chet Miller, EM-34  
Lynne Wade, EM-33  
Kelli Moses, EM-33  
Mary Bisesi, EM-33  
Jay Rhoderick, EM-35  
Greg Duggan, EM-35  
George Dixon, EM-36  
Jason Darby, DOE/OR  
Behram Shroff, EM-42  
Ram Mukunda, EM-34  
Tom Teynor, DOE/RL  
Rudi Guercia, DOE/RL  
Jane Talarico, EM-33  
Marty Letourneau, EM-35  
Pete Siebach, EM-36  
Mike Klimas, DOE/CH  
Steve Loftus, MACTEC

Attachments

Disposal Facility Cost Template

Disposal Site: \_\_\_\_\_ Facility: \_\_\_\_\_

Cost Element	FY 1996		FY 1997		FY 1998	
	1 m3	1 m3	1 m3	1 m3	1 m3	1 m3
	First m3 (Fixed Cost) \$ (K)	Variable Cost \$ (K)	First m3 (Fixed Cost) \$ (K)	Variable Cost \$ (K)	First m3 (Fixed Cost) \$ (K)	Variable Cost \$ (K)
Actual [for FY'96] and Projected [for FY'97 & FY'98] Disposal Volumes (m3) =						
I. - Waste documentation for, and acceptance or certification by, disposal facilities. - Verification/characterization when required for disposal such as monitoring or assays for radioactivity, RCRA compliance sampling and analysis, visual container inspections, weight, dose rate, truck survey and vehicle release survey						
II. Operations/Surveillance and Maintenance (Preventive and Corrective) facilities including inspections, repackaging, spill cleanup, waste containers, record keeping, assays packaging or repackaging materials, and closure activities.						
III. ES&H including Conduct of Operations, NEPA, Procedures, Training, Permits, quality assurance, SARs, ORPs, technical support, performance assessment activities.						
IV. Capital equipment, line item, general plant projects to upgrade and/or maintain disposal facilities.						
V. Management including planning and budgeting, directly attributable to disposal facilities.						
<b>Annual Fixed and Variable Totals (\$K)</b>	\$	\$	\$	\$	\$	\$
<b>Annual Grand Total (\$K)</b>	\$	\$	\$	\$	\$	\$
<b>Annual Chargeback Total (\$K)</b>						

(See Appendix C of Detailed Work Plan for activities and definitions in cost elements I-V above)

Are these fixed costs prorated because the facility manages more than one waste type?

Yes  No

Check One

## Instructions for Completing the Disposal Facility Cost Template

Disposal facility costs will be collected for three fiscal year, actuals for FY 1996 and projections for FY 1997 and FY 1998, and reported by the five cost elements defined by the EM Data Dictionary for disposal operations. **All costs are to reported in thousands of dollars.** Data Dictionary definitions and activities within each cost category are provided in Appendix C of the Detailed Work Plan (attached).

The Disposal Facility Cost Template is in Microsoft Excel 5.0 format. Please contact Celinda Crawford if this format is not acceptable or if you wish to provide the data in another format.

### Disposal Site

Provide the name of the disposal site (e.g., INEEL) and facility (e.g., RWMS). Please use the name you would like your site and disposal facility to be referred to in the study.

### Disposal Volumes

Report the actual volume of LLW (only) disposed in FY 1996 and the projected volumes to be disposed in FY 1997 and FY 1998. The FY 1997 projected volume should reflect actuals to date and old projections should be adjusted accordingly. **Please report all volumes in cubic meters.**

### Annual Fixed and Variable Costs

For each fiscal year and cost element, the disposal facility will provide the annual fixed costs and annual variable costs.

The annual **fixed costs** are those costs that will not change with a change in waste volume disposed (or any associated variable, e.g., curie content). Fixed costs are reoccurring costs that do not vary with waste disposal activities, such as labor and material costs to maintain the capability to receive and dispose of the first cubic meter of LLW. Examples of fixed costs are permitting, monitoring, training, and program management.

The annual **variable costs** are those costs that fluctuate as a result of changes in volumes of waste being disposed (or other variables). Variable costs are those costs that change in proportion to the amount of waste disposed such as labor, materials, and contract costs, above and beyond fixed costs necessary to dispose of LLW. Variable costs will increase (or decrease) as the volume of waste disposed increases (or decreases). Most disposal operations, maintenance, and trench development costs are a function of volume disposed and are, therefore, variable costs. For example, if each trench has a capacity of 10,000 cubic meters and the facility disposes of 20,000 cubic meters one year and 10,000 cubic meters the next year, the facility will

incur the cost of the development of two trenches in the first year and the cost of one trench in the second year.

The annual fixed and variable totals should add up to the total annual cost to operate the disposal facility. **The spreadsheet will calculate the Annual Fixed Total, the Annual Variable Total, and the Annual Grand Total automatically.** The Annual Grand Total equals the sum of the Annual Fixed Total plus the Annual Variable Total.

#### Annual Chargeback Total

Report the total annual amount received (or projected to receive) in chargebacks (disposal fees) in thousands of dollars. The amount received in chargebacks does **not** have to be broken out and distributed into each of the five cost elements.

#### Assumptions, Rules, Footnotes

1. The scope of this study is limited to the cost of LLW disposal. For facilities managing and disposing of multiple waste types (e.g., TRU, MLLW, etc.), the LLW portion of the fixed costs of the facility must be **prorated** according to volume (or other method(s) defined by the disposal facility). Please note on the template that these costs were prorated, and provide on a separate sheet the total fixed cost of the facility, the proration method, and the LLW portion or fraction of those costs.
2. Please document and provide on a separate sheet all assumptions used to complete the Disposal Facility Cost Template. Describe in sufficient detail the method(s) used for allocating costs into the cost elements and into the fixed and variable portions of those costs.
3. Please note that "General Support" and "Waste Minimization" costs should be distributed among the five cost elements, and do not have a separate costing category for data collection.
4. "Special Activities" costs should be captured in their appropriate categories and large dollar expenditures for one-time special activities should be footnoted on Site data submittals.
5. Costs provided should reflect the fully-burdened cost (direct costs plus indirect costs) of each activity. All cost comparisons will be based on the total cost of disposal.
6. The Variable Costs should include any amounts received from the generator through chargebacks or fees. Therefore, the Annual Grand Total is the total cost of operating and maintaining the disposal facility, which should equal the sum of the EM direct funded (budget) **plus** the amount received in chargebacks or fees.

**LLW Disposal Cost Comparison Draft Detailed Work Plan  
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**APPENDIX C**

**Disposal Facility Cost Reporting Elements/Activities**

<b>Legend</b>	
<b>I,II,III...</b>	Denotes Data Dictionary Definitions
●	Denotes activities as defined for the 1996 Hanford/NTS Cost Study
◆	Denotes Hanford/NTS activities further defined
→	Denotes Envirocare identified additional activities

- I.**
- **Waste documentation for, and acceptance or certification by, disposal facilities.**
  - **Verification/characterization when required for disposal such as monitoring or assays for radioactivity, RCRA compliance sampling and analysis, visual container inspections, weight, dose rate, truck survey and vehicle release survey.**
- **Waste Acceptance/Verification -**
    - ◆ The analysis required to verify incoming waste contents by nondestructive examination (NDE), at a minimum, or opened and visually examined.
    - ◆ All verified containers which contain matrices that can be sampled must also be chemically field screened.
    - ◆ **Performance Evaluation System (PES) Activities.** The PES evaluates generator performance to determine appropriate verification rates and coordinates the resolution of issues identified during waste receipt.
    - ◆ **Generator assistance:** It is in the best interest of the T/S/D to provide some support to generators in meeting the Waste Acceptance Criteria, transportation, and environmental regulations or requirements. This reduces failures at the point of waste receipt and subsequent PES efforts.
  - **Laboratory Analysis**

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**II. Operations/Surveillance and Maintenance (Preventive and Corrective) facilities including inspections, repackaging, spill cleanup, waste containers, record keeping, assays packaging or repackaging materials, and closure activities.**

- Disposal Operations
  - ◆ Operations on site - Facility Operations, Operations Management, and Facility Support
  - ◆ Includes manager and secretary resources needed to provide direction and coordination;
  - ◆ Behavior-Based Safety (BBST) and the DOE Voluntary Protection Program (VPP) principles.
  - ◆ Waste Receipt Preparation (Administrative Activities): Wastes require technical review to ensure the waste is adequately characterized radiologically and chemically, WAC, applicable permits, and federal codes.
  - ◆ Waste Receipts: Actual unloading and placement of waste. Includes heavy equipment for lifting waste containers and backfilling and all trench preparation to receive waste.
  - ◆ In addition, Abnormal conditions such as cold weather, snow or outage of the fire alarm/protection system require continuous monitoring by operators and, in some cases, by Radiological Control Technicians for the duration of the condition.
  - ◆ External Audits, Tours, Inspections and Requests: Access of oversight personnel is required to be controlled and those personnel escorted when in controlled areas. These activities generally demand responses and explanations involving some research and written communications.
  - ◆ Corrective Actions: Once remedial actions are identified, they must be tracked, screened for applicability to the safety basis, analyzed, prioritized, and/or reported (Occurrence reporting).
  - ◆ Configuration Control
  
- Integrated Closure Program - Costs associated with the development and implementation of a closure plan.
  - Plan Approval
  - Closure Plan Management

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- WAC Maintenance - This provides for the annual review and update; and interim updates as necessary to incorporate changes to regulations and waste streams.
- Maintenance - Physically maintain the Low Level waste facilities in a condition ready to receive and dispose of Low Level waste from its customers. Includes:
  - ◆ Performing preventative maintenance by developing, reviewing, and updating procedures used to maintain the designed operating configuration in operation and,
  - ◆ Preparing/tracking/performing corrective maintenance work packages.
  - ◆ Procedure Development
  - ◆ Maintaining filled/closed trenches in their original configuration and free from debris/weeds
  - ◆ Trench grooming
  - ◆ Vegetation Management - vegetation spray program and weed removal to minimize contamination spread potential and fire hazards.
- Waste Approvals - This provides the formal process for approval for the generator to ship waste. WSRd/Waste Request Review: Waste Specification Records (WSRds) are needed to allow the Treatment/Storage/Disposal (TSD) facility to appropriately segregate into like kind manageable groupings. These are developed or updated as new waste groupings are identified. Waste Certification Summaries are developed by the generators describing the management of a specific waste stream.

**III. ES&H including Conduct of Operations, NEPA, Procedures, Training, Permits, quality assurance, SARs, ORPs, technical support, performance assessment activities.**

- Performance Assessment - An analysis must be conducted to assure the assumptions of disposed (buried) waste containment performance are correct. Long term migration of buried waste constituents to aquifers would have significant effects on future inhabitants or the area.
- Permitting - The development, updating, and revising of RCRA and Air Permits as required by the regulations.

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- **Regulatory Compliance - Manage the waste currently disposed in compliance with all applicable regulations. A multitude of regulations govern solid waste management activities and a significant effort is needed to track those regulations which apply. In addition, efforts are required to identify and test compliance. This cost category includes NEPA compliance activities.**
  - Licenses
  - Permits
  
- **Monitoring - Activities performed in accordance with NEPA (i.e., well and groundwater monitoring, site characterization environmental impact statement, etc.)**
  - Soil/Wind Monitoring
  - Stormwater Monitoring
  - Monitoring Design
  - Well Installation/Development
  - Background Monitoring
  - Detection Monitoring
  - Compliance Monitoring Contingency
  - Sample Analysis
  
- **Conduct of Operations - Self Assessments to determine regulatory/environmental compliance.**
  
- **Safety Basis - Verify compliance with the existing safety basis and maintain the documents specifying the safety basis on all projects, maintenance, operations, and any other activities. This cost category includes SARs.**
  
- **Training - Training as required by regulations and good management practices. This includes:**
  - ◆ all general training not specific to a single facility such as student time and costs as well as training development time and cost;
  - ◆ all Facility specific training to maintain workers current in operations procedures and conditions, including the maintenance

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and updating of the certification training; the delivery and attendance of the training; and training on radiological requirements.

**IV. Capital equipment, line item, general plant projects to upgrade and/or maintain disposal facilities.**

- Capital Equipment - Capital Equipment not related to construction.
- Trench Development - Construction of a new trench in order to receive forecasted waste. In addition, any modifications to a current trench to provide more efficient storage.
- Construction - General Plant Projects (GPPs) and Line Item (LI) funds.

**V. Management including planning and budgeting, directly attributable to disposal facilities.**

- Program Management -
  - ◆ Administrative activities: Development of the yearly baseline documents, good management practice requires staff meetings, work statusing, progress reporting, time tracking by charge code, and other miscellaneous administrative activities.
  - ◆ Project Control and Administration: Includes Planners and Schedulers that are needed to implement and Management Control System and perform the required activities for the Direct and Indirect cost accounts.
  - ◆ Document retrieval costs associated with the regulators requests.
  - ◆ Change control and cost monitoring are performed to effectively manage costs.
- Waste Inventory Database - Database which collects and tracks waste forecasted volumes and receipts and associated costs.
- Federal Staff - Estimate of Federal staff's time apportioned to the disposal activity.
- Waste Forecasting - Includes activities in obtaining and analyzing waste forecasts from both on and off site generators.