APPENDIX P
COST ASSOCIATED WITH SCREENED ENGINEERING ALTERNATIVES

COST ASSOCIATED WITH SCREENED ENGINEERING ALTERNATIVES

1.0 INTRODUCTION

This appendix describes the methodology for determining estimated costs associated with the screened engineering alternatives (EA). Costs will be calculated for each of the screened EAs in the Decentralized, Regionalized, and Centralized configuration. The cost consists of summarizing waste processing, transportation, repository backfill, and emplacement handling for the selected EAs. The collection of the analyzed costs includes comparative analysis of the incremental change of the screened EAs relative to the repository baseline cost. The impact of cost for each EA will be an important tool for planning the implementation of an EA since it will typically determine the level of funding that must be appropriated. Costs are analyzed by developing process flow diagrams that segment the EA into conceptual elements. The costs for the EAs are developed on the basis of waste quantities and rate to meet schedule constraints.

Cost are based on an approach that utilized an approach consistent with current U.S. Department of Energy (DOE) methodologies and assumptions. The results of the analysis are presented according to backup calculations and summarized according to each EA.

2.0 METHODOLOGY USED TO EVALUATE COSTS

2.1 Process Costing Methodology

The waste processing costs were estimated using information contained in "Interim Report: Waste Management Facilities Cost Information for Transuranic Waste" (WMFCITRUW) (Feizollahi and Shropshire, 1994). The cost estimating method used by Feizollahi and Shropshire involves segmenting waste management facilities into discrete modules which are used to estimate the costs for building and operating facilities to perform various waste management functions. Cost estimates for different types of integrated transuranic (TRU) waste facilities are created by linking modules for different functions together in such a way that they closely approximate an actual waste management facility. This methodology provides the flexibility to estimate the costs many different sized facilities with many different functions without having to perform a rigorous conceptual design and cost estimate for each facility configuration.

Figure P-1 shows the information flow diagram used to develop waste processing cost estimates. Information from process flow diagrams and mass flow rates are required as input to the cost modules. A combination of data sources were used to develop this information, including existing waste inventories and waste generation projections (Appendix O), processing schedules (Appendix Q), a listing of EAs that require waste processing (Section 2), and the system configuration for the waste processing facilities (i.e., centralized, regionalized, or decentralized) (Section 2).

Process flow diagrams were developed for each alternative in each configuration (see Figures P-2 to P-12). These flow schemes were based on the DOE "Evaluation of the Effectiveness and Feasibility of the Waste Isolation Pilot Plant Engineered Alternatives:

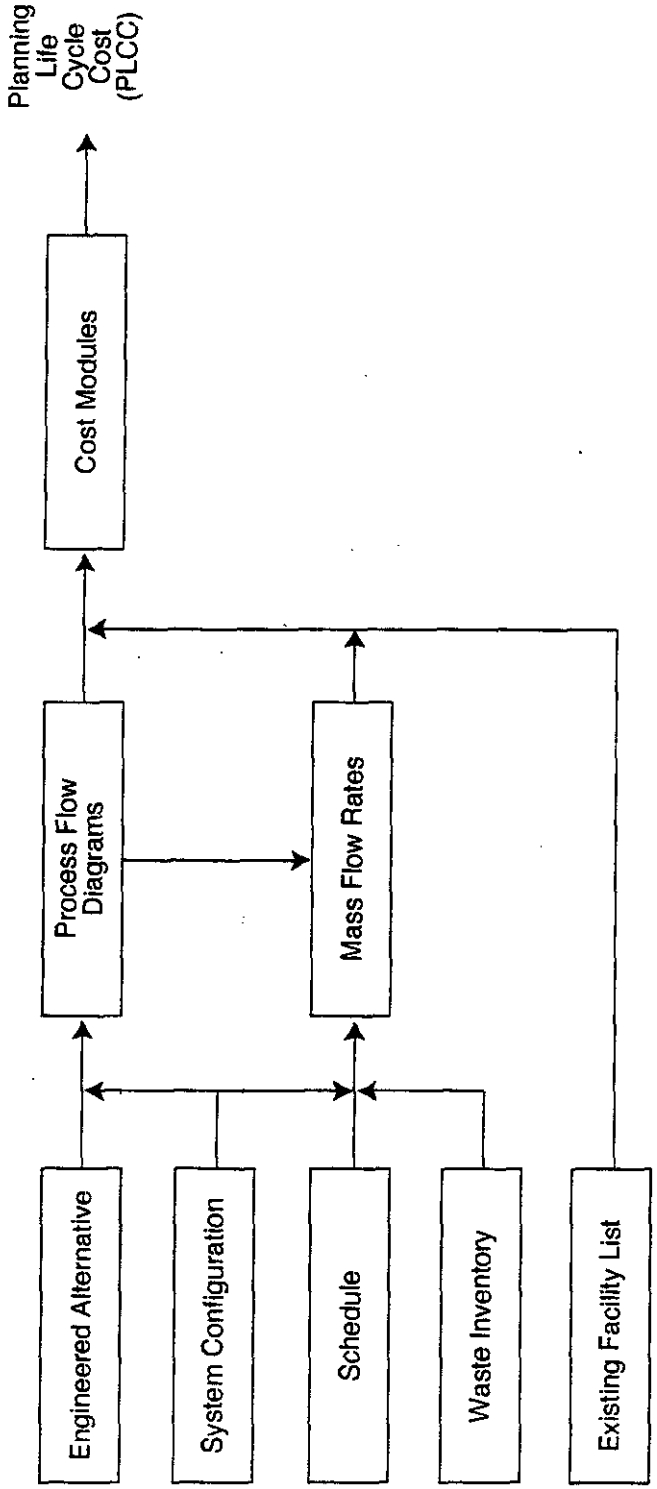
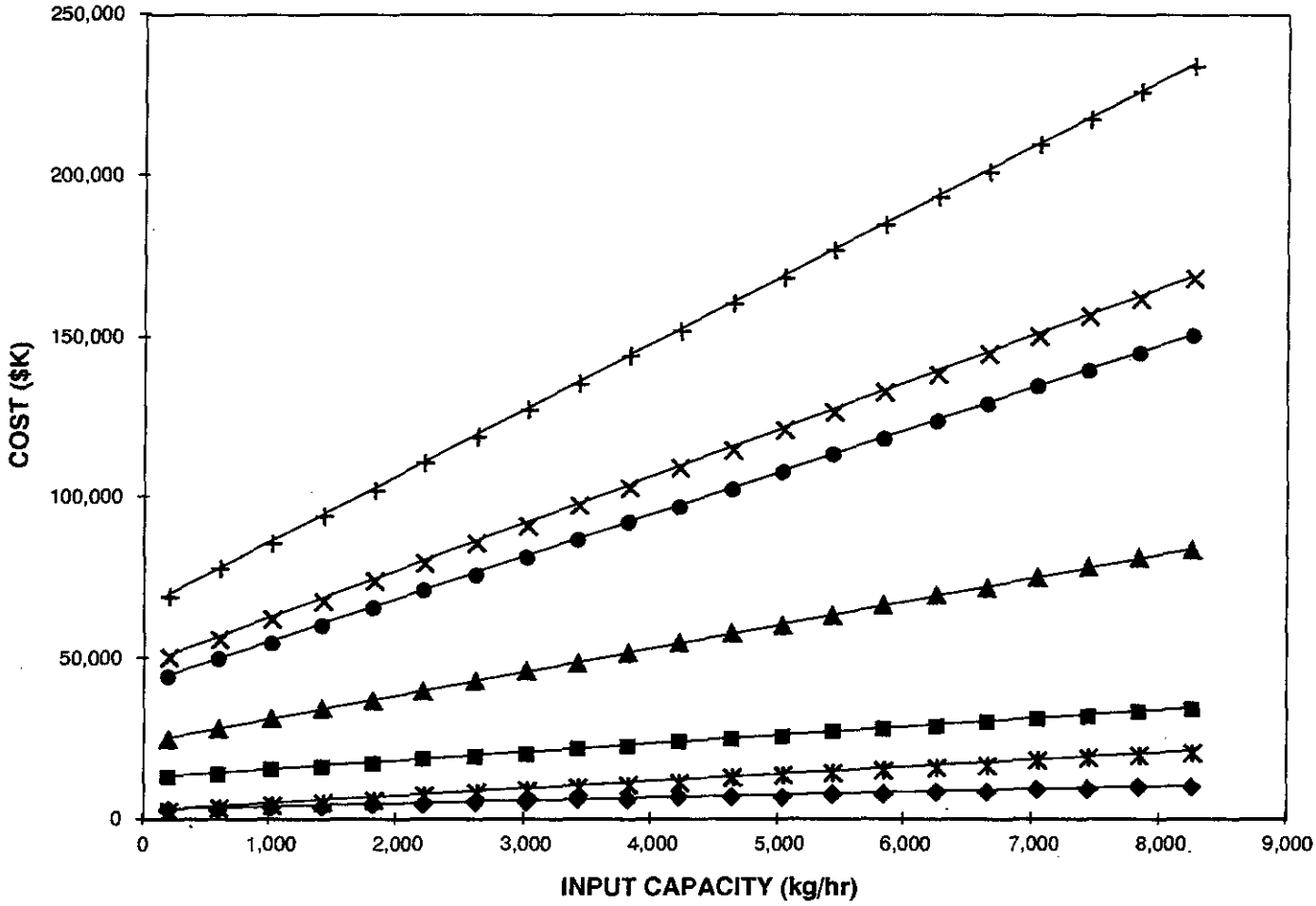


Figure P-1
Process Costing Methodology Flow Diagram



LEGEND

- 1.0 PRE-OPERATION
  y = 0.878x + 2969.1
  R^2 = 1
- 2.0 CONSTRUCTION
  y = 2.6672x + 12644
  R^2 = 1
- 3.0 O& M (10 yr)
  y = 7.3151x + 23831
  R^2 = 1
- 3.0 O& M (20 yr)
  y = 14.63x + 47661
  R^2 = 1
- 4.0 D & D
  y = 2.2816x + 2395.4
  R^2 = 1
- TOTAL PLCC (10 yr) $K
  y = 13.142x + 41839
  R^2 = 1
- TOTAL PLCC (20 yr) $K
  y = 20.457x + 65670
  R^2 = 1

- Linear (TOTAL PLCC (20 yr) $K)
- Linear (3.0 O& M (20 yr))
- Linear (TOTAL PLCC (10 yr) $K)
- Linear (3.0 O& M (10 yr))
- Linear (2.0 CONSTRUCTION)
- Linear (4.0 D & D)
- Linear (1.0 PRE-OPERATION)

Figure P-2

CH-RH Certification and Shipping Cost Curves

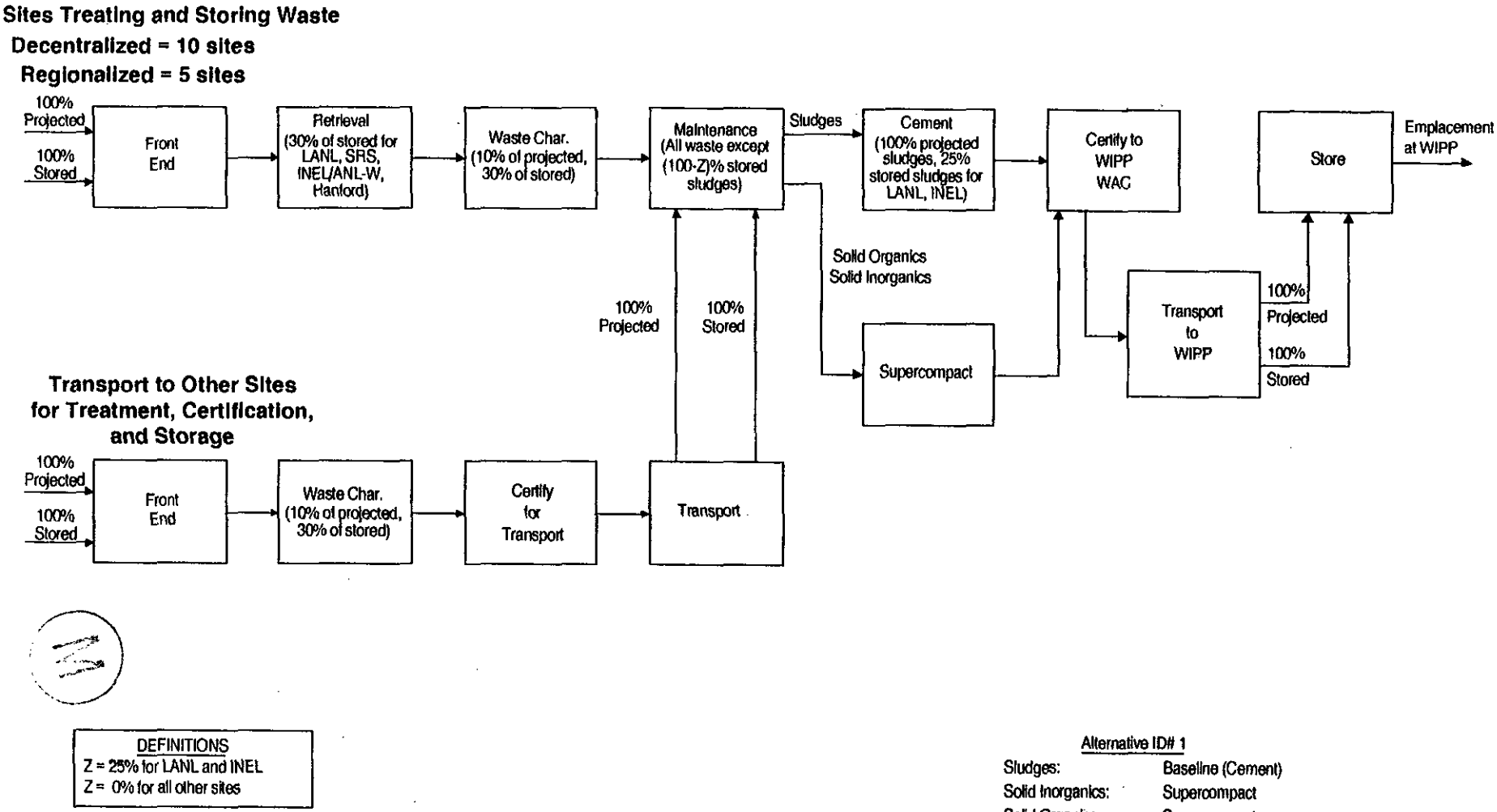


Figure P-3

Decentralized and Regionalized Alternative ID #s 1 and 77(a-d) Contact Handled Process Flow Diagram B

763435.01.00.00.00/zc A34

DOE/WIPP 95-2135 10/13/95

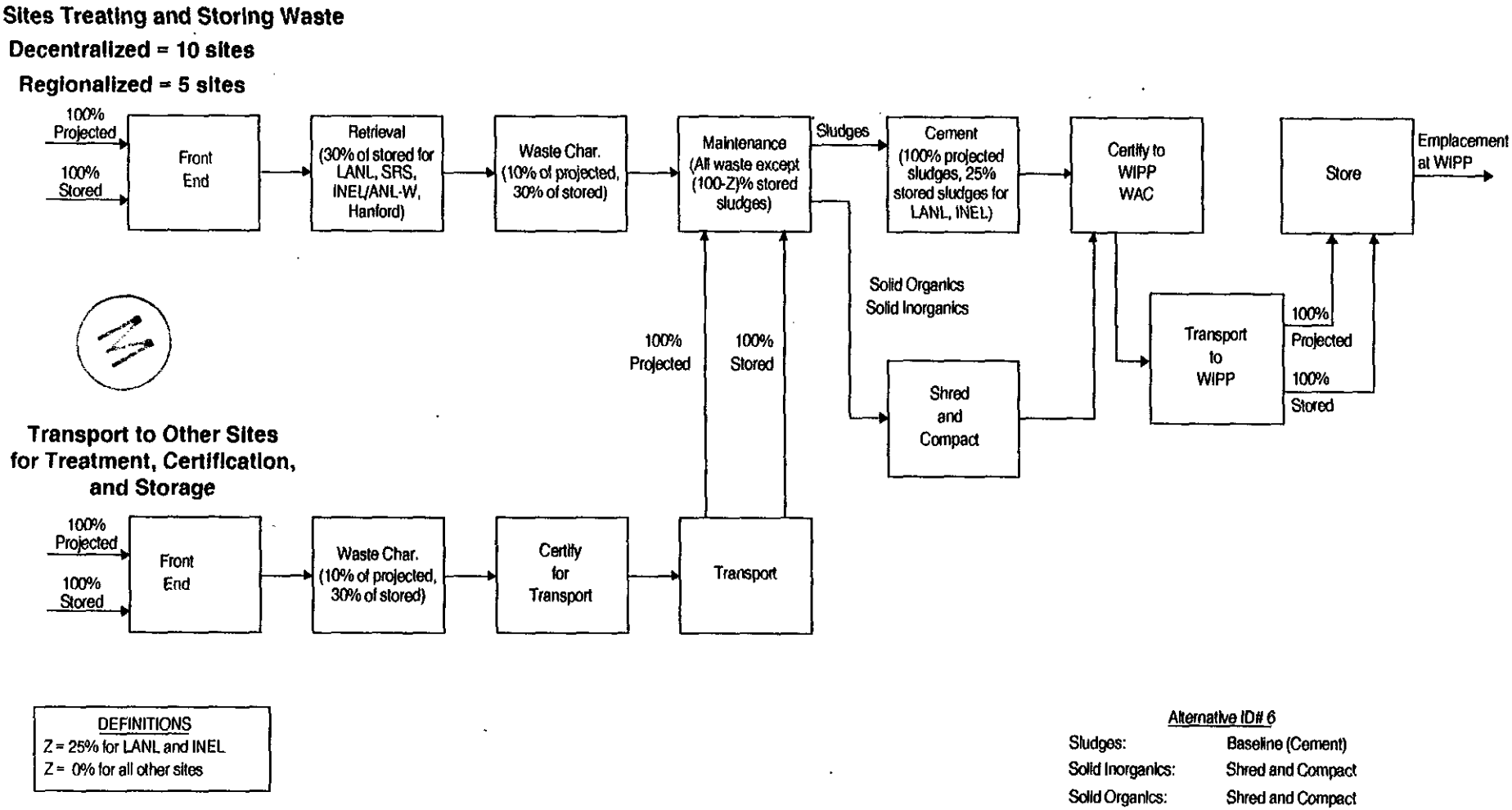


Figure P-4

Decentralized and Regionalized Alternative ID# 6 Contact Handled Process Flow Diagram C

763435.01.00.00/zc A35

DOE/WIPP 95-2135 10/13/95

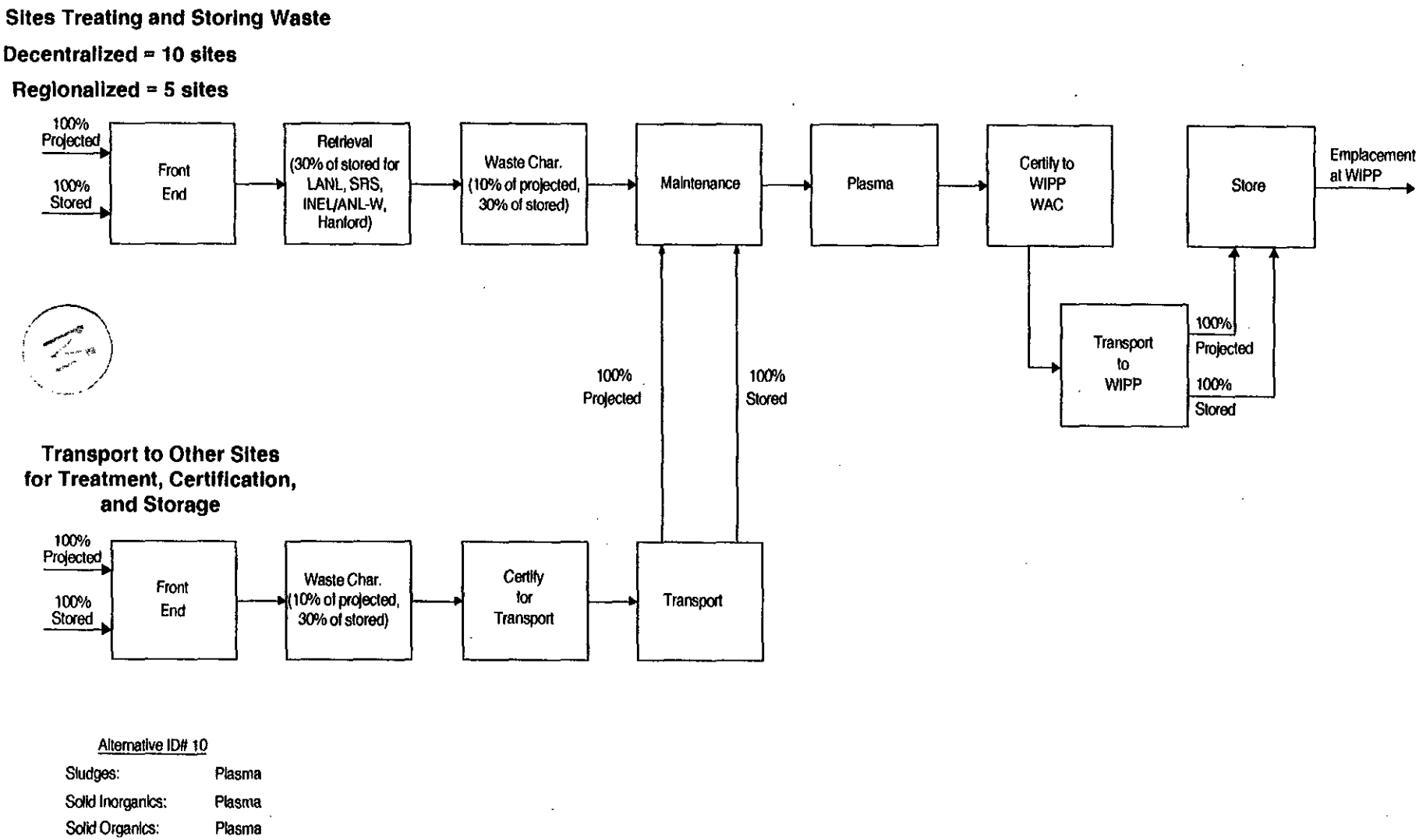
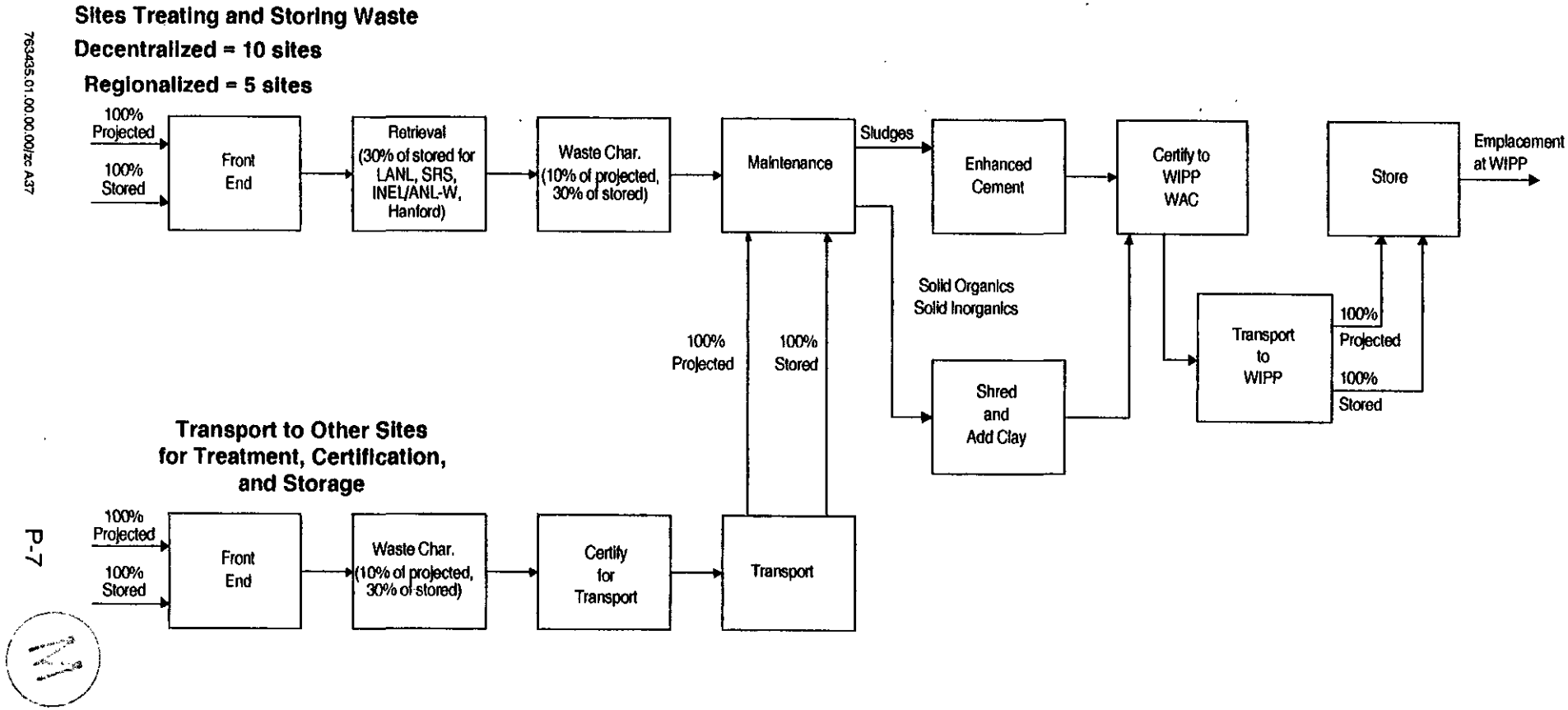


Figure P-5

Decentralized and Regionalized Alternative ID# 10 Contact Handled Process Flow Diagram D



Alternative ID# 94(a-f)

Sludges:	Enhanced Cement
Solid Inorganics:	Shred and Add Clay
Solid Organics:	Shred and Add Clay

Figure P-6

Decentralized and Regionalized Alternative ID# 94(a-f) Contact Handled Process Flow Diagram E

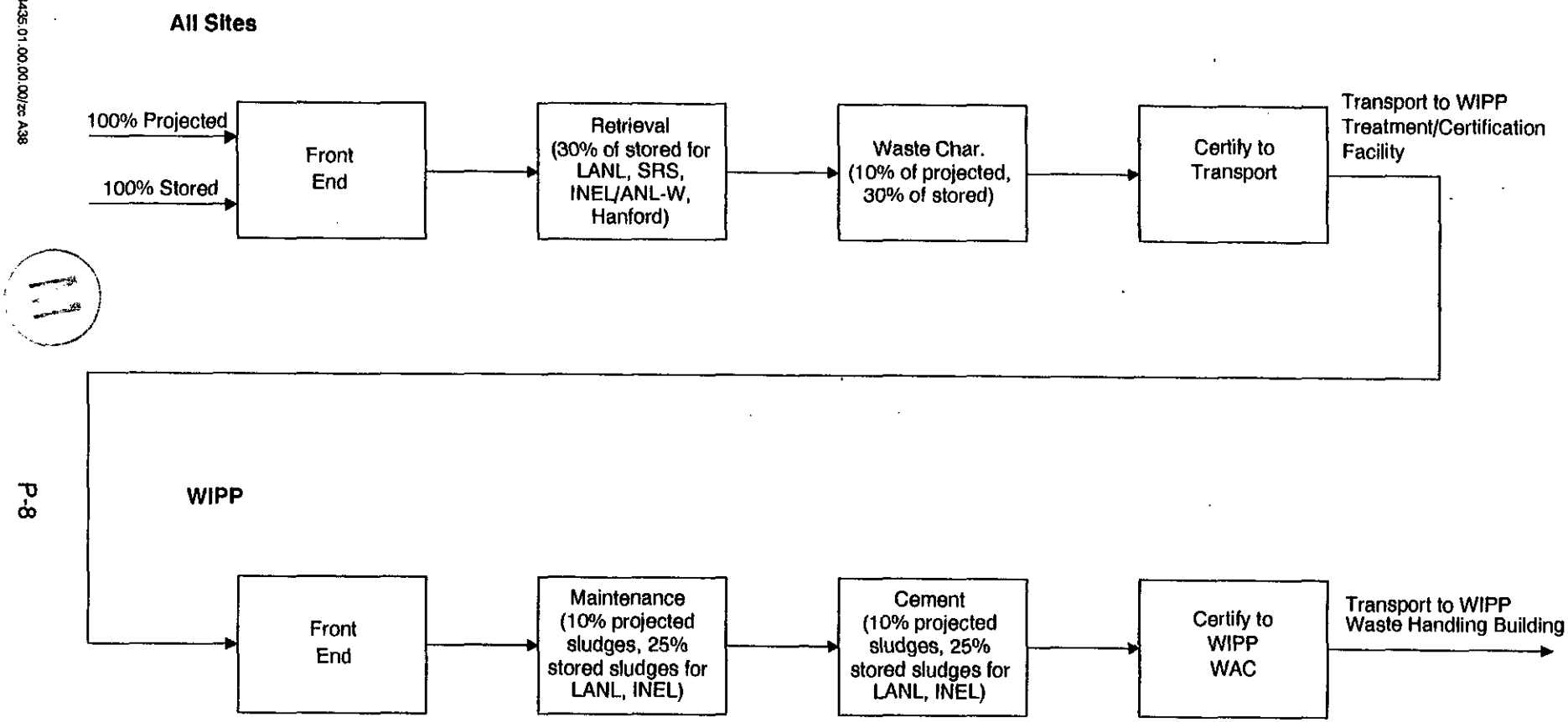


Figure P-7

Centralized Base Case and Alternative ID #s 33, 35(a&b), 83, and 111 Contact Handled Process Flow Diagram F

763435.01.00.00.00/zc A38

DOE/WIPP 95-2135 10/13/95

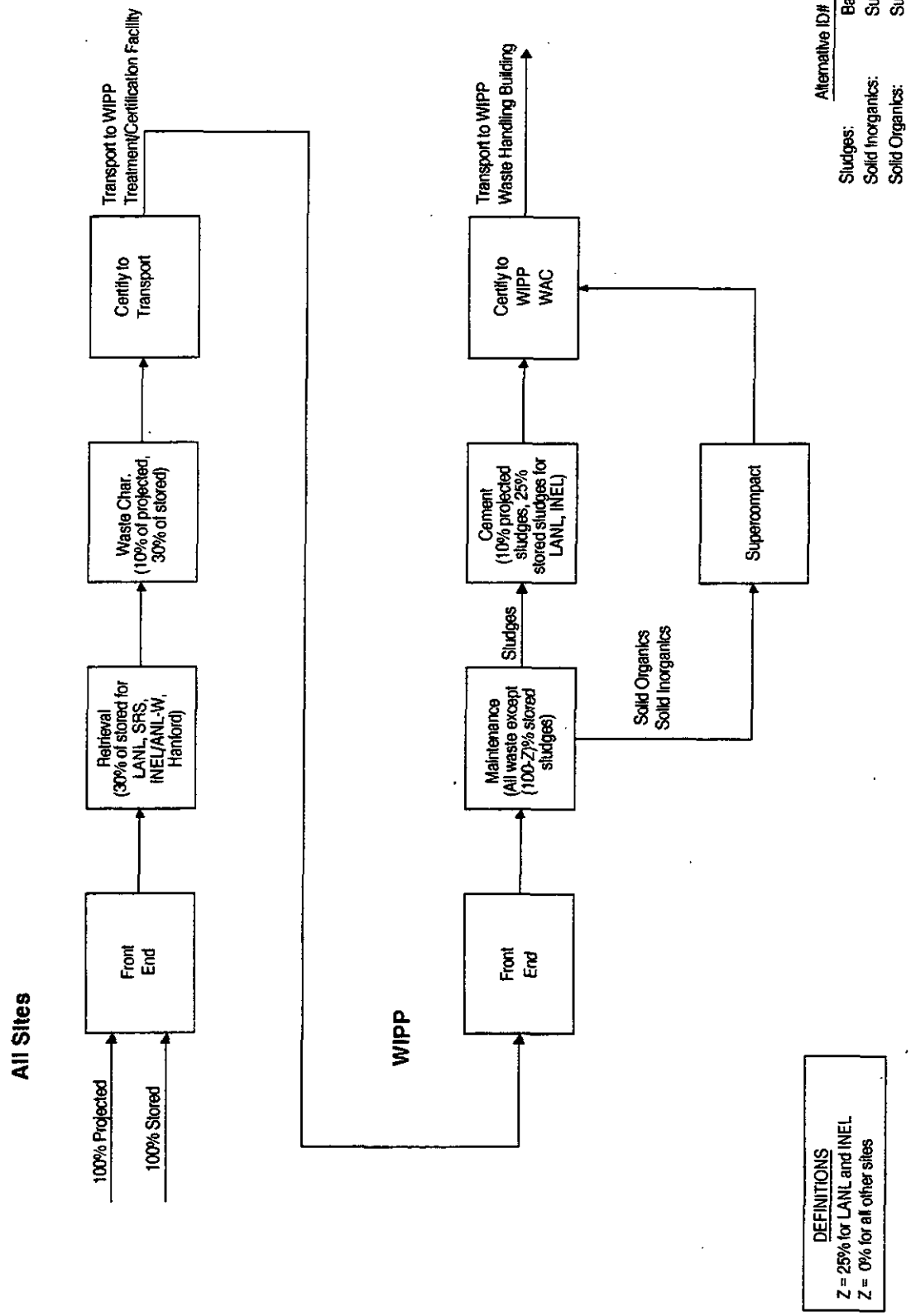


Figure P-8
Centralized Alternative ID#s 1 and 77(a-d) Contact Handled Process Flow Diagram G

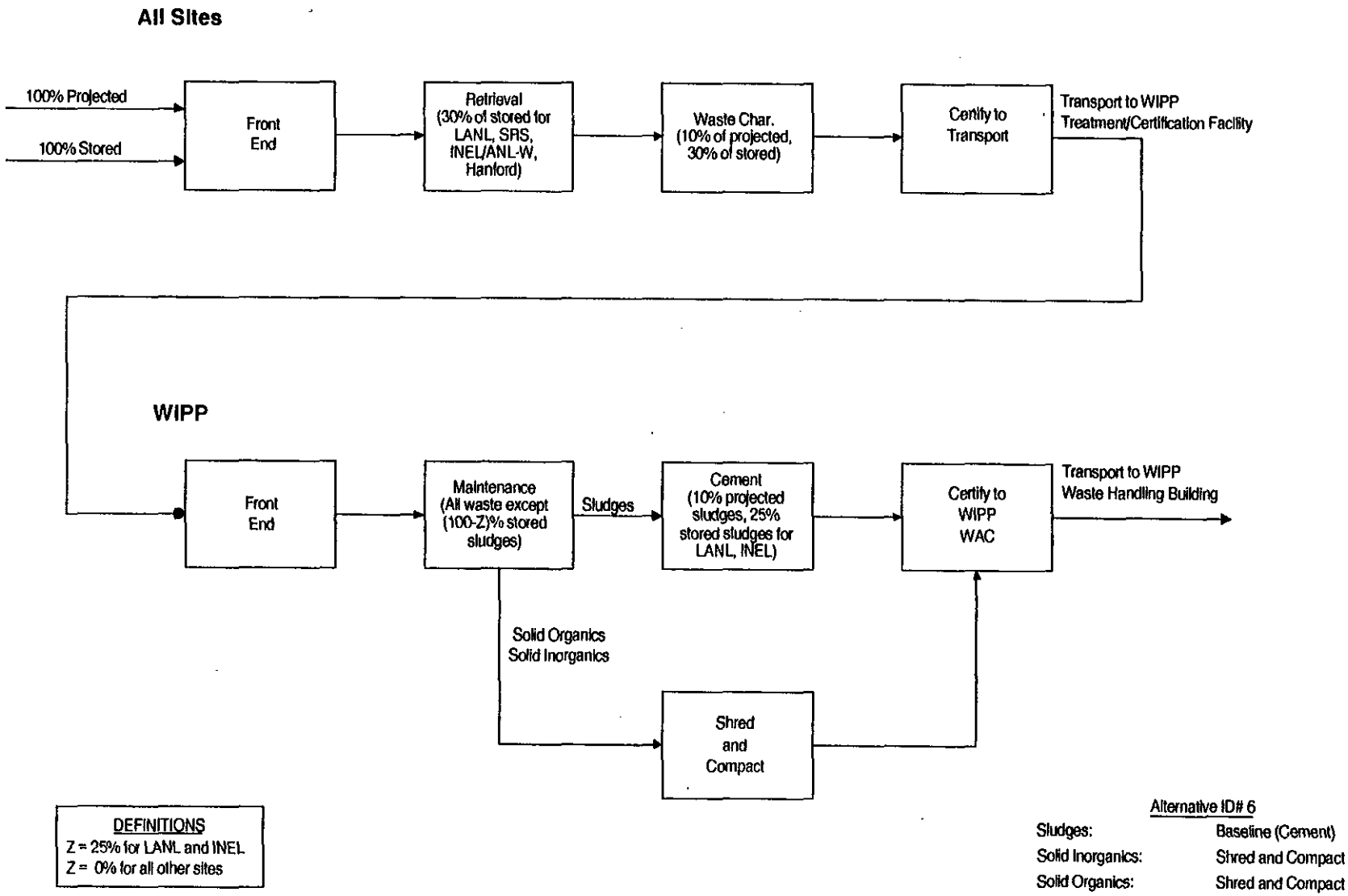
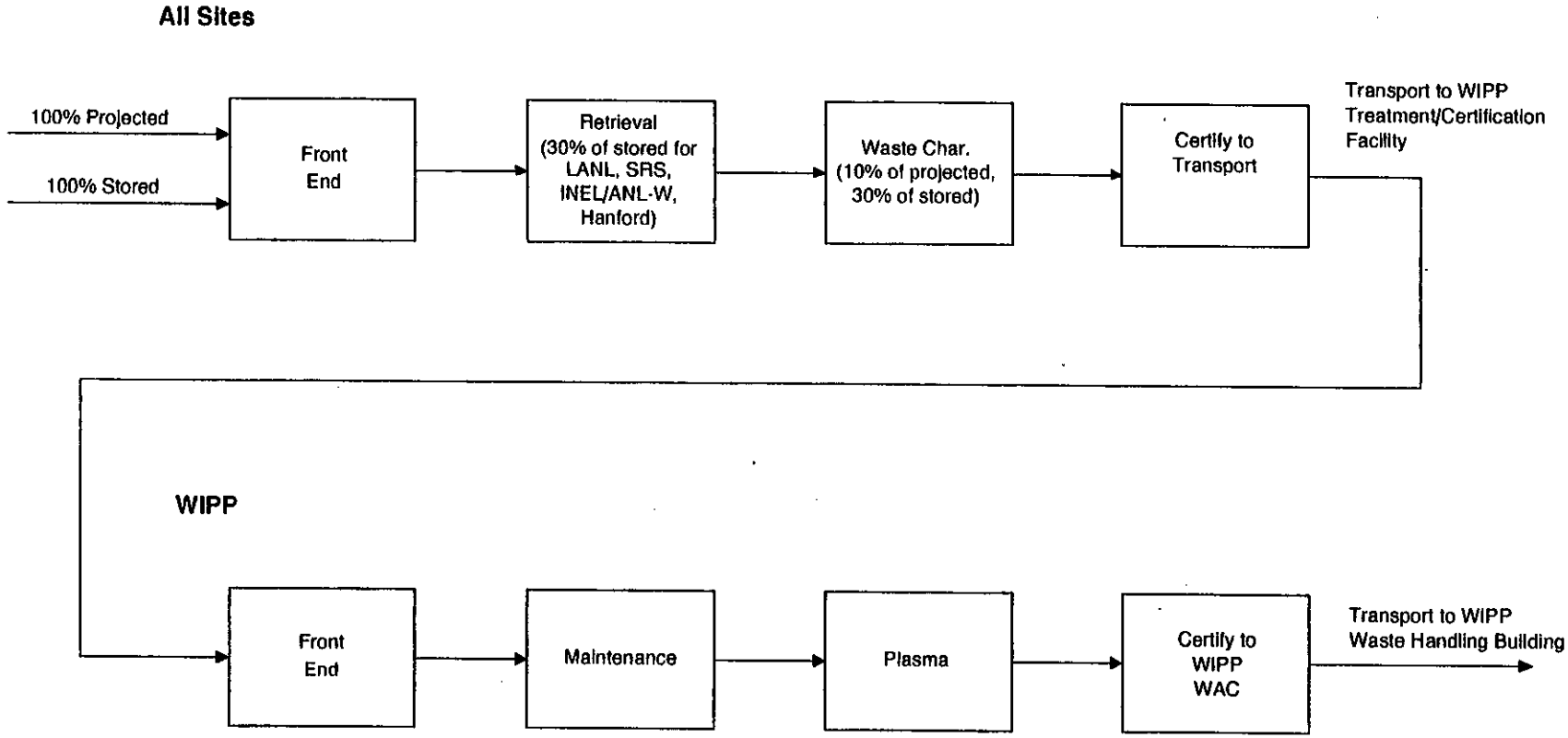


Figure P-9
Centralized Alternative ID# 6 Contact Handled Process Flow Diagram H



Alternative ID# 10

Sludges:	Plasma
Solid Inorganics:	Plasma
Solid Organics:	Plasma

Figure P-10
Centralized Alternative ID# 10 Contact Handled Process Flow Diagram I

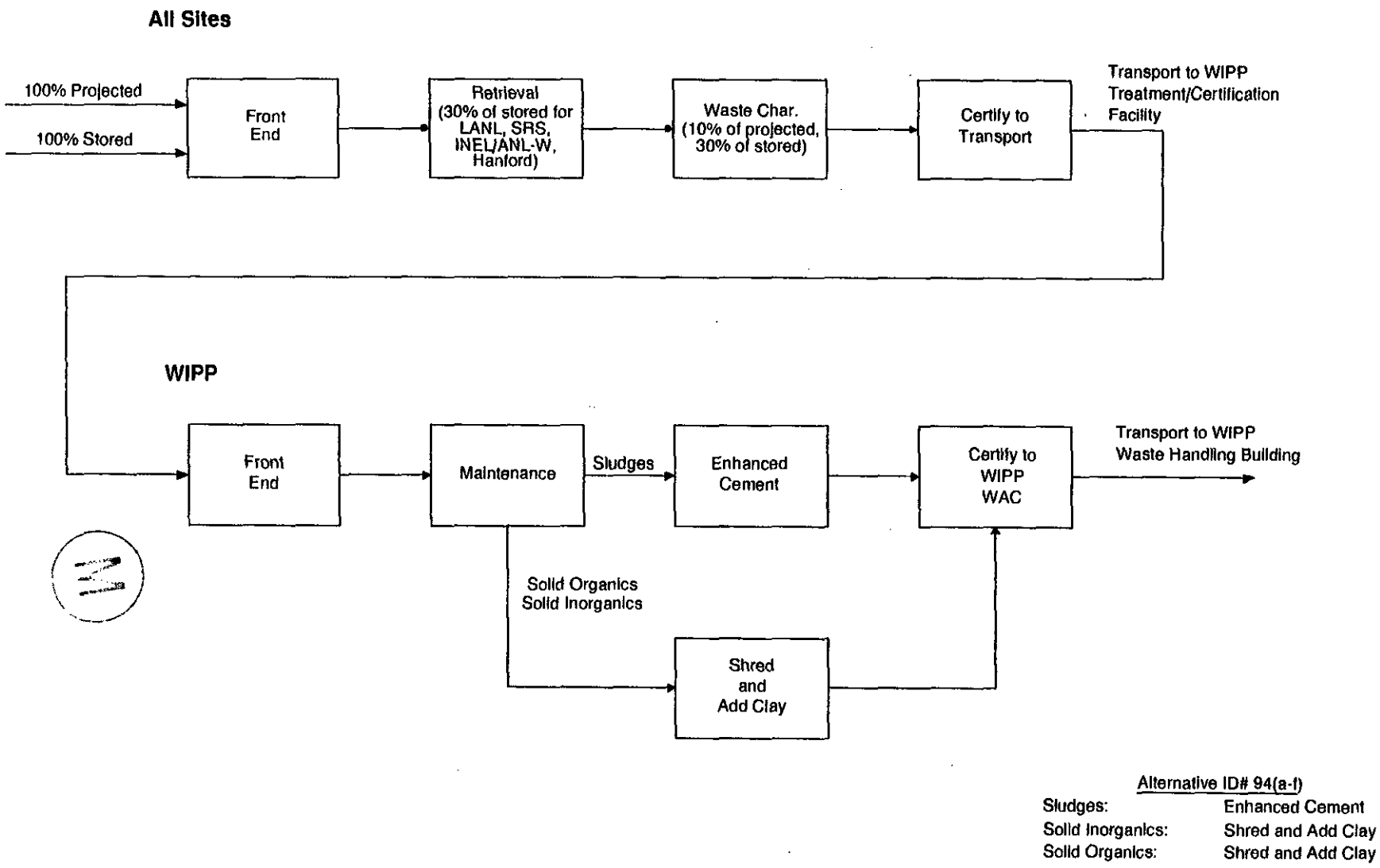


Figure P-11
Centralized Alternative ID# 94(a-f)
Process Flow Diagram J

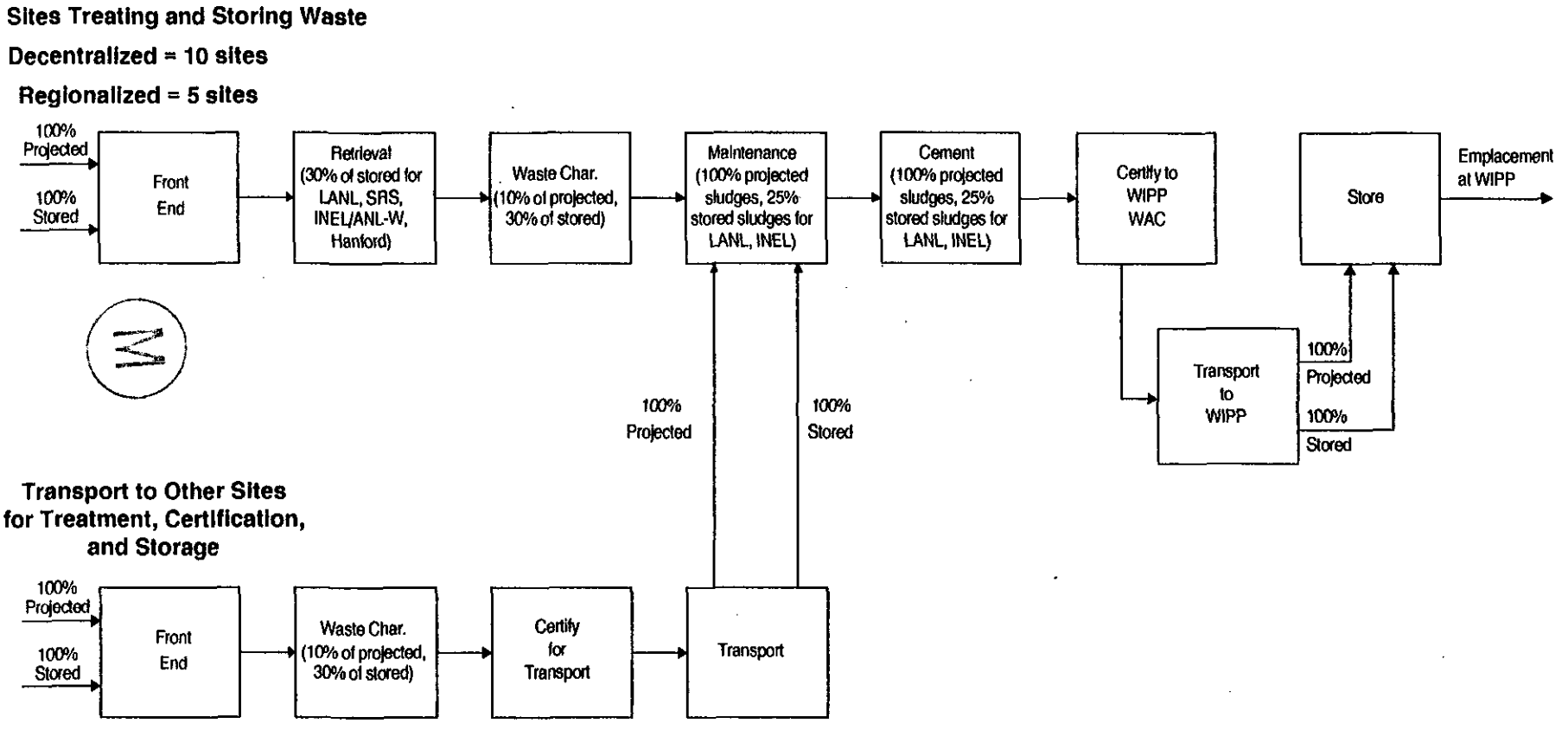


Figure P-12

Decentralized Base Case Remote Handled Process Flow Diagram K

Final Report of the Engineered Alternatives Task Force" (DOE, 1991), the Draft Environmental Management Programmatic Environmental Impact Statement (EM-PEIS) report (DOE, 1995b), and the WMFCITRUW report (Feizollahi and Shropshire, 1994). Information from these sources were used to connect each of the modules and to construct a visual description of mass and volume flow through each treatment process.

The modules are described below:

- Front End: Front-end support facilities consist of all administrative and laboratory buildings required for the waste management support functions. Front-end support functions include security, personnel decontamination (radioactive and hazardous), maintenance of noncontaminated areas and equipment, health physics, radiation badges, facility access control, sanitary facilities, work control and personnel support, internal and external communications, spill or emergency response provisions (hazardous and radioactive), analytical laboratory, environmental field sampling, environmental regulatory reporting, and records management.

- Retrieval: This module consists of all-weather excavation, inspection, and repackaging of bermed waste. The module includes three principal unit operations: earthen-cover extraction and decontamination, waste-container retrieval and inspection, and packaging and staging for shipment.

- Waste Characterization: This module is a self-contained facility in which waste characterization is performed. Activities include extracting physical samples of waste; conducting chemical, physical, and radiological analysis of waste samples; and repackaging drums and boxes to remove and stabilize noncompliant waste.

- Maintenance: A maintenance facility is used in conjunction with treatment facilities. It consists of a failed-equipment receiving and repair building housing machinery and tools.

- Treatment: The treatment module varies based on the alternative being considered. Treatment options include grouting, supercompacting, shredding and compacting, plasma melting, enhanced-cement processing, and shredding and adding clay.

- Storage: This module consists of a Resource Conservation and Recovery Act (RCRA)-compliant storage building sized to accommodate an accumulation of up to 20 years' volume of waste input from treatment modules. Storage area features include spill collection, sloping floors, sumps, and concrete berms. Monitoring is included for both gamma and alpha radiation control.

- Certification: Certification consists of storage of incoming material, assay and certification, and truck loading. The facility is equipped with a bridge crane and a forklift. It is assumed that certification operations will take place indoors.

- Transportation: Transportation consists of truck shipments. Equipment includes a tractor and trailer transporting three Transuranic Package Transporter-II (TRUPACT-IIs) for contact-handled (CH) waste or one remote-handled (RH) cask (RH-72B) (a cylinder consisting of a separate inner canister within an outer cask protected by impact limiters at each end) for RH waste.

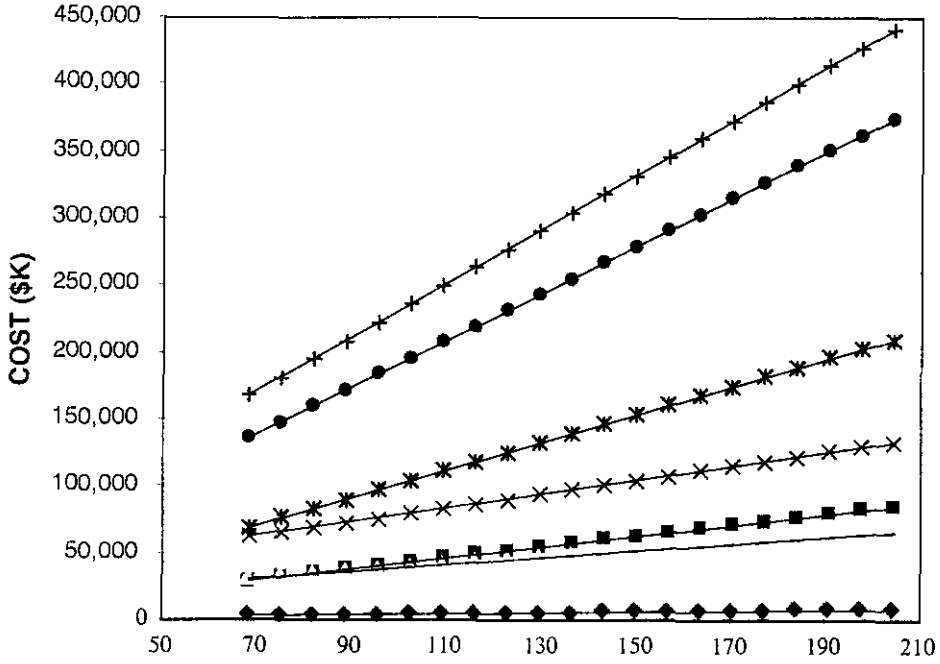
The process flow diagrams are developed from multiple data sources, and TRU waste processing knowledge from various sources; therefore, the uncertainty of the process flow diagrams cannot be quantified, but should be in the same order of magnitude as the documents used as guidelines for this study. The process flow diagrams developed for this study were designed mostly in accordance with the EM-PEIS and the WMFCITRUW report; however, not every module recommended in the WMFCITRUW report was included in this study. The reasons for deviating from the recommended WMFCITRUW guidance include (1) minimizing the costs of duplicate equipment contained in more than one module, and (2) more accurately representing the functions in existing and planned TRU waste facilities.

Mass and volume throughput are calculated using data from the Waste Isolation Pilot Plant (WIPP) Transuranic Waste Baseline Inventory Report (BIR) (DOE, 1995d). These rates are calculated using a 20-year processing period and a 4,032-hour working year. The mass or volume input to each of the individual modules is shown in Appendix O and is used as the basis for the module throughput which is the primary data used to estimate the cost of the module.

"The TRU waste disposal inventory in the BIR is derived from existing information on waste, which has been provided by DOE TRU waste generator/storage sites and is predominately based on process knowledge" (DOE, 1995d). Any uncertainty within the BIR is carried into this EA study. Calculated processing rates using a 20-year period and 4,032-hour working year may also introduce a level of uncertainty in estimating the costs. Many of the calculated processing rates were below or beyond the range of processing rates listed in the WMFCITRUW report and may cause the calculated costs to be skewed.

Numerical data values for cost versus flow rate information were obtained from the authors of the WMFCITRUW and used to construct approximate relations or curve fits for cost versus mass or volume throughput for a specific processing module, as shown in Figures P-13 through P-23. Cost data are available in the WMFCITRUW report according to specific project activities including pre-operations (pre-ops), planning life-cycle cost (PLCC), construction, operations and maintenance (O&M), and decontamination and decommissioning (D&D). Appendix P provides additional information on the method for establishing the modules. The PLCC is the summation of pre-ops, construction, O&M and D&D cost.

The WMFCITRUW was developed specifically to calculate facility costs in the EM-PEIS. Neither the WMFCITRUW nor the EM-PEIS provide a quantitative uncertainty of the costing data. From the costing categories listed in Plant Design and Economics for Chemical Engineers (Peters et al., 1991), the WMFCITRUW study cost estimates fall into the Study Estimate cost category where the probable accuracy of the estimate is plus or minus 30 percent.
To ensure that the waste processing cost estimates presented in this study account for those facilities that currently exist, a list of existing facilities was assembled from information gathered from several sources, including personal communications (Bjotvedt, 1995; George, 1995) and preliminary information being developed by the DOE National TRU Program Office. Data from these sources were consolidated into a single list used to describe existing TRU waste processing

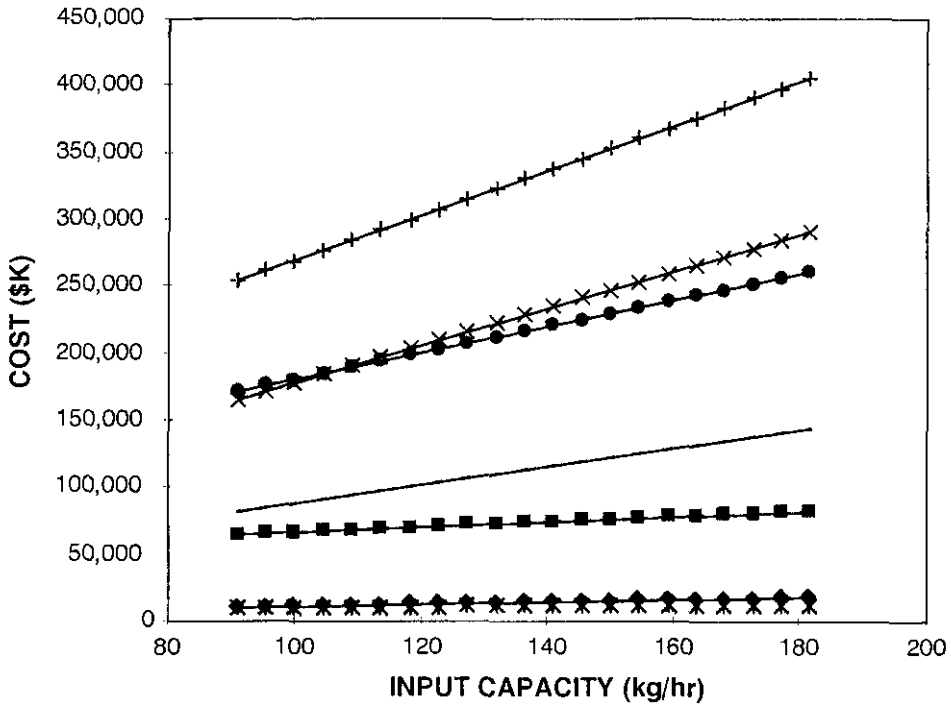


LEGEND

- 1.0 PRE-OPERATIONS
  y = 39.957x + 1603.4
  R^2= 1
- 2.0 CONSTRUCTION
  y = 410.93x + 2820.7
  R^2= 1
- 3.0 O & M 10 years
  y = 260.51x + 13871
  R^2= 1
- 3.0 O & M 20 years
  y = 521.02x + 27742
  R^2= 1
- 4.0 D & D
  y = 1035.7x - 3E-10
  R^2= 1
- TOTAL PLCC (10 yr)
  y = 1747.1x + 18295
  R^2= 1
- TOTAL PLCC (20 yr)
  y = 2007.6x + 32166
  R^2= 1

- Linear (TOTAL PLCC (20 yr) $K)
- Linear (TOTAL PLCC (10 yr) $K)
- Linear (4.0 D&D)
- Linear (3.0 O& M 20 years)
- Linear (2.0 Const)
- Linear (3.0 O& M 10 years)
- Linear (1.0 Pre-Ops)

Figure P-13
CH-RH Retrieval



LEGEND

◆ 1.0 PRE-OPERATIONS
y = 81.515x + 4188.3

■ 2.0 CONSTRUCTION
y = 200.17x + 47294
$R^2 = 1$

3.0 O& M
10 years
y = 691x + 20625
$R^2 = 1$

× 3.0 O& M
20 years
y = 1382x + 41250
$R^2 = 1$

✱ 4.0 D&D
y = 12.555x + 10374
$R^2 = 1$

● TOTAL PLCC (10 yr)
$K
y = 1676.3x + 103106
$R^2 = 1$

\+ TOTAL PLCC (20 yr)
$K
y = 985.25x + 82481
$R^2 = 1$

——Linear (TOTAL PLCC (20 yr) $K)

——Linear (TOTAL PLCC (10 yr) $K)

——Linear (3.0 O& M 10 years)

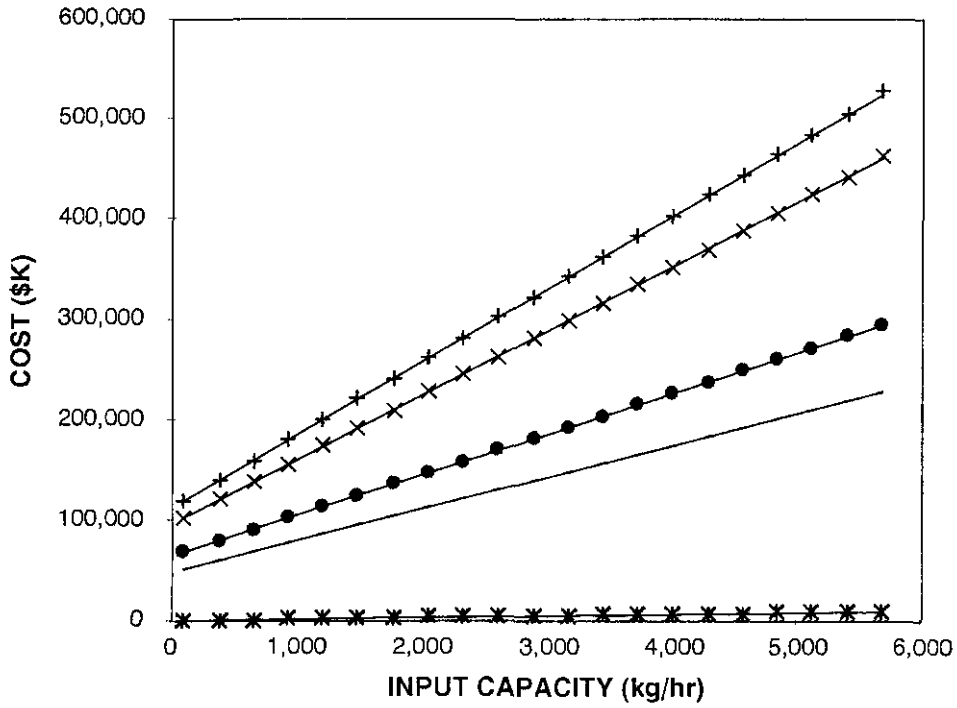
——Linear (2.0 Const)

——Linear (1.0 Pre-Ops)

——Linear (4.0 D&D)

——Linear (3.0 O& M 20 years)

Figure P-14
Waste Characterization



LEGEND

3.0 O& M
10 years
y = 31.836x + 49523
R^2 = 1

× 3.0 O& M
20 years
y = 63.673x + 99046
R^2 = 1

✱ 4.0 D&D
y = 1.5643x + 2136.6
R^2 = 1

● TOTAL PLCC (10 yr)
$K
y = 40.578x + 65777
R^2 = 1

\+ TOTAL PLCC (20 yr)
$K
y = 72.415x + 115300
R^2 = 1

——Linear (TOTAL PLCC (20 yr)
$K)

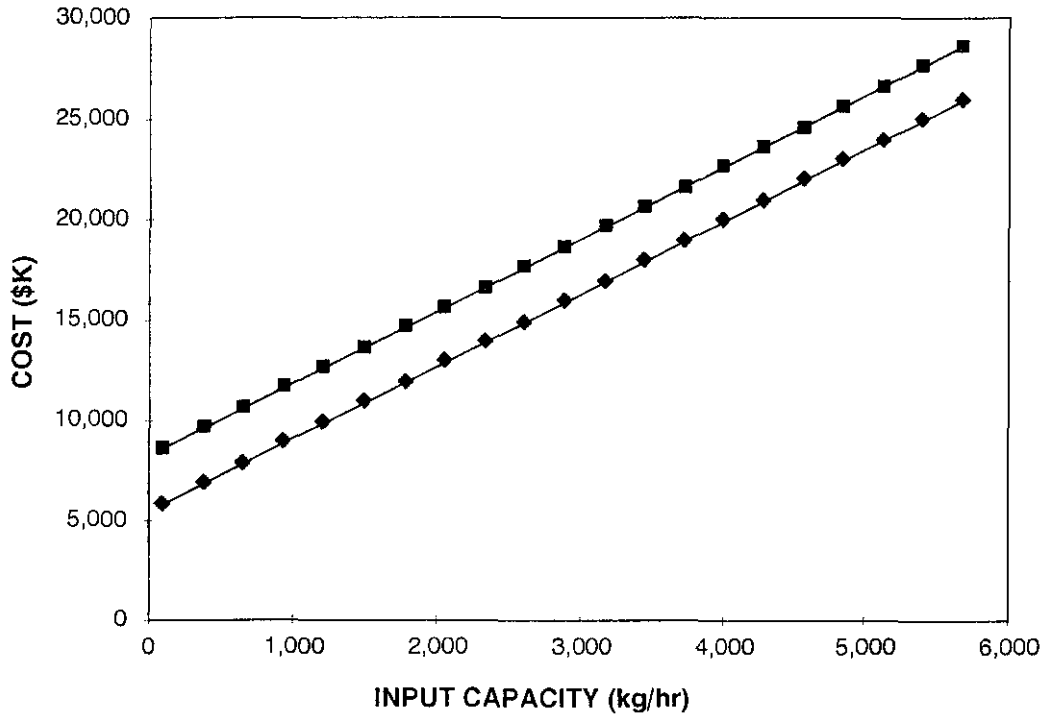
——Linear (3.0 O& M
20 years)

——Linear (TOTAL PLCC (10 yr)
$K)

——Linear (3.0 O& M
10 years)

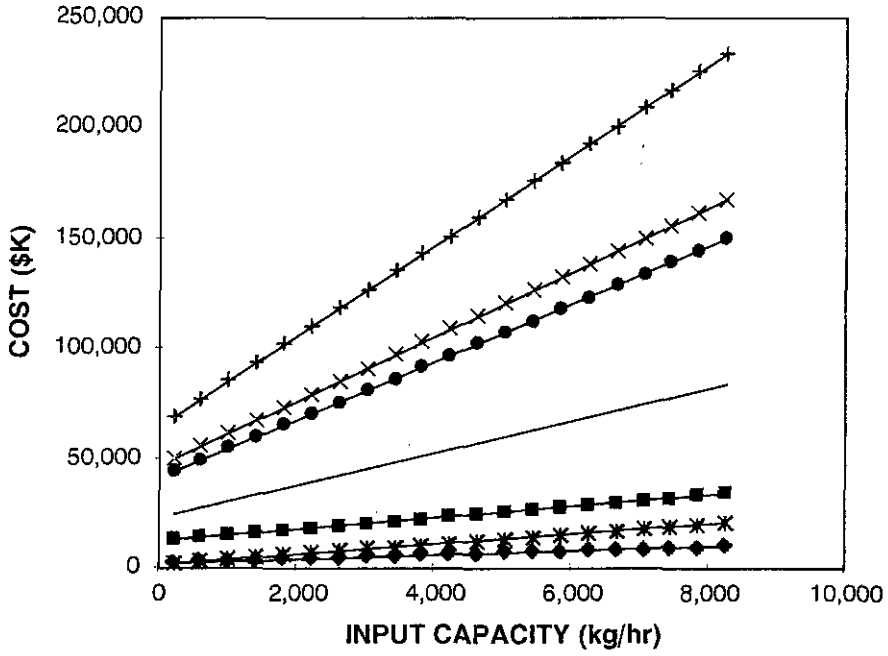
——Linear (4.0 D&D)

Figure P-15
CH-RH Front End Support (TADMIN)



M

Figure P-16
CH-RH (TADMIN)



LEGEND

- ◆ 1.0 PRE-OPERATIONS
  y = 0.878x + 2969.1
  $R^2 = 1$
- ■ 2.0 Const
  y = 2.6672x + 12644
  $R^2 = 1$
- 3.0 O& M
  10 years
  y = 7.3151x + 23831
  $R^2 = 1$
- × 3.0 O& M
  20 years
  y = 14.63x + 47661
  $R^2 = 1$
- ✱ 4.0 D&D
  y = 2.2816x + 2395.4
  $R^2 = 1$
- ● TOTAL PLCC (10 yr)
  $K
  y = 13.142x + 41839
  $R^2 = 1$
- \+ TOTAL PLCC (20 yr)
  $K
  y = 20.457x + 65670
  $R^2 = 1$

——Linear (TOTAL PLCC (20 yr) $K)

——Linear (3.0 O& M 20 years)

——Linear (TOTAL PLCC (10 yr) $K)

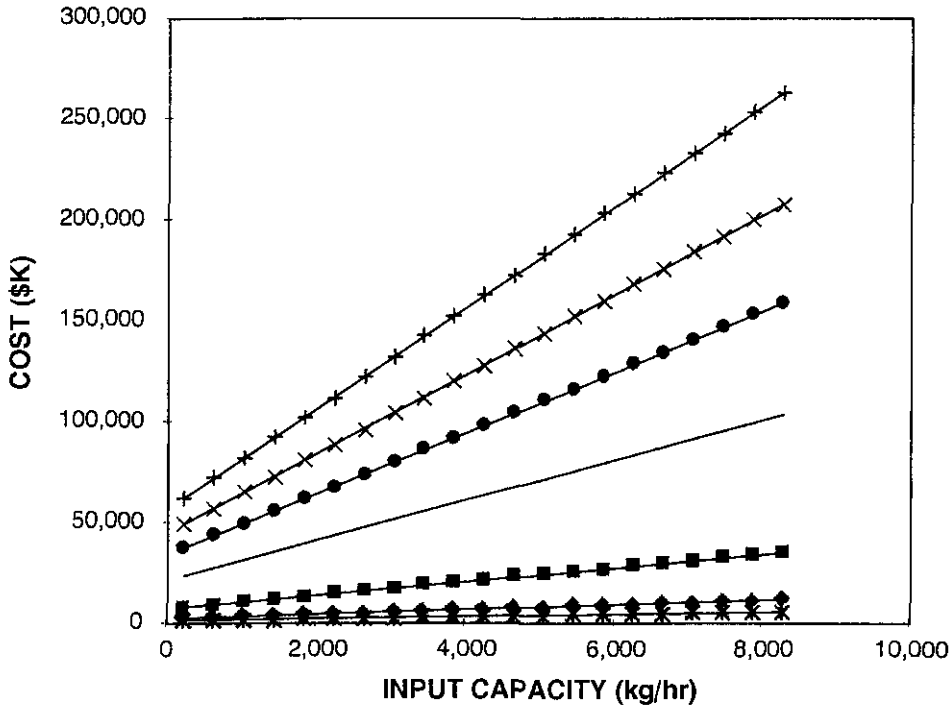
——Linear (3.0 O& M 10 years)

——Linear (2.0 Const)

——Linear (4.0 D&D)

——Linear (1.0 Pre-Ops)

Figure P-17
CH-RH Certify and Ship



LEGEND

- ◆ 1.0 PRE-OPERATIONS
  y = 1.181x + 2724.3
  R^2= 1
- ■ 2.0 CONSTRUCTION
  y = 3.458x + 7922
- 3.0 O& M
  10 years
  y = 9.8717x + 22786
  R^2= 1
- × 3.0 O& M
  20 years
  y = 19.743x + 45572
  R^2= 1
- ✱ 4.0 D&D
  y = 0.6254x + 1592
  R^2= 1
- ● TOTAL PLCC (10 yr)
  $K
  y = 15.136x + 35024
  R^2= 1
- \+ TOTAL PLCC (20 yr)
  $K
  y = 25.008x + 57811
  R^2= 1

——Linear (TOTAL PLCC (20 yr) $K)

——Linear (3.0 O& M 20 years)

——Linear (TOTAL PLCC (10 yr) $K)

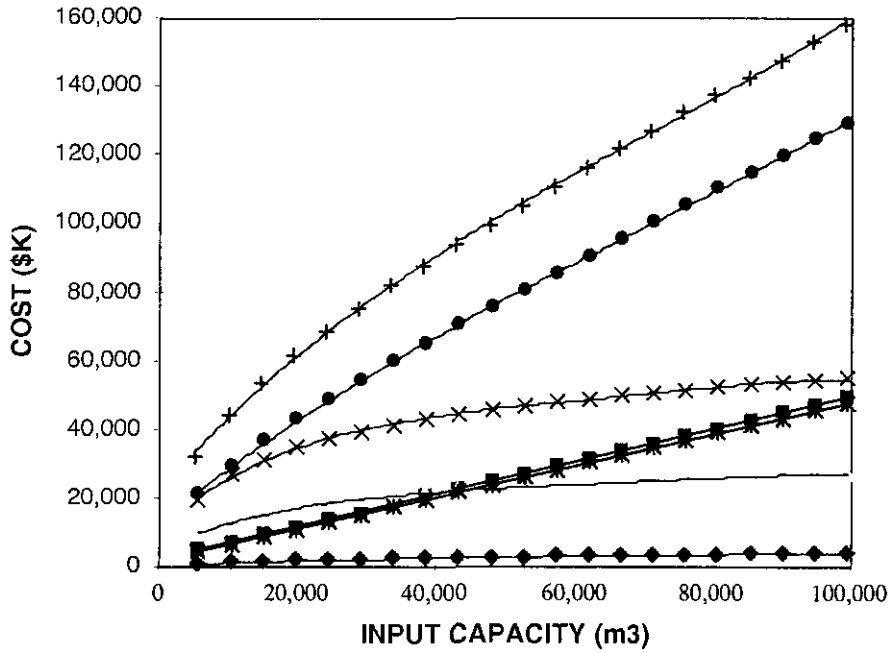
——Linear (3.0 O& M 10 years)

——Linear (2.0 Const)

——Linear (1.0 Pre-Ops)

——Linear (4.0 D&D)

Figure P-18
CH-RH Maintenance



LEGEND

◆ 1.0 PRE-OPERATIONS
$y = -7.905E\text{-}17^{4}x + 2.058E\text{-}11^{4}x - 1.997E\text{-}06^{2}x + 1.095E\text{-}01x + 7.279E+02$
$R^2 = 9.995E\text{-}01$

■ 2.0 CONSTRUCTION
$y = 0.4628x + 2222.5$
$R^2 = 1$

3.0 O& M
10 years
$y = 0.4715x + 2753$
$R^2 = 1$

× 3.0 O& M
20 years
$y = -1.437E\text{-}15^{4}x - 3.631E\text{-}05^{3}x + 3.743E\text{-}10^{2}x + 1.756E+00x + 1.186E+04$
$R^2 = 9.985E\text{-}01$

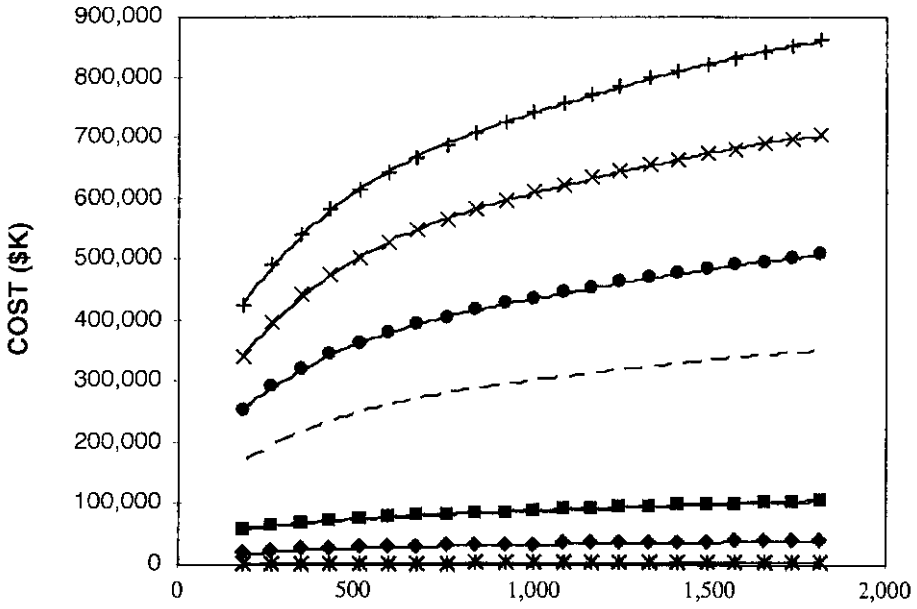
✱ 4.0 D&D
$y = -7.186E\text{-}16^{4}x + 1.871E\text{-}10^{3}x - 1.816E\text{-}05^{2}x + 8.778E\text{-}01x + 5.929E+03$
$R^2 = 9.985E\text{-}01$

● TOTAL PLCC (10 yr)
$K
$y = 4.012E\text{-}11^{3}x - 8.584E\text{-}06^{2}x + 1.631E+00x + 1.358E+04$
$R^2 = 9.998E\text{-}01$

+ TOTAL PLCC (20 yr)
$K
$y = 7.626E\text{-}11^{3}x - 1.632E\text{-}05x^{2} + 2.247E+00x + 2.126E+04$
$R^2 = 9.996E\text{-}01$

——Poly. (TOTAL PLCC (20 yr) $K)
——Poly. (TOTAL PLCC (10 yr) $K)
——Poly. (3.0 O& M 20 years)
——Linear (2.0 Const)
——Linear (4.0 D&D)
——Poly. (3.0 O& M 10 years)
——Poly. (1.0 Pre-Ops)

Figure P-19
CH-RH Storage



LEGEND

◆ 1.0 PRE-OPERATIONS
$y = -5.890E\text{-}09^4x + 2.963E\text{-}05^3x - 5.700E\text{-}02^2x + 5.747E+01x + 1.195E+04$
$R^2 = 9.997E\text{-}01$

■ 2.0 CONSTRUCTION
$y = -8.831E\text{-}09^4x + 4.443E\text{-}05^3x - 8.547E\text{-}02^2x + 9.580E+01x + 4.519E+04$
$R^2 = 9.998E\text{-}01$

3.0 O& M
10 years
$y = -5.133E\text{-}08^4x + 2.583E\text{-}04^3x - 4.968E\text{-}01^2x + 4.985E+02x + 9.730E+04$
$R^2 = 9.996E\text{-}01$

× 3.0 O& M
20 years
$y = -1.027E\text{-}07^4x + 5.166E\text{-}04^3x9.937E\text{-}01^2x + 9.970E+02x + 1.946E+05$
$R^2 = 9.996E\text{-}01$

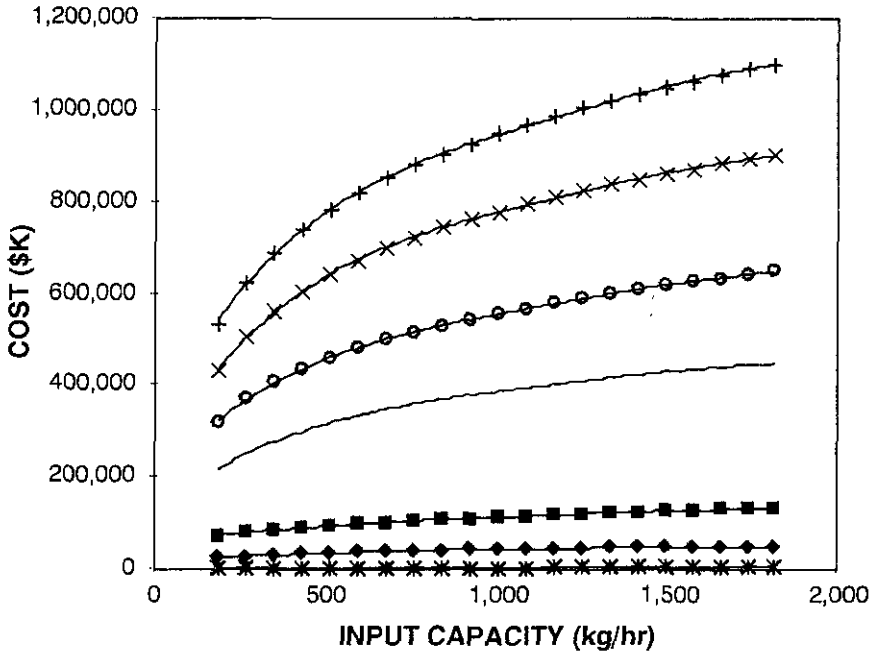
✱ 4.0 D&D
$y = 1.6149x + 3941.1$
$R^2 = 1$

● TOTAL PLCC (10 yr)
$K
$y = -6.605E\text{-}08^4x + 3.323E\text{-}04^3x - 6.393E\text{-}01^2x + 6.534E+02x + 1.584E+05$
$R^2 = 9.997E\text{-}01$

\+ TOTAL PLCC (20 yr)
$K
$y = -1.174E\text{-}07^4x + 5.906E\text{-}04^3x - 1.136E+00^2x + 1.152E+03x + 2.557E+05$
$R^2 = 9.997E\text{-}01$

——Poly. (TOTAL PLCC (20 yr) $K)
——Poly. (3.0 O& M 20 years)
——Poly. (TOTAL PLCC (10 yr) $K)
——Poly. (3.0 O& M 10 years)
——Poly. (2.0 Const)
——Poly. (2.0 Const)
——Poly. (1.0 Pre-Ops)
——Linear (4.0 D&D)

Figure P-20
CH Cement



LEGEND

◆ 1.0 PRE-OPERATIONS
$y = -7.612E\text{-}09^4x + 3.830E\text{-}05^3x - 7.367E\text{-}02^2x + 7.427E+01x + 1.489E+04$
$R^2 = 9.996E\text{-}01$

■ 2.0 CONSTRUCTION
$y = 1.226E\text{-}05^3x - 5.104E\text{-}02^2x + 9.489E+01x + 6.073E+04$
$R^2 = 9.991E\text{-}01$

3.0 O& M
10 years
$y = -6.625E\text{-}08^4x + 3.333E\text{-}04^3x - 6.412E\text{-}01^2x + 6.434E+02x + 1.214E+05$
$R^2 = 9.996E\text{-}01$

× 3.0 O& M
20 years
$y = -1.325E\text{-}07^4x + 6.667E\text{-}04^3x - 1.282E+00^2x + 1.287E+03x + 2.428E+05$
$R^2 = 9.996E\text{-}01$

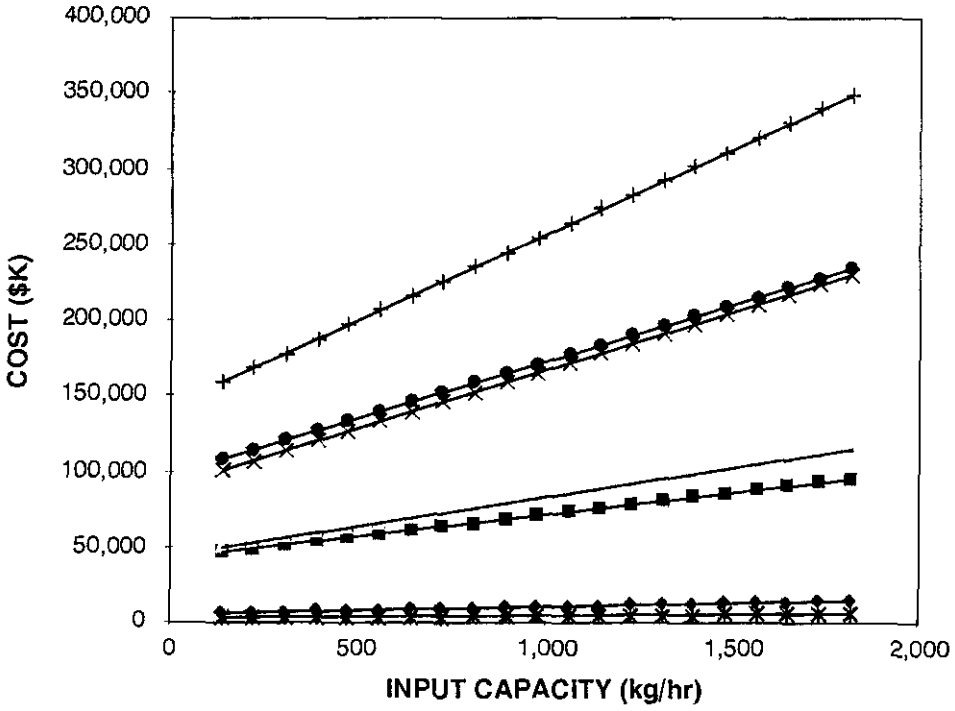
✱ 4.0 D&D
$y = 1.9412x + 4832.6$
$R^2 = 1$

o TOTAL PLCC (10 yr.)
$K
$y = -8.57E\text{-}08^4x + 4.31E\text{-}04^3x - 8.29E\text{-}01^2x + 8.47E+02x + 1.97E+05$
$R^2 = 1.00E+00$

\+ TOTAL PLCC (20 yr.)
$K
$y = -1.519E\text{-}07^4x + 7.643E\text{-}04^3x - 1.470E+00^2x + 1.490E+03x + 3.184E+05$
$R^2 = 9.997E\text{-}01$

——Poly. (TOTAL PLCC (20 yr.) $K)
——Poly. (3.0 O& M 20 years)
——Poly. (TOTAL PLCC (10 yr.) $K)
——Poly. (3.0 O& M 10 years)
——Poly. (2.0 Const)
——Poly. (1.0 Pre-Ops)
——Linear (4.0 D&D)

Figure P-21
RH Cement Grout



LEGEND

- ◆ 1.0 PRE-OPERATIONS
  y = 5.0482x + 6231.2
  $R^2 = 1$
- ■ 2.0 CONSTRUCTION
  y = 29.447x + 43598
  $R^2 = 1$
- 3.0 O& M
  10 years
  y = 38.531x + 45748
  $R^2 = 1$
- × 3.0 O& M
  20 years
  y = 77.062x + 91496
  $R^2 = 1$
- ✱ 4.0 D&D
  y = 2.0512x + 3408.2
  $R^2 = 1$
- ● TOTAL PLCC (10 yr)
  $K
  y = 75.077x + 98986
  $R^2 = 1$
- \+ TOTAL PLCC (20 yr)
  $K
  y = 113.61x + 144734
  $R^2 = 1$

——Linear (TOTAL PLCC (20 yr) $K)

——Linear (TOTAL PLCC (10 yr) $K)

——Linear (3.0 O& M 20 years)

——Linear (3.0 O& M 10 years)

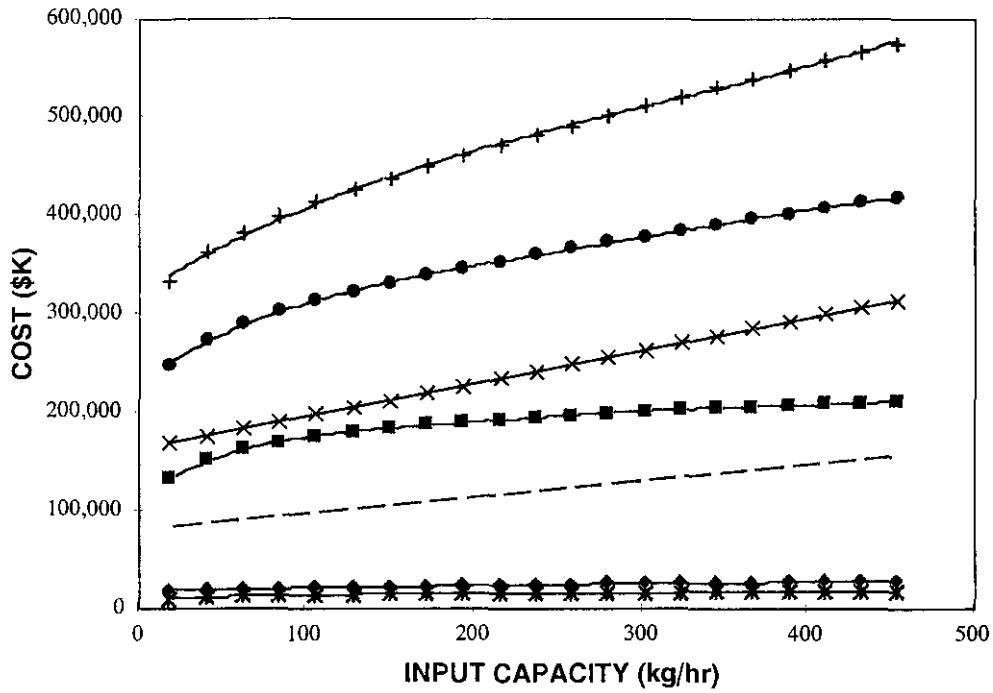
——Linear (2.0 Const)

——Linear (1.0 Pre-Ops)

——Linear (4.0 D&D)

Figure P-22
CH Compact

CH VITRIFICATION (PLASMA)



LEGEND

- ◆ 1.0 PRE-OPERATIONS
  $y = -0.0122^{2}x + 28.113x + 19882$
  $R^2 = 0.9987$
- ■ 2.0 CONSTRUCTION
  $y = 4.233E\text{-}08^{5}x - 5.855E\text{-}05^{4}x + 3.112E\text{-}02^{3}x - 8.093E+00^{3}x + 1.155E+03x + 1.157E+05$
  $R^2 = 9.991E\text{-}01$
- 3.0 O& M 10 years
  10 years
  $y = 167.24x + 82022$
  $R^2 = 1$
- × 3.0 O& M 20 years
  20 years
  $y = 334.48x + 164045$
  $R^2 = 1$
- ✱ 4.0 D&D
  $y = 3.943E\text{-}09^{5}x - 5.454E\text{-}06^{4}x + 2.899E\text{-}03^{3}x - 7.538E\text{-}01^{2}x + 1.075E+02x + 9.789E+03$
  $R^2 = 9.991E\text{-}01$
- ● TOTAL PLCC (10 yr)
  $K
  $y = -9.666E\text{-}06^{4}x + 1.119E\text{-}02^{3}x - 4.763E+00^{2}x + 1.168E+03x + 2.329E+05$
  $R^2 = 9.993E\text{-}01$
- \+ TOTAL PLCC (20 yr)
  $K
  $y = 2.073E\text{-}03^{3}x - 1.965E+00^{2}x + 1.030E+03x + 3.232E+05$
  $R^2 = 9.988E\text{-}01$

- —— Poly. (TOTAL PLCC (20 yr) $K)
- —— Poly. (TOTAL PLCC (10 yr) $K)
- —— Linear (3.0 O& M 20 years)
- —— Poly. (2.0 Const)
- —— Linear (3.0 O& M 10 years)
- —— Poly. (4.0 D&D)
- —— Poly. (1.0 Pre-Ops)

Figure P-23
CH Vitrification (Plasma)

facilities for this study, as shown in Table P-1. All of the information sources have not been subject to extensive review, thus uncertainty of the data arises from the uncertainties associated with the sources themselves, and any changes that have occurred between the current time and the time these sources were compiled.

The existing facility list was used to adjust process cost estimates. O&M and D&D costs were added and applied to facilities that had current existing TRU waste processing facilities for a specific module, while the PLCC was applied to facilities that did not have existing processing capabilities for a specific module.

Combining all of the information gathered, computer cost-model programs have been developed using Visual Basic computer programming language and cost equations were applied based on a calculated mass or volume throughput for a specific module. These programs were implemented using a computer spreadsheet with mass and volume throughput data. The computer cost model programs calculate the cost for each processing module for each alternative in each configuration. Summary results for process costs are presented in Section 4.1 of this appendix.

2.2 TRU Waste Transportation Cost Estimation Methodology

This section will supply information on the sources and assumptions used to complete transportation cost estimations for the various EAs.

The guidance chosen for development of transportation cost estimates is based on a report titled "Waste Management Facilities Cost Information for Transportation of Radioactive and Hazardous Materials," co-authored by Fred Feizollahi and David Shropshire of the Idaho National Engineering Laboratory (INEL) (Feizollahi and Shropshire, 1994). This report is also used as guidance for development of transportation cost estimation in the Draft EM-PEIS. The report also covers the procedure for estimating the costs of various types of wastes, including an entire section on RH and CH-TRU waste transportation.

It is important to note that the report does not make an attempt to limit the volume or radionuclides of the waste being transported; all shipments are mass-limited. The report includes only guidance for estimating the cost of transportation of waste; loading and unloading operations are included in the facility operating and maintenance costs.

It is assumed that all CH-TRU waste will be shipped by truck in TRUPACT-II containers, which have weight, volume, and radionuclide restrictions that limit the amount of waste transported in one shipment. Given waste volume and mass data for each of the sites, both mass-limited and volume-limited cases were developed. It was found that the treatment of the weight results in the majority of the shipments will carry waste of sufficiently high density to be mass-limited. The mass limitation of the TRUPACT-II shipments requires that the transportation of the waste be load

managed. The load management of the waste requires that payload scenarios be taken into account for the shipment of TRUPACT-IIs. RH-TRU waste, however, did have limitations on the radionuclide content and the volumes had to be further reduced to meet container and shipping specifications. The number of shipments was ultimately derived by making assumptions not included in the report. It was assumed that a 60/40 split between 55-gallon drums and standard waste boxes would be made (for volume limited shipments). The mass limited shipments required that the waste be packaged into 55-gallon drums to maintain loading efficiency (see Tables P-53 through P-74). Fourteen 55-gallon drums or two standard waste boxes can fit into a TRUPACT-II container. A truck shipment has the capacity for three TRUPACT-II containers. The mass limited shipments varied the number of drums that were shipped from 42 drums to 7 drums per TRUPACT-II. Additionally, the number of TRUPACT-II per shipment varied from 3 to 1.

The planned route and total mileage traveled for each of the shipments is determined by the HIGHWAY 3.3 Routing Model that was prepared by the Oak Ridge National Laboratory for use by DOE. The model is an extensive computerized atlas that determines the optimum route for a given origin and destination. The DOE sites that produce and treat TRU waste are all included, as is the WIPP repository. The program allows the user to place constraints on route choices, and several were invoked in order to choose the most preferred route for TRU waste transportation. Route constraints include the barred use of roads that prohibit truck use, the preferred use of routes already designated for hazardous waste transportation, and the use of roads in New Mexico designated as preferred shipment routes to the WIPP. The model is described in Section 3.5.2 of this report, Methodology Used to Evaluate Factor 5 (Risk of Transportation).

There are three types of costs associated with transportation. Carrier costs and hardware costs are functions of a moving vehicle and are combined to make up the "costs per loaded mile" (CPLM). Carrier costs include tractor, fuel, labor, insurance, security escort, taxes, tools, permit fees, and related costs incurred during waste transportation. Hardware costs are associated with maintenance of the specialized trailers and railroad cars used to transport waste. Fixed costs are independent of the distance traveled and are considered separately. Fixed costs include demurrage costs of the carrier and the hardware used in the shipment. The total cost for a single shipment can be determined by adding the fixed costs to the product of the CPLM and the number of miles traveled. It should be noted that the CPLM unit rate is based on one-way mileage from origin to destination, but that the total cost for one shipment includes the return trip (see Section 3.5.2.5).

Finally, the process of estimating the costs is a straightforward analysis. The costs are derived from the number of shipments based on a volumetric and mass calculation, taking into consideration the volume and mass of drums or standard waste boxes. The number of shipments are applied to the CPLM and the round-trip mileage, and the fixed costs are added to determine the total transportation costs for each individual site. Transportation cost estimations were performed for the decentralized and regionalized cases and each EA therein. An estimation was also made for the centralized baseline. Since the centralized transportation configuration requires that all waste be treated at the WIPP, all the centralized EAs are similar from a transportation point of view. Results are discussed in Section 4.2.

There are relatively few sources of uncertainty in the development of the transportation cost estimations. Included in these are the uncertainty of the waste volumes and masses requiring

transportation and the uncertainty in the numbers provided in the report used as guidance for estimate development. The level of uncertainty is discussed in Section 4.2.

2.3 Backfill Emplacement Cost Estimation Methodology

Backfill emplacement costs were developed by analyzing a logical approach to emplacing material into a panel. The approach had to be generic in nature to accommodate the fact that an exact method of emplacement has not been developed. The approach for estimating the costs of emplacement are generated by applying mine development data sources to an activity that is not characteristic the mining industry. The backfilling of waste emplaced in a mine has not been an activity that is common practice for the DOE or mining industry.

The cost estimation of a backfill operation was developed based on the rate at which backfill would be emplaced. The assumptions for this estimation are listed in Section 3.0. Once the capacity of the equipment requirement was determined a cost model was developed to determine the cost requirements for backfill.

The primary source of costing information is the SME Mining Engineering Handbook (Hartman, 1992), which provided a logical approach to the activities that would be performed. Assumptions had to be made in order to provide some logical data points for performing a backfill activity. An estimation of this type would be categorized as a Study Estimate where the uncertainty of the estimate is plus or minus 30 percent.

Data for the estimate was dependent on the mass and volume of backfill material. The backfill was to be emplaced daily as a batch and would not interrupt the waste emplacement activities. The rate for backfill was assumed to be 960 hours per year for 35 years.

Calculation of the cost estimation was developed utilizing a spreadsheet format that applied the cost equations to the rate at which the backfill would be emplaced. The spreadsheet calculated the cost for each EA that had a backfill associated with it.

Costs included in the estimate are based on capital equipment design and development and on operation and maintenance. The capital is based on actual equipment costs and the tons per day of emplacement capacity (Hartman, 1992). The operating costs are calculated as the total number of FTEs for backfill operations multiplied by the number of hours to perform the backfill times a labor rate. Maintenance costs are assumed to be 30 percent of total capital equipment costs. Design and development of the backfill emplacement activities is calculated as 30 percent of the total capital equipment expenditures. A contingency factor of 25 percent was applied to the overall cost. The manpower for the backfill emplacement was analyzed similarly to an unmechanized shrinkage mine. This facilitated the complexity of departmental requirements for safety of operations.

2.4 WIPP Waste Operations Emplacement Cost Estimation Methodology

The cost estimation for the impacts associated with the WIPP operations only analyzed the incremental costs to the actual activities associated with waste handling and emplacement. These impacts provide a measure of the planning necessary to implementing an EA.

For each of the EAs and configuration (i.e., decentralized, regionalized, or centralized) the throughput of the waste was determined in order to handle and emplace the waste at WIPP. The throughput rate was based on the number of transported waste shipments that were to be handled at WIPP. The waste work-off and repository configuration is analyzed and accounted for to determine additional equipment requirements or modifications. The next parameter is to determine the manpower necessary to handle the waste. Guidance was provided (Palanca, 1995) in order to determine the size of a crew and the waste handling capacity.

The number of waste shipments to the WIPP was determined based on the methodology for transportation (see Section 2.2) The throughput rate was calculated by applying the number of shipments to the operational period of the WIPP. The waste transported to the WIPP site had to meet the time constraint of a 35 year operational life for the treatment and emplacement. The alternatives that required waste treatment would not have waste available for approximately 10 years, which only allows 25 years for transportation and emplacement. Additionally, the manpower requirements for the waste handling operation were given as three possible crews based on the throughput rate. The capital equipment requirement was estimated and totaled for the applicable EA.

Calculation of the WIPP handling cost estimation was developed utilizing a spreadsheet format that applied the capital requirements and the throughput rate of the waste to the manpower requirement. The cost was calculated for each EA and configuration. A comparative analysis was performed to the baseline decentralized EA.

3.0 ASSUMPTIONS AND DATA FOR FACTOR 7

Two major sources of data were used for the analysis of cost and schedule:

- The initial retrievable and projected waste volumes were obtained from the WIPP BIR (DOE, 1995d)

- Guidance for process flow diagrams and costing and cost curves were obtained from the draft EM-PEIS (DOE, 1995b).

The major assumptions follow:

- Cited references are the most current information source of the reference subject and the information gathered from these references are correct.

- Mass and volume changes occur during certain processing activities. A summary of the mass and volume changes is presented in Table P-1.

- The volume of waste categorized as "unknown" was processed the same as solid organics and inorganics. However, the mass of unknown waste was assumed to be zero because no information was available regarding the density of the unknown waste and the volume of this waste was small compared to the total volume of waste destined for WIPP.

- Thirty percent of the stored waste at Los Alamos National Laboratory (LANL), Savannah River Site (SRS), INEL/Argonne National Laboratory-West (ANL-W), and Hanford requires retrieval.

- Twenty-five percent of stored sludges at LANL and INEL require re-grouting.

- Waste is treated and or stored according to the site configurations denoted in Table P-2.

- Waste is processed 4,032 hours per year over a 20-year waste treatment facility operating life.

- All waste within a major waste form category (i.e., sludges, solid organic, solid inorganic) can be treated using a specified technology.

- The supercompaction module does not include shredding.

- Costs for supercompaction processing were analyzed as a modified cost module for the WMFCITRUW supercompaction module.

- Costs for a vitrification unit were considered adequate for the costs for a plasma melter.

- Costs for enhanced cement processing are identical to costs for grouting except for material costs.

- Costs for shredding and adding clay are identical to costs for grouting except for material costs.

- Costs for shredding and compacting were analyzed as a modified cost module for supercompaction.

- Transportation of waste to WIPP is either mass or volume limited. The limiting factor determines the number of shipments.

- Costs for a throughput of 0.05 kg/hr or less to any processing module are considered zero.

- Costs are in 1994 dollars and do not take into account escalation or the time value of dollars.

- The operations at WIPP are 35 years. Waste treatment alternatives require 10 years for start-up to turnkey operations.

- The waste emplacement operations at WIPP consists of two eight hour shift operation five days a week.

- EAs 94(a-f) decentralized and regionalized requires 28.6 years of waste emplacement which exceeds the time constraint of 35 years by 3.6 years.

- Both waste handling and backfill is completed in the 35 year operational period.

- Waste emplacement is dependent upon the number of TRUPACT-IIs per day.

- Backfill costs are based on a batch per day (tons) of material that would be emplaced each day.

- Backfill of the rooms does not impact operations.

4.0 RESULTS OF ANALYSIS FOR FACTOR 7

4.1 Process Costing Results

As described in Section 2.1, process costs are calculated using computer program cost models developed for this study. Costs are calculated for each EA in each configuration for CH waste and for decentralized baseline for RH waste. Cost values are based on 1994 cost data and do not take into consideration time value of money or escalation for expenditures occurring during the planning life cycle cost (Feizollahi and Shropshire, 1994). Summaries of these costs are presented in Tables P-3 and P-4. These tables present the summary of process costs for the baseline and each of the different EAs in each of the configurations for CH waste and for the decentralized baseline for RH waste.

Processing schemes for EAs 33, 35(a&b), 83, and 111 are identical to the processing schemes for the baseline for each of the configurations, therefore their processing costs are assumed to be identical to the processing costs for the baseline. The processing scheme for EA 77 (a-d) is the same as the processing scheme for Alternative 1 for each of the configurations; therefore, its processing costs are identical to the process costs for EA 1. EA 33, 35 (a and b), 77 (a through d), 83, and 111 will be omitted from further discussion in this section because they are not unique with respect to processing cost.

The range of processing costs for CH waste varies between $3.2 billion for the centralized baseline and $6.3 billion for decentralized EAs 94(a-f). The process costs for the decentralized EAs are the highest for a specific EA; the process costs for the centralized configuration are the lowest. This was expected because process costs for treatment (maintenance and specific alternative treatments) are applied to a larger number of sites in the decentralized (10 sites) and regionalized (5 sites) configuration as compared to the centralized (1 site) configuration.

The processing costs for the baseline case were least expensive when compared to the EAs; processing costs for EA 94 (a-f) were most expensive. This results from a combination of effects. One explanation for this is that the treatment module throughput values for the baselines are lowest; treatment module throughput values for EA 94 (a-f) are highest. The baseline consists

of treating to the WIPP-Waste Acceptance Criteria (WAC) standards. Treatment to WIPP-WAC entailed shredding and grouting a portion of the existing sludges and all of the projected sludges, along with repackaging waste as necessary to meet transportation and WIPP requirements. In EA 94(a-f) all of the waste was treated in some way by either repackaging, enhanced-cement processing, or shredding and adding clay. Thus, the "treatment" processing throughput for EA 94 (a-f) is higher than the baseline.

The second explanation is that for the shred-and-add-clay and, enhanced-cement cost modules, it was assumed that there were currently no facilities that had these processing capabilities. The result was that the PLCC was applied to all appropriate sites (decentralized, regionalized and centralized configurations) making EA 94 (a-f) more costly than other EAs (e.g EA 1, etc.) where some facilities currently do have a specific processing capability.

Another observation from the information presented in Table P-3 is that after taking the level of uncertainty of the cost estimations plus or minus 30 percent (Section 2.1), that the centralized EA processing costs are approximately the same as compared to the decentralized baseline. The decentralized baseline represents the current strategy for managing CH waste. Thus, a greater benefit may be obtained by implementing a centralized case for the same cost as the current strategy.

The RH process costs for the baseline decentralized configuration is $1.01 billion.

Costs are calculated for each EA in each configuration, for CH waste, on the basis of sites and processing modules. The results of these calculations are presented in Tables P-5 to P-34. Information contained in these tables represent the highest level of cost detail per EA. The purpose of these tables is to present detailed cost for an individual EA not provided in the summary table.

Costs are calculated for each Decentralized, Regionalized and Centralized configurations on the basis of EA ID number and site. The results of these calculations are presented in Tables P-35 to P-37. The purpose of these tables is to provide a comparative view of site costs per EA.

Costs percentages are calculated on the basis of cost percentage of each EA cost attributed to a specific site for each EA. These results are presented in Tables P-38 to P-40. The purpose of these tables is to provide normalized view of the data presented in Tables P-35 to P-37 and in assist in comparing the site costs to each other for all configurations.

Cost percentages are calculated on the basis of cost percentage of the each EA total cost attributed to a specific cost module (front end, retrieval, waste characterization, etc.). The results of these calculations are presented in Tables P-41 to P-43. The purpose off these tables is to present a normalized view of the data presented in Tables P-5 to P-34 and in assist in comparing the module costs to each other for all configurations.

Cost percentages are calculated on the bases of cost percentage of the total cost attributed to a specific area of processing. The results are presented in Tables P-44 to P-46 For the basis of this comparison, the total processing scheme is divided into three sections. The first section is named "Front-End Processing" and is a roll-up of the Front End, Retrieval and Waste Characterization processing modules. The second section is named "Treatment Process" and is a roll-up of the Maintenance and any EA specific treatment modules (e.g. Plasma,

Supercompaction, etc.). The third processing area is named "Back-End Processing" and is a roll-up of the Certification and Shipping, and the Storage modules. The purpose of these tables to determine how costs are distributed throughout the total processing scheme.

Similar results are available for RH waste process cost data. Table P-47 presents the Decentralized Base Case cost per module for each site processing or shipping RH waste. Table P-48 presents the cost percentage of the total cost on a per site basis. Table P-50 presents the costs attributed to each processing module. Table P-49 presents the cost percentages of the total cost attributed to each processing module and lastly, Table P-51 presents the cost percentages attributed to each area of processing (Front End, Treatment and Back End).

4.2 TRU Waste Transportation Cost Estimation Results

This section provides information on the results of the transportation cost estimations for the various EAs. For information regarding the sources and assumptions used to complete transportation cost estimations, refer to Section CS.2.2.

Transportation cost estimations are performed for each configuration and EA. Within the centralized, regionalized, and decentralized configurations, some of the EAs are identical from a transportation standpoint, making the transportation costs for these EAs the same. For example, the centralized configuration provides only one set of transportation requirements because all treatment occurs at the WIPP, making the transportation costs for all centralized EAs the same. Similarly, the regionalized and decentralized EAs that vary backfill options do not provide unique situations to transportation, so these cases have transportation costs equal to those of other EAs. EAs that present transportation with a unique scheme include base case EAs and EAs 1, 6, 10, and 94(a-f).

The transportation scheme chosen has little effect on cost for any given EA. This is clearly demonstrated by the decentralized, regionalized, and centralized base cases. The total costs for transportation of CH-TRU waste are $690 million, $701 million, and $611 million, respectively. The centralized scheme requires that all waste be transported directly from its current site to the WIPP. Even though not treated, the waste must be handled only one time. The regionalized transportation configuration resulted in the highest percentage of waste to be handled twice; once from its storage site to the treatment site, and then on to the WIPP. The decentralized case avoids some of this "double handling" by treating at more sites, allowing more waste to take a more direct route to the WIPP. The overwhelming factor in determining transportation costs, as described below, is the volume of waste being transported.

As explained in Section 2.2, each case is found to be mass-limited. Logically, therefore, the effect each EA has on mass will have a proportional effect on transportation costs. The baseline EA and EA 94(a-f) treat sludges by grouting and enhanced cement, respectively. These are processes that increase the volume of waste. Solid organics and solid inorganics are treated by processes that have little effect on volume in these EAs. These are clearly the two most expensive EAs from a transportation point of view. Transportation of wastes treated with EAs 1, 6, and 10 are less expensive because they reduce volume. EA 6 grouts sludges, which initially increases their volume, but further shredding and compaction of solid wastes reduces volumes by a ratio of approximately 1.3:1. EA 1, which grouts sludges but supercompacts solid wastes,

is less expensive still. Supercompaction reduces solid wastes by a ratio of 2.9:1. EA 10 is the least expensive. It treats waste by plasma melting, reducing volume by a ratio of approximately 3:1.

The transportation costs range from a minimum of $611 million for centralized EA's, which are transported directly to the WIPP, to a maximum of $1,146 million for regionalized EA 94(a-f), which not only increases the original volume of waste by the largest percentage, but also has the highest percentage of "double handled" waste. An estimate to handle RH waste for the decentralized baseline is also prepared. In addition to the $611 million estimated to transport CH waste for this EA, $318.3 million is estimated to transport RH waste. Even though the volume of RH waste is significantly smaller than CH waste, to avoid radionuclide limitations during transportation, a much smaller volume is carried by each shipment. The Transportation Cost Estimation Summary, Table P-52 presents the estimated transportation costs for each EA.

Detailed costs are presented in Tables P-53 to P-77. These tables include site specific information used to calculate total site costs for shipping. This information includes waste destination, CPLM, number of shipments, total miles traveled, fixed cost, variable cost, and total cost. These tables present the costs in the highest level of detail and provide information not otherwise found in Table P-52.

The level of uncertainty in the cost estimates comes from two sources. One, the level of uncertainty in the stored and projected waste volumes in the Baseline Inventory Report (DOE, 1995d) and two, the level of uncertainty in the studies used as guidance to develop the transportation cost estimates. For guidance in estimating transportation costs, a report titled "Waste Management Facilities Cost Information for Transportation of Radioactive and Hazardous Materials" (Feizollahi and Shropshire, 1994), was contracted by the DOE, and Revision 1 was completed in September, 1994. A report of this nature would be classified as a "study estimate" (Peters and Timmerhaus, 1991), and would have a probable accuracy only within plus or minus 30 percent.

4.3 Backfill Emplacement Cost Results

Backfill emplacement costs were performed for each of the EAs that specified backfill. The cost for emplacement activities was independent to the case of the EA (decentralized, regionalized, centralized) and was only affected by the mass and volume of the backfill. This costs for the EAs were dependent upon the amount and type of backfill that was to be utilized.

Table P-75 (Backfill Emplacement Cost Total Summary) provides a summary of the estimated cost total for each EA. The lowest cost for backfill are EAs 77 (a-d) which consists of the least amount of backfill material due to the reduced room height for waste. The highest cost for backfill are EAs 35 (a-b) and 94c, respectively. This is due to the increased complexity of emplacing a wet (grout) backfill.

Cost of backfill is categorized as a planning cost estimate and has an uncertainty of plus or minus 30 percent. In addition the estimation does not include the cost of the material to be utilized for backfill. It is assumed that backfill materials consisting of salt would utilize the existing mined materials.

4.4 WIPP Waste Operations Emplacement Cost Results

Incremental cost information for the emplacement activities associated with the waste handling at the WIPP are discussed in this section. The discussion includes the assumptions and limitations of the results.

The comparative analysis of the WIPP waste handling and emplacement activities is discussed is shown in Table P-76. The cost of WIPP handling and emplacing the waste is primarily independent of the cases (decentralized, regionalized, centralized) for this cost estimate study. For this estimate there were three waste handling/emplacement crew configuration that were utilized as input for the EAs. The crew sized was dependent upon the number of TRUPACT-IIs that were processed per day as shown in Table P-77. The number of TRUPACT-IIs that were processed was based on the number of waste shipment and the limiting factor of a 35 year operational life for WIPP.

Baseline cost is established based on the required labor to handle and emplace the waste. The EAs 33, 35 (a-b) and 111 have the same comparable cost as the baseline. The EA with the highest handling savings are number 10 and 94 (a-f) in emplacement activities for 25 years instead of 35 years based on 100% processing of waste. This is due to the decrease in the total waste generated by approximately 3:1. EAs 1 and 6 have the same handling savings. EA 77(a-d) has a reduced savings as compared to EA 1. This is due to the reduced room height which does not accommodate the current remote handled underground handling equipment or emplacement configuration.

The limitation of this estimate is that the total WIPP budget is not included in this estimate. The only costs included are labor and anticipated capital equipment or modifications. Additional cost not included in this comparative analysis is the required budget that would be needed to manage and operate the WIPP, departmental management, and any additional research and development. This estimate is only intended to provide a measure of the relative cost savings or burden for an EA.

TABLE P-1

EXISTING TRU FACILITIES

	Waste Processing Functions								
								Treatment[2]	
Site	Retrieve	Waste Char	Front End	Certify/ Ship	Maint	Storage	Grout	Super Cmpct	Plasma
Major Generator/Storage Sites									
ANL-E	–		X		X	X			
Hanf		X	X	X	X	X			
INEL/ ANL-W		X	X	X	X	X			X[3]
LANL		X	X		X	X	X		
LLNL	–	X	X	X	X	X			
Mound	–		X		X				
NTS	–		X		X	X			
ORNL	–	X	X	X	X	X			
RFETS	–	X	X	X	X	X	X	X	
SRS			X		X	X			
Small Quantity Sites									
Ames	–	P	[1]	P	–	–	–	–	–
BCLDP	–	P	[1]	P	–	–	–	–	–
BT	–	P	[1]	P	–	–	–	–	–
ETEC	–	P	[1]	P	–	–	–	–	–
KAPL	–	P	[1]	P	–	–	–	–	–
LBL	–	P	[1]	P	–	–	–	–	–
Pad	–	P	[1]	P	–	–	–	–	–
Pantex	–	P	[1]	P	–	–	–	–	–
SNL	–	P	[1]	P	–	–	–	–	–
U Mo	–	P	[1]	P	–	–	–	–	–
WVDP	–	P	[1]	P	–	–	–	–	–

Notes:
X = Site has existing facilities to perform this function. No credit was given for planned facilities. Costs only include 20 years of O&M and D&D.
– = Site will not require this function.
P = This function will be accomplished utilizing portable equipment.
[1]For sites which will use portable equipment for waste characterization and certification and shipment, it is assumed that existing facilities will be sufficient for administrative purposes.
[2]No facilities exist to treat TRU waste using shred/compact, shred/add clay, or enhanced cement.
[3]It is assumed that the INEL Pit 9 treatment facility will be available to treat stored waste.

TABLE P-2

SITE TRANSFERS FOR THE DECENTRALIZED, REGIONALIZED, AND CENTRALIZED CONFIGURATIONS

Decentralized			Regionalized			Centralized		
Site	**CH**	**RH**	**Site**	**CH**	**RH**	**Site**	**CH**	**RH**
ANL-E*	WIPP	ORNL+	ANL-E	SRS	ORNL	ANL-E	WIPP	WIPP
Ames	ANL-E#		Ames	SRS		Ames	WIPP	
BCLDP		ORNL+	BCLDP		ORNL	BCLDP		WIPP
BT	Mound	ORNL+	BT	SRS	ORNL	BT	WIPP	WIPP
ETEC	NTS		ETEC	INEL/ ANL-W		ETEC	WIPP	
INEL/ ANL-W*	WIPP	WIPP	INEL/ ANL-W*	WIPP	Hanford	INEL/ ANL-W	WIPP	WIPP
KAPL	Mound	ORNL+	KAPL	SRS	ORNL	KAPL	WIPP	WIPP
LANL*	WIPP	WIPP	LANL*	WIPP	Hanford	LANL	WIPP	WIPP
LBL	(LLNL)		LBL	Hanford		LBL	WIPP	
LLNL*	WIPP		LLNL	Hanford		LLNL	WIPP	
Mound*	WIPP		Mound	SRS		Mound	WIPP	
MU	ANL-E#		MU	SRS		MU	WIPP	
NTS*	WIPP	WIPP	NTS	INEL/ ANL-W	Hanford	NTS	WIPP	WIPP
ORNL*	WIPP	WIPP	ORNL* (rh)	SRS	WIPP	ORNL	WIPP	WIPP
PA	ORNL		PA	SRS		PA	WIPP	
Pantex	LANL		Pantex	LANL		Pantex	WIPP	
RFETS*	WIPP		RFETS*	WIPP		RFETS	WIPP	
Hanford*	WIPP	WIPP	Hanford*	WIPP	WIPP	Hanford	WIPP	WIPP
SNL/NM	LANL		SNL/NM	LANL		SNL/NM	WIPP	
SRS*	WIPP	WIPP	SRS*	WIPP	ORNL	SRS	WIPP	WIPP

Notes:

* Denotes a processing site.

ORNL+ Remote handled wastes from BCLDP, BT, KAPL, (these are not discussed in the EM-PEIS) and ANL-E should be processed at ORNL instead of Mound because Mound currently does not process or store RH waste.

ANL-E# The EM-PEIS discusses that ANL-E will process and ship their own CH waste, but does not cover Ames and MU, which are closer to ANL-E than ORNL.

(LLNL) EM-PEIS indicates LBL waste will be shipped to Hanford. LBL waste should be shipped to LLNL because it is much closer.

TABLE P-3

CH PROCESS GRAND TOTALS
($K)

Alternative ID #	Decentralized	Regionalized	Centralized
Base Case	3,576,954	3,418,650	3,202,376
1	4,379,357	3,974,696	3,411,991
6	4,117,678	3,757,294	3,329,333
10	5,966,427	4,992,885	3,960,139
33	3,576,954	3,418,650	3,202,376
35 (a&b)	3,576,954	3,418,650	3,202,376
77	4,379,357	3,974,696	3,411,991
83	3,576,954	3,418,650	3,202,376
94 (a-f)	6,301,672	5,502,932	4,217,091
111	3,576,954	3,418,650	3,202,376

TABLE P-4

RH DECENTRALIZED BASELINE COST PER SITE ($K)

Site	Cost
BCLDP	0
BT	0
HANFORD	173,279
INEL/ANL-W	170,849
KAPL	0
LANL	206,932
ORNL	339,190
SRS	121,730
GRAND TOTAL	**1,011,980**

TABLE P-5

CH DECENTRALIZED BASELINE COST SUMMARY ($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	4,850	170,847
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	47,466	119,034	88,819	55,263	15,878	513,712
INEL/ANL-W	181,977	158,617	47,773	117,412	117,717	55,477	14,413	693,385
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	47,604	108,993	76,332	53,714	9,727	451,057
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	47,170	101,543	88,819	10,831	4,850	288,556
MOUND	0	50,674	0	101,299	0	14,123	6,405	172,502
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	4,850	171,177
ORNL	0	35,343	47,171	101,772	88,819	10,831	4,850	288,786
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,450	103,732	72,326	22,109	4,850	285,810
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	68,413	9,705	461,273
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**284,635**	**1,073,005**	**532,831**	**398,857**	**80,380**	
GRAND TOTAL								**3,576,954**

TABLE P-6

CH DECENTRALIZED ALTERNATIVE ID #1
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Supercompaction	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	0	14,123	4,850	170,847
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	52,786	119,034	88,819	146,500	55,705	9,388	659,484
INEL/ANL-W	181,977	158,617	50,556	117,412	117,717	134,615	55,708	11,257	827,859
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	48,920	108,993	76,332	96,559	55,150	7,392	548,034
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	47,274	101,543	88,819	26,162	10,831	4,850	314,822
MOUND	0	50,674	47,199	101,299	0	26,162	14,123	6,405	245,862
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	47,272	101,529	0	26,162	14,123	4,850	244,611
ORNL	0	35,343	47,348	101,772	88,819	26,162	10,831	4,850	315,125
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	47,916	103,732	72,326	30,731	22,617	4,850	317,515
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	52,015	116,492	0	144,301	71,028	4,850	655,350
WIPP	0	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**441,285**	**1,073,005**	**532,831**	**657,355**	**404,089**	**63,546**	
GRAND TOTAL									**4,379,357**

TABLE P-7

CH DECENTRALIZED ALTERNATIVE ID #6
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Shred and Compaction	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	0	14,123	4,850	170,847
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	52,786	119,034	88,819	83,714	55,705	13,642	600,952
INEL/ANL-W	181,977	158,617	50,556	117,412	117,717	76,923	55,708	13,286	772,196
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	48,920	108,993	76,332	55,177	55,150	8,896	508,155
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	47,274	101,543	88,819	14,950	10,831	4,850	303,610
MOUND	0	50,674	47,199	101,299	0	14,950	14,123	6,405	234,650
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	47,272	101,529	0	14,950	14,123	4,850	233,399
ORNL	0	35,343	47,348	101,772	88,819	14,950	10,831	4,850	303,913
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	47,916	103,732	72,326	26,661	22,617	4,850	313,444
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	52,015	116,492	0	82,458	71,028	8,009	596,665
WIPP	0	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**441,285**	**1,073,005**	**532,831**	**384,731**	**404,089**	**74,490**	
GRAND TOTAL									**4,117,678**

TABLE P-8

CH DECENTRALIZED ALTERNATIVE ID #10
COST SUMMARY ($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Plasma	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	47,169	101,199	67,478	14,123	4,850	285,494
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	52,787	119,034	501,386	54,724	6,721	921,904
INEL/ANL-W	181,977	158,617	52,384	117,412	267,218	54,390	5,930	837,927
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	49,648	108,993	423,349	42,865	4,850	784,392
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	47,276	101,543	168,035	10,831	4,850	367,879
MOUND	0	50,674	47,200	101,299	76,105	14,123	6,405	295,807
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	47,272	101,529	163,545	14,123	4,850	381,994
ORNL	0	35,343	47,363	101,819	250,235	10,831	4,850	450,441
PANTEX	0	Portable	0	0	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,960	103,732	360,578	14,808	4,850	567,272
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	52,015	116,492	485,036	68,413	4,850	993,469
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**491,074**	**1,073,051**	**2,762,966**	**379,080**	**53,009**	
GRAND TOTAL								**5,966,427**

TABLE P-9

CH DECENTRALIZED ALTERNATIVE ID #33
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	4,850	170,847
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	47,466	119,034	88,819	55,263	15,878	513,712
INEL/ANL-W	181,977	158,617	47,773	117,412	117,717	55,477	14,413	693,385
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	47,604	108,993	76,332	53,714	9,727	451,057
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	47,170	101,543	88,819	10,831	4,850	288,556
MOUND	0	50,674	0	101,299	0	14,123	6,405	172,502
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	4,850	171,177
ORNL	0	35,343	47,171	101,772	88,819	10,831	4,850	288,786
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,450	103,732	72,326	22,109	4,850	285,810
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	68,413	9,705	461,273
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**284,635**	**1,073,005**	**532,831**	**398,857**	**80,380**	
GRAND TOTAL								**3,576,954**

TABLE P-10

CH DECENTRALIZED ALTERNATIVE ID #35 (A&B)
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	4,850	170,847
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	47,466	119,034	88,819	55,263	15,878	513,712
INEL/ANL-W	181,977	158,617	47,773	117,412	117,717	55,477	14,413	693,385
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	47,604	108,993	76,332	53,714	9,727	451,057
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	47,170	101,543	88,819	10,831	4,850	288,556
MOUND	0	50,674	0	101,299	0	14,123	6,405	172,502
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	4,850	171,177
ORNL	0	35,343	47,171	101,772	88,819	10,831	4,850	288,786
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,450	103,732	72,326	22,109	4,850	285,810
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	68,413	9,705	461,273
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**284,635**	**1,073,005**	**532,831**	**398,857**	**80,380**	
GRAND TOTAL								**3,576,954**

TABLE P-11

CH DECENTRALIZED ALTERNATIVE ID #77 (A-D)
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Supercompaction	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	0	14,123	4,850	170,847
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	52,786	119,034	88,819	146,500	55,705	9,388	659,484
INEL/ANL-W	181,977	158,617	50,556	117,412	117,717	134,615	55,708	11,257	827,859
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	48,920	108,993	76,332	96,559	55,150	7,392	548,034
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	47,274	101,543	88,819	26,162	10,831	4,850	314,822
MOUND	0	50,674	47,199	101,299	0	26,162	14,123	6,405	245,862
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	47,272	101,529	0	26,162	14,123	4,850	244,611
ORNL	0	35,343	47,348	101,772	88,819	26,162	10,831	4,850	315,125
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	47,916	103,732	72,326	30,731	22,617	4,850	317,515
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	52,015	116,492	0	144,301	71,028	4,850	655,350
WIPP	0	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**441,285**	**1,073,005**	**532,831**	**657,355**	**404,089**	**63,546**	
GRAND TOTAL									**4,379,357**

TABLE P-12

CH DECENTRALIZED ALTERNATIVE ID #83
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	4,850	170,847
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	47,466	119,034	88,819	55,263	15,878	513,712
INEL/ANL-W	181,977	158,617	47,773	117,412	117,717	55,477	14,413	693,385
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	47,604	108,993	76,332	53,714	9,727	451,057
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	47,170	101,543	88,819	10,831	4,850	288,556
MOUND	0	50,674	0	101,299	0	14,123	6,405	172,502
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	4,850	171,177
ORNL	0	35,343	47,171	101,772	88,819	10,831	4,850	288,786
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,450	103,732	72,326	22,109	4,850	285,810
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	68,413	9,705	461,273
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**284,635**	**1,073,005**	**532,831**	**398,857**	**80,380**	
GRAND TOTAL								**3,576,954**

TABLE P-13

CH DECENTRALIZED ALTERNATIVE #94
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Enhanced Cement	Shred and Add Clay	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	47,169	101,199	92,751	0	14,123	4,850	310,767
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	52,787	119,034	92,751	500,396	61,239	15,879	1,029,337
INEL/ANL-W	181,977	158,617	52,384	117,412	324,409	348,839	61,865	18,639	1,264,140
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	49,648	108,993	193,928	206,476	72,483	11,102	797,317
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	47,276	101,543	92,751	90,879	10,831	4,850	383,473
MOUND	0	50,674	47,200	101,299	92,751	90,879	14,123	6,405	403,332
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	47,272	101,529	0	90,879	14,123	4,850	309,328
ORNL	0	35,343	47,363	101,819	92,751	90,879	10,831	4,850	383,836
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	47,960	103,732	92,751	99,766	29,556	4,850	413,958
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	52,015	116,492	0	484,177	77,132	9,705	1,006,183
WIPP	0	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	0	0	0	0
Module Total	**444,535**	**762,712**	**491,074**	**1,073,051**	**1,074,840**	**2,003,170**	**366,307**	**85,981**	
GRAND TOTAL									**6,301,672**

TABLE P-14

CH DECENTRALIZED ALTERNATIVE #111
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	4,850	170,847
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	47,466	119,034	88,819	55,263	15,878	513,712
INEL/ANL-W	181,977	158,617	47,773	117,412	117,717	55,477	14,413	693,385
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	47,604	108,993	76,332	53,714	9,727	451,057
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	47,170	101,543	88,819	10,831	4,850	288,556
MOUND	0	50,674	0	101,299	0	14,123	6,405	172,502
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	4,850	171,177
ORNL	0	35,343	47,171	101,772	88,819	10,831	4,850	288,786
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,450	103,732	72,326	22,109	4,850	285,810
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	68,413	9,705	461,273
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**284,635**	**1,073,005**	**532,831**	**398,857**	**80,380**	
GRAND TOTAL								**3,576,954**

TABLE P-15

CH REGIONALIZED BASELINE
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	47,472	119,034	88,819	55,369	16,141	514,087
INEL/ANL-W	181,977	158,617	47,773	117,412	117,717	55,568	14,545	693,609
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	47,604	108,993	76,332	53,714	9,727	451,057
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,450	103,732	72,326	22,109	4,850	285,810
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	47,171	116,492	88,819	70,837	10,174	600,156
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**237,471**	**1,073,005**	**444,012**	**401,478**	**55,438**	
GRAND TOTAL								**3,418,650**

TABLE P-16

CH REGIONALIZED ALTERNATIVE ID #1
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Supercompaction	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	0	14,123	0	165,997
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	52,897	119,034	88,819	146,991	55,819	9,541	660,353
INEL/ANL-W	181,977	158,617	50,666	117,412	117,717	135,129	55,808	11,309	828,635
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	48,923	108,993	76,332	96,719	55,150	7,392	548,196
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	0	14,123	0	166,096
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	0	101,529	0	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	47,916	103,732	72,326	30,731	22,617	4,850	317,515
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	52,286	116,492	88,819	145,543	71,351	4,912	746,066
WIPP	0	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**252,688**	**1,073,005**	**444,012**	**555,112**	**404,626**	**38,005**	
GRAND TOTAL									**3,974,696**

TABLE P-17

CH REGIONALIZED ALTERNATIVE ID #6
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Shred and Compaction	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	0	14,123	0	165,997
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	52,897	119,034	88,819	83,995	55,819	13,867	601,683
INEL/ANL-W	181,977	158,617	50,666	117,412	117,717	77,217	55,808	13,390	772,803
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	48,923	108,993	76,332	55,268	55,150	8,896	508,249
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	0	14,123	0	166,096
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	0	101,529	0	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	47,916	103,732	72,326	26,661	22,617	4,850	313,444
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	52,286	116,492	88,819	83,167	71,351	8,406	687,184
WIPP	0	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**252,688**	**1,073,005**	**444,012**	**326,307**	**404,626**	**49,409**	
GRAND TOTAL									**3,757,294**

TABLE P-18

CH REGIONALIZED ALTERNATIVE ID #10
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Plasma	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	52,900	119,034	503,717	54,818	6,834	924,555
INEL/ANL-W	181,977	158,617	52,494	117,412	269,074	54,481	5,994	840,048
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	49,651	108,993	423,447	42,865	4,850	784,492
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,819	0	10,831	0	147,993
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,960	103,732	360,578	14,808	4,850	567,272
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	52,309	116,492	491,390	70,837	4,850	1,002,541
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**255,314**	**1,073,051**	**2,048,205**	**381,689**	**27,379**	
GRAND TOTAL								**4,992,885**

TABLE P-19

CH REGIONALIZED ALTERNATIVE ID #33
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	47,472	119,034	88,819	55,369	16,141	514,087
INEL/ANL-W	181,977	158,617	47,773	117,412	117,717	55,568	14,545	693,609
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	47,604	108,993	76,332	53,714	9,727	451,057
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,450	103,732	72,326	22,109	4,850	285,810
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	47,171	116,492	88,819	70,837	10,174	600,156
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	**444,535**	**762,712**	**237,471**	**1,073,005**	**444,012**	**401,478**	**55,438**	
GRAND TOTAL								**3,418,650**

TABLE P-20

CH REGIONALIZED ALTERNATIVE ID #35
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	47,472	119,034	88,819	55,369	16,141	514,087
INEL/ANL-W	181,977	158,617	47,773	117,412	117,717	55,568	14,545	693,609
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	47,604	108,993	76,332	53,714	9,727	451,057
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,450	103,732	72,326	22,109	4,850	285,810
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	47,171	116,492	88,819	70,837	10,174	600,156
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	237,471	1,073,005	444,012	401,478	55,438	
GRAND TOTAL								3,418,650

TABLE P-21

CH REGIONALIZED ALTERNATIVE ID #77 (A-D)
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Supercompaction	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	0	14,123	0	165,997
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	52,897	119,034	88,819	146,991	55,819	9,541	660,353
INEL/ANL-W	181,977	158,617	50,666	117,412	117,717	135,129	55,808	11,309	828,635
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	48,923	108,993	76,332	96,719	55,150	7,392	548,196
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	0	14,123	0	166,096
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	0	101,529	0	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	47,916	103,732	72,326	30,731	22,617	4,850	317,515
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	52,286	116,492	88,819	145,543	71,351	4,912	746,066
WIPP	0	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	252,688	1,073,005	444,012	555,112	404,626	38,005	
GRAND TOTAL									3,974,696

TABLE P-22

CH REGIONALIZED ALTERNATIVE ID #83
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	47,472	119,034	88,819	55,369	16,141	514,087
INEL/ANL-W	181,977	158,617	47,773	117,412	117,717	55,568	14,545	693,609
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	47,604	108,993	76,332	53,714	9,727	451,057
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,450	103,732	72,326	22,109	4,850	285,810
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	47,171	116,492	88,819	70,837	10,174	600,156
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	237,471	1,073,005	444,012	401,478	55,438	
GRAND TOTAL								**3,418,650**

TABLE P-23

CH REGIONALIZED ALTERNATIVE ID #94
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Enhanced Cement	Shred and Add Clay	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	0	14,123	0	165,997
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	52,900	119,034	92,751	503,907	61,467	16,146	1,033,457
INEL/ANL-W	181,977	158,617	52,494	117,412	324,409	358,409	62,079	18,757	1,274,152
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	49,651	108,993	193,928	206,816	72,483	11,102	797,660
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	0	14,123	0	166,096
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	0	101,529	0	0	14,123	0	166,327
ORNL	0	35,343	0	101,819	0	0	10,831	0	147,993
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	47,960	103,732	92,751	99,766	29,556	4,850	413,958
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	52,309	116,492	92,751	493,433	77,850	10,229	1,109,726
WIPP	0	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	255,314	1,073,051	796,588	1,662,331	447,315	61,084	
GRAND TOTAL									**5,502,932**

TABLE P-24

CH REGIONALIZED ALTERNATIVE ID #111
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	47,472	119,034	88,819	55,369	16,141	514,087
INEL/ANL-W	181,977	158,617	47,773	117,412	117,717	55,568	14,545	693,609
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	47,604	108,993	76,332	53,714	9,727	451,057
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	47,450	103,732	72,326	22,109	4,850	285,810
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	47,171	116,492	88,819	70,837	10,174	600,156
WIPP	0	0	0	0	0	0	0	0
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	237,471	1,073,005	444,012	401,478	55,438	
GRAND TOTAL								**3,418,650**

TABLE P-25

CH CENTRALIZED BASELINE COST SUMMARY ($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	0	119,034	0	54,724	0	361,010
INEL/ANL-W	181,977	158,617	0	117,412	0	54,390	0	512,395
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	0	108,993	0	42,827	0	306,507
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	0	103,732	0	14,808	0	153,883
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	68,413	0	451,568
WIPP	0	0	48,815	162,552	236,513	88,797	6,405	543,082
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	48,815	1,235,557	236,513	467,839	6,405	
GRAND TOTAL								3,202,376

TABLE P-26

CH CENTRALIZED ALTERNATIVE ID #1
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Supercompaction	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	0	14,123	0	165,997
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	0	119,034	0	0	54,724	0	361,010
INEL/ANL-W	181,977	158,617	0	117,412	0	0	54,390	0	512,395
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	0	108,993	0	0	42,827	0	306,507
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	0	14,123	0	166,096
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	0	101,529	0	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	0	103,732	0	0	14,808	0	153,883
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	0	68,413	0	451,568
WIPP	0	0	64,032	162,552	236,513	192,869	90,325	6,405	752,697
PORTABLE	0	B	0	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	64,032	1,235,557	236,513	192,869	469,368	6,405	
GRAND TOTAL									3,411,991

TABLE P-27

CH CENTRALIZED ALTERNATIVE ID #6
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Shred and Compaction	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	0	14,123	0	165,997
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	0	119,034	0	0	54,724	0	361,010
INEL/ANL-W	161,977	158,617	0	117,412	0	0	54,390	0	512,395
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	0	108,993	0	0	42,827	0	306,507
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	0	14,123	0	166,096
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	0	101,529	0	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	0	103,732	0	0	14,808	0	153,883
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	0	68,413	0	451,568
WIPP	0	0	64,032	162,552	236,513	110,211	90,325	6,405	670,039
PORTABLE	0	B	0	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	64,032	1,235,557	236,513	110,211	469,368	6,405	
GRAND TOTAL									**3,329,333**

TABLE P-28

CH CENTRALIZED ALTERNATIVE ID #10
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Plasma	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	0	119,034	0	54,724	0	361,010
INEL/ANL-W	181,977	158,617	0	117,412	0	54,390	0	512,395
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	0	108,993	0	42,827	0	306,507
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,819	0	10,831	0	147,993
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	0	103,732	0	14,808	0	153,883
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	68,413	0	451,568
WIPP	0	0	66,658	162,599	979,888	85,247	6,405	1,300,797
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	66,658	1,235,650	979,888	464,290	6,405	
GRAND TOTAL								3,960,139

TABLE P-29

CH CENTRALIZED ALTERNATIVE ID #33
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	0	119,034	0	54,724	0	361,010
INEL/ANL-W	181,977	158,617	0	117,412	0	54,390	0	512,395
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	0	108,993	0	42,827	0	306,507
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	0	103,732	0	14,808	0	153,883
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	68,413	0	451,568
WIPP	0	0	48,815	162,552	236,513	88,797	6,405	543,082
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	48,815	1,235,557	236,513	467,839	6,405	
GRAND TOTAL								3,202,376

TABLE P-30

CH CENTRALIZED ALTERNATIVE ID #35 (A & B)
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	0	119,034	0	54,724	0	361,010
INEL/ANL-W	181,977	158,617	0	117,412	0	54,390	0	512,395
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	0	108,993	0	42,827	0	306,507
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	0	103,732	0	14,808	0	153,883
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	68,413	0	451,568
WIPP	0	0	48,815	162,552	236,513	88,797	6,405	543,082
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	48,815	1,235,557	236,513	467,839	6,405	
GRAND TOTAL								3,202,376

TABLE P-31

CH CENTRALIZED ALTERNATIVE ID #77 (A-D)
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Supercompaction	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	0	14,123	0	165,997
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	0	119,034	0	0	54,724	0	361,010
INEL/ANL-W	181,977	158,617	0	117,412	0	0	54,390	0	512,395
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	0	108,993	0	0	42,827	0	306,507
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	0	14,123	0	166,096
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	0	101,529	0	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	0	103,732	0	0	14,808	0	153,883
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	0	68,413	0	451,568
WIPP	0	0	64,032	162,552	236,513	192,869	90,325	6,405	752,697
PORTABLE	0	B	0	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	64,032	1,235,557	236,513	192,869	469,368	6,405	
GRAND TOTAL									**3,411,991**

TABLE P-32

CH CENTRALIZED ALTERNATIVE ID #83
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	0	119,034	0	54,724	0	361,010
INEL/ANL-W	181,977	158,617	0	117,412	0	54,390	0	512,395
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	0	108,993	0	42,827	0	306,507
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	0	103,732	0	14,808	0	153,883
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	68,413	0	451,568
WIPP	0	0	48,815	162,552	236,513	88,797	6,405	543,082
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	48,815	1,235,557	236,513	467,839	6,405	
GRAND TOTAL								3,202,376

TABLE P-33

CH CENTRALIZED ALTERNATIVE ID #94
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Enhanced Cement	Shred and Add Clay	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	0	14,123	0	165,997
BT	0	Portable	0	A	0	0	Portable	0	0
ETEC	0	Portable	0	A	0	0	Portable	0	0
HANFORD	80,387	106,865	0	119,034	0	0	54,724	0	361,010
INEL/ANL-W	181,977	158,617	0	117,412	0	0	54,390	0	512,395
KAPL	0	Portable	0	A	0	0	Portable	0	0
LANL	77,468	77,219	0	108,993	0	0	42,827	0	306,507
LBL	0	Portable	0	A	0	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	0	14,123	0	166,096
MU	0	Portable	0	A	0	0	Portable	0	0
NTS	0	50,674	0	101,529	0	0	14,123	0	166,327
ORNL	0	35,343	0	101,819	0	0	10,831	0	147,993
PANTEX	0	Portable	0	A	0	0	Portable	0	0
PA	0	Portable	0	A	0	0	Portable	0	0
RFETS	0	35,343	0	103,732	0	0	14,808	0	153,883
SNL/NM	0	Portable	0	A	0	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	0	68,413	0	451,568
WIPP	0	0	66,658	162,599	498,895	708,036	115,157	6,405	1,557,749
PORTABLE	0	B	0	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	66,658	1,235,650	498,895	708,036	494,200	6,405	
GRAND TOTAL									4,217,091

TABLE P-34

CH CENTRALIZED ALTERNATIVE ID #111
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
AMES LAB	0	Portable	0	A	0	Portable	0	0
ANL-E	0	50,674	0	101,199	0	14,123	0	165,997
BT	0	Portable	0	A	0	Portable	0	0
ETEC	0	Portable	0	A	0	Portable	0	0
HANFORD	80,387	106,865	0	119,034	0	54,724	0	361,010
INEL/ANL-W	181,977	158,617	0	117,412	0	54,390	0	512,395
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	77,468	77,219	0	108,993	0	42,827	0	306,507
LBL	0	Portable	0	A	0	Portable	0	0
LLNL	0	35,343	0	101,543	0	10,831	0	147,717
MOUND	0	50,674	0	101,299	0	14,123	0	166,096
MU	0	Portable	0	A	0	Portable	0	0
NTS	0	50,674	0	101,529	0	14,123	0	166,327
ORNL	0	35,343	0	101,772	0	10,831	0	147,946
PANTEX	0	Portable	0	A	0	Portable	0	0
PA	0	Portable	0	A	0	Portable	0	0
RFETS	0	35,343	0	103,732	0	14,808	0	153,883
SNL/NM	0	Portable	0	A	0	Portable	0	0
SRS	104,703	161,960	0	116,492	0	68,413	0	451,568
WIPP	0	0	48,815	162,552	236,513	88,797	6,405	543,082
PORTABLE	0	B	0	0	0	79,848	0	79,848
Module Total	444,535	762,712	48,815	1,235,557	236,513	467,839	6,405	
GRAND TOTAL								3,202,376

TABLE P-35

DECENTRALIZED CONFIGURATION
CH ALTERNATIVE COST PER SITE
COST SUMMARY
($K)

Site	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
AMES LAB	0	0	0	0	0	0	0	0	0	0	0
ANL-E	170,847	170,847	170,847	285,494	170,847	170,847	170,847	170,847	170,847	310,767	170,847
BT	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0
HANFORD	513,712	659,484	600,952	921,904	513,712	513,712	513,712	659,484	513,712	1,029,337	513,712
INEL/ANL-W	693,385	827,859	772,196	837,927	693,385	693,385	693,385	827,859	693,385	1,264,140	693,385
KAPL	0	0	0	0	0	0	0	0	0	0	0
LANL	451,057	548,034	508,155	784,392	451,057	451,057	451,057	548,034	451,057	797,317	451,057
LBL	0	0	0	0	0	0	0	0	0	0	0
LLNL	288,556	314,822	303,610	367,879	288,556	288,556	288,556	314,822	288,556	383,473	288,556
MOUND	172,502	245,862	234,650	295,807	172,502	172,502	172,502	245,862	172,502	403,332	172,502
MU	0	0	0	0	0	0	0	0	0	0	0
NTS	171,177	244,611	233,399	381,994	171,177	171,177	171,177	244,611	171,177	309,328	171,177
ORNL	288,786	315,125	303,913	450,441	288,786	288,786	288,786	315,125	288,786	383,836	288,786
PANTEX	0	0	0	0	0	0	0	0	0	0	0
PA	0	0	0	0	0	0	0	0	0	0	0
RFETS	285,810	317,515	313,444	567,272	285,810	285,810	285,810	317,515	285,810	413,958	285,810
SNL/NM	0	0	0	0	0	0	0	0	0	0	0
SRS	461,273	655,350	596,665	993,469	461,273	461,273	461,273	655,350	461,273	1,006,183	461,273
WIPP	0	0	0	0	0	0	0	0	0	0	0
PORTABLE	79,848	79,848	79,848	79,848	79,848	79,848	79,848	79,848	79,848	0	79,848
GRAND TOTAL	3,576,954	4,379,357	4,117,678	5,966,427	3,576,954	3,576,954	3,576,954	4,379,357	3,576,954	6,301,672	3,576,954

TABLE P-36

REGIONALIZED CONFIGURATION
CH ALTERNATIVE COST PER SITE
COST SUMMARY
($K)

Site	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
AMES LAB	0	0	0	0	0	0	0	0	0	0	0
ANL-E	165,997	165,997	165,997	165,997	165,997	165,997	165,997	165,997	165,997	165,997	165,997
BT	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0
HANFORD	514,087	660,353	601,683	924,555	514,087	514,087	514,087	660,353	514,087	1,033,457	514,087
INEL/ANL-W	693,609	828,635	772,803	840,048	693,609	693,609	693,609	828,635	693,609	1,274,152	693,609
KAPL	0	0	0	0	0	0	0	0	0	0	0
LANL	451,057	548,196	508,249	784,492	451,057	451,057	451,057	548,196	451,057	797,660	451,057
LBL	0	0	0	0	0	0	0	0	0	0	0
LLNL	147,717	147,717	147,717	147,717	147,717	147,717	147,717	147,717	147,717	147,717	147,717
MOUND	166,096	166,096	166,096	166,096	166,096	166,096	166,096	166,096	166,096	166,096	166,096
MU	0	0	0	0	0	0	0	0	0	0	0
NTS	166,327	166,327	166,327	166,327	166,327	166,327	166,327	166,327	166,327	166,327	166,327
ORNL	147,946	147,946	147,946	147,993	147,946	147,946	147,946	147,946	147,946	147,993	147,946
PANTEX	0	0	0	0	0	0	0	0	0	0	0
PA	0	0	0	0	0	0	0	0	0	0	0
RFETS	285,810	317,515	313,444	567,272	285,810	285,810	285,810	317,515	285,810	413,958	285,810
SNL/NM	0	0	0	0	0	0	0	0	0	0	0
SRS	600,156	746,066	687,184	1,002,541	600,156	600,156	600,156	746,066	600,156	1,109,726	600,156
WIPP	0	0	0	0	0	0	0	0	0	0	0
PORTABLE	79,848	79,848	79,848	79,848	79,848	79,848	79,848	79,848	79,848	79,848	79,848
GRAND TOTAL	3,418,650	3,974,696	3,757,294	4,992,885	3,418,650	3,418,650	3,418,650	3,974,696	3,418,650	5,502,932	3,418,650

TABLE P-37

CENTRALIZED CONFIGURATION
CH ALTERNATIVE COST PER SITE
COST SUMMARY
($K)

Site	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
AMES LAB	0	0	0	0	0	0	0	0	0	0	0
ANL-E	165,997	165,997	165,997	165,997	165,997	165,997	165,997	165,997	165,997	165,997	165,997
BT	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0
HANFORD	361,010	361,010	361,010	361,010	361,010	361,010	361,010	361,010	361,010	361,010	361,010
INEL/ANL-W	512,395	512,395	512,395	512,395	512,395	512,395	512,395	512,395	512,395	512,395	512,395
KAPL	0	0	0	0	0	0	0	0	0	0	0
LANL	306,507	306,507	306,507	306,507	306,507	306,507	306,507	306,507	306,507	306,507	306,507
LBL	0	0	0	0	0	0	0	0	0	0	0
LLNL	147,717	147,717	147,717	147,717	147,717	147,717	147,717	147,717	147,717	147,717	147,717
MOUND	166,096	166,096	166,096	166,096	166,096	166,096	166,096	166,096	166,096	166,096	166,096
MU	0	0	0	0	0	0	0	0	0	0	0
NTS	166,327	166,327	166,327	166,327	166,327	166,327	166,327	166,327	166,327	166,327	166,327
ORNL	147,946	147,946	147,946	147,993	147,946	147,946	147,946	147,946	147,946	147,993	147,946
PANTEX	0	0	0	0	0	0	0	0	0	0	0
PA	0	0	0	0	0	0	0	0	0	0	0
RFETS	153,883	153,883	153,883	153,883	153,883	153,883	153,883	153,883	153,883	153,883	153,883
SNL/NM	0	0	0	0	0	0	0	0	0	0	0
SRS	451,568	451,568	451,568	451,568	451,568	451,568	451,568	451,568	451,568	451,568	451,568
WIPP	543,082	752,697	670,039	1,300,797	543,082	543,082	543,082	752,697	543,082	1,557,749	543,082
PORTABLE	79,848	79,848	79,848	79,848	79,848	79,848	79,848	79,848	79,848	79,848	79,848
GRAND TOTAL	3,202,376	3,411,991	3,329,333	3,960,139	3,202,376	3,202,376	3,202,376	3,411,991	3,202,376	4,217,091	3,202,376

TABLE P-38

DECENTRALIZED CONFIGURATION
CH COST PERCENT PER SITE

Site	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
AMES LAB	0	0	0	0	0	0	0	0	0	0	0
ANL-E	5	4	4	5	5	5	5	4	5	5	5
BT	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0
HANFORD	14	15	15	15	14	14	14	15	14	16	14
INEL/ANL-W	19	19	19	14	19	19	19	19	19	20	19
KAPL	0	0	0	0	0	0	0	0	0	0	0
LANL	13	13	12	13	13	13	13	13	13	13	13
LBL	0	0	0	0	0	0	0	0	0	0	0
LLNL	8	7	7	6	8	8	8	7	8	6	8
MOUND	5	6	6	5	5	5	5	6	5	6	5
MU	0	0	0	0	0	0	0	0	0	0	0
NTS	5	6	6	6	5	5	5	6	5	5	5
ORNL	8	7	7	8	8	8	8	7	8	6	8
PANTEX	0	0	0	0	0	0	0	0	0	0	0
PA	0	0	0	0	0	0	0	0	0	0	0
RFETS	8	7	8	10	8	8	8	7	8	7	8
SNL/NM	0	0	0	0	0	0	0	0	0	0	0
SRS	13	15	14	17	13	13	13	15	13	16	13
WIPP	0	0	0	0	0	0	0	0	0	0	0
PORTABLE	2	2	2	1	2	2	2	2	2	0	2
Sum	100	100	100	100	100	100	100	100	100	100	100

TABLE P-39

REGIONALIZED CONFIGURATION
CH COST PERCENT PER SITE

Site	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
AMES LAB	0	0	0	0	0	0	0	0	0	0	0
ANL-E	5	4	4	3	5	5	5	4	5	3	5
BT	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0
HANFORD	15	17	16	19	15	15	15	17	15	19	15
INEL/ANL-W	20	21	21	17	20	20	20	21	20	23	20
KAPL	0	0	0	0	0	0	0	0	0	0	0
LANL	13	14	14	16	13	13	13	14	13	14	13
LBL	0	0	0	0	0	0	0	0	0	0	0
LLNL	4	4	4	3	4	4	4	4	4	3	4
MOUND	5	4	4	3	5	5	5	4	5	3	5
MU	0	0	0	0	0	0	0	0	0	0	0
NTS	5	4	4	3	5	5	5	4	5	3	5
ORNL	4	4	4	3	4	4	4	4	4	3	4
PANTEX	0	0	0	0	0	0	0	0	0	0	0
PA	0	0	0	0	0	0	0	0	0	0	0
RFETS	8	8	8	11	8	8	8	8	8	8	8
SNL/NM	0	0	0	0	0	0	0	0	0	0	0
SRS	18	19	18	20	18	18	18	19	18	20	18
WIPP	0	0	0	0	0	0	0	0	0	0	0
PORTABLE	2	2	2	2	2	2	2	2	2	1	2
Sum	100	100	100	100	100	100	100	100	100	100	100

TABLE P-40

CENTRALIZED CONFIGURATION
CH COST PERCENT PER SITE

Site	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
AMES LAB	0	0	0	0	0	0	0	0	0	0	0
ANL-E	5	5	5	4	5	5	5	5	5	4	5
BT	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0
HANFORD	11	11	11	9	11	11	11	11	11	9	11
INEL/ANL-W	16	15	15	13	16	16	16	15	16	12	16
KAPL	0	0	0	0	0	0	0	0	0	0	0
LANL	10	9	9	8	10	10	10	9	10	7	10
LBL	0	0	0	0	0	0	0	0	0	0	0
LLNL	5	4	4	4	5	5	5	4	5	4	5
MOUND	5	5	5	4	5	5	5	5	5	4	5
MU	0	0	0	0	0	0	0	0	0	0	0
NTS	5	5	5	4	5	5	5	5	5	4	5
ORNL	5	4	4	4	5	5	5	4	5	4	5
PANTEX	0	0	0	0	0	0	0	0	0	0	0
PA	0	0	0	0	0	0	0	0	0	0	0
RFETS	5	5	5	4	5	5	5	5	5	4	5
SNL/NM	0	0	0	0	0	0	0	0	0	0	0
SRS	14	13	14	11	14	14	14	13	14	11	14
WIPP	17	22	20	33	17	17	17	22	17	37	17
PORTABLE	2	2	2	2	2	2	2	2	2	2	2
Sum	100	100	100	100	100	100	100	100	100	100	100

TABLE P-41

DECENTRALIZED CONFIGURATION
CH COST PERCENT PER MODULE

Module	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
Front End	30	25	26	18	30	30	30	25	30	17	30
Retrieval	12	10	11	7	12	12	12	10	12	7	12
Waste Characterization	21	17	19	13	21	21	21	17	21	12	21
Maintenance	8	10	11	8	8	8	8	10	8	8	8
Grout	15	12	13	0	15	15	15	12	15	0	15
Supercompact	0	15	0	0	0	0	0	15	0	0	0
Shred & Compact	0	0	9	0	0	0	0	0	0	0	0
Plasma	0	0	0	46	0	0	0	0	0	0	0
Enhanced Cement	0	0	0	0	0	0	0	0	0	17	0
Shred & Add Clay	0	0	0	0	0	0	0	0	0	32	0
Certification & Shipping	11	9	10	6	11	11	11	9	11	6	11
Storage	2	1	2	1	2	2	2	1	2	1	2
Sum	100	100	100	100	100	100	100	100	100	100	100

TABLE P-42

REGIONALIZED CONFIGURATION
CH COST PERCENT PER MODULE

Module	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
Front End	31	27	29	21	31	31	31	27	31	19	31
Retrieval	13	11	12	9	13	13	13	11	13	8	13
Waste Characterization	22	19	20	15	22	22	22	19	22	14	22
Maintenance	7	6	7	5	7	7	7	6	7	5	7
Grout	13	11	12	0	13	13	13	11	13	0	13
Supercompact	0	14	0	0	0	0	0	14	0	0	0
Shred & Compact	0	0	9	0	0	0	0	0	0	0	0
Plasma	0	0	0	41	0	0	0	0	0	0	0
Enhanced Cement	0	0	0	0	0	0	0	0	0	14	0
Shred & Add Clay	0	0	0	0	0	0	0	0	0	30	0
Certification & Shipping	12	10	11	8	12	12	12	10	12	8	12
Storage	2	1	1	1	2	2	2	1	2	1	2
Sum	100	100	100	100	100	100	100	100	100	100	100

TABLE P-43

CENTRALIZED CONFIGURATION
CH COST PERCENT PER MODULE

Module	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
Front End	39	36	37	31	39	39	39	36	39	29	39
Retrieval	14	13	13	11	14	14	14	13	14	11	14
Waste Characterization	24	22	23	19	24	24	24	22	24	18	24
Maintenance	2	2	2	2	2	2	2	2	2	2	2
Grout	7	7	7	0	7	7	7	7	7	0	7
Supercompact	0	6	0	0	0	0	0	6	0	0	0
Shred & Compact	0	0	3	0	0	0	0	0	0	0	0
Plasma	0	0	0	25	0	0	0	0	0	0	0
Enhanced Cement	0	0	0	0	0	0	0	0	0	12	0
Shred & Add Clay	0	0	0	0	0	0	0	0	0	17	0
Certification & Shipping	15	14	14	12	15	15	15	14	15	12	15
Storage	0	0	0	0	0	0	0	0	0	0	0
Sum	100	100	100	100	100	100	100	100	100	100	100

TABLE P-44

DECENTRALIZED CONFIGURATION
CH COST PERCENT PER AREA OF PROCESSING

Area of Processing	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
Front End Processing[1]	64	52	55	38	64	64	64	52	64	36	64
Treatment[2]	23	37	33	55	23	23	23	37	23	57	23
Back End Processing[3]	13	11	12	7	13	13	13	11	13	7	13
Sum	100	100	100	100	100	100	100	100	100	100	100

[1]Front End processing includes Front End, Retrieval, and Waste Characterization Modules.
[2]Treatment includes Maintenance and specific alternative treatment modules (e.g., Plasma, Grout, etc.).
[3]Back End processing includes Certification and Shipping and Storage Modules.

TABLE P-45

REGIONALIZED CONFIGURATION
CH COST PERCENT PER AREA OF PROCESSING

Area of Processing	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
Front End Processing[1]	67	57	61	46	67	67	67	57	67	41	67
Treatment[2]	20	31	27	46	20	20	20	31	20	49	20
Back End Processing[3]	13	11	12	8	13	13	13	11	13	9	13
Sum	100	100	100	100	100	100	100	100	100	100	100

[1]Front End processing includes Front End, Retrieval, and Waste Characterization Modules.
[2]Treatment includes Maintenance and specific alternative treatment modules (e.g., Plasma, Grout, etc.).
[3]Back End processing includes Certification and Shipping and Storage Modules.

TABLE P-46

CENTRALIZED CONFIGURATION
CH COST PERCENT PER AREA OF PROCESSING

Area of Processing	Base Case	1	6	10	33	35 (a&b)	60	77 (a-d)	83	94 (a-f)	111
Front End Processing[1]	76	72	73	62	76	76	76	72	76	58	76
Treatment[2]	9	14	12	26	9	9	9	14	9	30	9
Back End Processing[3]	15	14	14	12	15	15	15	14	15	12	15
Sum	100	100	100	100	100	100	100	100	100	100	100

[1]Front End processing includes Front End, Retrieval, and Waste Characterization Modules.
[2]Treatment includes Maintenance and specific alternative treatment modules (e.g., Plasma, Grout, etc.).
[3]Back End processing includes Certification and Shipping and Storage Modules.

TABLE P-47

RH DECENTRALIZED BASELINE
COST SUMMARY
($K)

Site	Retrieval	Waste Characterization	Maintenance	Front End	Grouting	Certification and Shipping	Storage	Site Total
BCLDP	0	Portable	0	A	0	Portable	0	0
BT	0	Portable	0	A	0	Portable	0	0
HANFORD	0	50,674	0	102,076	0	14,123	6,405	173,279
INEL/ANL-W	0	50,674	0	101,201	0	14,123	4,850	170,849
KAPL	0	Portable	0	A	0	Portable	0	0
LANL	34,458	50,674	0	101,272	0	14,123	6,405	206,932
ORNL	0	50,674	57,884	101,501	108,602	14,123	6,405	339,190
SRS	0	0	0	101,202	0	14,123	6,405	121,730
Portable	0	B	0	0	0	C	0	0
Module Total	34,458	202,697	57,884	507,251	108,602	70,617	30,471	
GRAND TOTAL								1,011,980

TABLE P-48

RH DECENTRALIZED BASELINE COST PERCENTAGE BY SITE

Site	Cost Percentage
BCLDP	0
BT	0
HANFORD	17
INEL/ANL-W	17
KAPL	0
LANL	20
ORNL	34
SRS	12
Sum	100

TABLE P-49

RH DECENTRALIZED BASELINE COST PER MODULE ($K)

Module	Cost
Front End	507,251
Retrieval	34,458
Waste Characterization	202,697
Maintenance	57,884
Grout	108,602
Certification & Shipping	70,617
Storage	30,471
GRAND TOTAL	1,011,980

TABLE P-50

RH DECENTRALIZED BASELINE
COST PERCENTAGE PER MODULE

Module	Cost Percentage
Front End	50
Retrieval	3
Waste Characterization	20
Maintenance	6
Grout	11
Certification and Shipping	7
Storage	3
Sum	100

TABLE P-51

RH DECENTRALIZED BASELINE
COST PERCENTAGE PER PROCESSING AREA

Processing Area	Cost Percentage
Front End Processing[1]	74
Treatment[2]	16
Back End Processing[3]	10
Sum	100

[1]Front End processing includes Front End, Retrieval, and Waste Characterization Modules.
[2]Treatment includes Maintenance and specific alternative treatment modules (e.g., Plasma, Grout, etc.).
[3]Back End processing includes Certification and Shipping and Storage Modules.

TABLE P-52

TRANSPORTATION COST GRAND TOTAL SUMMARY

	Number of Shipments	Total Miles Traveled	Fixed Costs($K)	Variable Costs($K)	Total Costs($K)
CH Centralized Baseline	17,662	47,388,994	163,550	446,272	609,822
CH Centralized Alternative 1	17,662	47,388,994	163,550	446,272	609,822
CH Centralized Alternative 6	17,662	47,388,994	163,550	446,272	609,822
CH Centralized Alternative 10	17,662	47,388,994	163,550	446,272	609,822
CH Centralized Alternative 33	17,662	47,388,994	163,550	446,272	609,822
CH Centralized Alternative 35	17,662	47,388,994	163,550	446,272	609,822
CH Centralized Alternative 60	17,662	47,388,994	163,550	446,272	609,822
CH Centralized Alternative 77	17,662	47,388,994	163,550	446,272	609,822
CH Centralized Alternative 83	17,662	47,388,994	163,550	446,272	609,822
CH Centralized Alternative 94	17,662	47,388,994	163,550	446,272	609,822
CH Centralized Alternative 111	17,662	47,388,994	163,550	446,272	609,822
CH Regionalized Baseline	18,045	48,001,334	167,097	452,756	619,852
CH Regionalized Alternative 1	10,539	26,366,812	97,591	249,770	347,361
CH Regionalized Alternative 6	15,576	40,837,024	144,234	385,541	529,775
CH Regionalized Alternative 10	5,593	14,831,054	51,791	140,129	191,920
CH Regionalized Alternative 33	18,045	48,001,334	167,097	452,756	619,852
CH Regionalized Alternative 35	18,045	48,001,334	167,097	452,756	619,852
CH Regionalized Alternative 60	18,045	48,001,334	167,097	452,756	619,852
CH Regionalized Alternative 77	10,539	26,366,812	97,591	249,770	347,361
CH Regionalized Alternative 83	18,045	48,001,334	167,097	452,756	619,852
CH Regionalized Alternative 94	18,526	48,425,946	171,551	456,701	628,252
CH Regionalized Alternative 111	18,045	48,001,334	167,097	452,756	619,852
CH Decentralized Baseline	17,690	47,397,822	163,809	446,380	610,190
RH Decentralized Baseline	7,958	26,210,998	73,691	244,610	318,301
CH Decentralized Alternative 1	10,182	25,845,272	94,285	244,174	338,459
CH Decentralized Alternative 6	15,227	40,280,216	141,002	379,625	520,627
CH Decentralized Alternative 10	5,237	14,331,254	48,495	134,734	183,229
CH Decentralized Alternative 33	17,690	47,397,822	163,809	446,380	610,190
CH Decentralized Alternative 35	17,690	47,397,822	163,809	446,380	610,190
CH Decentralized Alternative 60	17,690	47,397,822	163,809	446,380	610,190
CH Decentralized Alternative 77	10,182	25,845,272	94,285	244,174	338,459
CH Decentralized Alternative 83	17,690	47,397,822	163,809	446,380	610,190
CH Decentralized Alternative 94	18,181	47,862,978	168,356	450,731	619,087
CH Decentralized Alternative 111	17,690	47,397,822	163,809	446,380	610,190

TABLE P-53

CH DECENTRALIZED BASELINE TRANSPORTATION COSTS

Origin	Destination	One-Way Mileage[1]	CPLM2 ($/mile)	Number of Shipments	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	ANL-E	353	10.87	1	706	9	8	17
ANL-E	WIPP	1,455	9.31	7	20,370	65	190	254
BT	MOUND	289	10.87	17	9,826	157	107	264
ETEC	NTS	375	10.87	2	1,500	19	16	35
HANFORD	WIPP	1,808	9.31	5,712	20,654,592	52,893	192,294	245,187
INEL/ANL-W	WIPP	1,392	9.31	4,974	13,847,616	46,059	128,921	174,981
KAPL	MOUND	694	10.87	1	1,388	9	15	24
LANL	WIPP	342	10.87	2,839	1,941,876	26,289	21,108	47,397
LBL	LLNL	75	19.65	1	150	9	3	12
LLNL	WIPP	1,452	9.31	137	397,848	1,269	3,704	4,973
MOUND	WIPP	1,557	9.31	47	146,358	435	1,363	1,798
MU	ANL-E	393	10.87	1	786	9	9	18
NTS	WIPP	1,214	9.31	68	165,104	630	1,537	2,167
ORNL	WIPP	1,521	9.31	120	365,040	1,111	3,399	4,510
PANTEX	LANL	335	10.87	1	670	9	7	17
PA	ORNL	317	10.87	1	634	9	7	16
RFETS	WIPP	704	10.87	931	1,310,848	8,621	14,249	22,870
SNL-NM	WIPP	104	19.65	3	624	28	12	40
SRS	WIPP	1,509	9.31	2,827	8,531,886	26,178	79,432	105,610
TOTAL				**17,690**	**47,397,822**	**163,809**	**446,380**	**610,190**

[1]Source: ORNL, 1993
[2]Source: INEL, 1994b

Notes:
This table presents the costs for transporting CH TRU waste by truck.
Assume that shipments will be volume limited.
Volumes represent total stored and projected volumes.
Volume at sites that receive waste includes the waste received for treatment and/or interim storage from other sites.

TABLE P-54

CH DECENTRALIZED ALTERNATIVE ID #1
TRANSPORTATION COSTS

Origin	Destination	One-Way Mileage[1]	CPLM2 ($/mile)	Volume (m3)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	ANL-E	353	10.87	0	1	0	1	1	706	9	8	17
ANL-E	WIPP	1,455	9.31	30	90	7	10	4	11,640	37	108	145
BT	MOUND	289	10.87	56	167	13	19	7	4,046	65	44	109
ETEC	NTS	375	10.87	3	9	1	2	1	750	9	8	17
HANFORD	WIPP	1,808	9.31	25,688	76,301	5,709	8,305	2,769	10,012,704	25,641	93,218	118,859
INEL/ANL-W	WIPP	1,392	9.31	33,295	98,896	7,399	10,764	3,588	9,988,992	33,225	92,998	126,222
KAPL	MOUND	694	10.87	1	3	1	1	1	1,388	9	15	24
LANL	WIPP	342	10.87	18,257	54,229	4,058	5,903	1,968	1,346,112	18,224	14,632	32,856
LBL	LLNL	75	19.65	2	7	1	1	1	150	9	3	12
LLNL	WIPP	1,452	9.31	601	1,784	134	195	65	188,760	602	1,757	2,359
MOUND	WIPP	1,557	9.31	259	770	58	84	28	87,192	259	812	1,071
MU	ANL-E	393	10.87	1	3	1	1	1	786	9	9	18
NTS	WIPP	1,214	9.31	217	646	49	71	24	58,272	222	543	765
ORNL	WIPP	1,521	9.31	467	1,389	104	152	51	155,142	472	1,444	1,917
PANTEX	LANL	335	10.87	0	1	0	1	1	670	9	7	17
PA	ORNL	317	10.87	2	7	1	1	1	634	9	7	16
RFETS	WIPP	704	10.87	6,061	18,003	1,347	1,960	654	920,832	6,056	10,009	16,065
SNL-NM	WIPP	104	19.65	6	18	2	3	1	208	9	4	13
SRS	WIPP	1,509	9.31	9,427	28,001	2,095	3,048	1,016	3,066,288	9,408	28,547	37,955
TOTAL								**10,182**	**25,845,272**	**94,285**	**244,174**	**338,459**

[1]Source: ORNL, 1993
[2]Source: INEL, 1994b
Notes:
This table presents the costs for transporting CH TRU waste by truck.
Assume that shipments will be volume limited.
Volumes represent total stored and projected volumes.
Volume at sites that receive waste includes the waste received for treatment and/or interim storage from other sites.

TABLE P-55

CH DECENTRALIZED ALTERNATIVE ID #6
TRANSPORTATION COSTS

Origin	Destination	One-Way Mileage[1]	CPLM2 ($/mile)	Volume (m3)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total
AMES	ANL-E	353	10.87	0	1	0	1	1	706	9	8	17
ANL-E	WIPP	1,455	9.31	34	101	8	12	4	11,640	37	108	145
BT	MOUND	289	10.87	122	361	28	40	14	8,092	130	88	218
ETEC	NTS	375	10.87	7	20	2	3	1	750	9	8	17
HANFORD	WIPP	1,808	9.31	43,809	130,125	9,736	14,163	4,721	17,071,136	43,716	158,932	202,649
INEL/ANL-W	WIPP	1,392	9.31	42,186	125,304	9,375	13,638	4,546	12,656,064	42,096	117,828	159,924
KAPL	MOUND	694	10.87	2	6	1	1	1	1,388	9	15	24
LANL	WIPP	342	10.87	23,787	70,654	5,286	7,690	2,564	1,753,776	23,743	19,064	42,806
LBL	LLNL	75	19.65	5	15	2	3	1	150	9	3	12
LLNL	WIPP	1,452	9.31	1,037	3,082	231	336	112	325,248	1,037	3,028	4,065
MOUND	WIPP	1,557	9.31	549	1,631	122	178	60	186,840	556	1,739	2,295
MU	ANL-E	393	10.87	2	5	1	1	1	786	9	9	18
NTS	WIPP	1,214	9.31	472	1,403	105	153	51	123,828	472	1,153	1,625
ORNL	WIPP	1,521	9.31	883	2,625	197	286	96	292,032	889	2,719	3,608
PANTEX	LANL	335	10.87	0	2	0	1	1	670	9	7	17
PA	ORNL	317	10.87	2	7	1	1	1	634	9	7	16
RFETS	WIPP	704	10.87	7,830	23,259	1,741	2,532	844	1,188,352	7,815	12,917	20,733
SNL-NM	WIPP	104	19.65	13	39	3	5	2	416	19	8	27
SRS	WIPP	1,509	9.31	20,469	60,801	4,549	6,618	2,206	6,657,708	20,428	61,983	82,411
TOTAL								**15,227**	**40,280,216**	**141,002**	**379,625**	**520,627**

[1]Source: ORNL, 1993
2Source: INEL, 1994b
Notes:
This table presents the costs for transporting CH TRU waste by truck.
Assume that shipments will be volume limited.
Volumes represent total stored and projected volumes.
Volume at sites that receive waste includes the waste received for treatment and/or interim storage from other sites.

TABLE P-56

CH DECENTRALIZED ALTERNATIVE ID #10
TRANSPORTATION COSTS

Origin	Destination	One-Way Mileage[1]	CPLM2 ($/mile)	Volume (m3)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	ANL-E	353	10.87	0	1	0	1	1	706	9	8	17
ANL-E	WIPP	1,455	9.31	11	33	3	4	2	5,820	19	54	73
BT	MOUND	289	10.87	53	157	12	18	6	3,468	56	38	93
ETEC	NTS	375	10.87	3	9	1	2	1	750	9	8	17
HANFORD	WIPP	1,808	9.31	15,934	47,331	3,541	5,152	1,718	6,212,288	15,909	57,836	73,745
INEL/ANL-W	WIPP	1,392	9.31	13,325	39,580	2,962	4,309	1,437	4,000,608	13,307	37,246	50,552
KAPL	MOUND	694	10.87	1	3	1	1	1	1,388	9	15	24
LANL	WIPP	342	10.87	6,979	20,730	1,551	2,257	753	515,052	6,973	5,599	12,571
LBL	LLNL	75	19.65	2	7	1	1	1	150	9	3	12
LLNL	WIPP	1,452	9.31	384	1,142	86	125	42	121,968	389	1,136	1,524
MOUND	WIPP	1,557	9.31	237	705	53	77	26	80,964	241	754	995
MU	ANL-E	393	10.87	1	3	1	1	1	786	9	9	18
NTS	WIPP	1,214	9.31	205	609	46	67	23	55,844	213	520	733
ORNL	WIPP	1,521	9.31	372	1,105	83	121	41	124,722	380	1,161	1,541
PANTEX	LANL	335	10.87	0	1	0	1	1	670	9	7	17
PA	ORNL	317	10.87	1	3	1	1	1	634	9	7	16
RFETS	WIPP	704	10.87	2,062	6,126	459	668	223	313,984	2,065	3,413	5,478
SNL-NM	WIPP	104	19.65	6	17	2	3	1	208	9	4	13
SRS	WIPP	1,509	9.31	8,888	26,401	1,976	2,874	958	2,891,244	8,871	26,917	35,789
TOTAL								**5,237**	**14,331,254**	**48,495**	**134,734**	**183,229**

[1]Source: ORNL, 1993
[2]*Source: INEL, 1994b*

Notes:
This table presents the costs for transporting CH TRU waste by truck.
Assume that shipments will be volume limited.
Volumes represent total stored and projected volumes.
Volume at sites that receive waste includes the waste received for treatment and/or interim storage from other sites.

TABLE P-57

CH DECENTRALIZED ALTERNATIVE ID #33
TRANSPORTATION COSTS

Origin	Destination	One-Way Mileage[1]	CPLM2 ($/mile)	Number of Shipments	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	ANL-E	353	10.87	1	706	9	8	17
ANL-E	WIPP	1,455	9.31	7	20,370	65	190	254
BT	MOUND	289	10.87	17	9,826	157	107	264
ETEC	NTS	375	10.87	2	1,500	19	16	35
HANFORD	WIPP	1,808	9.31	5,712	20,654,592	52,893	192,294	245,187
INEL/ANL-W	WIPP	1,392	9.31	4,974	13,847,616	46,059	128,921	174,981
KAPL	MOUND	694	10.87	1	1,388	9	15	24
LANL	WIPP	342	10.87	2,839	1,941,876	26,289	21,108	47,397
LBL	LLNL	75	19.65	1	150	9	3	12
LLNL	WIPP	1,452	9.31	137	397,848	1,269	3,704	4,973
MOUND	WIPP	1,557	9.31	47	146,358	435	1,363	1,798
MU	ANL-E	393	10.87	1	786	9	9	18
NTS	WIPP	1,214	9.31	68	165,104	630	1,537	2,167
ORNL	WIPP	1,521	9.31	120	365,040	1,111	3,399	4,510
PANTEX	LANL	335	10.87	1	670	9	7	17
PA	ORNL	317	10.87	1	634	9	7	16
RFETS	WIPP	704	10.87	931	1,310,848	8,621	14,249	22,870
SNL-NM	WIPP	104	19.65	3	624	28	12	40
SRS	WIPP	1,509	9.31	2,827	8,531,886	26,178	79,432	105,610
TOTAL				**17,690**	**47,397,822**	**163,809**	**446,380**	**610,190**

[1]Source: ORNL, 1993
[2]Source: INEL, 1994b

Notes:
This table presents the costs for transporting CH TRU waste by truck.
Assume that shipments will be volume limited.
Volumes represent total stored and projected volumes.
Volume at sites that receive waste includes the waste received for treatment and/or interim storage from other sites.

TABLE P-58

CH DECENTRALIZED ALTERNATIVE ID #35 (a & b)
TRANSPORTATION COSTS

Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Number of Shipments	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	ANL-E	353	10.87	1	706	9	8	17
ANL-E	WIPP	1,455	9.31	7	20,370	65	190	254
BT	MOUND	289	10.87	17	9,826	157	107	264
ETEC	NTS	375	10.87	2	1,500	19	16	35
HANFORD	WIPP	1,808	9.31	5,712	20,654,592	52,893	192,294	245,187
INEL/ANL-W	WIPP	1,392	9.31	4,974	13,847,616	46,059	128,921	174,981
KAPL	MOUND	694	10.87	1	1,388	9	15	24
LANL	WIPP	342	10.87	2,839	1,941,876	26,289	21,108	47,397
LBL	LLNL	75	19.65	1	150	9	3	12
LLNL	WIPP	1,452	9.31	137	397,848	1,269	3,704	4,973
MOUND	WIPP	1,557	9.31	47	146,358	435	1,363	1,798
MU	ANL-E	393	10.87	1	786	9	9	18
NTS	WIPP	1,214	9.31	68	165,104	630	1,537	2,167
ORNL	WIPP	1,521	9.31	120	365,040	1,111	3,399	4,510
PANTEX	LANL	335	10.87	1	670	9	7	17
PA	ORNL	317	10.87	1	634	9	7	16
RFETS	WIPP	704	10.87	931	1,310,848	8,621	14,249	22,870
SNL-NM	WIPP	104	19.65	3	624	28	12	40
SRS	WIPP	1,509	9.31	2,827	8,531,886	26,178	79,432	105,610
TOTAL				**17,690**	**47,397,822**	**163,809**	**446,380**	**610,190**

[1]Source: ORNL, 1993
[2]Source: INEL, 1994b

Notes:
This table presents the costs for transporting CH TRU waste by truck.
Assume that shipments will be volume limited.
Volumes represent total stored and projected volumes.
Volume at sites that receive waste includes the waste received for treatment and/or interim storage from other sites.

Table P-59
CH Decentralized Alternative ID #77 (a-d)
Transportation Costs

						VOLUME LIMITING CALCULATIONS				MASS LIMITING CALCULATIONS												
Origin	*Destination*	*One-Way Mileage*[1]	CPLM[2] ($/mile)	Volume (m^3)	Mass (kg)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	ANL-E	353	10.87	0.32	119.43	1	0	1	1	2	76.66	A	42	3	1	VOLUME	1	1	706	9	8	17
ANL-E	WIPP	1455	9.31	30.13	23311.75	90	7	10	4	145	160.93	B	35	15	5	MASS	5	15	14550	46	135	183
BT	MOUND	289	10.87	55.96	122052.74	167	13	19	7	322	453.62	XX	14	46	23	MASS	23	46	13294	213	145	357
ETEC	NTS	375	10.87	3.01	6466.58	9	1	2	1	18	445.44	XX	14	4	2	MASS	2	4	1500	19	16	35
HANFORD	WIPP	1808	9.31	25687.77	26934798.08	76301	5706	8305	2769	123499	218.10	D	21	11762	5881	MASS	5881	11762	21265686	54,458	197,984	252,442
INEL/ANL-W	WIPP	1392	9.31	33294.81	26952245.98	98896	7399	10764	3588	160072	168.38	C	28	11434	5717	MASS	5717	11434	15918128	52,939	148,179	201,118
KAPL	MOUND	694	10.87	0.84	1625.80	3	1	1	1	5	452.10	XX	14	2	1	VOLUME	1	1	1388	9	15	24
LANL	WIPP	342	10.87	18257.03	14114042.46	54229	4058	5903	1968	87775	160.80	B	35	7524	2508	MASS	2508	7524	1715472	23,224	18,647	41,871
LBL	LLNL	75	19.65	2.30	4896.08	7	1	1	1	14	452.10	XX	14	2	1	VOLUME	1	1	150	9	3	12
LLNL	WIPP	1452	9.31	800.54	545260.94	1784	134	195	65	2888	148.85	C	28	208	104	MASS	104	208	302016	963	2,812	3,775
MOUND	WIPP	1557	9.31	259.12	386958.46	770	58	84	28	1246	310.62	E	14	178	89	MASS	89	178	277146	824	2,580	3,404
MU	ANL-E	393	10.87	0.75	1626.80	3	1	1	1	5	452.10	XX	14	2	1	VOLUME	1	1	786	9	9	18
NTS	WIPP	1214	9.31	217.42	477750.02	646	49	71	24	1258	467.05	XX	14	180	90	MASS	90	180	218520	833	2,034	2,868
ORNL	WIPP	1521	9.31	467.33	859464.22	1389	104	152	51	2262	312.53	XX	14	324	162	MASS	162	324	492804	1,500	4,588	6,088
PANTEX	LANL	335	10.87	0.22	474.71	1	0	1	1	2	452.10	XX	14	2	1	VOLUME	1	1	670	9	7	17
PA	ORNL	317	10.87	2.10	2656.43	7	1	1	1	11	243.11	E	14	2	1	VOLUME	1	1	634	9	7	16
RFP	WIPP	704	10.87	8060.69	5771670.13	18003	1347	1960	654	29138	198.06	C	28	2082	1041	MASS	1041	2082	1465728	9,640	15,932	25,572
SNL-NM	WIPP	304	19.65	5.99	13018.73	18	2	3	1	35	452.10	XX	14	6	3	MASS	3	6	624	28	12	40
SRS	WIPP	1509	9.31	9426.72	21122425.35	28001	2095	3048	1016	55586	466.06	XX	14	7942	3971	MASS	3971	7942	11984478	36,771	111,575	148,347
TOTAL																	19,602	41,711	53,672,290	181,516	504,689	686,204

[1]Source: ORNL, 1993
[2]Source: INEL, 1994b
[3]Source: Personal Communication with Phil Gregory
Notes:
This table presents the costs for transporting CH TRU waste by truck.
Volumes and masses represent total stored and project volumes and masses.
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites.
Shipment Configuration is dependent on the average drum mass.
A -- Maximum of 42 drums in three TRUPACT-II's
B -- Maximum of 35 drums in three TRUPACT-II's
C -- Maximum of 28 drums in two TRUPACT-II's
D -- Maximum of 21 drums in two TRUPACT-II's
E -- Maximum of 14 drums in two TRUPACT-II's
XX -- Average drum mass exceeds expected upper limit. Average drum weight set at 380 kg/drum for calculations. Use Shipment Configuration E.

Table P-60
CH Decentralized Alternative ID #83
Transportation Costs

Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m^3)	Mass (kg)	VOLUME LIMITING CALCULATIONS: Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	MASS LIMITING CALCULATIONS: Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	ANL-E	353	10.87	0.32	119.43	1	0	1	1	2	78.68	A	42	3	1	VOLUME	1	1	706	9	8	17
ANL-E	WIPP	1455	9.31	35.95	22938.06	107	8	12	4	173	132.73	A	42	15	5	MASS	5	15	14550	46	135	182
BT	MOUND	289	10.87	159.90	110957.04	475	36	52	18	769	144.34	B	35	66	22	MASS	22	66	12716	204	138	342
ETEC	NTS	375	10.87	8.61	5878.71	26	2	3	1	42	140.05	B	35	6	2	MASS	2	6	1500	19	16	35
HANFORD	WIPP	1808	9.31	54415.83	24828774.58	161632	12093	17592	5864	261615	94.91	A	42	18687	6229	MASS	6229	18687	22524064	57,681	209,699	267,380
INEL/ANL-W	WIPP	1392	9.31	47390.00	25850461.76	140763	10532	15321	5107	227837	113.46	A	42	16275	5425	MASS	5425	16275	15103200	50,236	140,611	190,848
KAPL	MOUND	694	10.87	2.40	1659.81	8	1	2	1	12	141.85	B	35	3	1	VOLUME	1	2	1388	9	15	24
LANL	WIPP	342	10.87	27023.49	13591943.62	80268	6006	8737	2913	129921	104.62	A	42	9282	3094	MASS	3094	9282	2116296	28,650	23,004	51,655
LBL	LLNL	75	19.65	6.57	4541.89	20	2	3	1	32	143.85	B	35	3	1	VOLUME	1	3	150	9	3	12
LLNL	WIPP	1452	9.31	1293.18	503804.65	3842	288	419	140	5218	96.03	A	42	447	149	MASS	149	447	432696	1,380	4,028	5,408
MOUND	WIPP	1557	9.31	718.35	362609.62	2134	160	233	78	3454	104.10	A	42	249	83	MASS	83	249	258462	769	2,406	3,175
MU	ANL-E	393	10.87	2.14	1478.91	7	1	1	1	11	143.85	B	35	3	1	VOLUME	1	1	786	9	9	18
NTS	WIPP	1214	9.31	621.21	434318.20	1846	139	202	68	2987	145.42	B	35	258	86	MASS	86	258	208808	796	1,944	2,740
ORNL	WIPP	1521	9.31	1127.04	789272.40	3348	251	365	122	5419	145.66	B	35	465	155	MASS	155	465	471510	1,435	4,390	5,825
PANTEX	LANL	335	10.87	0.62	431.55	2	0	1	1	3	143.85	B	35	3	1	VOLUME	1	1	670	9	7	17
PA	ORNL	317	10.87	2.10	2655.43	7	1	1	1	11	262.11	E	14	2	1	VOLUME	1	1	634	9	7	16
RFP	WIPP	704	10.87	8866.22	5587396.08	26336	1971	2867	956	42627	131.08	A	42	3045	1015	MASS	1015	3045	1429120	9,399	15,535	24,933
SNL-NM	WIPP	104	19.65	17.11	11833.39	51	4	6	2	83	143.85	B	35	9	3	MASS	3	9	624	28	12	40
SRS	WIPP	1509	9.31	26933.46	19202207.74	80001	5986	8708	2903	129488	148.29	B	35	11100	3700	MASS	3700	11100	11166600	34,262	103,961	138,223
TOTAL																	19,974	59,913	53,744,480	184,959	505,929	690,888

[1]Source: ORNL, 1993
[2]Source: INEL, 1994b
[3]Source: Personal Communication with Phil Gregory
Notes:
This table presents the costs for transporting CH TRU waste by truck
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
A - Maximum of 42 drums in three TRUPACT-II's
B - Maximum of 35 drums in three TRUPACT-II's
C - Maximum of 28 drums in two TRUPACT-II's
D - Maximum of 21 drums in two TRUPACT-II's
E - Maximum of 14 drums in two TRUPACT-II's
XX - Average drum mass exceeds expected upper limit. Average drum weight set at 380 kg/drum for calculations. Use Shipment Configuration E

Table P-61
CH Decentralized Alternative ID #94
Transportation Costs

								VOLUME LIMITING CALCULATIONS				MASS LIMITING CALCULATIONS												
Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m^3)	Revised Volume (m^3)	Mass (kg)	Revised Mass (kg)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calc.[4]	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	ANL-E	353	10.87	0.32	0.28	119.43	102.83	1	0	1	1	2	76.68	A	42	3	1	VOLUME	1	0	706	9	8	17
ANL-E	WIPP	1455	9.31	70.51	60.72	66143.70	56953.63	181	14	20	7	292	195.11	C	28	22	11	MASS	11	22	32010	102	298	400
BT	MOUND	289	10.87	159.90	137.68	261072.26	224798.62	409	31	45	15	662	339.61	E	14	96	48	MASS	48	96	27744	444	302	746
ETEC	NTS	375	10.87	8.61	7.41	13832.09	11910.25	23	2	3	1	36	334.23	E	14	6	3	MASS	3	6	2250	26	24	52
HANFORD	WIPP	1808	9.31	54420.36	46859.14	53326437.16	45917208.65	139186	10414	15149	5050	225285	203.82	C	28	16092	8046	MASS	8046	16092	29094336	74,508	270,868	345,374
INEL/ANL-W	WIPP	1392	9.31	68421.44	58914.90	56312806.14	48488648.54	174995	13093	19047	6349	283245	171.19	C	28	20232	10116	MASS	10116	20232	28162944	93,674	262,197	355,871
KAPL	MOUND	694	10.87	2.40	2.07	3905.40	3362.78	7	1	1	1	10	338.47	E	14	2	1	VOLUME	1	1	1388	9	15	24
LANL	WIPP	342	10.87	32641.55	28106.30	26855786.89	23124417.00	83485	6246	9087	3029	135127	171.13	C	28	9652	4826	MASS	4826	9652	3300984	44,689	35,882	80,570
LBL	LLNL	75	19.65	6.57	5.65	10686.68	9201.86	17	2	3	1	28	338.47	E	14	4	2	MASS	2	4	300	19	6	24
LLNL	WIPP	1452	9.31	1313.13	1130.68	1086694.76	935708.31	3359	252	368	122	5436	172.13	C	28	390	195	MASS	195	390	566280	1,806	5,272	7,078
MOUND	WIPP	1557	9.31	736.12	633.84	836930.14	720646.23	1863	141	205	69	3048	236.49	D	21	292	146	MASS	146	292	454644	1,352	4,233	5,585
MU	ANL-E	393	10.87	2.14	1.84	3479.75	2996.27	6	1	1	1	9	338.47	E	14	2	1	VOLUME	1	1	786	9	9	18
NTS	WIPP	1214	9.31	621.21	534.90	1021912.97	879927.36	1589	119	173	58	2572	342.17	E	14	368	184	MASS	184	368	446752	1,704	4,159	5,863
ORNL	WIPP	1521	9.31	1295.19	1115.23	1926718.19	1659018.03	3313	248	361	121	5362	309.42	E	14	766	383	MASS	383	766	1165086	3,547	10,847	14,394
PANTEX	LANL	335	10.87	0.62	0.54	1015.40	874.32	2	0	1	1	3	338.47	E	14	2	1	VOLUME	1	0	670	9	7	17
PA	ORNL	317	10.87	5.25	4.52	8367.75	7205.13	14	2	2	1	22	331.52	E	14	4	2	MASS	2	4	1268	19	14	32
RFP	WIPP	704	10.87	9148.83	7877.68	8458950.48	7283655.45	23400	1751	2547	849	37874	192.32	C	28	2706	1353	MASS	1353	2706	1905024	12,529	20,708	33,236
SNL-NM	WIPP	104	19.65	17.11	14.73	27842.94	23974.41	44	4	6	2	71	338.47	E	14	12	6	MASS	6	12	1248	56	25	80
SRS	WIPP	1509	9.31	26933.49	23191.32	45181150.31	38903636.11	68886	5154	7498	2500	111497	348.92	E	14	15930	7965	MASS	7965	15930	24038370	73,756	223,797	297,553
TOTAL																			31,290	66,574	89,202,790	308,266	838,670	1,146,935

[1]Source: ORNL, 1993
[2]Source: INEL, 1994b
[3]Source: Personal Communication with Phil Gregory
Notes:
This table presents the costs for transporting CH TRU waste by truck
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
A - Maximum of 42 drums in three TRUPACT-II's
B - Maximum of 35 drums in three TRUPACT-II's
C - Maximum of 28 drums in two TRUPACT-II's
D - Maximum of 21 drums in two TRUPACT-II's
E - Maximum of 14 drums in two TRUPACT-II's
XX - Average drum mass exceeds expected upper limit. Average drum weight set at 380 kg/drum for calculations. Use Shipment Configuration E

Revised Mass and Volume Scaling Factor 0.861059

Table P-62
CH Decentralized Alternative ID #111
Transportation Costs

Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m³)	Mass (kg)	VOLUME LIMITING CALCULATIONS: Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	MASS LIMITING CALCULATIONS: Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	ANL-E	353	10 87	0 32	119 43	1	0	1	1	2	76 68	A	42	3	1	VOLUME	1	1	706	9	8	17
ANL-E	WIPP	1455	9 31	35 95	22938 06	107	8	12	4	173	132 73	A	42	15	5	MASS	5	15	14550	48	135	182
BT	MOUND	289	10 87	159 90	110957 04	475	36	52	18	769	144 34	B	35	66	22	MASS	22	66	12716	204	138	342
ETEC	NTS	375	10 87	8 61	5878 71	26	2	3	1	42	142 05	B	35	6	2	MASS	2	6	1500	19	16	35
HANFORD	WIPP	1808	9 31	54415 83	24826774 58	161632	12093	17592	5864	261615	94 91	A	42	18687	6229	MASS	6229	18687	22524064	57,681	209,699	267,380
INEL/ANL-W	WIPP	1392	9 31	47390 00	25850461 76	140763	10532	15321	5107	227837	113 46	A	42	16275	5425	MASS	5425	16275	15103200	50,236	140,611	190,848
KAPL	MOUND	694	10 87	2 40	1659 81	8	1	2	1	12	143 85	B	35	3	1	VOLUME	1	2	1388	9	15	24
LANL	WIPP	342	10 87	27023 49	13591943 62	80268	6006	8737	2913	129921	104 62	A	42	9282	3094	MASS	3094	9282	2116296	28,650	23,004	51,655
LBL	LLNL	75	19 65	6 57	4544 69	20	2	3	1	32	143 85	B	35	3	1	VOLUME	1	3	150	9	3	12
LLNL	WIPP	1452	9 31	1293 18	503804 65	3842	288	419	140	6218	81 03	A	42	447	149	MASS	149	447	432696	1,380	4,028	5,408
MOUND	WIPP	1557	9 31	718 35	352609 62	2134	160	233	78	3454	102 10	A	42	249	83	MASS	83	249	258462	759	2,406	3,175
MU	ANL-E	393	10 87	2 14	1478 91	7	1	1	1	11	143 85	B	35	3	1	VOLUME	1	1	786	9	9	18
NTS	WIPP	1214	9 31	621 21	434318 20	1846	139	202	68	2987	45 42	B	35	258	86	MASS	86	258	208808	796	1,944	2,740
ORNL	WIPP	1521	9 31	1127 04	789272 40	3348	251	365	122	5419	145 66	B	35	465	155	MASS	155	465	471510	1,435	4,390	5,825
PANTEX	LANL	335	10 87	0 62	431 55	2	0	1	1	3	143 85	B	35	3	1	VOLUME	1	1	670	9	7	17
PA	ORNL	317	10 87	2 10	2656 43	7	1	1	1	11	263 11	E	14	2	1	VOLUME	1	1	634	9	7	16
RFP	WIPP	704	10 87	8866 22	5567396 08	26336	1971	2867	956	42627	131 08	A	42	3045	1015	MASS	1015	3045	1429120	9,399	15,535	24,933
SNL-NM	WIPP	104	19 65	17 11	11833 39	51	4	6	2	83	143 85	B	35	9	3	MASS	3	9	624	28	12	40
SRS	WIPP	1509	9 31	26933 46	19202207 74	86001	5986	8708	2903	129488	148 29	B	35	11100	3700	MASS	3700	11100	11166600	34,262	103,961	138,223
TOTAL																	19,974	59,913	53,744,480	184,959	505,929	690,888

[1]Source: ORNL, 1993
[2]Source: INEL, 1994b
[3]Source: Personal Communication with Phil Gregory

Notes:
This table presents the costs for transporting CH TRU waste by truck
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
A - Maximum of 42 drums in three TRUPACT-II'S
B - Maximum of 35 drums in three TRUPACT-II's
C - Maximum of 28 drums in two TRUPACT-II's
D - Maximum of 21 drums in two TRUPACT-II's
E - Maximum of 14 drums in two TRUPACT-II's
XX - Average drum mass exceeds expected upper limit. Average drum weight set at 380 kg/drum for calculations. Use Shipment Configuration E

Table P-63
CH Regionalized Baseline
Transportation Costs

						VOLUME LIMITING CALCULATIONS				MASS LIMITING CALCULATIONS												
Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m³)	Mass (kg)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	SRS	1190	9 31	0 13	37 91	1	0	1	1	1	60 86	A	42	3	1	VOLUME	1	1	2380	9	22	31
ANL-E	SRS	877	10 87	31 31	20426 77	93	7	11	4	151	135 71	A	42	12	4	VOLUME	4	11	7016	37	76	113
BT	SRS	686	10 87	159 90	110957 04	475	36	52	18	769	144 34	B	35	66	22	MASS	22	66	30184	204	328	532
ETEC	INEL/ANL-W	958	10 87	8 61	5878 71	26	2	3	1	42	142 05	B	35	6	2	MASS	2	6	3832	19	42	60
HANFORD	WIPP	1808	9 31	55709 01	25332570 23	165473	12380	18010	6004	267832	94 58	A	42	19131	6377	MASS	6377	19131	23059232	59,051	214,681	273,732
INEL/ANL-W	WIPP	1392	9 31	48011 21	26284779 96	142608	10670	15522	5174	230824	113 87	A	42	16488	5496	MASS	5496	16488	15300864	50,893	142,451	193,344
KAPL	SRS	949	10 87	2 40	1659 81	8	1	2	1	12	143 85	B	35	3	1	VOLUME	1	2	1898	9	21	30
LANL	WIPP	342	10 87	27023 49	13591943 62	80268	6006	8737	2913	129921	04 62	A	42	9282	3094	MASS	3094	9282	2116296	28,650	23,004	51,655
LBL	HANFORD	870	10 87	6 57	4541 89	20	2	3	1	32	143 85	B	35	3	1	VOLUME	1	3	1740	9	19	28
LLNL	HANFORD	890	10 87	1158 04	445343 02	3440	258	375	125	5568	79 99	A	42	399	133	MASS	133	399	236740	1,232	2,573	3,805
MOUND	SRS	641	10 87	263 29	143644 06	783	59	86	29	1266	113 48	A	42	93	31	MASS	31	93	39742	287	432	719
MU	SRS	863	10 87	2 14	1478 91	7	1	1	1	11	143 85	B	35	3	1	VOLUME	1	1	1726	9	19	28
NTS	INEL/ANL-W	713	10 87	612 60	428439 49	1820	137	199	67	2946	145 47	B	35	255	85	MASS	85	255	121210	787	1,318	2,105
ORNL	SRS	358	10 87	1124 94	728806 41	3342	250	364	122	5409	134 76	A	42	387	129	MASS	129	387	92364	1,195	1,004	2,199
PANTEX	LANL	335	10 87	0 62	431 55	2	0	1	1	3	143 85	B	35	3	1	VOLUME	1	1	670	9	7	17
PA	SRS	569	10 87	2 10	2656 43	7	1	1	1	11	263 11	E	14	2	1	VOLUME	1	1	1138	9	12	22
RFP	WIPP	704	10 87	8866 22	5587396 08	26336	1971	2867	956	42627	131 08	A	42	3045	1015	MASS	1015	3045	1429120	9,309	15,535	24,933
SNL-NM	LANL	104	19 65	17 11	11833 39	51	4	6	2	83	143 85	B	35	9	3	MASS	3	9	624	28	12	40
SRS	WIPP	1509	9 31	28814 79	20367027 82	85589	6404	9316	3106	138533	147 02	B	35	11877	3959	MASS	3959	11877	11948262	36,660	111,238	147,899
TOTAL																	20,356	61,058	54,395,038	188,497	512,795	701,291

[1]Source ORNL, 1993
[2]Source INEL, 1994b
[3]Source Personal Communication with Phil Gregory
Notes
This table presents the costs for transporting CH TRU waste by truck
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
A - Maximum of 42 drums in three TRUPACT-IIS
B - Maximum of 35 drums in three TRUPACT-IIs
C - Maximum of 28 drums in two TRUPACT IIs
D - Maximum of 21 drums in two TRUPACT-IIs
E - Maximum of 14 drums in two TRUPACT-IIs
XX -- Average drum mass exceeds expected upper limit Average drum weight set at 380 kg /drum for calculations *Use Shipment Configuration E*

Table P-64
CH Regionalized Alternative ID #1
Transportation Costs

						VOLUME LIMITING CALCULATIONS				MASS LIMITING CALCULATIONS												
Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m^3)	Mass (kg)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	SRS	1190	9 31	0 13	37 91	1	0	1	1	1	60 86	A	42	3	1	VOLUME	1	1	2380	9	22	31
ANL E	SRS	877	10 87	31 31	20426 77	93	7	11	4	151	135 71	A	42	12	4	VOLUME	4	11	7016	37	76	113
BT	SRS	686	10 87	159 90	110957 04	475	36	52	18	769	44 34	B	35	66	22	MASS	22	66	30184	204	328	532
ETEC	INEL/ANL-W	958	10 87	8 61	5878 71	26	2	3	1	42	42 05	B	35	6	2	MASS	2	6	3832	19	42	60
HANFORD	WIPP	1808	9 31	26288 31	27460059 02	78085	5842	8499	2833	126387	217 43	D	21	12038	6019	MASS	6019	12038	21764704	55,736	202,629	258,365
INEL/ANL-W	WIPP	1392	9 31	33512 23	27429996 01	99542	7448	10835	3612	161117	70 25	C	28	11510	5755	MASS	5755	11510	16021920	53,291	149,164	202,455
KAPL	SRS	949	10 87	2 40	1659 81	8	1	2	1	12	143 85	B	35	3	1	VOLUME	1	2	1898	9	21	30
LANL	WIPP	342	10 87	18257 03	14114042 46	54229	4058	5903	1968	87775	160 80	B	35	7524	2508	MASS	2508	7524	1715472	23,224	18,647	41,871
LBL	HANFORD	870	10 87	6 57	4541 89	20	2	3	1	32	143 85	B	35	3	1	VOLUME	1	3	1740	9	19	28
LLNL	HANFORD	890	10 87	1158 04	445343 02	3440	258	375	125	5568	79 99	A	42	399	133	MASS	133	399	236740	1,232	2,573	3,805
MOUND	SRS	641	10 87	263 29	143644 06	783	59	86	29	1266	113 48	A	42	93	31	MASS	31	93	39742	287	432	719
MU	SRS	863	10 87	2 14	1478 91	7	1	1	1	11	143 85	B	35	3	1	VOLUME	1	1	1726	9	19	28
NTS	INEL/ANL-W	713	10 87	612 60	426439 49	1820	137	199	67	2946	145 47	B	35	255	85	MASS	85	255	121210	787	1,318	2,105
ORNL	SRS	358	10 87	1124 94	728606 41	3342	250	364	122	5409	134 76	A	42	387	129	MASS	129	387	92364	1,195	1,004	2,199
PANTEX	LANL	335	10 87	0 62	431 55	2	0	1	1	3	143 85	B	35	3	1	VOLUME	1	1	670	9	7	17
PA	SRS	569	10 87	2 10	2656 43	7	1	1	1	11	253 11	E	14	2	1	VOLUME	1	1	1138	9	12	22
RFP	WIPP	704	10 87	6060 69	5771670 13	18003	1347	1960	654	29138	138 08	C	28	2082	1041	MASS	1041	2082	1465728	9,640	15,932	25,572
SNL NM	LANL	104	19 65	17 11	11833 39	51	4	6	2	83	113 85	B	35	9	3	MASS	3	9	624	28	12	40
SRS	WIPP	1509	9 31	10183 30	22392159 78	30248	2263	3293	1098	58927	437 37	XX	14	8420	4210	MASS	4210	8420	12705780	38,985	118,291	157,275
TOTAL																	19,948	42,809	54,214,868	184,718	510,549	695,268

[1]Source ORNL, 1993
[2]Source INEL, 1994b
[3]Source Personal Communication with Phil Gregory
Notes
This table presents the costs for transporting CH TRU waste by truck
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
A - Maximum of 42 drums in three TRUPACT-IIS
B - Maximum of 35 drums in three TRUPACT-IIs
C - Maximum of 28 drums in two TRUPACT-IIs
D - Maximum of 21 drums in two TRUPACT-IIs
E - Maximum of 14 drums in two TRUPACT-IIs
XX - Average drum mass exceeds expected upper limit Average drum weight set at 380 kg /drum for calculations Use Shipment Configuration E

Table P-65
CH Regionalized Alternative ID #6
Transportation Costs

						VOLUME LIMITING CALCULATIONS				MASS LIMITING CALCULATIONS													
Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m³)	Mass (kg)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	SRS	1190	9 31	0 13	37 91	1	0	1	1	1	60 86	A	42	3	1	VOLUME	1	1	2380	9	22	31
ANL-E	SRS	877	10 87	31 31	20426 77	93	7	11	4	151	135 71	A	42	12	4	VOLUME	4	11	7016	37	76	113
BT	SRS	686	10 87	159 90	110957 04	475	36	52	18	769	144 34	B	35	66	22	MASS	22	66	30184	204	328	532
ETEC	INEL/ANL-W	958	10 87	8 61	5878 71	26	2	3	1	42	142 05	B	35	6	2	MASS	2	6	3832	19	42	60
HANFORD	WIPP	1808	9 31	44845 98	27480059 02	133206	9966	14498	4833	215606	127 46	A	42	15402	5134	MASS	5134	15402	18564544	47,541	172,836	220,377
INEL/ANL-W	WIPP	1392	9 31	42657 74	27429996 01	126707	9480	13791	4597	205086	133 75	A	42	14649	4883	MASS	4883	14649	13594272	45,217	126,563	171,779
KAPL	SRS	949	10 87	2 40	1659 81	8	1	2	1	12	143 85	B	35	3	1	VOLUME	1	2	1898	9	21	30
LANL	WIPP	342	10 87	23786 64	14114042 46	70654	5286	7690	2564	114359	123 42	A	42	8169	2723	MASS	2723	8169	1862532	25,215	20,246	45,461
LBL	HANFORD	870	10 87	6 57	4541 89	20	2	3	1	32	143 85	B	35	3	1	VOLUME	1	3	1740	9	19	28
LLNL	HANFORD	890	10 87	1158 04	445343 02	3440	258	375	125	5568	79 99	A	42	399	133	MASS	133	399	236740	1,232	2,573	3,805
MOUND	SRS	641	10 87	263 29	143644 06	783	59	86	29	1266	113 48	A	42	93	31	MASS	31	93	39742	287	432	719
MU	SRS	863	10 87	2 14	1478 91	7	1	1	1	11	143 85	B	35	3	1	VOLUME	1	1	1726	9	19	28
NTS	INEL/ANL-W	713	10 87	612 60	428439 49	1820	137	199	67	2946	145 47	B	35	255	85	MASS	85	255	121210	767	1,318	2,105
ORNL	SRS	358	10 87	1124 94	726806 41	3342	250	364	122	5409	134 76	A	42	387	129	MASS	129	387	92364	1,195	1,004	2,199
PANTEX	LANL	335	10 87	0 62	431 55	2	0	1	1	3	143 85	B	35	3	1	VOLUME	1	1	670	9	7	17
PA	SRS	569	10 87	2 10	2656 43	7	1	1	1	11	263 11	E	14	2	1	VOLUME	1	1	1138	9	12	22
RFP	WIPP	704	10 87	7830 33	5771670 13	23259	1741	2532	844	37646	153 32	B	35	3228	1076	MASS	1076	3228	1515008	9,964	16,468	26,432
SNL NM	LANL	104	19 65	17 11	11833 39	51	4	6	2	83	143 85	B	35	9	3	MASS	3	9	624	28	12	40
SRS	WIPP	1509	9 31	21935 47	22392150 78	65155	4875	7092	2364	105460	212 33	D	21	10044	5022	MASS	5022	10044	15156396	46,504	141,106	187,610
TOTAL																	19,253	52,727	51,234,016	178,283	483,104	661,387

[1]Source ORNL, 1993
[2]Source INEL, 1994b
[3]Source Personal Communication with Phil Gregory
Notes
This table presents the costs for transporting CH TRU waste by truck
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
A - Maximum of 42 drums in three TRUPACT IIS
B - Maximum of 35 drums in three TRUPACT IIs
C - Maximum of 28 drums in two TRUPACT IIs
D - Maximum of 21 drums in two TRUPACT-IIs
E - Maximum of 14 drums in two TRUPACT-IIs
XX - Average drum mass exceeds expected upper limit Average drum weight set at 360 kg/drum for calculations Use Shipment Configuration E

Table P-66
CH Regionalized Alternative ID #10
Transportation Costs

						VOLUME LIMITING CALCULATIONS				MASS LIMITING CALCULATIONS												
Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m³)	Mass (kg)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	SRS	1190	9 31	0 13	37 91	1	0	1	1	1	60 86	A	42	3	1	VOLUME	1	1	2380	9	22	31
ANL-E	SRS	877	10 87	31 31	20426 77	93	7	11	4	151	135 71	A	42	12	4	VOLUME	4	11	7016	37	76	113
BT	SRS	686	10 87	159 90	110957 04	475	36	52	18	769	144 34	B	35	66	22	MASS	22	66	30184	204	328	532
ETEC	INEL/ANL-W	958	10 87	8 61	5878 71	26	2	3	1	42	142 05	B	35	6	2	MASS	2	6	3832	19	42	60
HANFORD	WIPP	1808	9 31	16318 82	22708067 71	48472	3627	5276	1759	78456	289 44	E	14	11208	5604	MASS	5604	11208	20264064	51,893	188,658	240,551
INEL/ANL W	WIPP	1392	9 31	13530 24	21099392 64	40189	3007	4375	1459	65050	224 36	E	14	9294	4647	MASS	4647	9294	12937248	43,031	120,446	163,477
KAPL	SRS	949	10 87	2 40	1659 81	8	1	2	1	12	143 85	B	35	3	1	VOLUME	1	2	1898	9	21	30
LANL	WIPP	342	10 87	6979 09	9846783 71	20730	1551	2257	753	33554	293 47	E	14	4794	2397	MASS	2397	4794	1639548	22,196	17,822	40,018
LBL	HANFORD	870	10 87	6 57	4541 89	20	2	3	1	32	143 85	B	35	3	1	VOLUME	1	3	1740	9	19	28
LLNL	HANFORD	890	10 87	1158 04	445343 02	3440	258	375	125	5568	79 99	A	42	399	133	MASS	133	399	236740	1,232	2,573	3,805
MOUND	SRS	641	10 87	263 29	143644 06	783	59	86	29	1266	113 48	A	42	93	31	MASS	31	93	39742	287	432	719
MU	SRS	863	10 87	2 14	1478 91	7	1	1	1	11	143 85	B	35	3	1	VOLUME	1	1	1726	9	19	28
NTS	INEL/ANL-W	713	10 87	612 60	428439 49	1820	137	199	67	2946	145 47	B	35	255	85	MASS	85	255	121210	787	1,318	2,105
ORNL	SRS	358	10 87	1124 94	786615 97	3342	250	364	122	5409	145 44	B	35	465	155	MASS	155	465	110980	1,435	1,206	2,642
PANTEX	LANL	335	10 87	0 62	431 55	2	0	1	1	3	143 85	B	35	3	1	VOLUME	1	1	670	9	7	17
PA	SRS	569	10 87	2 10	2656 43	7	1	1	1	11	243 11	E	14	2	1	VOLUME	1	1	1138	9	12	22
RFP	WIPP	704	10 87	2062 25	3151674 56	6126	459	668	223	9915	317 88	E	14	1418	709	MASS	709	1418	998272	6,565	10,851	17,417
SNL-NM	LANL	104	19 65	17 11	11833 39	51	4	6	2	83	143 85	B	35	9	3	MASS	3	9	624	28	12	40
SRS	WIPP	1509	9 31	9508 10	20366033 36	28242	2113	3074	1025	53595	415 53	XX	14	7658	3829	MASS	3829	7658	11555922	35,457	107,586	143,042
TOTAL																	17,627	35,685	47,954,934	163,226	451,451	614,677

[1]Source ORNL, 1993
[2]Source INEL, 1994b
[3]Source Personal Communication with Phil Gregory

Notes
This table presents the costs for transporting CH TRU waste by truck.
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
A - Maximum of 42 drums in three TRUPACT-II'S
B - Maximum of 35 drums in three TRUPACT-II's
C - Maximum of 28 drums in two TRUPACT-II's
D - Maximum of 21 drums in two TRUPACT-II's
E - Maximum of 14 drums in two TRUPACT-II's
XX - Average drum mass exceeds expected upper limit Average drum weight set at 380 kg /drum for calculations Use Shipment Configuration E

Table P-67
CH Regionalized Alternative ID #33
Transportation Costs

						VOLUME LIMITING CALCULATIONS				MASS LIMITING CALCULATIONS												
Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m^3)	Mass (kg)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	SRS	1190	9 31	0 13	37 91	1	0	1	1	1	60 86	A	42	3	1	VOLUME	1	1	2380	9	22	31
ANL-E	SRS	877	10 87	31 31	20426 77	93	7	11	4	151	135 71	A	42	12	4	VOLUME	4	11	7016	37	76	113
BT	SRS	686	10 87	159 90	110957 04	475	36	52	18	769	144 34	B	35	66	22	MASS	22	66	30184	204	328	532
ETEC	INEL/ANL-W	956	10 87	8 61	5878 71	26	2	3	1	42	142 05	B	35	6	2	MASS	2	6	3832	19	42	60
HANFORD	WIPP	1808	9 31	55709 01	25332579 23	165473	12380	18010	6004	267832	94 58	A	42	19131	6377	MASS	6377	19131	23059232	59,051	214,681	273,732
INEL/ANL-W	WIPP	1392	9 31	48011 21	26284779 96	142608	10670	15522	5174	230824	113 87	A	42	16488	5496	MASS	5496	16488	15300864	50,893	142,451	193,344
KAPL	SRS	849	10 87	2 40	1659 81	8	1	2	1	12	143 85	B	35	3	1	VOLUME	1	2	1898	9	21	30
LANL	WIPP	342	10 87	27023 49	13591943 62	80268	6006	8737	2913	129921	104 62	A	42	9282	3094	MASS	3094	9282	2116296	28,650	23,004	51,655
LBL	HANFORD	870	10 87	6 57	4541 89	20	2	3	1	32	143 85	B	35	3	1	VOLUME	1	3	1740	9	16	26
LLNL	HANFORD	890	10 87	1158 04	445343 02	3440	258	375	125	5568	79 99	A	42	399	133	MASS	133	399	236740	1,232	2,573	3,805
MOUND	SRS	641	10 87	263 29	143644 06	783	59	86	29	1266	113 48	A	42	93	31	MASS	31	93	39742	287	432	719
MU	SRS	863	10 87	2 14	1478 91	7	1	1	1	11	143 85	B	35	3	1	VOLUME	1	1	1726	9	19	28
NTS	INEL/ANL-W	713	10 87	612 60	428439 49	1820	137	199	67	2946	145 47	B	35	255	85	MASS	85	255	121210	787	1,318	2,105
ORNL	SRS	358	10 87	1124 94	728806 41	3342	250	364	122	5409	134 76	A	42	387	129	MASS	129	387	92364	1,195	1,004	2,199
PANTEX	LANL	335	10 87	0 62	431 55	2	0	1	1	3	143 85	B	35	3	1	VOLUME	1	1	670	9	7	17
PA	SRS	569	10 87	2 10	2656 43	7	1	1	1	11	263 11	E	14	2	1	VOLUME	1	1	1138	9	12	22
RFP	WIPP	704	10 87	8866 22	5587396 08	26336	1971	2867	956	42627	131 08	A	42	3045	1015	MASS	1015	3045	1429120	9,399	15,535	24,933
SNL NM	LANL	104	19 65	17 11	11833 39	51	4	6	2	83	143 85	B	35	9	3	MASS	3	9	624	28	12	40
SRS	WIPP	1509	9 31	28814 79	20367027 82	85589	6404	9316	3106	138533	147 02	B	35	11877	3959	MASS	3959	11877	11948262	36,660	111,238	147,899
TOTAL																	20,356	61,068	64,395,038	188,497	512,786	701,291

[1]Source ORNL, 1993
[2]Source INEL, 1994b
[3]Source Personal Communication with Phil Gregory
Notes
This table presents the costs for transporting CH TRU waste by truck
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
A -- Maximum of 42 drums in three TRUPACT-II's
B -- Maximum of 35 drums in three TRUPACT-II's
C -- Maximum of 28 drums in two TRUPACT-II's
D -- Maximum of 21 drums in two TRUPACT-II's
E -- Maximum of 14 drums in two TRUPACT-II's
XX -- Average drum mass exceeds expected upper limit Average drum weight set at 380 kg/drum for calculations Use Shipment Configuration E

Table P-68
CH Regionalized Alternative ID #35 (a&b)
Transportation Costs

						VOLUME LIMITING CALCULATIONS				MASS LIMITING CALCULATIONS													
Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m^3)	Mass (kg)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	SRS	1190	9 31	0 13	37 91	1	0	1	1	1	60 86	A	42	3	1	VOLUME	1	1	2380	9	22	31
ANL-E	SRS	877	10 87	31 31	20426 77	93	7	11	4	151	135 71	A	42	12	4	VOLUME	4	11	7016	37	76	113
BT	SRS	686	10 87	159 90	110957 04	475	36	52	18	769	144 34	B	35	66	22	MASS	22	66	30184	204	328	532
ETEC	INEL/ANL-W	958	10 87	8 61	5878 71	26	2	3	1	42	142 05	B	35	6	2	MASS	2	6	3832	19	42	60
HANFORD	WIPP	1808	9 31	55709 01	25332579 23	165,473 00	12380	18010	6004	267832	94 58	A	42	19131	6377	MASS	6377	19131	23059232	59,051	214,681	273,732
INEL/ANL-W	WIPP	1392	9 31	48011 21	26284779 96	142608	10670	15522	5174	230824	113 87	A	42	16488	5496	MASS	5496	16488	15300864	50,893	142,451	193,344
KAPL	SRS	949	10 87	2 40	1659 81	8	1	2	1	12	143 85	B	35	3	1	VOLUME	1	2	1898	9	21	30
LANL	WIPP	342	10 87	27023 49	13591943 62	80268	6006	8737	2913	129921	104 62	A	42	9282	3094	MASS	3094	9282	2116296	26,650	23,004	51,655
LBL	HANFORD	870	10 87	6 57	4541 89	20	2	3	1	32	143 85	B	35	3	1	VOLUME	1	3	1740	9	19	28
LLNL	HANFORD	890	10 87	1158 04	445343 02	3440	258	375	125	5568	79 99	A	42	399	133	MASS	133	399	236740	1,232	2,573	3,805
MOUND	SRS	641	10 87	263 29	143644 06	783	59	86	29	1266	113 48	A	42	93	31	MASS	31	93	39742	267	432	719
MU	SRS	863	10 87	2 14	1478 81	7	1	1	1	11	143 85	B	35	3	1	VOLUME	1	1	1726	9	19	28
NTS	INEL/ANL-W	713	10 87	612 60	428439 49	1820	137	199	67	2946	145 47	B	35	255	85	MASS	85	255	121210	787	1,318	2,105
ORNL	SRS	358	10 87	1124 94	728806 41	3342	250	364	122	5409	134 76	A	42	387	129	MASS	129	387	92364	1,195	1,004	2,199
PANTEX	LANL	335	10 87	0 62	431 55	2	0	1	1	3	143 85	B	35	3	1	VOLUME	1	1	670	9	7	17
PA	SRS	569	10 87	2 10	2656 43	7	1	1	1	11	263 11	E	14	2	1	VOLUME	1	1	1138	9	12	22
RFP	WIPP	704	10 87	8866 22	5587396 08	26336	1971	2867	956	42627	131 08	A	42	3045	1015	MASS	1015	3045	1429120	9,399	15,535	24,933
SNL-NM	LANL	104	19 65	17 11	11833 39	51	4	6	2	83	143 85	B	35	9	3	MASS	3	9	624	28	12	40
SRS	WIPP	1509	9 31	26814 79	20367027 82	85589	6404	9316	3106	138533	147 02	B	35	11877	3959	MASS	3959	11877	11948262	36,660	111,238	147,899
TOTAL																	20,356	61,058	54,385,038	188,497	512,795	701,291

[1]Source ORNL, 1993
[2]Source INEL, 1994b
[3]Source Personal Communication with Phil Gregory
Notes
This table presents the costs for transporting CH TRU waste by truck
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass.
A -- Maximum of 42 drums in three TRUPACT-II'S
B -- Maximum of 35 drums in three TRUPACT-II's
C -- Maximum of 28 drums in two TRUPACT-II's
D -- Maximum of 21 drums in two TRUPACT-II's
E -- Maximum of 14 drums in two TRUPACT-II's
XX -- Average drum mass exceeds expected upper limit Average drum weight set at 360 kg /drum for calculations Use Shipment Configuration E

Table P-69
CH Regionalized Alternative ID #77 (a-d)
Transportation Costs

						VOLUME LIMITING CALCULATIONS				MASS LIMITING CALCULATIONS												
Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m^3)	Mass (kg)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	SRS	1,190 00	9 31	0 13	37 91	1 00	0 00	1 00	1 00	1 00	60 86	A	42 00	3 00	1 00	VOLUME	1 00	1 00	2,380 00	9 26	22 16	31 42
ANL-E	SRS	877 00	10 87	31 31	20,426 77	93 00	7 00	11 00	4 00	151 00	135 71	A	42 00	12 00	4 00	VOLUME	4 00	11 00	7,016 00	37 04	76 26	113 30
BT	SRS	686 00	10 87	159 90	110,957 04	475 00	36 00	52 00	18 00	769 00	144 34	B	35 00	66 00	22 00	MASS	22 00	66 00	30,184 00	203 72	328 10	531 82
ETEC	INEL/ANL-W	958 00	10 87	8 61	5,878 71	26 00	2 00	3 00	1 00	42 00	142 05	B	35 00	6 00	2 00	MASS	2 00	6 00	3,832 00	18 52	41 65	60 17
HANFORD	WIPP	1,808 00	9 31	26,288 31	27,480,059 02	78,085 00	5,842 00	8,499 00	2,833 00	126,387 00	217 43	D	21 00	12,038 00	6,019 00	MASS	6,019 00	12,038 00	21,764,704 00	55,735 94	202,629 39	258,365 33
INEL/ANL-W	WIPP	1,392 00	9 31	33,512 23	27,429,996 01	99,542 00	7,448 00	10,835 00	3,612 00	161,117 00	170 25	C	28 00	11,510 00	5,755 00	MASS	5,755 00	11,510 00	16,021,920 00	53,291 30	149,164 08	202,455 38
KAPL	SRS	949 00	10 87	2 40	1,659 81	8 00	1 00	2 00	1 00	12 00	143 85	B	35 00	3 00	1 00	VOLUME	1 00	2 00	1,898 00	9 26	20 63	29 89
LANL	WIPP	342 00	10 87	18,257 03	14,114,042 46	54,229 00	4,058 00	5,903 00	1,968 00	87,775 00	160 80	B	35 00	7,524 00	2,508 00	MASS	2,508 00	7,524 00	1,715,472 00	23,224 08	18,647 18	41,871 26
LBL	HANFORD	870 00	10 87	8 57	4,541 89	20 00	2 00	3 00	1 00	32 00	143 85	B	35 00	3 00	1 00	VOLUME	1 00	3 00	1,740 00	9 26	18 91	28 17
LLNL	HANFORD	890 00	10 87	1,158 04	445,343 02	3,440 00	258 00	375 00	125 00	5,568 00	79 99	A	42 00	399 00	133 00	MASS	133 00	399 00	236,740 00	1,231 58	2,573 36	3,804 94
MOUND	SRS	641 00	10 87	263 29	143,644 06	783 00	59 00	86 00	29 00	1,266 00	113 48	A	42 00	93 00	31 00	MASS	31 00	93 00	39,742 00	287 06	432 00	719 06
MU	SRS	863 00	10 87	2 14	1,476 91	7 00	1 00	1 00	1 00	11 00	143 85	B	35 00	3 00	1 00	VOLUME	1 00	1 00	1,726 00	9 26	18 76	28 02
NTS	INEL/ANL-W	713 00	10 87	612 60	428,439 49	1,820 00	137 00	199 00	67 00	2,946 00	145 47	B	35 00	255 00	85 00	MASS	85 00	255 00	121,210 00	787 10	1,317 55	2,104 65
ORNL	SRS	358 00	10 87	1,124 94	726,806 41	3,342 00	250 00	364 00	122 00	5,409 00	134 76	A	42 00	387 00	129 00	MASS	129 00	387 00	92,364 00	1,194 54	1,004 00	2,198 54
PANTEX	LANL	335 00	10 87	0 62	431 55	2 00	0 00	1 00	1 00	3 00	143 85	B	35 00	3 00	1 00	VOLUME	1 00	1 00	670 00	9 26	7 28	16 54
PA	SRS	569 00	10 87	2 10	2,656 43	7 00	1 00	1 00	1 00	11 00	263 11	E	14 00	2 00	1 00	VOLUME	1 00	1 00	1,138 00	9 26	12 37	21 63
RFP	WIPP	704 00	10 87	6,060 69	5,771,670 13	18,003 00	1,347 00	1,960 00	654 00	29,138 00	198 08	C	28 00	2,082 00	1,041 00	MASS	1,041 00	2,082 00	1,465,728 00	9,839 66	15,932 46	25,572 12
SNL-NM	LANL	104 00	19 65	17 11	11,833 39	51 00	4 00	6 00	2 00	83 00	143 85	B	35 00	9 00	3 00	MASS	3 00	9 00	624 00	27 78	12 26	40 04
SRS	WIPP	1,509 00	9 31	10,183 30	22,392,159 78	30,248 00	2,263 00	3,293 00	1,098 00	58,927 00	457 37	XX	14 00	8,420 00	4,210 00	MASS	4,210 00	8,420 00	12,705,780 00	38,984 60	118,290 81	157,275 41
													1,000 00									
TOTAL																	19,948 00	42,809 00	54,214,868 00	184,718 48	510,549 23	695,267 71

[1]Source ORNL, 1993
[2]Source INEL, 1994b
[3]Source Personal Communication with Phil Gregory

Notes
This table presents the costs for transporting CH TRU waste by truck
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
- A – Maximum of 42 drums in three TRUPACT-IIS
- B – Maximum of 35 drums in three TRUPACT-IIs
- C – Maximum of 28 drums in two TRUPACT IIs
- D – Maximum of 21 drums in two TRUPACT-IIs
- E – Maximum of 14 drums in two TRUPACT-IIs
- XX – Average drum mass exceeds expected upper limit Average drum weight set at 380 kg /drum for calculations Use Shipment Configuration E

Table P-70
CH Regionalized Alternative ID #83
Transportation Costs

						VOLUME LIMITING CALCULATIONS				MASS LIMITING CALCULATIONS												
Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m^3)	Mass (kg)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	*Fixed Costs ($K)*	*Variable Costs ($K)*	*Total Costs ($K)*
AMES	SRS	1190	9 31	0 13	37 91	1	0	1	1	1	60 86	A	42	3	1	VOLUME	1	1	2380	9	22	31
ANL-E	SRS	877	10 87	31 31	20426 77	93	7	11	4	151	135 71	A	42	12	4	VOLUME	4	11	7016	37	76	113
BT	SRS	686	10 87	159 90	110957 04	475	36	52	18	769	144 34	B	35	66	22	MASS	22	66	30184	204	328	532
ETEC	INEL/ANL-W	958	10 87	8 61	5878 71	26	2	3	1	42	142 05	B	35	6	2	MASS	2	6	3832	19	42	60
HANFORD	WIPP	1808	9 31	55709 01	25332579 23	165473	12380	18010	6004	267832	94 58	A	42	19131	6377	MASS	6377	19131	23059232	59,051	214,681	273,732
INEL/ANL-W	WIPP	1392	9 31	48011 21	26284779 96	142608	10670	15522	5174	230824	113 87	A	42	16488	5496	MASS	5496	16488	15300864	50,893	142,451	193,344
KAPL	SRS	949	10 87	2 40	1659 81	8	1	2	1	12	143 85	B	35	3	1	VOLUME	1	2	1898	9	21	30
LANL	WIPP	342	10 87	27023 49	13591943 62	80268	6006	8737	2913	129921	104 62	A	42	9282	3094	MASS	3094	9282	2116296	28,650	23,004	51,655
LBL	HANFORD	870	10 87	6 57	4541 89	20	2	3	1	32	143 85	B	35	3	1	VOLUME	1	3	1740	9	19	28
LLNL	HANFORD	890	10 87	1158 04	445343 02	3440	258	375	125	5568	79 99	A	42	399	133	MASS	133	399	236740	1,232	2,573	3,805
MOUND	SRS	641	10 87	263 29	143644 06	783	59	86	29	1266	113 48	A	42	93	31	MASS	31	93	39742	287	432	719
MU	SRS	863	10 87	2 14	1478 91	7	1	1	1	11	143 85	B	35	3	1	VOLUME	1	1	1726	9	19	28
NTS	INEL/ANL-W	713	10 87	612 60	428439 49	1820	137	199	67	2946	145 47	B	35	255	85	MASS	85	255	121210	787	1,318	2,105
ORNL	SRS	358	10 87	1124 94	728806 41	3342	250	364	122	5409	134 76	A	42	387	129	MASS	129	387	92364	1,195	1,004	2,199
PANTEX	LANL	335	10 87	0 62	431 55	2	0	1	1	3	143 85	B	35	3	1	VOLUME	1	1	670	9	7	17
PA	SRS	569	10 87	2 10	2656 43	7	1	1	1	11	263 11	E	14	2	1	VOLUME	1	1	1138	9	12	22
RFP	WIPP	704	10 87	6666 22	5587396 08	26336	1971	2867	956	42627	131 08	A	42	3045	1015	MASS	1015	3045	1429120	9,399	15,535	24,933
SNL-NM	LANL	104	19 65	17 11	11833 39	51	4	6	2	83	143 85	B	35	9	3	MASS	3	9	624	28	12	40
SRS	WIPP	1509	9 31	28614 79	20367027 82	85589	6404	9316	3106	138533	147 02	B	35	11877	3959	MASS	3959	11877	11948262	36,660	111,238	147,899
TOTAL																	20,356	61,058	54,395,038	188,497	512,795	701,291

[1]Source ORNL, 1993
[2]Source INEL, 1994b
[3]Source Personal Communication with Phil Gregory
Notes
This table presents the costs for transporting CH TRU waste by truck.
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
A -- Maximum of 42 drums in three TRUPACT-IIS
B -- Maximum of 35 drums in three TRUPACT-IIs
C -- Maximum of 28 drums in two TRUPACT-IIs
D -- Maximum of 21 drums in two TRUPACT-IIs
E -- Maximum of 14 drums in two TRUPACT-IIs
XX -- Average drum mass exceeds expected upper limit Average drum weight set at 380 kg /drum for calculations Use Shipment Configuration E

Table P-71
CH Regionalized Alternative ID #94
Transportation Costs

Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m^3)	Revised Volume (m^3)	Mass (kg)	Revised Mass (kg)	VOLUME LIMITING CALCULATIONS: Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	MASS LIMITING CALCULATIONS: Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	SRS	1190	9.31	0.13	0.11	37.91	32.65	1	0	1	1	1	60.86	A	42	3	1	VOLUME	1	0	2380	9	22	31
ANL E	SRS	877	10.87	31.31	26.96	20426.77	17588.65	81	6	9	3	130	135.71	A	42	12	4	MASS	4	12	7016	37	76	113
BT	SRS	886	10.87	159.90	137.68	110957.04	95540.56	409	31	45	15	662	144.34	B	35	57	19	MASS	19	57	26068	176	283	459
ETEC	INEL/ANL-W	958	10.87	8.61	7.41	5878.71	5061.92	23	2	3	1	36	142.05	B	35	6	2	MASS	2	6	3832	19	42	60
HANFORD	WIPP	1808	9.31	55733.49	47989.82	54413131.92	46852916.96	142545	10665	15515	5172	230721	203.07	C	28	16482	8241	MASS	8241	16482	29799456	78.312	277.433	353.745
INEL/ANL-W	WIPP	1392	9.31	69042.65	59449.90	57334719.11	49368575.90	176584	13212	19220	6407	285817	172.73	C	28	20416	10208	MASS	10208	20416	28419072	84.526	264.582	359.108
KAPL	SRS	949	10.87	2.40	2.07	1659.81	1429.20	7	1	1	1	10	143.85	B	35	3	1	VOLUME	1	1	1898	9	21	30
LANL	WIPP	342	10.87	32641.55	28106.30	26855786.89	23124417.00	83485	6246	9087	3029	135127	171.13	C	28	9652	4826	MASS	4826	9652	3300984	44.689	35.882	80.570
LBL	HANFORD	870	10.87	6.57	5.65	4541.89	3910.84	17	2	3	1	28	143.85	B	35	3	1	VOLUME	3	2	5220	28	57	85
LLNL	HANFORD	890	10.87	1158.04	997.14	445343.02	383466.61	2962	222	323	108	4794	79.99	A	42	345	115	MASS	115	345	204700	1.065	2.225	3.290
MOUND	SRS	641	10.87	263.29	226.71	143644.06	123686.01	674	51	74	25	1090	113.48	A	42	78	26	MASS	26	78	33332	241	362	603
MU	SRS	863	10.87	2.14	1.84	1478.91	1273.43	6	1	1	1	9	143.85	B	35	3	1	VOLUME	1	1	1726	9	19	28
NTS	INEL/ANL-W	713	10.87	612.60	527.48	428439.49	368911.68	1567	118	171	57	2536	145.47	B	35	219	73	MASS	73	219	104096	676	1.132	1.808
ORNL	SRS	358	10.87	1124.94	968.54	786615.97	677322.76	2878	216	314	105	4657	145.44	B	35	402	134	MASS	134	402	95944	1.241	1.043	2.284
PANTEX	LANL	335	10.87	0.62	0.54	431.55	371.59	2	0	1	1	3	143.85	B	35	3	1	VOLUME	1	0	670	9	7	17
PA	SRS	569	10.87	2.10	1.81	2656.43	2287.34	6	1	1	1	9	263.11	E	14	2	1	VOLUME	1	1	1138	9	12	22
RFP	WIPP	704	10.87	9148.83	7877.68	8458950.48	7283655.45	23400	1751	2547	849	37874	192.32	C	28	2706	1353	MASS	1353	2706	1905024	12.529	20.708	33.236
SNL NM	LANL	104	19.65	17.11	14.73	11833.39	10189.25	44	4	6	2	71	143.85	B	35	9	3	MASS	3	9	624	28	12	40
SRS	WIPP	1509	9.31	29035.31	25001.11	48010942.34	41340254.00	74261	5556	8083	2695	120198	343.94	E	14	17172	8586	MASS	8586	17172	25912548	78.506	241.246	320.752
TOTAL																			**33,598**	**67,561**	**89,825,730**	**311,117**	**845,163**	**1,156,280**

[1]Source: ORNL, 1993
[2]Source: INEL, 1994b
[3]Source: Personal Communication with Phil Gregory

Notes:
This table presents the costs for transporting CH TRU waste by truck.
Volumes and masses represent total stored and project volumes and masses.
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites.
Shipment Configuration is dependent on the average drum mass.
- A -- Maximum of 42 drums in three TRUPACT-IIS
- B -- Maximum of 35 drums in three TRUPACT-IIs
- C -- Maximum of 28 drums in two TRUPACT-IIs
- D -- Maximum of 21 drums in two TRUPACT-IIs
- E -- Maximum of 14 drums in two TRUPACT-IIs
- XX -- Average drum mass exceeds expected upper limit. Average drum weight set at 380 kg /drum for calculations. Use Shipment Configuration E

Revised Mass and Volume Scaling Factor: 0.861059

Table P-72
CH Regionalized Alternative ID #111
Transportation Costs

						VOLUME LIMITING CALCULATIONS				MASS LIMITING CALCULATIONS												
Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m³)	Mass (kg)	Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[1]	Maximum Number of TRUPACTs[1]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	SRS	1190	9 31	0 13	37 91	1	0	1	1	1	60 86	A	42	3	1	VOLUME	1	1	2380	9	22	31
ANL-E	SRS	877	10 87	31 31	20426 77	93	7	11	4	151	135 71	A	42	12	4	VOLUME	4	11	7016	37	76	113
BT	SRS	686	10 87	159 90	110957 04	475	36	52	18	769	144 34	B	35	66	22	MASS	22	66	30184	204	328	532
ETEC	INEL/ANL-W	958	10 87	8 61	5878 71	26	2	3	1	42	142 05	B	35	6	2	MASS	2	6	3832	19	42	60
HANFORD	WIPP	1808	9 31	55709 01	25332579 23	165473	12380	18010	6004	267832	94 58	A	42	19131	6377	MASS	6377	19131	23059232	59,051	214,681	273,732
INEL/ANL-W	WIPP	1392	9 31	48011 21	26284779 96	142608	10670	15522	5174	230824	13 87	A	42	16488	5496	MASS	5496	16488	15300864	50,893	142,451	193,344
KAPL	SRS	949	10 87	2 40	1659 81	8	1	2	1	12	43 85	B	35	3	1	VOLUME	1	2	1898	9	21	30
LANL	WIPP	342	10 87	27023 49	13591943 62	80268	6006	8737	2913	129921	104 62	A	42	9282	3094	MASS	3094	9282	2116296	28,650	23,004	51,655
LBL	HANFORD	870	10 87	6 57	4541 89	20	2	3	1	32	143 85	B	35	3	1	VOLUME	1	3	1740	9	19	28
LLNL	HANFORD	890	10 87	1158 04	445343 02	3440	258	375	125	5568	79 99	A	42	399	133	MASS	133	399	236740	1,232	2,573	3,805
MOUND	SRS	641	10 87	263 29	143644 06	783	59	86	29	1266	113 48	A	42	93	31	MASS	31	93	39742	287	432	719
MU	SRS	863	10 87	2 14	1478 91	7	1	1	1	11	143 85	B	35	3	1	VOLUME	1	1	1726	9	19	28
NTS	INEL/ANL-W	713	10 87	612 60	428439 49	1820	137	199	67	2946	145 47	B	35	255	85	MASS	85	255	121210	787	1,318	2,105
ORNL	SRS	358	10 87	1124 94	728806 41	3342	250	364	122	5409	134 76	A	42	387	129	MASS	129	387	92364	1,195	1,004	2,199
PANTEX	LANL	335	10 87	0 62	431 55	2	0	1	1	3	143 85	B	35	3	1	VOLUME	1	1	670	9	7	17
PA	SRS	569	10 87	2 10	2656 43	7	1	1	1	11	263 11	E	14	2	1	VOLUME	1	1	1138	9	12	22
RFP	WIPP	704	10 87	8866 22	5587396 08	26336	1971	2867	956	42627	131 08	A	42	3045	1015	MASS	1015	3045	1429120	9,399	15,535	24,933
SNL-NM	LANL	104	19 65	17 11	11833 39	51	4	6	2	83	143 85	B	35	9	3	MASS	3	9	624	28	12	40
SRS	WIPP	1509	9 31	28814 79	20367027 82	85589	6404	9316	3106	138533	147 02	B	35	11877	3959	MASS	3959	11877	11948262	36,660	111,238	147,899
TOTAL																	20,356	61,058	54,395,038	188,497	512,785	701,281

[1]Source ORNL, 1993
[2]Source INEL, 1994b
[3]Source Personal Communication with Phil Gregory
Notes
This table presents the costs for transporting CH TRU waste by truck
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
A -- Maximum of 42 drums in three TRUPACT IIIS
B -- Maximum of 35 drums in three TRUPACT-IIIs
C -- Maximum of 28 drums in two TRUPACT-IIIs
D -- Maximum of 21 drums in two TRUPACT-IIIs
E -- Maximum of 14 drums in two TRUPACT-IIIs
XX -- Average drum mass exceeds expected upper limit Average drum weight set at 380 kg /drum for calculations Use Shipment Configuration E

Table P-73
CH Centralized Baseline
Transportation Costs

Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/mile)	Volume (m^3)	Mass (kg)	VOLUME LIMITING CALCULATIONS: Number of Drums	Number of SWBs	Number of TRUPACTs	Number of Shipments	MASS LIMITING CALCULATIONS: Number of Drums	Average Drum Mass (kg)	Shipment Configuration[3]	Maximum Drums per Shipment[3]	Maximum Number of TRUPACTs[3]	Number of Shipments	Mass or Volume Limited?	Number of Shipments for Calcs	Number of TRUPACTs for Calcs	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
AMES	WIPP	1255	9.31	0.13	37.91	1	0	1	1	1	60.86	A	42	3	1	VOLUME	1	1	2510	9	23	33
ANL-E	WIPP	1455	9.31	31.31	20426.77	93	7	11	4	151	135.71	A	42	12	4	VOLUME	4	11	11640	37	108	145
BT	WIPP	1803	9.31	159.90	110957.04	475	36	52	18	769	44.34	B	35	66	22	MASS	22	66	79332	204	739	942
ETEC	WIPP	958	10.87	8.61	5878.71	26	2	3	1	42	42.05	B	35	6	2	MASS	2	6	3832	19	42	60
HANFORD	WIPP	1808	9.31	46286.36	22258182.80	143425	10731	15611	5204	232146	95.88	A	42	16584	5528	MASS	5528	16584	19989248	51,189	186,100	237,289
INEL/ANL-W	WIPP	1392	9.31	40379.52	20665074.44	119940	8974	13055	4352	194133	106.45	A	42	13869	4623	MASS	4623	13869	12870432	42,809	119,824	162,633
KAPL	WIPP	2208	9.31	2.40	1659.81	8	1	2	1	12	143.85	B	35	3	1	VOLUME	1	2	4416	9	41	50
LANL	WIPP	342	10.87	21131.01	9834518.77	62766	4696	6832	2278	101592	96.80	A	42	7257	2419	MASS	2419	7257	1654596	22,400	17,985	40,385
LBL	WIPP	1522	9.31	6.57	4541.89	20	2	3	1	32	143.85	B	35	3	1	VOLUME	1	3	3044	9	28	38
LLNL	WIPP	1452	9.31	1158.04	445343.02	3440	258	375	125	5568	79.99	A	42	399	133	MASS	133	399	386232	1,232	3,596	4,827
MOUND	WIPP	1557	9.31	263.29	143644.06	783	59	86	29	1266	113.48	A	42	93	31	MASS	31	93	96534	287	899	1,186
MU	WIPP	1145	9.31	2.14	1478.91	7	1	1	1	11	143.85	B	35	3	1	VOLUME	1	1	2290	9	21	31
NTS	WIPP	1214	9.31	612.60	428439.49	1820	137	199	67	2946	145.47	B	35	255	85	MASS	85	255	206380	787	1,921	2,708
ORNL	WIPP	1521	9.31	1124.94	726806.41	3342	250	364	122	5409	134.76	A	42	387	129	MASS	129	387	392418	1,195	3,653	4,848
PANTEX	WIPP	443	10.87	0.62	431.55	2	0	1	1	3	143.85	B	35	3	1	VOLUME	1	1	886	9	10	19
PA	WIPP	1360	9.31	2.10	2656.43	7	1	1	1	11	233.11	E	14	2	1	VOLUME	1	1	2720	9	25	35
RFETS	WIPP	704	10.87	6249.25	3151674.56	18563	1389	2021	674	30045	104.90	A	42	2148	716	MASS	716	2148	1008128	6,630	10,958	17,589
SNL-NM	WIPP	311	10.87	17.11	11833.39	51	4	6	2	83	113.85	B	35	9	3	MASS	3	9	1866	28	20	48
SRS	WIPP	1509	9.31	26933.46	19202207.74	80001	5986	8708	2903	129488	148.29	B	35	11100	3700	MASS	3700	11100	11166600	34,262	103,961	138,223
TOTAL																	17,401	52,193	47,883,104	161,133	449,856	611,089

[1]Source: ORNL, 1993
[2]Source: INEL, 1994b
[3]Source: Personal Communication with Phil Gregory
Notes
This table presents the costs for transporting CH TRU waste by truck
Volumes and masses represent total stored and project volumes and masses
Volume and mass at sites that receive waste includes the waste received for treatment and/or interim storage from other sites
Shipment Configuration is dependent on the average drum mass
- A -- Maximum of 42 drums in three TRUPACT-IIS
- B -- Maximum of 35 drums in three TRUPACT-IIs
- C -- Maximum of 28 drums in two TRUPACT-IIs
- D -- Maximum of 21 drums in two TRUPACT-IIs
- E -- Maximum of 14 drums in two TRUPACT-IIs
- XX -- Average drum mass exceeds expected upper limit. Average drum weight set at 380 kg /drum for calculations. Use Shipment Configuration E

TABLE P-74

RH DECENTRALIZED BASELINE TRANSPORTATION COSTS

Origin	Destination	One-Way Mileage[1]	CPLM[2] ($/ mile)	Number of Shipments	Total Miles Traveled	Fixed Costs ($K)	Variable Costs ($K)	Total Costs ($K)
BATELLE	ORNL	409	10.87	123	100,614	1,139	1,094	2,233
BT	ORNL	607	10.87	3	3,642	28	40	67
HANFORD	WIPP	1,808	9.31	5,176	18,716,416	47,930	174,250	222,180
INEL/ANL-W	WIPP	1,392	9.31	109	303,456	1,009	2,825	3,835
KAPL	ORNL	884	10.87	57	100,776	528	1,095	1,623
LANL	WIPP	342	10.87	249	170,316	2,306	1,851	4,157
ORNL	WIPP	1,521	9.31	2,185	6,646,770	20,233	61,881	82,115
SRS	WIPP	1,509	9.31	56	169,008	519	1,573	2,092
TOTAL				**7,958**	**26,210,998**	**73,691**	**244,610**	**318,301**

[1]Source: ORNL, 1993
[2]Source: INEL, 1994b

Notes:
This table presents the costs for transporting CH TRU waste by truck.
Assume that shipments will be volume limited.
Volumes represent total stored and projected volumes.
Volume at sites that receive waste includes the waste received for treatment and/or interim storage from other sites.

TABLE P-75

BACKFILL EMPLACEMENT COST TOTALS SUMMARY

Alternative ID#	Capital Equipment	Design and Development	Operations and Maintenance	Total Cost[1] ($K)
33	1,007	302	43,114	55,527
35a	1,199	360	67,352	86,139
35b	1,200	360	67,352	86,141
77a	1,110	333	46,871	60,394
77b	760	228	24,052	31,299
77c	820	246	28,923	34,487
77d	805	241	27,669	35,894
83	981	294	41,241	53,146
94b	1,165	350	39,051	50,707
94c	1,418	425	61,025	78,536
94d	1,679	504	61,104	79,057
94e	1,037	311	32,462	42,262
94f	1,131	340	37,355	48,533
111	910	273	35,839	46,272

[1]Includes a 25% contingency factor.

TABLE P-76

WIPP WASTE HANDLING COMPARATIVE COST IMPACTS

Alternative ID#	Cost Impacts ($K)[1]
1[2]	(61,440)
6[2]	(61,440)
10 (Decentralized, Regionalized)[2]	(80,640)
10 (Centralized)[2]	(61,440)
33	0
35(a-b)	0
77(a-d)[2]	(621,440)
83	0
94(a-f) (Decentralized, Regionalized)[2,3]	(39,322)
94(a-f) (Centralized)	(61,440)
111	0

Notes.
[1] Values in parentheses represent a reduction from the baseline costs.
[2] The emplacement of waste occurs during 25 years due to processing facility construction estimation of approximately 10 years.
[3] The waste handling for the WIPP occurs for approximately 28.6 years which exceeds the 35 year time constraint (10 year process facility start + 25 year emplacement).

TABLE P-77

WIPP WASTE EMPLACEMENT WORKOFF AND LABOR COST ESTIMATE

Engineered Alternative	Case	Number of CH shipments[1]	Number TRUPACT-IIs per day	Number of FTEs for operations[2]	Change in emplacement labor cost ($K)
Baseline, 33, 35(a,b), 83, 111	Decentralized	19,944	7.12	64	215,040
	Regionalized	19,944	7.12	64	215,040
	Centralized	17,401	6.21	64	215,040
1[3]	Decentralized	19,571	6.94	64	153,600
	Regionalized	19,548	6.93	64	153,600
	Centralized	17,401	8.70	64	153,600
6[3]	Decentralized	18,794	8.52	64	153,600
	Regionalized	18,838	8.58	64	153,600
	Centralized	17,401	8.70	64	188,160
10[3]	Decentralized	17,174	5.72	56	134,400
	Regionalized	17,186	5.80	56	134,400
	Centralized	17,401	8.70	64	153,600
77(a-d)[3]	Decentralized	19,571	6.94	64	153,600
	Regionalized	19,548	6.93	64	153,600
	Centralized	17,401	8.70	64	153,600
94(a-f)	Decentralized[3,4]	33,225	9.70	64	175,718
	Regionalized[3,4]	33,214	9.70	64	175,718
	Centralized	17,401	9.70	64	153,600

Notes.
[1] The number of shipments is for waste transported to the WIPP site.
[2] The number of FTEs is based on the crew directly involved in emplacement activities only.
[3] The number of TRUPACT-IIs and dollars for emplacement is based on a 25 year emplacement activity due to the lag in processing capability.
[4] The waste emplacement for this alternative exceeds the 25 year constraint by 3.6 years.