

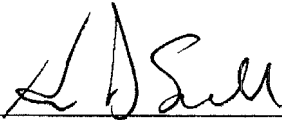
WSMS-WV-08-0002

Revision 0


November 2008

Western New York Nuclear Service Center
Sitewide Removal Alternative
Technical Report

Prepared for the
U.S. Department of Energy
West Valley, New York

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3.5 Costs

For purposes of Sitewide Removal Alternative cost estimates, cost was separated into the four major categories of materials, labor, waste disposal, and contingencies, which were generated for each WMA or Facility.

The two cost tables produced in the report are nearly identical with the exception of the location where the waste would be disposed of. For example, Table 3-18 displays the costs for each WMA and Facilities as represented by waste transported to DOE facilities and commercial facilities; whereas, Table 3-19 presents the costs related to waste transported to Commercial facilities only. Since the disposal facilities are different under each scenario, a few ancillary costs are different as well, such as waste packaging, transportation, and subsequent contingency costs. The distinctions are most noticeable in the sum-total costs in the last row, where labor costs are identical and waste disposal costs are different by approximately \$150 million.

Waste disposal costs for which there are some uncertainty are listed separately at the bottom of the tables as "Non-Project Costs." The approach used to estimate these costs is described in the Facility Description and Methodology Technical Report.

Based upon knowledge of past site operations, there are various wastes that would be generated under the WMA-3 complete removal, which came in contact with the high level waste liquids. Table 3-20 presents the estimated volumes of these wastes both prior to and following packaging for disposal. A likely scenario for disposal of these wastes would be to classify them as TRU and low-level (Class A and C) under a determination that they qualify as Waste Incidental to Reprocessing (WIR). An alternative to the WIR classification, would be to classify the "wetted" components as HLW.

For comparison purposes, each of these potential disposal options is evaluated for the Waste Tank Farm. Tables 3-21 and 3-22 present the results of this evaluation. The WIR option assumes that the components would be managed as LLW and TRU wastes. The HLW option assumes Tanks 8D-1, 8D-2, and 8D-4, as well as the wetted pump and transfer piping surfaces, and the STS equipment, would need to be managed as HLW. Since the difference between these two options only applies to waste disposal costs, these costs are the only items compared. Removal costs, worker exposure, resource requirements, and environmental releases are the same for both of these options

Figure 3-14 illustrates the annual breakdown in spending of the assumed annual \$100 million site budget, using a stacked bar chart. Based on the chart, approximately 60% of the annual site budget is spent on remediation of WMA 3, WMA 7, and WMA 8, including operation of the support facilities (WTFWPF, LTF, and CMF) between years 3 and 55.

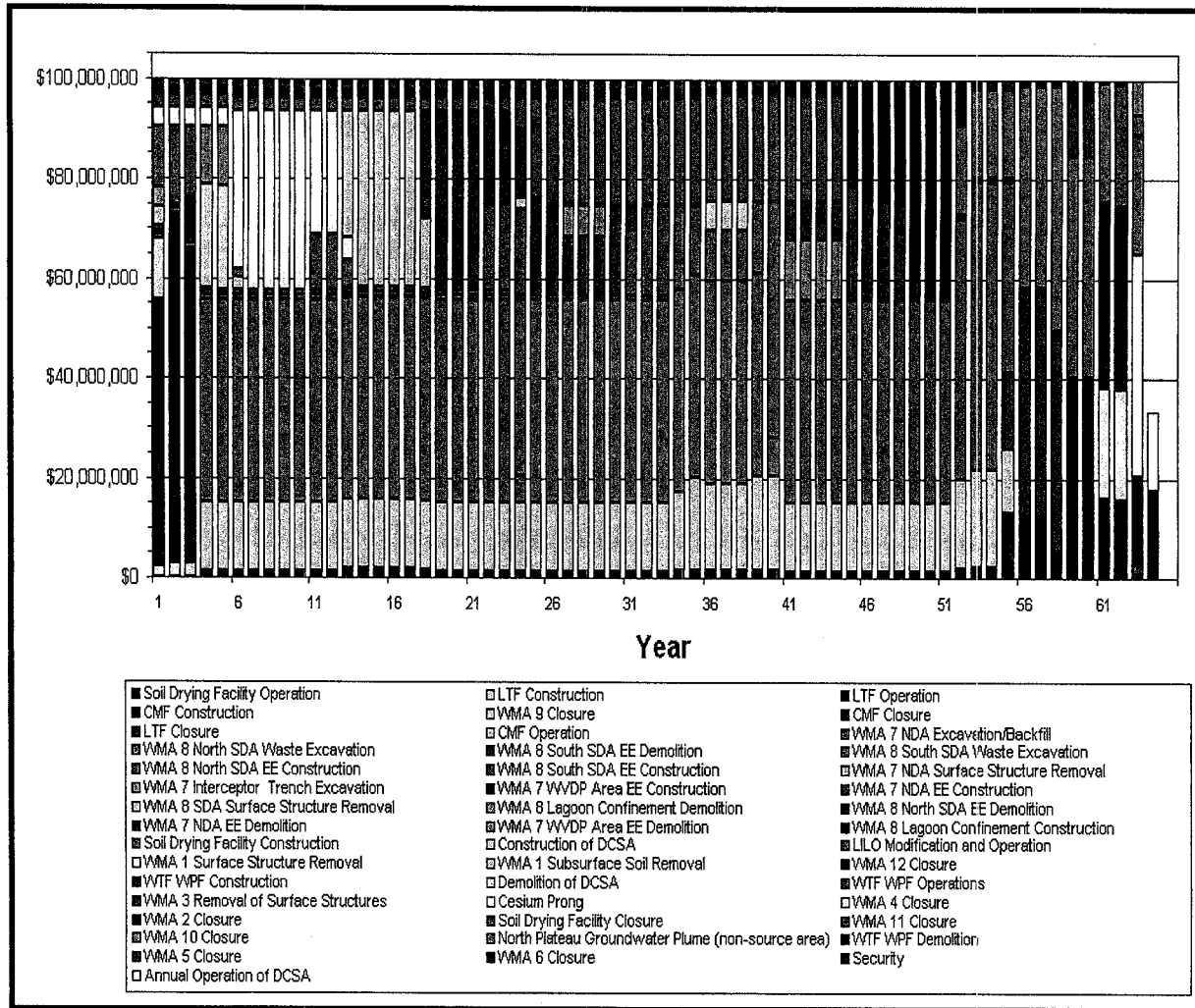


Figure 3-14. Total Costs (Y2008) by Implementation Year

Table 3-18. DOE/Commercial Facilities Waste Disposal (2008 Dollars)

Effort	Total Materials Cost	Total Labor Cost	Total Waste Disposal Cost	Total Contingency Cost	Total Cost
HLW Canister Removal					
Construction of DCSA	\$31,851,100	\$7,178,800	\$0	\$5,361,900	\$44,391,800
LILO Modification and Operation	\$9,547,000	\$8,760,600	\$153,000	\$6,114,800	\$24,575,400
Operation of DCSA	\$42,000	\$16,233,000	\$0	\$4,074,000	\$20,349,000
Demolition of DCSA	\$2,198,400	\$7,637,600	\$3,641,000	\$3,369,400	\$16,846,400
WMA 1 Closure					
Surface Structure Removal	\$21,770,300	\$126,991,100	\$34,803,200	\$45,891,600	\$229,456,200
Subsurface Soil Removal	\$12,462,400	\$37,462,700	\$94,356,800	\$36,070,700	\$180,352,600
WMA 2 Closure	\$12,179,900	\$50,220,700	\$56,012,500	\$29,603,400	\$148,016,500
WMA 3 Closure					
Removal of Surface Structures	\$779,000	\$6,553,200	\$2,344,800	\$2,419,400	\$12,096,400
WTF WPF Construction	\$78,282,900	\$74,406,100	\$1,154,300	\$38,460,900	\$192,304,200
WTF WPF Operations	\$25,828,600	\$253,393,200	\$15,324,100	\$134,201,400	\$428,747,300
WTF WPF Demolition	\$18,165,700	\$88,687,800	\$59,455,600	\$41,577,300	\$207,886,400
WMA 4 Closure	\$2,525,500	\$5,238,400	\$27,566,100	\$8,832,600	\$44,162,600
WMA 5 Closure	\$2,440,200	\$9,068,800	\$6,491,100	\$4,500,400	\$22,500,500
WMA 6 Closure	\$535,100	\$2,213,600	\$2,938,900	\$1,422,100	\$7,109,700
LTF Construction	\$5,365,400	\$1,611,200	\$22,600	\$1,085,500	\$8,084,700
LTF Operation	\$3,725,000	\$55,828,100	\$2,635,900	\$15,547,500	\$77,736,500
LTF Closure	\$174,100	\$1,742,800	\$356,700	\$568,500	\$2,842,100
CMF Construction	\$85,809,200	\$62,060,100	\$502,200	\$36,967,400	\$185,338,900
CMF Operation	\$13,852,500	\$487,203,600	\$3,222,400	\$251,333,800	\$755,612,300
CMF Closure	\$2,582,700	\$20,904,300	\$6,896,100	\$7,595,900	\$37,979,000
WMA 7 Closure					
Surface Structure Removal	\$243,100	\$707,600	\$2,168,800	\$780,000	\$3,899,500
Interceptor Trench Excavation	\$279,900	\$614,800	\$2,154,000	\$762,300	\$3,811,000
NDA EE Construction	\$7,589,500	\$24,307,500	\$1,053,000	\$8,237,700	\$41,187,700
WVDP Area EE Construction	\$2,042,700	\$4,645,300	\$424,200	\$1,778,200	\$8,890,400
NDA Excavation/Backfill	\$53,846,300	\$363,061,500	\$182,591,300	\$219,308,800	\$818,807,900
WVDP Area EE Demolition	\$1,379,400	\$5,610,100	\$8,253,700	\$3,811,000	\$19,054,200
NDA EE Demolition	\$6,270,200	\$36,079,900	\$19,912,000	\$15,565,700	\$77,827,800
WMA 8 Closure					
Surface Structure Removal	\$122,800	\$1,208,400	\$443,500	\$443,800	\$2,218,500
South SDA EE Construction	\$11,418,000	\$35,625,500	\$1,461,400	\$12,126,300	\$60,631,200
North SDA EE Construction	\$7,915,000	\$32,441,500	\$1,067,400	\$10,356,000	\$51,779,900
Lagoon Confinement Construction	\$3,537,300	\$1,082,500	\$363,600	\$1,245,900	\$6,229,300
SDA Waste Excavation	\$233,272,300	\$522,617,700	\$263,117,900	\$398,936,900	\$1,417,944,800
Lagoon Confinement Demolition	\$4,594,700	\$21,689,800	\$12,535,500	\$9,705,100	\$48,525,100
North SDA EE Demolition	\$8,261,300	\$50,578,300	\$29,532,800	\$22,093,200	\$110,465,600
South SDA EE Demolition	\$11,227,000	\$68,143,600	\$40,133,800	\$29,876,300	\$149,380,700
WMA 9 Closure	\$903,600	\$6,495,100	\$2,332,800	\$2,433,000	\$12,164,500
WMA 10 Closure	\$501,700	\$4,164,300	\$1,102,200	\$1,442,200	\$7,210,400
WMA 11 Closure	\$1,458,000	\$1,168,600	\$306,400	\$733,400	\$3,666,400
WMA 12 Closure	\$6,371,800	\$15,689,600	\$28,199,400	\$12,565,400	\$62,826,200
Soil Drying Facility Construction	\$5,157,000	\$16,762,900	\$499,700	\$5,605,100	\$28,024,700
Soil Drying Facility Operation	\$1,370,400	\$7,026,700	\$104,000	\$2,125,300	\$10,626,400

Table 3-18. DOE/Commercial Facilities Waste Disposal (2008 Dollars)

Effort	Total Materials Cost	Total Labor Cost	Total Waste Disposal Cost	Total Contingency Cost	Total Cost
Soil Drying Facility Closure	\$3,984,800	\$22,499,300	\$12,288,200	\$9,693,200	\$48,465,500
NPGP (non-source area)	\$46,230,300	\$31,848,100	\$172,084,400	\$62,540,800	\$312,703,600
Cesium Prong	\$5,348,100	\$17,570,700	\$25,011,700	\$11,982,700	\$59,913,200
Existing Facility Maintenance	\$32,741,900	\$142,661,300	\$6,314,500	\$45,137,100	\$226,854,800
Security		\$75,072,000		\$18,768,000	\$93,840,000
TOTALS	\$786,184,100	\$2,832,768,300	\$1,131,333,500	\$1,583,051,900	\$6,333,337,800
GTCC Waste Disposal			\$3,137,400,000		\$3,137,400,000
TRU Waste Disposal			\$82,525,000		\$82,525,000
HLW Canister Disposal			\$137,500,000		\$137,500,000
TOTAL NON-PROJECT COST			\$3,357,425,000		\$3,357,425,000
TOTAL ALTERNATIVE COST	\$786,184,100	\$2,832,768,300	\$4,488,758,500	\$1,583,051,900	\$9,690,762,800

Table 3-19. Commercial Facilities Waste Disposal (2008 Dollars)

Effort	Total Materials Cost	Total Labor Cost	Total Waste Disposal Cost	Total Contingency Cost	Total Cost
HLW Canister Removal					
Construction of DCSA	\$31,851,100	\$7,178,800	\$0	\$5,361,900	\$44,391,800
LILO Modification and Operation	\$9,537,600	\$8,760,600	\$99,200	\$6,099,000	\$24,496,400
Operation of DCSA	\$42,000	\$16,233,000	\$0	\$4,074,000	\$20,349,000
Demolition of DCSA	\$2,198,400	\$7,637,600	\$3,641,000	\$3,369,400	\$16,846,400
WMA 1 Closure					
Surface Structure Removal	\$21,124,500	\$126,991,100	\$33,562,200	\$45,419,800	\$227,097,600
Subsurface Soil Removal	\$10,149,700	\$37,462,700	\$33,920,500	\$20,383,500	\$101,916,400
WMA 2 Closure					
WMA 3 Closure					
Removal of Surface Structures	\$752,000	\$6,553,200	\$2,230,600	\$2,384,100	\$11,919,900
WTF WPF Construction					
WTF WPF Operations					
WTF WPF Demolition					
WMA 4 Closure					
WMA 5 Closure					
WMA 6 Closure					
LTF Construction					
LTF Operation					
LTF Closure					
CMF Construction					
CMF Operation					
CMF Closure					
WMA 7 Closure					
Surface Structure Removal	\$188,700	\$707,600	\$824,500	\$430,400	\$2,151,200
Interceptor Trench Excavation	\$225,900	\$614,800	\$1,040,900	\$470,600	\$2,352,200
NDA EE Construction	\$7,589,500	\$24,307,500	\$1,058,100	\$8,239,000	\$41,194,100
WVDP Area EE Construction	\$2,042,700	\$4,645,300	\$424,200	\$1,778,200	\$8,890,400
NDA Excavation/Backfill	\$52,593,600	\$363,061,500	\$150,397,500	\$210,947,100	\$776,999,700
WVDP Area EE Demolition	\$1,172,400	\$5,610,100	\$3,981,100	\$2,691,000	\$13,454,600
NDA EE Demolition	\$5,945,900	\$36,079,900	\$21,241,000	\$15,816,900	\$79,083,700
WMA 8 Closure					
Surface Structure Removal	\$122,800	\$1,208,400	\$443,500	\$443,800	\$2,218,500
South SDA EE Construction	\$11,418,000	\$35,625,500	\$1,461,400	\$12,126,300	\$60,631,200
North SDA EE Construction	\$7,915,000	\$32,441,500	\$1,067,400	\$10,356,000	\$51,779,900
Lagoon Confinement Construction	\$3,537,300	\$1,082,500	\$363,600	\$1,245,900	\$6,229,300
SDA Waste Excavation	\$233,272,300	\$522,617,700	\$263,117,900	\$398,936,900	\$1,417,944,800
Lagoon Confinement Demolition	\$4,594,700	\$21,689,800	\$12,535,500	\$9,705,100	\$48,525,100
North SDA EE Demolition	\$8,261,300	\$50,578,300	\$29,532,800	\$22,093,200	\$110,465,600
South SDA EE Demolition	\$11,227,000	\$68,143,600	\$40,133,800	\$29,876,300	\$149,380,700
WMA 9 Closure					
WMA 10 Closure					
WMA 11 Closure					
WMA 12 Closure					
Soil Drying Facility Construction	\$5,157,000	\$16,762,900	\$499,700	\$5,605,100	\$28,024,700

Table 3-19. Commercial Facilities Waste Disposal (2008 Dollars)

Effort	Total Materials Cost	Total Labor Cost	Total Waste Disposal Cost	Total Contingency Cost	Total Cost
Soil Drying Facility Operation	\$1,370,400	\$7,026,700	\$104,000	\$2,125,300	\$10,626,400
Soil Drying Facility Closure	\$3,929,200	\$22,499,300	\$11,012,000	\$9,360,200	\$46,800,700
NPGP (non-source area)	\$46,230,300	\$31,848,100	\$172,084,400	\$62,540,800	\$312,703,600
Cesium Prong	\$5,348,100	\$17,570,700	\$25,011,700	\$11,982,700	\$59,913,200
Existing Facility Maintenance	\$32,741,900	\$142,661,300	\$6,314,500	\$45,137,100	\$226,854,800
Security		\$75,072,000		\$18,768,000	\$93,840,000
TOTALS	\$775,081,000	\$2,832,768,300	\$977,704,000	\$1,542,149,400	\$6,127,702,700
GTCC Waste Disposal			\$3,137,400,000		\$3,137,400,000
TRU Waste Disposal			\$82,525,000		\$82,525,000
HLW Canister Disposal			\$137,500,000		\$137,500,000
TOTAL NON-PROJECT COST			\$3,357,425,000		\$3,357,425,000
TOTAL ALTERNATIVE COST	\$775,081,000	\$2,832,768,300	\$4,335,129,000	\$1,542,149,400	\$9,485,127,700

Table 3-20. Volume of WMA-3 Components Potentially Classified as HLW

Location/Area	Unpackaged Volume (cf)	WIR Classification
Removal of NFS and Vit Process Lines	608	A
Removal of Mob and Transfer Pumps (8D-1)	515	C
Removal of Mob and Transfer Pumps (8D-2 and 4)	670	TRU
Tank 8D-1 Radionuclide Removal	1,308	TRU
STS Equipment Removal	1,500	TRU
Demolition of 8D-1	6,417	C
Demolition of 8D-2	6,417	TRU
Demolition of 8D-4	147	TRU

Table 3-21. Cost of Waste Disposal Assuming all Contact Wastes are Classified as WIR

Waste Classification	Unpackaged Volume (cf)	Packaged Volume (CF)	Disposal Cost	Unit Cost
Class A and C Waste	7,540	8,630	\$494,400	@ \$50/cf
TRU Waste	10,042	10,247	\$23,580,750	@ \$2,300/cf

Total Disposal for WIR Option \$24,075,150

Table 3-22. Cost of Waste Disposal Assuming all Contact Wastes are Classified as HLW

Waste Classification	Unpackaged Volume (cf)	Packaged Volume (CF)	Disposal Cost	Unit Cost
HLW Waste	17,582	17,941	\$376,897,500	@ \$21,000/cf

Total Disposal for HLW Option \$376,897,500

4.0 POST-IMPLEMENTATION AND STEWARDSHIP ACTIVITIES

4.1 Introduction

For waste management under this alternative an optimistic convention for estimating waste disposition has been assumed. However, this section evaluates a scenario of waste management for the Sitewide Removal Alternative, whereby all current regulatory uncertainties involving Greater than Class C (GTCC) waste, Pre-WVDP/Commercial Class B and Class C waste, TRU waste and the Waste Incidental to Reprocessing (WIR) determination remain unresolved.

4.2 Post-Implementation Waste Management

Due to current regulatory issues surrounding disposition of the GTCC, Pre-WVDP/commercial Class B and Class C waste, TRU waste and the potential WIR wastes, the potential impacts of ongoing site storage and management of these wastes were estimated so that the EIS Lead Agencies would be able to consider the potential impacts.

This section presents an estimate of a resource requirements to support a reasonably foreseeable waste management scenario whereby the wastes generated through the implementation of the Sitewide Removal Alternative that could fall within the disposal uncertainty envelopes described above remain at the West Valley site in storage for an indefinite period of time. Therefore routine waste storage activity estimates are presented on an annual basis.

4.2.1 Operation of the Container Management Facility Storage Area

A small staff would be required to maintain the ventilation and utilities in the CMF, and to perform routine inspections of the storage area. A subcontractor crew of four individuals would staff the CMF, 8 hours a day, 250 days a year. This crew would perform the required inspections in the storage area, and maintain and repair equipment in the CMF. A security staff of three individuals per shift, 24 hours a day, 365 days a year, would be on site to provide security during the storage operations at the CMF. Annual operating costs for the subcontractor maintenance at the CMF are included in the costs reported in Table 4-7.

4.2.2 Resource Requirements, Impacts, and Costs Associated with the Operation of the Orphan Waste Scenario Container Management Facility

The total resource requirements, impacts, and costs associated with the operation of the orphan waste scenario CMF are presented in Tables 4-1 through 4-15.