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16. KEY

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2	1	Cog. Mgr. M. J. Lauterbach (1)		3/17/92	H4-55	IRA Clearance (1)			H4-17	3	6
		QA				M. R. Adams (5)			H4-55	3	6
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Part 1

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Signature: M. J. Lauterbach

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7. Abstract

WHC, 1992, *Westinghouse Hanford Company Five-Year Cost Estimate for Macroengineering Implementation*, WHC-SD-EN-EE-007, Rev. 0, prepared by A. T. Kearney, Inc., for Westinghouse Hanford Company, Richland, Washington.

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1.0 INTRODUCTION

This report presents the 5-yr plan cost estimate for implementation of the macroengineering cleanup/restoration approach for the 100 B/C Area. The primary purposes of this effort include:

- Planning for and incorporating appropriate funding requests in the 5-yr plan process
- Achieving the maximum achievable level of cleanup/restoration within the five-year planning period
- Demonstrating the applicability and capabilities of the macroengineering approach to cleanup/restoration.

The estimated costs include expenditures for planning/preparation activities (planning, permitting, design, and procurement) and for implementation and operation of onsite cleanup equipment/facilities. Implementation costs of the 5-yr plan are based on the use of one cleanup system (i.e., one truss-type containment structure and associated equipment as described in the recently completed Hanford Past-Practice Site Cleanup and Restoration Conceptual Study, Integrated Study and Summary (WHC 1991a) and 100 Area Hanford Past-Practice Site Cleanup and Restoration Conceptual Study (WHC 1991b). It is recognized that other types of containment structures (e.g., commercially available semi-permanent structures) are and will continue to be evaluated, as will the need for complete containment in all cases. The eventual decisions regarding the type of and the need for containment may impact, possibly significantly, 5-yr plan cost estimates. As this information becomes available, it will be incorporated in the cost estimates.

Planning/preparation activity costs reflect the level of effort and the staffing mix necessary to accomplish the required tasks in the accelerated timeframe incorporated in the 5-yr plan. Implementation costs were developed using the cost models noted by Westinghouse Hanford Company (Westinghouse Hanford) (1991a).

Disposal facility planning/preparation and implementation costs are presented separately because disposal capability/capacity must be recognized regardless of the course of action pursued to restore the Hanford Site. It should be noted that current activities planned under the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) (Ecology et al. 1991) do not include provisions for waste disposal. Disposal facility planning/preparation costs reflect the level of effort and staffing mix required to accomplish the efforts within the stated timeframe. Disposal facility implementation costs reflect the use of one trench and one burial vault, with associated unloading, handling, and decontamination facilities.

During the 5-yr plan period, it is estimated that implementation of the macroengineering approach will result in the excavation, and require the management and disposal of more than 830,000 yd^3 of low-activity wastes and approximately 20,000 yd^3 of high-activity wastes.

Table 1. Estimated 5-Yr Plan Costs.

Fiscal year	100 B/C Area	Disposal facility
1993	$ 30,300,000	$ 10,200,000
1994	21,300,000	10,000,000
1995	94,500,000	261,000,000
1996	53,600,000	18,500,000
1997	36,600,000	18,500,000
Totals	$236,300,000	$318,200,000

Implementation costs represent more than 70% of 5-yr plan costs for the 100 B/C Area. The major cost drivers for 100 B/C Area implementation are:

- FY-95 - The containment structure represents approximately one-half of the total cost while the remaining equipment comprise the remaining costs
- FY-96 - Operating and labor costs represent more than two-thirds of the total costs while pipeline removal equipment and single-use containers represent the major capital expenditures
- FY-97 - Operating and labor costs represent virtually the entire cost.

Implementation costs represent more than 90% of 5-yr plan costs for the disposal facility. The major cost drivers for disposal facility implementation are:

- FY-95 - The single disposal trench and containment structure represent approximately one-half of total costs. The remaining bulk waste disposal facility structures and equipment represent about one-fifth of total costs. The high activity waste disposal system (one vault) represents approximately one-fourth of total costs. More than 90% of total costs consist of expenditures for single items/facilities that could not function and/or be purchased as fractional units
- FY-96 and FY-97 - More than 95% of the total costs in each of these years consists of operating and labor costs.

It should be noted that the disposal facility represents a fixed asset whose useful life transcends and extends well beyond the scope of activities encompassed in this 5-yr plan.

In recognition of the magnitude of the 5-yr plan cost estimates, evaluations are being performed to balance and/or control the fiscal year costs. These evaluations include:

- Assessment of the annual impact of lease versus purchase costs
- Assessment of the impact of spreading out restoration activities
- Assessment of the cost and schedule impacts/benefits of alternative containment structures (e.g., commercially available semi-permanent structures).

2.0 BACKGROUND

This task was undertaken pursuant to Task Order K-92-01-22 under Westinghouse Hanford Purchase Order MDR-SVV-061461. In order to accommodate the rapid turn-around time required for incorporation of the cost estimates into the 5-yr plan, the information and data used to prepare this report were based upon recently prepared reports. Specifically, the Hanford Past-Practice Site Cleanup and Restoration Conceptual Study, Integrated Study and Summary (WHC 1991a), the 100 Area Hanford Past-Practice Site Cleanup and Restoration Conceptual Study (WHC 1991b), and the 200 Area Hanford Past-Practice Site Cleanup and Disposal Conceptual Study (WHC 1991c) provided the basic data and information used to prepare the 5-yr plan cost estimates contained in this report. It should be noted that previous comments on the cost models presented by Westinghouse Hanford (1991a) have been incorporated in the cost models used to develop implementation and disposal facility cost estimates.

To reflect the various requirements associated with macroengineering implementation and to incorporate a "building block" approach to planning and implementation, this task was divided into the following basic elements:

- Planning/preparation activities
- Macroengineering implementation
- The 5-yr plan cost estimates.

The following sections address each of these elements. These sections are subdivided to reflect separate consideration of 100 B/C Area restoration and disposal facility requirements.

The Tri-Party Agreement and existing restoration plans currently do not address the issue of waste disposal. Therefore, waste disposal is an issue which must be addressed, regardless of the course of restoration action to be pursued.

3.0 PLANNING/PREPARATION ACTIVITIES

These activities include the planning, engineering, design, permitting, and document preparation activities, which would support, and must precede, macroengineering implementation in the 100 B/C Area.

3.1 100 B/C AREA ACTIVITIES

As defined by Westinghouse Hanford at the beginning of this effort, it was assumed that an interim record of decision (IROD) would be reached by the regulatory agencies within 30 mo based on a start date of October 1, 1991 (i.e., the beginning of FY-92). All activities associated with reaching the IROD would be supported to the extent necessary to reach an IROD in this time frame.

Following completion and acceptance of the IROD, it was determined that procurement and onsite placement of restoration facilities and equipment would take place in the ensuing 15-mo period (i.e., to be completed by July 1, 1995). In addition, construction necessary to commence area cleanup on July 1, 1995, would be completed during this procurement period.

Area cleanup would then proceed through the remainder of the 5-yr plan period (i.e., July 1, 1995 through September 30, 1997).

Figure 1 illustrates the schedule for macroengineering implementation activities. Figure 2 identifies the specific planning/preparation activity elements and presents the schedule for performance and completion of each element. These elements and schedule dates were defined by Westinghouse Hanford and reflect anticipated requirements.

3.2 DISPOSAL FACILITY

In proceeding with implementation of the macroengineering cleanup approach in the 100 B/C Area, it is important to recognize that the availability of disposal capabilities and capacity at the Hanford Site is critical to the overall efficiency and effectiveness of this approach. It is impractical to assume that the large quantities of wastes expected to be managed using this restoration approach could be stored onsite to await disposal elsewhere. In addition, offsite disposal costs for such large quantities of wastes could be prohibitive, and these quantities could quickly overwhelm the ability of offsite disposal facilities to accept these wastes.

The Tri-Party Agreement and existing plans (a microengineering approach) for restoration currently do not address the issue of waste disposal. Waste disposal is an issue that must be addressed, regardless of the course of

Figure 1. 100 B/C Area Cleanup Macroengineering Activities Plan.

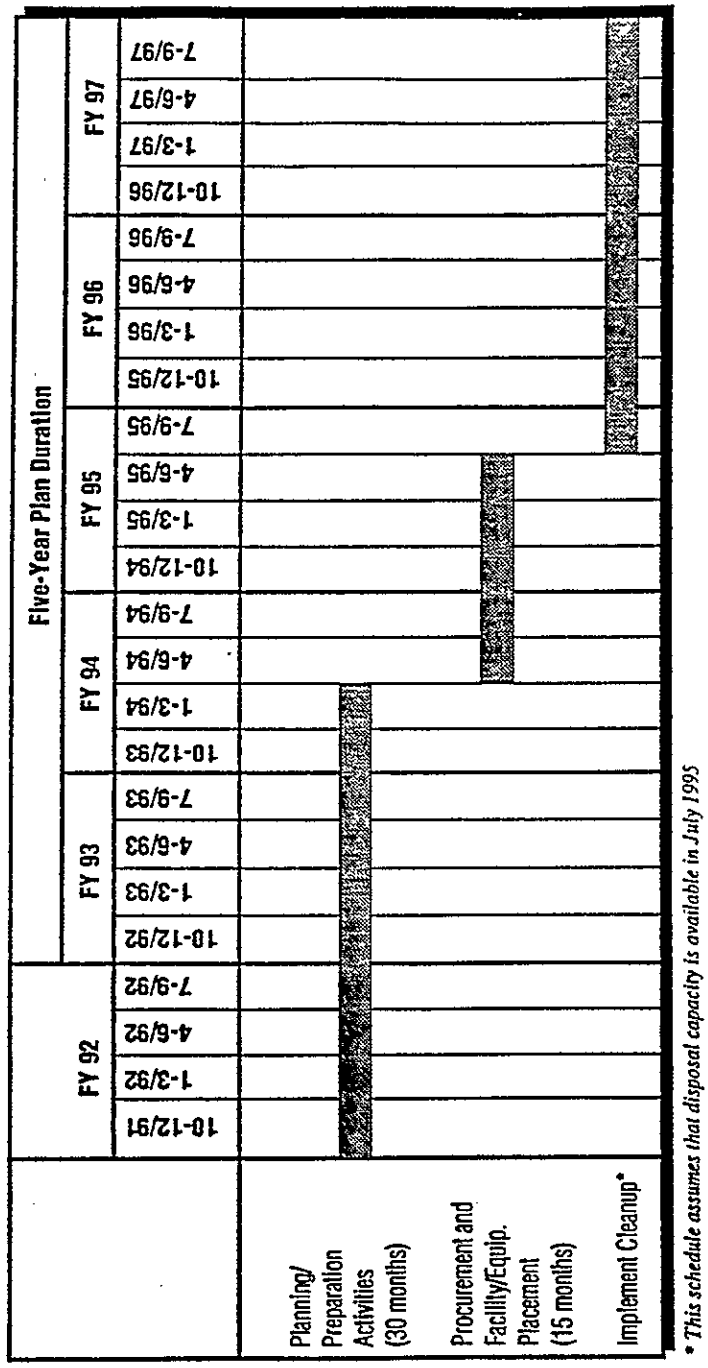
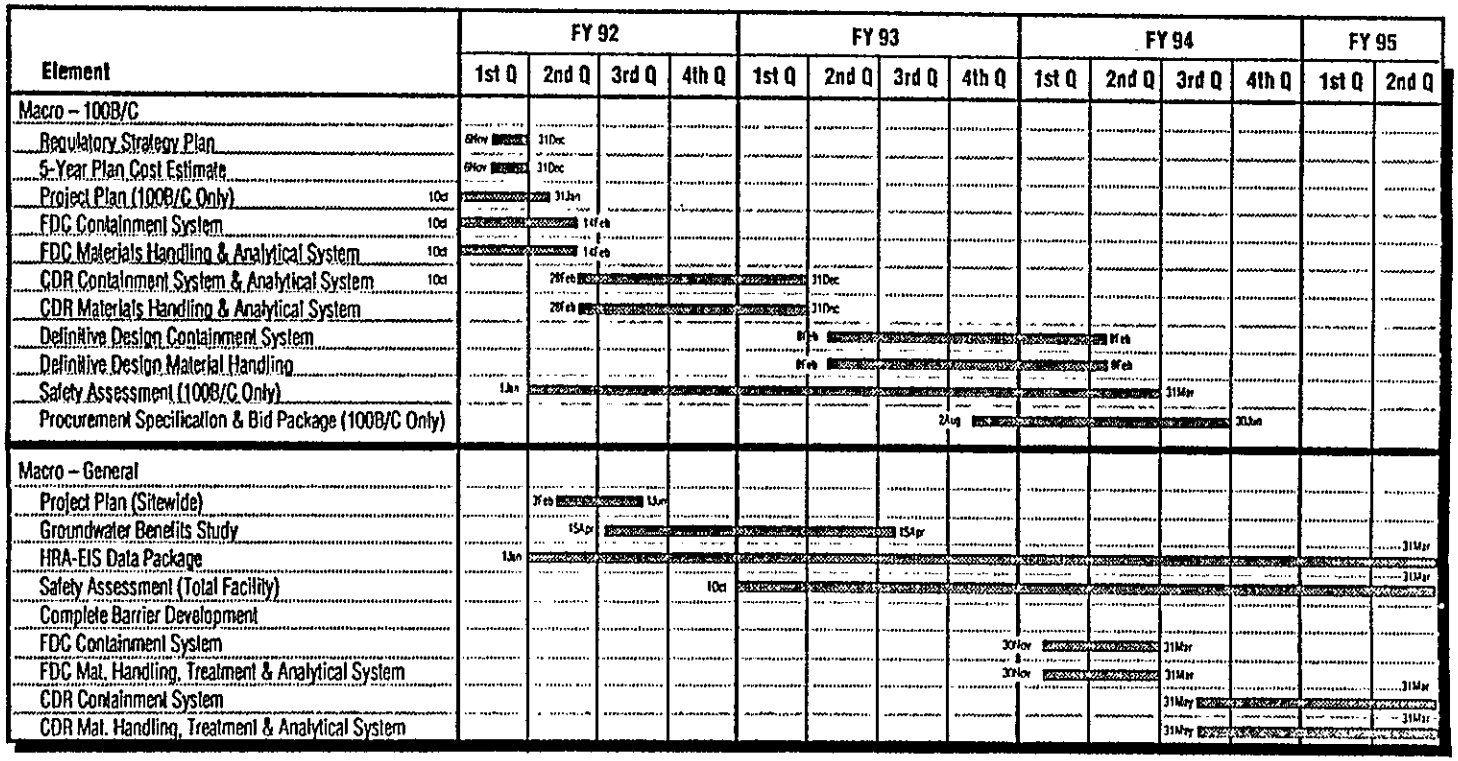


Figure 2. Schedule For 100 B/C Implementation Planning/Preparation Activities.



Source: Work elements and schedules defined by Westinghouse Hanford Company

restoration action to be pursued. For this reason, activities and costs for development, construction, and operation of an onsite disposal facility have been separated from 100 B/C Area implementation cost estimates. There are regulatory and political benefits that accrue to onsite waste disposal (versus offsite disposal) regardless of the course of action taken to clean up contaminated areas.

Figure 3 identifies the planning and preparation activities to plan, develop, construct, and operate an onsite disposal facility. This figure also presents the schedules associated with each activity. These schedules are designed to accommodate the overall implementation schedule presented in Figure 1. These elements and schedule dates were defined by Westinghouse Hanford and reflect anticipated requirements.

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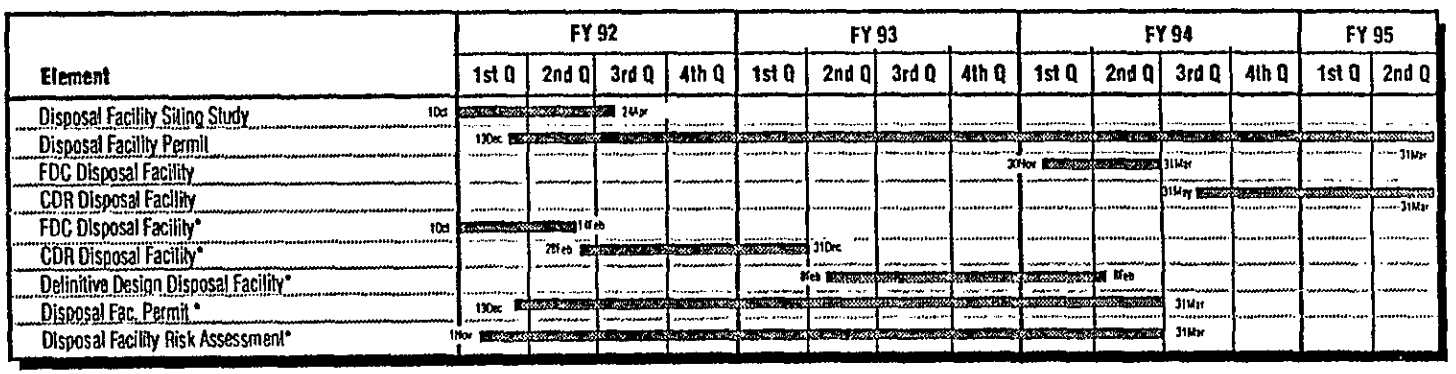
Figure 3. Schedule For Disposal Facility Planning/Preparation Activities.



** These activities encompass those efforts needed to provide a facility to receive 100 B/C Area wastes*
Source: Work elements and schedules defined by Westinghouse Hanford Company

4.0 MACROENGINEERING IMPLEMENTATION

Accurate characterization of implementation costs requires consideration of equipment/facility requirements, site characteristics, site unit identification and sequencing, waste generation rates, and schedule. The following are the considerations/assumptions that influenced the selection of equipment/facilities, and the performance and sequencing of activities.

- Restoration activities, and resulting costs, were based on an annual operational average of 1.5 shifts/d. This average represents operations of 1 shift/d in the first (fall) and second (winter) quarters and 2 shifts/d in the third (spring) and fourth (summer) quarters of each fiscal year. In order to minimize organizational, personnel experience, and new facilities/equipment startup difficulties, it was assumed that operations in the first operational quarter (i.e., fourth quarter FY-95) would be based on 1 shift/d.

- A shift is defined as an 8-h work period, and a work week consists of 5 work days.

- Cleanup activities and costs are based (per the Task Order SOW) on the performance of one removal/excavation/containment system.

- Reflecting the use of one removal/containment system and to further minimize implementation startup and operational difficulties, the smallest containment structure (400 x 400 ft) presented in the original cost models (refer to WHC 1991a) was used as the basis for planning activities, estimating costs, and characterizing performance. The other two containment structures identified in WHC 1991a are 600 x 400 ft and 1,000 x 400 ft. As noted previously, the cost models have been revised, as appropriate, to reflect comments on the cost models presented in WHC 1991a.

- To gain experience rapidly while minimizing the potential for environmental releases, the sequence of unit activities would address relatively less contaminated (based on Hazard Ranking System (HRS) scores) units before moving on to units with relatively higher levels of contamination.

- Excavation and waste volumes are based on the assumptions and data presented in WHC 1991b. In summary, this document notes that:

  - Excavated wastes consist of 70% contaminated soil, 10% discrete metals, 10% demolition wastes, and 10% buried wastes

  - Swell factors are 60% for demolition wastes, 14% for soil, and 30% for metals and buried wastes

- Contaminated overburden exhibits only low activity contamination
- Five percent of contaminated soils exhibits high-activity contamination; 95% of these soils exhibits low-activity contamination
- One percent of metals and demolition wastes exhibits high activity contamination; 99% exhibits low activity contamination
- Fifteen percent of buried wastes exhibits high activity contamination; 85% exhibits low activity contamination.

- Buried decontamination and decommissioning facilities and plutonium cribs (per Westinghouse Hanford comment) have not been included in the list of units to be addressed in the 5-yr plan implementation period.
- Unit refill will be performed independent of pre-excavation, structure movement, and under cover excavation activities. Separate equipment and labor will be dedicated to unit refill activities.
- River pipeline removal is not incorporated in this 5-yr plan due to current uncertainties regarding contaminant levels in the sediment.
- Land pipeline removal will commence, to avoid conflict (e.g., physical interference and staffing) with the startup of excavation and removal activities, in the first quarter of FY-96. Based on the operational time incorporated in the cost models for WHC (1991a) and the pipeline lengths noted in WHC (1991b), pipeline removal (including excavation) is estimated to proceed at a rate of approximately 1.2 ft/h.
- To address regulatory agency concerns and to demonstrate the ability to move a containment structure during the course of unit excavation, unit 116-C-1 (the 107-C liquid waste disposal trench) is included in the list of units to be addressed during the 5-yr plan period.
- Unit 116-B-11 has been included in 5-yr plan activities to fill out available time (at the end of FY-97) in the implementation period. All of the 100 B/C Area units (not otherwise restricted) to be cleaned up using a 400 ft x 400 ft containment structure have already been included. This unit was selected primarily on the basis of its relatively high HRS score.
- To ensure schedule achievability, all between-unit structure moves are conservatively estimated to require 10 work days. Likewise, the mid-excavation move for unit 116-C-1 is assumed to require 10 work days. However, to reflect experience gained in the 116-C-1 mid-excavation move and reflecting the short distances of mid-excavation moves, the mid-excavation move for unit 116-B-11 is estimated to require only 5 work days.

- All disposal facility schedules and costs assume that EM-40 (DOE Office of Environmental Restoration) will be responsible for facility planning, permitting, design, construction, and operation.

Figure 4 identifies the units that form the basis for implementation costs and activities. Figures 5 through 9 illustrate the sequence for implementation activities. Figure 10 summarizes the estimated time requirements for onsite activities at each unit (these time requirements are the basis for the activities sequences presented in Figures 5 through 9 and assume an excavation rate of 265 yd^3/h, as noted in WHC (1991a). Figures 11 and 12 summarize unit excavation and waste volumes. Figure 13 presents a summary of pipeline removal accomplishments. As noted in WHC (1991b), 15% of the pipelines are expected to exhibit high activity contamination and 85% would exhibit low activity contamination.

9 2 1 2 3 7 9 3 7 1 6

Figure 4. 100 B/C Area Unit Descriptions (As Incorporated in the 5-Yr Plan).

Unit	HRS Score	Waste Unit Description
116-B-12	N/A	117-B crib
116-B-2	40.09	105-B storage basin trench
116-B-4	16.22	105-B dummy decontamination french drain
116-B-1	42.32	107-B liquid waste disposal trench
116-B-13	N/A	107-B south sludge trench
116-B-14	N/A	107-B north sludge trench
116-B-5	40.09	108-B crib
116-B-6A	16.22	111-B crib no. 1
116-B-6B	16.22	111-B crib no. 2
118-B-6	6.05	108-B solid waste burial ground
118-B-4	3.04	105-B spacer burial ground
118-B-7	3.04	111-B solid waste burial site
118-B-2	3.04	Construction burial ground
116-C-1	42.32	107-C liquid waste disposal trench
116-B-10	0.00	108-B dry well quench tank
116-B-9	0.00	104-B-2 french drain
116-B-11	76.91	107-B retention basin

N/A = Not Available

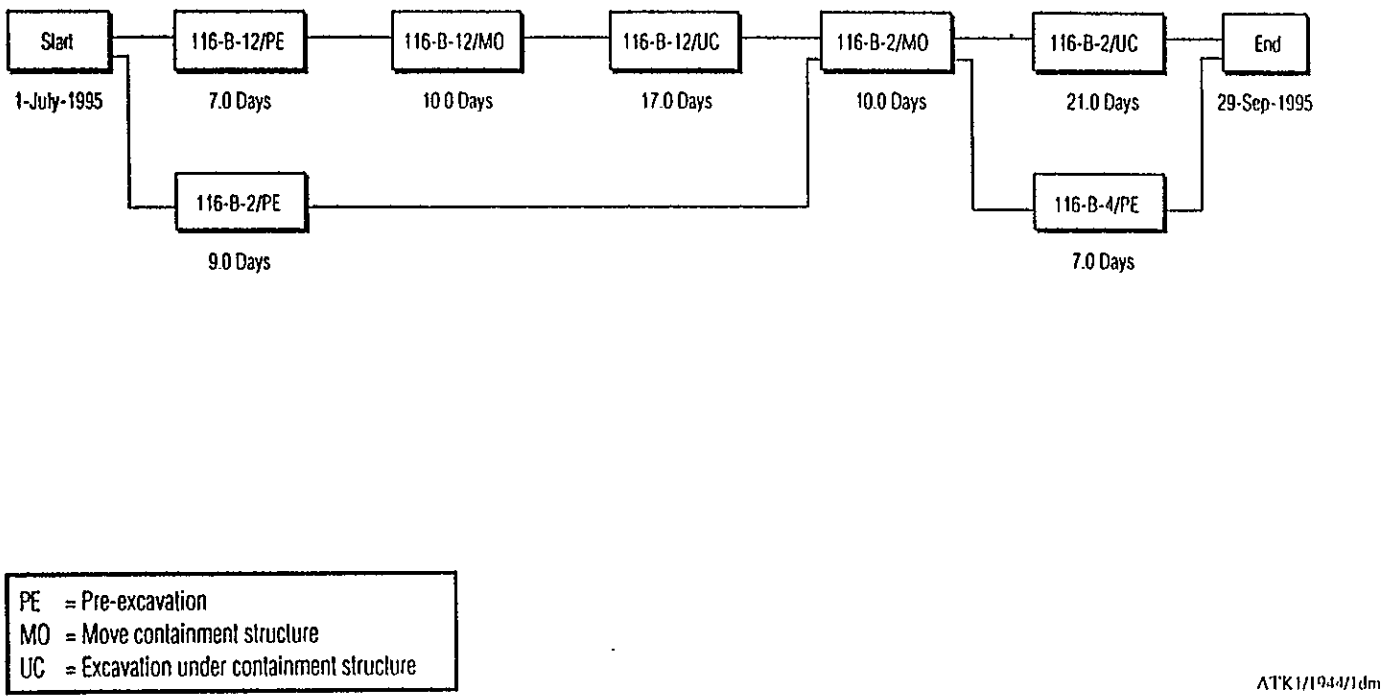


Figure 5. 100 B/C Area Activity Sequence - Fourth Quarter FY-95 (One Shift/Day).

Figure 6. 100 B/C Area Activity Sequence - First and Second Quarters FY-96 (One Shift/Day).

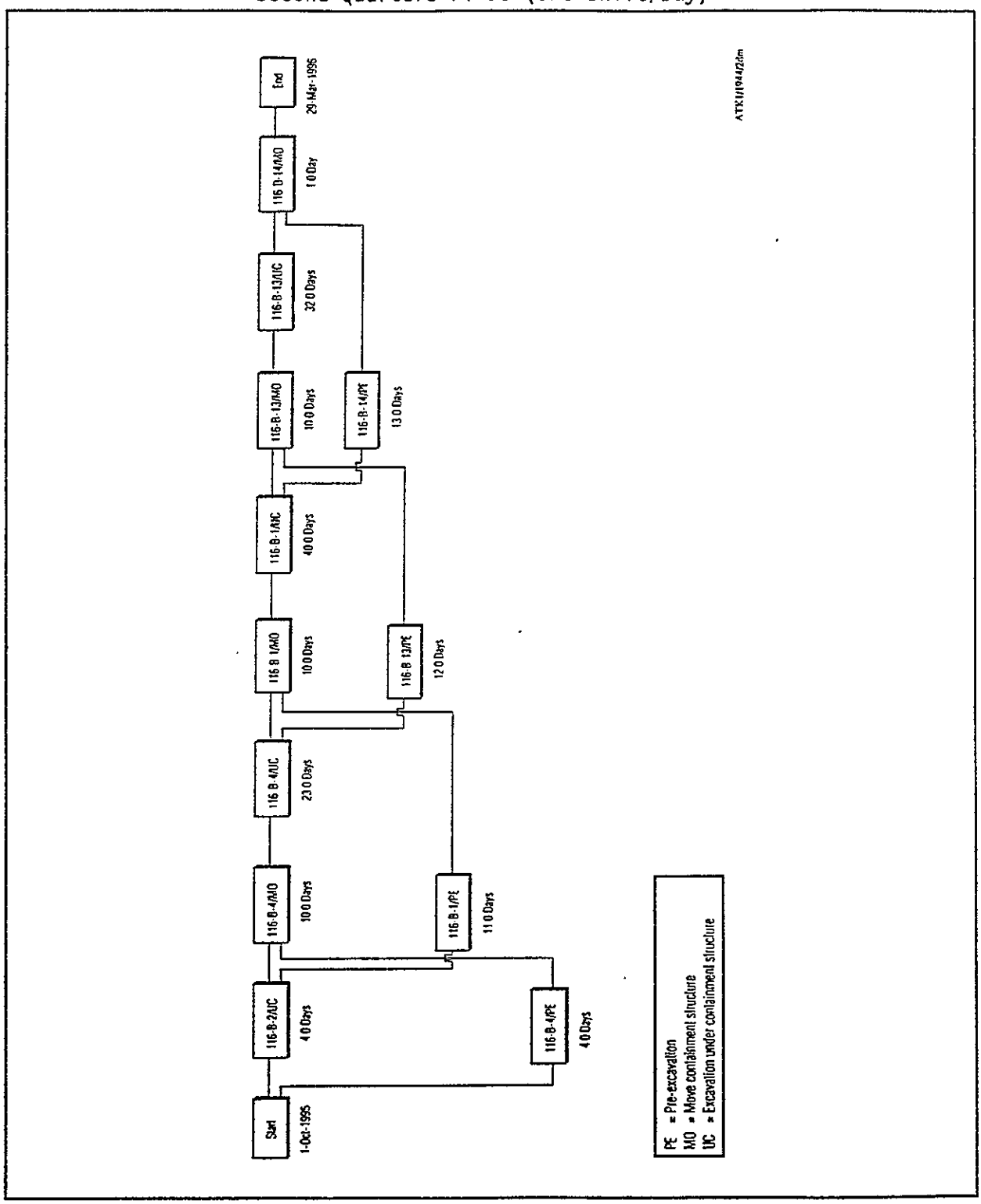


Figure 7. 100 B/C Area Activity Sequence - Third and Fourth Quarters FY-96 (Two Shifts/Day).

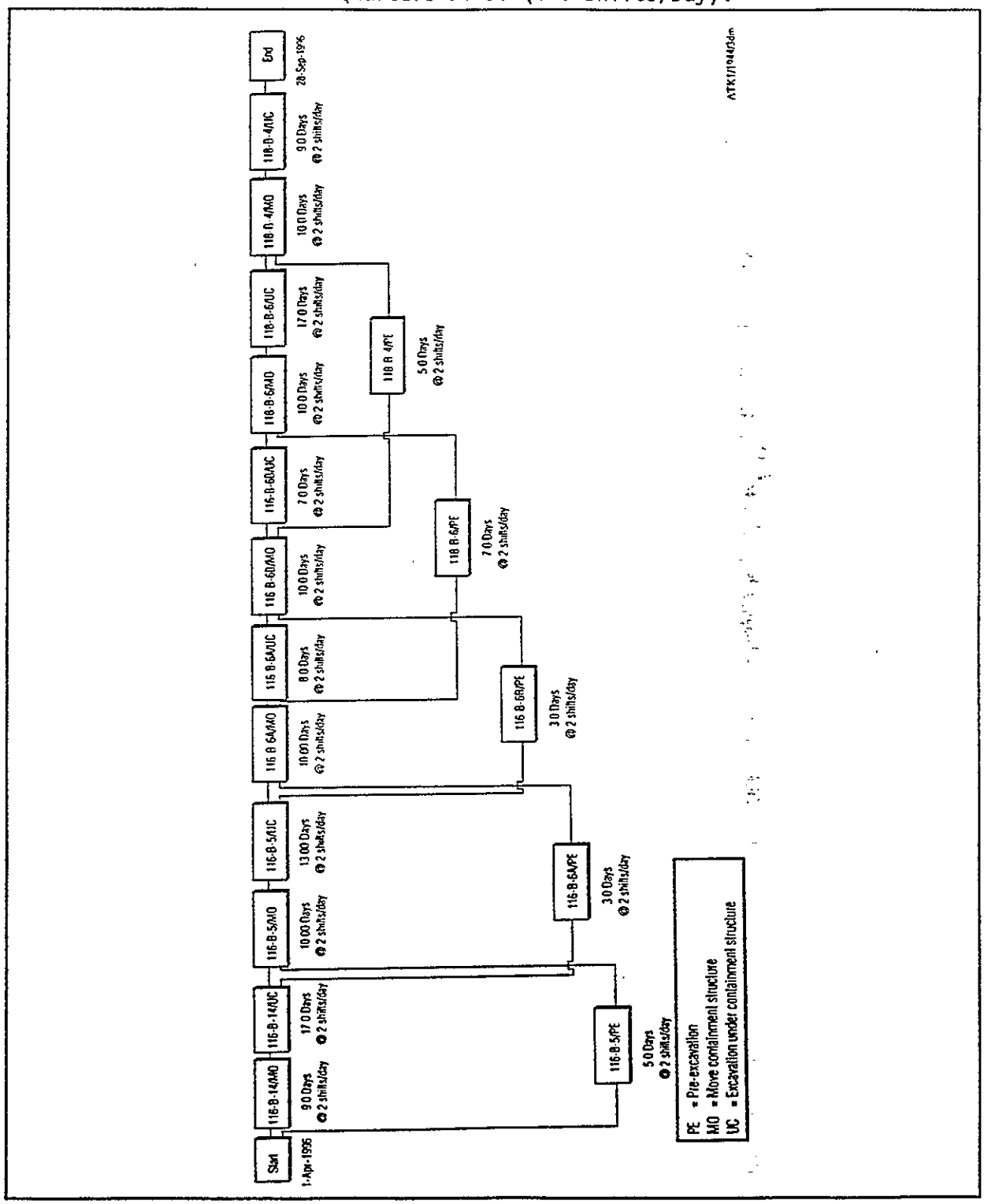
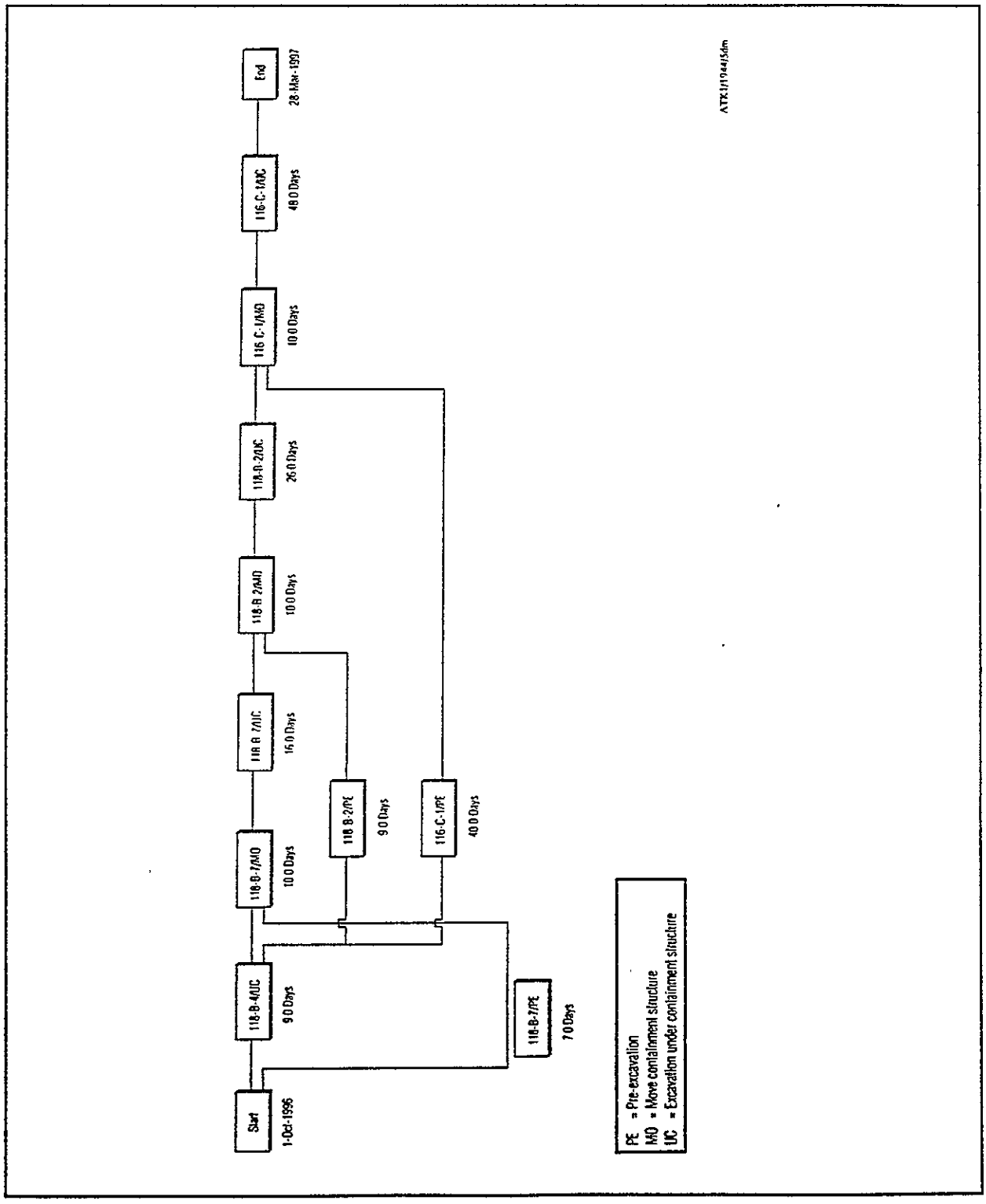


Figure 8. 100 B/C Area Activity Sequence - First and Second Quarters FY-97 (One Shift/Day).



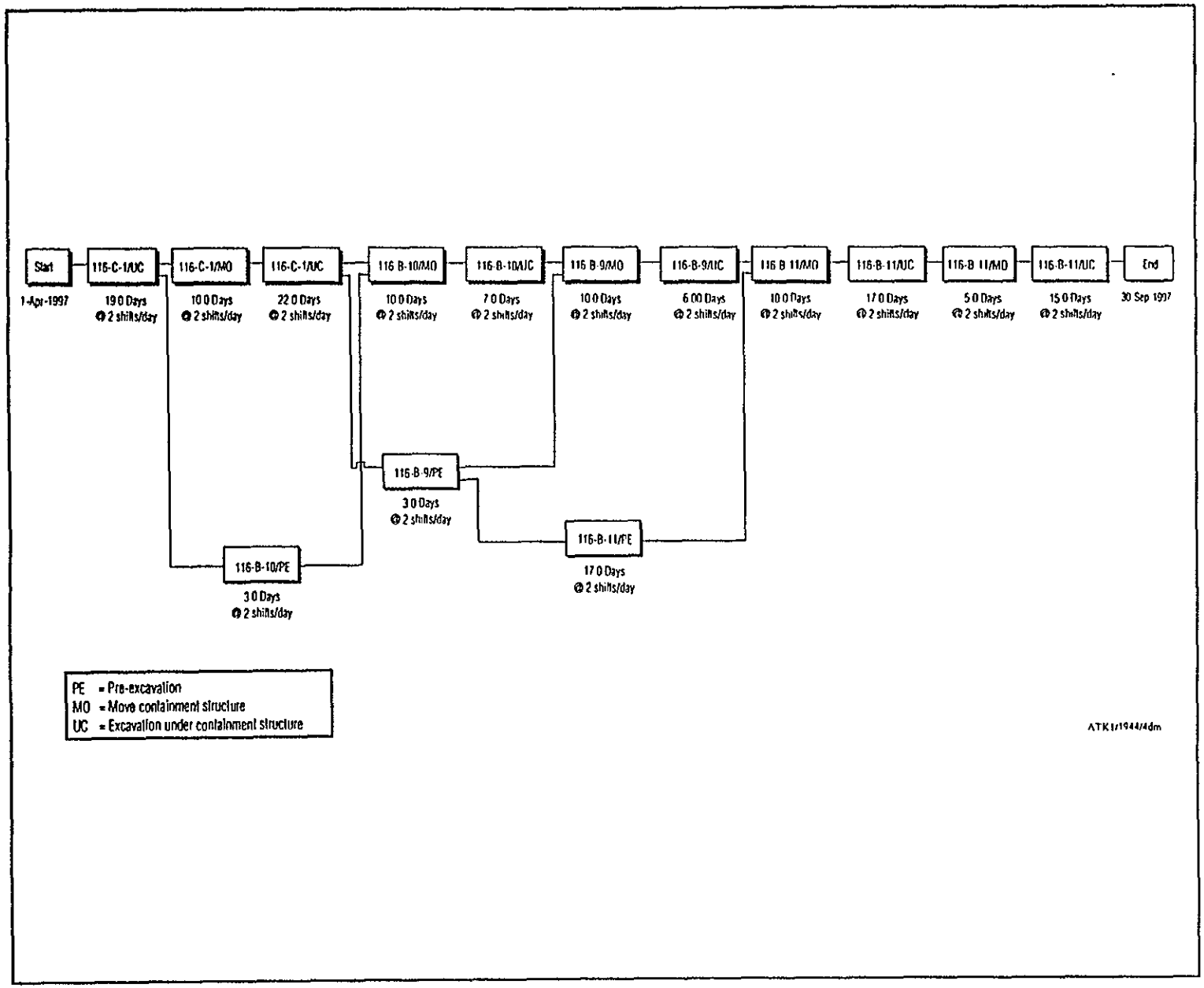


Figure 9. 100 B/C Area Activity Sequence - Third and Fourth Quarters FY-97 (Two Shifts/Day).

Figure 10. 100 B/C Area Unit Estimated Time Requirements.

Unit Name	116-B-12	116-B-2	116-B-4	116-B-1	116-B-13	116-B-14	116-B-5	116-B-6A	116-B-6B
Time Required – Pre-excavation (Days)	7	9	11	11	12	13	5*	3*	3*
– Under Cover (Days)	17	25	23	40	32	17*	13*	8*	7*
– Replace Fill (Days)	16	21	23	25	13*	14*	11*	7*	7*
– Move Cont. Structure (Days)	10	10	10	10	10	10*	10*	10*	10*

** – 2 shifts/day*

Unit Name	118-B-6	118-B-4	118-B-7	118-B-2	116-C-1	116-B-10	116-B-9	116-B-11	Totals
Time Required – Pre-excavation (Days)	7*	5*	7	9	40	3*	3*	17*	165
– Under Cover (Days)	17*	9 + 9*	16	26	48 + 41*	7*	6*	32*	393
– Replace Fill (Days)	15*	22	14	20	45*	7*	6*	–	266
– Move Cont. Structure (Days)	10*	10*	10	10	10 + 10*	10*	10*	15*	185

** – 2 shifts/day*

Figure 11. 100 B/C Area Unit Estimated Excavation Volumes.

Unit Name	116-B-12	116-B-2	116-B-4	116-B-1	116-B-13	116-B-14	116-B-5	116-B-6A	116-B-6B
Total Excavation (BCF)	1,368,990	1,940,370	1,896,280	2,918,790	2,448,600	2,633,850	1,988,350	1,151,650	1,099,680
Contaminated Soil (BCF)	130,680	272,250	105,850	726,000	363,000	370,260	321,040	130,540	113,700
Metals (BCF)	18,670	38,890	15,120	103,710	51,860	52,890	45,860	18,650	16,240
Buried Waste (BCF)	18,670	38,890	15,120	103,710	51,860	52,890	45,860	18,650	16,240
Demolition Waste (BCF)	18,670	38,890	15,120	103,710	51,860	52,890	45,860	18,650	16,240
Overburden (BCF)	1,182,300	1,551,450	1,745,070	1,881,660	1,930,020	2,104,920	1,529,730	965,160	937,260
Pre-excavation (BCF)	394,100	517,150	581,690	627,220	643,340	701,640	509,910	321,720	312,420
Uncontaminated Overburden (BCF)	394,100	517,150	581,690	627,220	643,340	701,640	509,910	321,720	312,420
Contaminated Overburden (BCF)	394,100	517,150	581,690	627,220	643,340	701,640	509,910	321,720	312,420
Returned Fill (Cubic Feet)	898,550	1,179,090	1,326,250	1,430,070	1,466,800	1,599,730	1,162,600	733,520	712,320

Unit Name	118-B-6	118-B-4	118-B-7	118-B-2	116-C-1	116-B-10	116-B-9	116-B-11	Totals
Total Excavation (BCF)	2,665,200	2,044,380	1,229,620	1,937,220	9,589,830	1,110,780	933,700	13,119,760 *	50,077,050
Contaminated Soil (BCF)	294,030	290,400	122,110	319,440	1,996,500	101,970	105,850	5,082,000 *	10,845,620
Metals (BCF)	42,000	41,490	17,440	45,630	285,210	14,570	15,120	726,000 *	1,549,350
Buried Waste (BCF)	42,000	41,490	17,440	45,630	285,210	14,570	15,120	726,000 *	1,549,350
Demolition Waste (BCF)	42,000	41,490	17,440	45,630	285,210	14,570	15,120	726,000 *	1,549,350
Overburden (BCF)	2,245,170	1,629,510	1,055,190	1,480,890	6,737,700	965,100	782,490	5,859,760 *	34,583,380
Pre-excavation (BCF)	748,390	543,170	351,730	493,630	2,245,900	321,700	260,830	1,953,250 **	11,527,790
Uncontaminated Overburden (BCF)	748,390	543,170	351,730	493,630	2,245,900	321,700	260,830	1,953,250 **	11,527,790
Contaminated Overburden (BCF)	748,390	543,170	351,730	493,630	2,245,900	321,700	260,830	1,710,110 **	11,284,650
Returned Fill (Cubic Feet	1,706,330	1,238,430	801,940	1,125,480	5,120,650	733,470	594,680	4,453,420 *	26,283,320

* *Total Unit Volumes*

** *Volumes excavated in FY 97*

Source: These volumes are based upon data presented in document WHC-EP-0457

Figure 12. 100 B/C Area Unit Estimated Waste Volumes.

Unit Name	116-B-12	116-B-2	116-B-4	116-B-1	116-B-13	116-B-14	116-B-5	116-B-6A	116-B-6B
Disposed Wastes (Cubic Yards) – High Activity									
Metals	10	20	10	50	30	30	20	10	10
Demolition Waste	10	20	10	60	30	30	30	10	10
Buried Waste	140	280	110	750	380	380	330	140	120
Soils	280	580	220	1,530	770	780	680	280	240
Total	440	900	350	2,390	1,210	1,220	1,060	440	380
Disposed Wastes (Cubic Yards) – Low Activity									
Metals	890	1,850	720	4,940	2,470	2,520	2,190	890	770
Demolition Waste	1,100	2,280	890	6,090	3,040	3,100	2,690	1,090	950
Buried Waste	760	1,590	620	4,250	2,120	2,170	1,880	760	670
Soils	21,880	32,760	28,810	55,600	41,720	44,480	34,410	18,820	17,750
Total	24,630	38,480	31,040	70,880	49,350	52,270	41,170	21,560	20,140

Unit Name	118-B-6	118-B-4	118-B-7	118-B-2	116-C-1	116-B-10	116-B-9	116-B-11	Totals
Disposed Wastes (Cubic Yards) – High Activity									
Metals	20	20	10	20	140	10	10	0	420
Demolition Waste	30	30	10	30	170	10	10	0	500
Buried Waste	300	300	710	330	2,060	110	110	0	5,970
Soils	620	610	260	670	4,220	220	220	0	12,180
Total	970	960	400	1,050	6,590	350	350	0	19,060
Disposed Wastes (Cubic Yards) – Low Activity									
Metals	2,000	1,980	830	2,180	13,600	690	720		39,240
Demolition Waste	2,460	2,430	1,020	2,680	16,730	860	890	0	48,300
Buried Waste	1,720	1,700	710	1,870	11,670	600	620	0	33,710
Soils	43,390	34,580	19,750	33,660	174,910	17,670	15,260	72,210 **	707,670
Total	49,570	40,690	22,310	40,390	216,910	19,820	17,490	72,210 **	828,910

** Total Unit Volumes*

*** Volumes excavated in FY-97*

Source: These volumes are based upon data presented in document WHC-EP-0457

Figure 13. 100 B/C Area Land Pipeline Removal.

- Land pipeline removal activities conducted as part of the macroengineering approach are anticipated to accomplish the following

Year	Quantity Removed (Linear Feet)				Resulting Waste Volume	
	12-16"	18-24"	36-42"	60-72"	Low Activity	High Activity
FY 96	180 ft.	1,445 ft.	750 ft.	1,370 ft.	2,025 cy	358 cy
FY 97	–	–	–	3,745 ft.	3,332 cy	588 cy

Source: Document WHC-EP-0457

5.0 FIVE-YEAR PLAN COST ESTIMATES

The macroengineering implementation considerations/assumptions described above form the basis for subsequent development of 5-yr plan cost estimates for the 100 B/C Area cleanup and for design, construction, and operation of the disposal facility. Reiterating one of the previously noted critical considerations, waste disposal capabilities were determined to be a separate issue because of the need for disposal capabilities regardless of the course of action pursued in restoring the Hanford Site. Following are the considerations/assumptions used in developing the 5-yr plan cost estimates:

- Due to the need to develop Five Year Plan cost estimates on a short turn around basis, Westinghouse Hanford's SOW for this task stipulated that the cost models developed for WHC (1991a) should be used to estimate equipment, disposal facility, and operation costs. These models incorporated capital, operating, and labor costs for mobile, truss-supported containment structures.

- As noted previously, the cost models used to develop implementation costs have been revised, as appropriate, to reflect comments on the cost models presented by Westinghouse Hanford (1991a).

- Planning and preparation activity costs reflect the level of effort and the staffing mix (relatively more senior) necessary to accomplish the activities in the accelerated timeframe noted in project schedules. Senior staff are more able to provide the needed creativity backed by experience.

- Use of truss-type containment structures provides a measure of conservatism in regulatory, planning, and cost estimation efforts.

- In developing the 5-yr plan cost estimates, it was noted that other types of containment structures might be used in place of the truss structures. However, at the time, there was insufficient detail to assess exactly what type of structure could be used to accommodate the macroengineering approach to site restoration. As a result, specific requirements and costs for alternative containment structures could not be defined or developed in the short period of time available for this task. Of particular importance to the demonstration of the macroengineering approach was the consideration that available alternatives would not offer free spans greater than approximately 150 ft. It should be noted that the smallest excavation area "footprint" in the 100 B/C Area is estimated to be 212 ft x 212 ft (refer to WHC 1991b). Table 2 presents a summary of the excavation footprints for each of the units included in developing 5-yr plan costs and in estimating waste volumes.

Table 2. Excavation Footprints for 5-Yr Plan Units.

Unit	Length (ft)	Width (ft)
116-B-12	239	239
116-B-2	347	227
116-B-4	263	263
116-B-1	294	294
116-B-13	359	269
116-B-14	364	254
116-B-5	313	245
116-B-6A	229	225
116-B-6B	225	221
118-B-6	299	299
118-B-4	329	239
118-B-7	231	231
118-B-2	289	259
116-C-1	774	324
116-B-10	223	223
116-B-9	212	212
116-B-11	721	501

- In reviewing this data (for the smallest units within the 100 B/C Area) it was considered that the repeated structure moves necessary to excavate the indicated "footprints" using smaller structures would present substantial impediments to the macroengineering approach. As a result, smaller structures were not incorporated in developing current cost estimates.

- It should be recognized, however, that investigations/evaluations to more fully assess the applicability of alternative containment structures (e.g., commercially available semi-permanent containment structures) will continue. Initial investigations indicate that semi-permanent structures are generally available in widths up to 150 ft and could be physically linked to attain the spans incorporated in the macroengineering approach. While the estimated cost of these structures is substantially less than that of the truss-type structure, it may be necessary to purchase multiple structures as preliminary evaluations indicate that it may take up to 60 d (using a 10 to 12 man crew) to

erect a structure of the envisioned dimensions. Multiple structures would be required so that excavation/restoration could proceed without delay. As specific information/data is developed it will be incorporated into the 5-yr plan cost estimates.

It is recognized also that assessment of the need for containment in all cases will continue.

- Capital costs include:

  - Equipment costs
  - Operating costs (e.g., maintenance labor and supplies, and power/fuel)
  - Installation (applied as a percentage of equipment and operating total costs)
  - Mobilization (applied as a percentage of equipment and operating total costs)
  - Miscellaneous pilot test costs (applied as a percentage of equipment and operating total costs)
  - Miscellaneous technology and engineering development costs (applied as a percentage of equipment and operating total costs).

  The percentages reflect the nature of the equipment/facilities to which they are applied (i.e., lower percentages are applied to commercially available equipment, such as front-end loaders, while higher percentages are applied to constructed facilities, such as the truss-type containment structure).

- Allowances (applied as percentages to the sum of capital and labor costs) include:

  - Operating contractor costs
  - Supplies and materials
  - Utilities
  - Maintenance
  - Construction and operating debris disposal
  - Decontamination and decommissioning
  - Contingency.

- Equipment/facility expenditures reflect only those facilities and levels of service required to support one excavation/restoration system (and its associated refill equipment) and its related waste disposal requirements.

  For example, only one low-activity waste disposal trench and one high-activity burial vault are incorporated in disposal facility costs. Also, as noted previously, cleanup costs are based on using one system (one containment structure and related equipment, e.g., conveyor system, ventilation system, fire suppression system, dozer, and front-end loader). Pre-excavation and refill will be performed using separate equipment (primarily front-end loaders).

The elimination of redundant equipment/facilities and spare equipment in the five-year planning period provides a measure of cost control in the estimation process.

- Further cost reductions through the reduction of major facilities/equipment expenditures could not, however, be incorporated in the cost models. Specifically, the equipment/facilities incorporated in the cost models cannot be purchased as fractional units (e.g., bulldozers, loaders, rail cars, locomotive, unloading facilities, and mobile labs). In addition, the purchase of smaller units (e.g., smaller loaders) would reduce the benefits of the macroengineering approach. Reducing the size of the disposal facility vault, containment structure, and trench could provide short-term cost reductions, however, long-term costs would increase due to the need to construct subsequent additional facilities.

- Equipment/facility (e.g., pipeline removal equipment and single-use disposal containers) expenditures are assigned to the year in which they are required.

- Labor costs are based on that level of staff support required to operate and support the equipment/facilities purchased (e.g., one operator per front-end loader). The efficiency factors incorporated in the labor cost portion of the cost model accommodate allowances for a variety of factors, including variable productivity and "climbing" the learning curve.

- Analytical costs consist of charges for offsite quality control analyses. Quality Control analyses will be performed on 10% of the samples collected for onsite analyses. Onsite analysis will be performed on approximately 22 samples per shift. Mobile laboratory costs (one each for hazardous and for radiological analyses) are included under capital and labor expenditures.

- Westinghouse Hanford invoicing factors are included in all planning/preparatory activity costs. These factors are:

- G&A	17.5%	
Common support pool	7.8%	
Oversight adder	3.7%	
	29.0%	(applied to all charges)
- Material procurement	20.8%	(applied to Westinghouse Hanford charges)
- Contracts rate	8.8%	(applied to subcontractor charges)

- 100 B/C Area implementation costs include:

  - One 400 ft x 400 ft containment structure
  - One conveyor and hopper system
  - Soil excavation and soil/waste moving equipment to support one cleanup system

- One land pipeline removal system
- Drum removal equipment
- Demolition equipment to support one removal system
- Mobile laboratories
- Instrumentation vehicles at the excavation face.

- 100 B/C Area costs do not include:

  - VOC venting/treatment system
  - River pipeline removal system.

- Disposal facility implementation costs include:

  - Hanford Monitored Waste Disposal System (HMWDS)
    - One trench (with double liner)
    - One containment structure
    - Covered tunnel system
    - Unloading and decontamination stations
    - Ventilation system
    - Trench filling equipment
    - Waste transport equipment
  - Mobile grout plant
  - High-activity packaged waste disposal system (with one vault).

- Disposal facility costs do not include:

  - Low-activity packaged waste disposal system
  - Incinerator
  - Volume reduction system
  - Water treatment facilities
  - In-situ vitrification system
  - Vibration-aided grout injection system
  - Closure.

After developing estimated costs for planning/preparatory activities and using the cost model to determine estimated implementation costs, the 5-yr plan estimated costs were summarized for ease of use in review and analysis. The estimated costs are presented in:

- Figure 14 - 100 B/C Area 5-Yr Plan Cost Summary
- Figure 15 - 100 B/C Area Macroengineering Implementation Costs
- Figure 16 - Disposal Facility 5-Yr Plan Cost Summary
- Figure 17 - Disposal Facility Implementation Costs.

Figure 14. 100 B/C Area 5-Yr Plan Cost Summary.

	Element	FY 92	Five-Year Plan Duration					Five-Year Plan Total
			FY 93	FY 94	FY 95	FY 96	FY 97	
Planning/Preparatory Activities	Macro – 100B							
	Regulatory Strategy Plan	$160,000	0	0	0	0	0	0
	5-Year Plan Cost Estimate	120,000	0	0	0	0	0	0
	Project Plan (100B Only)	110,000	0	0	0	0	0	0
	FDC Containment System	240,000	0	0	0	0	0	0
	FDC Materials Handling & Analytical System	240,000	0	0	0	0	0	0
	CDR Containment System & Analytical System	550,000	$90,000	0	0	0	0	$90,000
	CDR Materials Handling & Analytical System	550,000	90,000	0	0	0	0	90,000
	Definitive Design Containment System	0	9,300,000	$4,610,000	0	0	0	13,910,000
	Definitive Design Material Handling	0	9,610,000	4,670,000	0	0	0	14,280,000
	Safety Assessment (100B Only)	840,000	1,470,000	730,000	0	0	0	2,200,000
	Procurement Specification & Bid Package (100B Only)*	0	80,000	340,000	0	0	0	420,000
	Macro – General							
	Project Plan (Sitewide)	430,000	0	0	0	0	0	0
	Groundwater Benefits Study	140,000	70,000	0	0	0	0	70,000
	HRA-EIS Data Package	2,570,000	2,280,000	2,050,000	0	0	0	4,330,000
	Safety Assessment (Total Facility)	0	2,240,000	3,200,000	$960,000	0	0	6,400,000
	Complete Barrier Development	3,250,000	5,050,000	3,050,000	2,040,000	$1,450,000	$1,550,000	13,140,000
	FDC Containment System	0	0	610,000	0	0	0	610,000
	FDC Mat. Handling, Treatment & Analytical System	0	0	610,000	0	0	0	610,000
	CDR Containment System	0	0	700,000	1,790,000	0	0	2,490,000
	CDR Mat. Handling, Treatment & Analytical System	0	0	700,000	1,790,000	0	0	2,490,000
	Implement 100 B/C Cleanup	0	0	0	87,900,000	52,200,000	35,100,000	175,200,000
	Totals	$9,200,000	$30,280,000	$21,270,000	$94,480,000	$53,650,000	$36,650,000	$236,330,000

**WHC oversight; specs., drawings, etc., included in definitive design*

Figure 15. 100 B/C Area Macroengineering Implementation Costs.

Element	FY 95	FY 96	FY 97	Total
Facilities/Equipment Less Containment Structure				
Capital Expenditures	$23,100,000	$12,600,000	$3,400,000	$39,100,000
Labor	2,100,000	14,400,000	14,400,000	30,900,000
Analytical	400,000	2,000,000	2,000,000	4,400,000
Allowances	21,600,000	23,100,000	15,200,000	59,900,000
Subtotal	$47,200,000	$52,100,000	$35,000,000	$134,300,000
Containment Structure				
Capital Expenditures	$21,900,000	$70,000	$70,000	$22,000,000
Labor	0	0	0	0
Analytical	0	0	0	0
Allowances	18,800,000	60,000	60,000	18,900,000
Subtotal	$40,700,000	$130,000	$130,000	$40,900,000
Total	$87,900,000	$52,200,000	$35,100,000	$175,200,000

Figure 16. Disposal Facility 5-Yr Plan Cost Summary.

Element	FY 92	Five-Year Plan Duration					Five-Year Plan Total
		FY 93	FY 94	FY 95	FY 96	FY 97	
Disposal Facility Siting Study	$100,000	0	0	0	0	0	0
Disposal Facility Permit (Total Facility)	380,000	$830,000	$760,000	$280,000	0	0	$1,870,000
FDC Disposal Facility	0	0	3,140,000	0	0	0	3,140,000
CDR Disposal Facility (Total Facility)	0	0	3,070,000	5,700,000	0	0	8,770,000
FDC Disposal Facility*	2,190,000	0	0	0	0	0	0
CDR Disposal Facility*	3,900,000	1,300,000	0	0	0	0	1,300,000
Definitive Design Disposal Facility*	0	6,400,000	2,740,000	0	0	0	9,140,000
Disposal Fac. Permit *	610,000	1,110,000	280,000	0	0	0	1,390,000
Disposal Facility Risk Assessment*	650,000	600,000	0	0	0	0	600,000
Implementation	0	0	0	255,000,000	$18,500,000	$18,500,000	292,000,000
Totals	$7,830,000	$10,240,000	$9,990,000	$260,980,000	$18,500,000	$18,500,000	$318,210,000

** These activities encompass those efforts needed to provide a facility to receive 100 BIC Area wastes*

Figure 17. Disposal Facility Implementation Costs.

Element	FY 95	FY 96	FY 97	Total
Facilities/Equipment Less Containment Structure and Double Liner System*				
Capital Expenditures	$90,700,000	$1,600,000	$1,600,000	$93,900,000
Labor	1,400,000	8,300,000	8,300,000	18,000,000
Analytical	0	0	0	0
Allowances	79,200,000	8,500,000	8,500,000	96,200,000
Subtotal	$171,300,000	$18,400,000	$18,400,000	$208,100,000
Containment Structure*				
Capital Expenditures	$33,800,000	$60,000	$60,000	$33,900,000
Labor	0	0	0	0
Analytical	0	0	0	0
Allowances	27,400,000	60,000	60,000	27,500,000
Subtotal	$61,200,000	$120,000	$120,000	$61,400,000
Double Liner System				
Capital Expenditures	$12,400,000	0	0	$12,400,000
Labor	0	0	0	0
Analytical	0	0	0	0
Allowances	10,100,000	0	0	10,100,000
Subtotal	22,500,000	0	0	22,500,000
Total	$255,000,000	$18,500,000	$18,500,000	$292,000,000

** Containment structure includes the structure, tunnel system, and fans*

6.0 CONCLUSION

As shown in the cost summaries noted previously, implementation costs represent the substantial majority of both the 100 B/C Area restoration and the disposal facility 5-yr plan cost estimates. Within the implementation cost estimates the major cost sensitivities are:

- Containment Structures - This consideration applies to the 100 B/C Area restoration and the disposal facility. As noted previously in this report, investigations into containment structure alternatives are being performed to assess their applicability, and their associated benefits and impacts. Changes in the type of structure or in the need for containment in all cases would affect 5-yr plan cost estimates. As these effects are determined they will be incorporated into the cost estimates.

- Mobile Laboratories - While the mobile laboratories represent a relatively minor portion of the implementation costs, the ability to use these facilities as an onsite screening and analysis capability has a significant impact on estimated costs and on the progress of the macroengineering approach. Offsite analyses for the estimated number of samples generated in 100 B/C Area restoration activities could increase 5-yr plan estimated costs by more than $20 million. In addition, reliance on offsite analysis presents the possibility for substantial delays while awaiting results. The applicability of onsite analyses is a decision which rests primarily with the regulatory agencies.

- Disposal Facility - The disposal facility represents a major cost element; however, disposal costs must be addressed regardless of the restoration course of action chosen. For this reason, disposal facility costs have been developed separately and are considered apart from 100 B/C Area restoration costs. Also, the current Tri-Party Agreement does not consider the issues of onsite or offsite disposal capacity or capability. It should be noted that the disposal facility (as developed for this task) would be a fixed asset whose useful life transcends and extends well beyond the scope of activities encompassed in this 5-yr plan. In addition, when considering the impacts of cleaning up the entire site, offsite disposal costs could be substantially greater than onsite costs, and there could be political and/or regulatory hurdles to large-scale offsite disposal.

7.0 REFERENCES

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APPENDIX A

5-YR PLAN COST ESTIMATE

100 B/C Area and Disposal Facility Cost Summary

Element	FY95	FY96	FY97	Total
100 B/C Area Implementation Costs				
Facilities/Equipment Less Containment Structure				
Capital plus Allowances	43,000,000	23,400,000	6,300,000	72,700,000
Labor plus Allowances	3,800,000	26,700,000	26,700,000	57,200,000
Analytical	400,000	2,000,000	2,000,000	4,400,000
Subtotal	47,200,000	52,100,000	35,000,000	134,300,000
Containment Structure				
Capital plus Allowances	40,700,000	100,000	100,000	40,900,000
Labor plus Allowances	0	0	0	0
Analytical	0	0	0	0
Subtotal	40,700,000	100,000	100,000	40,900,000
Total	87,900,000	52,200,000	35,100,000	175,200,000
Disposal Facility Implementation Costs				
Facilities/Equipment Less Containment Structure and Double Liner System				
Capital plus Allowances	168,700,000	2,900,000	2,900,000	174,500,000
Labor plus Allowances	2,600,000	15,500,000	15,500,000	33,600,000
Analytical	0	0	0	0
Subtotal	171,300,000	18,400,000	18,400,000	208,100,000

Conta nt Structure				
Capital plus Allowances	61,200,000	100,000	100,000	61,400,000
Labor plus Allowances	0	0	0	0
Analytical	0	0	0	0
Subtotal	61,200,000	100,000	100,000	61,400,000
Double Liner System				
Capital plus Allowances	22,500,000	0	0	22,500,000
Labor plus Allowances	0	0	0	0
Analytical	0	0	0	0
Subtotal	22,500,000	0	0	22,500,000
Total	255,000,000	18,500,000	18,500,000	292,000,000

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100 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Pre-excavation equipment							
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	1	11.75	520	6,110	1,200,000	1	1,206,110
*Dump truck, 75-85 ton (1st unit)	1	15.50	520	8,060	86,000	1	94,060
*Instrumentation vehicle	1	14.00	520	7,280	170,000	1	177,280
Subtotal							1,477,450
Excavation equipment							
*Containment structures: 1000x400	0	5.00	0	0	0	1	0
*Containment structures: 600x400	0	5.00	0	0	0	1	0
*Containment structures: 400x400	1	5.00	520	2,600	7,200,000	1	7,202,600
*Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	1	15.00	520	7,800	400,000	1	407,800
Subtotal							7,610,400
Containment structure fire suppression							
*Water tank	1	0.00	520	0	13,000	1	13,000
*Containment structure	1	0.00	520	0	60,000	1	60,000
Subtotal							73,000
Conveyor systems							
* 36" belt, 800' long	1	0.00	520	0	8,000	1	8,000
* 54" apron feeder	1	0.00	520	0	5,000	1	5,000
*Feed hopper/w 12" grizzly	1	0.00	520	0	1,200	1	1,200
*Skid 800' long w/ winch	1	6.70	520	3,484	45,000	1	48,484
*Feed bins, 2 compartments	1	0.00	520	0	10,000	1	10,000
* 36" belt, 400' long	0	0.00	0	0	0	1	0
* 36" belt, 200' long	0	0.00	0	0	0	1	0
*Conveyor dust control; vacuum hood w/ exhauster, pre-filters,HEPA filters	1	3.00	520	1,560	25,000	1	26,560
*CH detector instrument package	1	0.00	520	0	20,000	1	20,000
*Automatic sampler	1	0.00	520	0	220,000	1	220,000
Subtotal							339,244
Front-end loaders							
*Caterpillar 992 (w/ 13 yd bucket)	1	11.75	520	6,110	1,200,000	1	1,206,110
*Caterpillar 992 (w/ 10 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 7 yd bucket)	1	11.75	520	6,110	1,200,000	1	1,206,110
*Bulldozers: Caterpillar D-9	1	10.80	520	5,616	100,000	1	105,616
*Bulldozers: Caterpillar D-8	0	10.80	0	0	0	1	0
*Instrumentation vehicle	1	14.00	520	7,280	170,000	1	177,280
*Water truck 8000 gallon tank	1	16.00	520	8,320	110,000	1	118,320

Subtotal							2,813,436
Demolition tools, concrete & metal tanks							
*Excavator Caterpillar 235 C (90k lb base)	1	25.90	520	13,468	325,000	1	338,468
*Universal Processor U90 (LaBounty)							
* -Concrete cracking jaws	1	9.00	520	4,680	30,000	1	34,680
* -Shear jaws	1	9.00	520	4,680	47,000	1	51,680
* -Grapple jaws	1	9.00	520	4,680	40,000	1	44,680
* -Wood shear jaws	1	9.00	520	4,680	44,000	1	48,680
* -Plate shear jaws	1	9.00	520	4,680	47,000	1	51,680
* -Hydraulic hammer	1	9.00	520	4,680	42,000	1	46,680
Subtotal							569,868
Pipeline removal							
*Expose pipe; backhoe (3 cy. bucket)	0	14.00	0	0	0	1	0
*Grout pump truck	0	12.00	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
Subtotal							0
Pipeline removal, land							
*Excavator; Caterpillar 235C (90k lb base)	0	25.90	0	0	0	1	0
*Universal Processor U90 attachments	0	15.00	0	0	0	1	0
* -Concrete cracking jaws	0	9.00	0	0	0	1	0
-Hydraulic hammer	0	9.00	0	0	0	1	0
* -Shear jaws	0	9.00	0	0	0	1	0
* -Grapple jaws	0	9.00	0	0	0	1	0
* -Wood shear jaws	0	9.00	0	0	0	1	0
*Material densifier;MD50 (LaBounty)	0	9.00	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
*Grout pump truck	0	14.00	0	0	0	1	0
*Water truck 8000 gallon tank	0	16.00	0	0	0	1	0
*Truck, flatbed	0	14.00	0	0	0	1	0
*Pipe racks	0	4.00	0	0	0	1	0
Subtotal							0
Intact drum removal							
*Drum handling attachment for UP90 backhoe (3 yard bucket)	1	9.00	520	4,680	17,000	1	21,680
Subtotal							21,680
Pipeline removal, river							
*Clamshell dredge	0	9.00	0	0	0	1	0
*Gamma scan mole	0	1.00	0	0	0	1	0
*Container barge & tug	0	11.50	0	0	0	1	0

100 AREA General

Subtotal							0
VOC venting equipment							
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	17.00	0	0	0	1	0
*Low temperature thermal desorber	0	1.00	0	0	0	1	0
Subtotal							0
Rail transport							
*Diesel electric locomotive 30,400 lb draw bar pull	1	20.00	520	10,400	750,000	1	760,400
*Flat bed cars w/ bulkheads	16	3.00	520	1,560	85,000	1	1,384,960
Subtotal							2,145,360
Containers - reusable 50 yd3							
*Type 1: loading door	98	0.00	520	0	5,000	1	490,000
*Type 2: loading ports	0	0.00	0	0	0	1	0
Subtotal							490,000
Containers - single use 50 yd3							
*Type 3: loading door	34	0.00	520	0	5,000	1	170,000
*Type 4: loading ports	0	0.00	0	0	0	1	0
Subtotal							170,000
Mobile Laboratories							
*Mobile laboratories (chem and rad)	2	18.50	520	9,620	3,000,000	1	6,019,240
Subtotal							6,019,240
Miscellaneous							
*Overpacks unsheilded for type 1 box	98	0.00	520	0	15,000	1	1,470,000
*Overpacks sheilded for type 3/4 box	5	0.00	520	0	15,000	1	75,000
*Walking gantry crane (100 tons)	1	19.50	520	10,140	400,000	1	410,140
*Bridge crane 100 tons (box loading)	1	21.00	520	10,920	450,000	1	460,920
*Bridge crane100tons(container load)	1	21.00	520	10,920	450,000	1	460,920
*Truck mounted articulating crane	1	19.00	520	9,880	180,000	1	189,880
Subtotal							3,066,860
SUBTOTAL CAPITAL COSTS							24,796,538
Installation Costs	25.00%						6,199,135
Mobilization Costs	25.00%						6,199,135

100 AREA General

Pilot Test Costs	25.00%	6,199,135
Technology and Eng. Dev. Costs	5.00%	1,239,827
TOTAL CAPITAL COSTS		44,633,768

100 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	1	520	1.60	42.250	35,152
*Dump truck, 75-85 ton	1	520	1.60	42.250	35,152
*Instrumentation vehicle	1	520	1.60	42.250	35,152
Subtotal					105,456
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	1	520	1.60	42.250	35,152
*Caterpillar 992 (w/ 10 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 7 yd bucket)	1	520	1.60	42.250	35,152
*Bulldozers: Caterpillar D-9	1	520	1.60	42.250	35,152
*Bulldozers: Caterpillar D-8	0	0	1.60	42.250	0
*Instrumentation vehicle	1	520	1.60	42.250	35,152
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
Subtotal					140,608
Pipeline removal					
*Expose pipe; 2 ops in parallel	0	0	1.60	42.250	0
* backhoe (3 yard bucket)			1.60		
*Grout pump truck	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
Subtotal					0
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	0	0	1.60	42.250	0
*Universal Processor U90 attachments	0	0	1.60	42.250	0
* -Concrete cracking jaws	0	0	1.60	42.250	0
* -Shear jaws	0	0	1.60	42.250	0
* -Grapple jaws	0	0	1.60	42.250	0
* -Wood shear jaws	0	0	1.60	42.250	0
*Material densifier;MD50 (LaBounty)	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
*Grout pump truck	0	0	1.60	42.250	0
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
*Truck, flatbed	0	0	1.60	42.250	0
Subtotal					0
Pipeline removal, river					
*Clamshell dredge	0	0	1.60	42.250	0
*Container barge & tug	0	0	1.60	42.250	0
Subtotal					0

100 AREA General

VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	0	1.60	42.250	0
Subtotal					0
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	3	520	1.60	42.250	105,456
*Flat bed cars w/ bulkheads	0	0	1.60	42.250	0
Subtotal					105,456
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	0	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	0	1.60	42.250	0
*Walking gantry crane (100 tons)	2	520	1.60	42.250	70,304
*Bridge crane 100 tons (box loading)	2	520	1.60	42.250	70,304
*Bridge crane 100 tons (cont. load)	1	520	1.60	42.250	35,152
*Truck mounted articulating crane	1	520	1.60	42.250	35,152
Subtotal					210,912
Operations support manpower					
*Heavy equipment maintenance	3	520	1.60	42.250	105,456
*General maintenance	2	520	1.60	42.250	70,304
*Quality Assurance	2	520	1.60	42.250	70,304
*Management/administration	3	520	1.60	59.150	147,638
*Decontaimination	3	520	1.60	59.150	147,638
*Health physics	4	520	1.60	59.150	196,851
*Field engineers/scientists	4	520	1.60	59.150	196,851
*Health and safety	2	520	1.60	59.150	98,426
*General laborers	4	520	1.60	42.250	140,608
*Samplers	4	520	1.60	42.250	140,608
Subtotal					1,314,685
Mobile laboratory personnel					
*Chemists	4	520	1.00	59.150	123,032
*Support staff	2	520	1.00	42.250	43,940
Subtotal					166,972
TOTAL LABOR COSTS	53				2,044,089

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100 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Pre-excavation equipment							
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	1	11.75	3,120	36,660	0	1	36,660
*Front-end loader; Cat 992 (for refill operations)	1	11.75	3,120	36,660	1,200,000	1	1,236,660
*Dump truck, 75-85 ton (2nd unit)	1	15.50	3,120	48,360	86,000	1	134,360
*Dump truck, 75-85 ton (1st unit)	1	15.50	3,120	48,360	0	1	48,360
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
Subtotal							1,499,720
Excavation equipment							
*Containment structures: 1000x400	0	5.00	0	0	0	1	0
*Containment structures: 600x400	0	5.00	0	0	0	1	0
*Containment structures: 400x400	1	5.00	3,120	15,600	0	1	15,600
*Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	1	15.00	3,120	46,800	0	1	46,800
Subtotal							62,400
Containment structure fire suppression							
*Water tank	1	0.00	3,120	0	0	1	0
*Containment structure	1	0.00	3,120	0	0	1	0
Subtotal							0
Conveyor systems							
* 36" belt, 800' long	1	0.00	3,120	0	0	1	0
* 54" apron feeder	1	0.00	3,120	0	0	1	0
*Feed hopper/w 12" grizzly	1	0.00	3,120	0	0	1	0
*Skid 800' long w/ winch	1	6.70	3,120	20,904	0	1	20,904
*Feed bins, 2 compartments	1	0.00	3,120	0	0	1	0
* 36" belt, 400' long	0	0.00	0	0	0	1	0
* 36" belt, 200' long	0	0.00	0	0	0	1	0
*Conveyor dust control; vacuum hood w/ exhauster, pre-filters,HEPA filters	1	3.00	3,120	9,360	0	1	9,360
*CM detector instrument package	1	0.00	3,120	0	0	1	0
*Automatic sampler	1	0.00	3,120	0	0	1	0
Subtotal							30,264
Front-end loaders							
*Caterpillar 992 (w/ 13 yd bucket)	1	11.75	3,120	36,660	0	1	36,660
*Caterpillar 992 (w/ 10 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 7 yd bucket)	1	11.75	3,120	36,660	0	1	36,660
*Bulldozers: Caterpillar D-9	1	10.80	3,120	33,696	0	1	33,696

*Bulldozers: Caterpillar D-8	0	10.80	0	0	0	1	0
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	0	1	49,920
Subtotal							200,616
Demolition tools, concrete & metal tanks							
*Excavator Caterpillar 235 C (90k lb base)	1	25.90	3,120	80,808	0	1	80,808
*Universal Processor U90 (LaBounty)							
* -Concrete cracking jaws	1	9.00	3,120	28,080	0	1	28,080
* -Shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Grapple jaws	1	9.00	3,120	28,080	0	1	28,080
* -Wood shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Plate shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Hydraulic hammer	1	9.00	3,120	28,080	0	1	28,080
Subtotal							221,208
Pipeline removal							
*Expose pipe; backhoe (3 cy. bucket)	1	14.00	3,120	43,680	150,000	1	193,680
*Grout pump truck	1	12.00	3,120	37,440	90,000	1	127,440
*Instrumentation vehicle	1	14.00	3,120	43,680	170,000	1	213,680
Subtotal							534,800
Pipeline removal, land							
*Excavator; Caterpillar 235C (90k lb base)	1	25.90	3,120	80,808	325,000	1	405,808
*Universal Processor U90 attachments	1	15.00	3,120	46,800	67,000	1	113,800
* -Concrete cracking jaws	1	9.00	3,120	28,080	30,000	1	58,080
-Hydraulic hammer	1	9.00	3,120	28,080	42,000	1	70,080
* -Shear jaws	1	9.00	3,120	28,080	47,000	1	75,080
* -Grapple jaws	1	9.00	3,120	28,080	40,000	1	68,080
* -Wood shear jaws	1	9.00	3,120	28,080	44,000	1	72,080
*Material densifier;MD50 (LaBounty)	1	9.00	3,120	28,080	65,000	1	93,080
*Instrumentation vehicle	1	14.00	3,120	43,680	170,000	1	213,680
*Group pump truck	1	14.00	3,120	43,680	150,000	1	193,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	110,000	1	159,920
*Truck, flatbed	1	14.00	3,120	43,680	110,000	1	153,680
*Pipe racks	1	4.00	3,120	12,480	30,000	1	42,480
Subtotal							1,719,528
Intact drum removal							
*Drum handling attachment for UP90 backhoe (3 yard bucket)	1	9.00	3,120	28,080	0	1	28,080
Subtotal							28,080
Pipeline removal, river							

100 AREA General

*Clamshell dredge	0	9.00	0	0	0	1	0
*Gamma scan mole	0	1.00	0	0	0	1	0
*Container barge & tug	0	11.50	0	0	0	1	0
Subtotal							0
VOC venting equipment							
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	17.00	0	0	0	1	0
*Low temperature thermal desorber	0	1.00	0	0	0	1	0
Subtotal							0
Rail transport							
*Diesel electric locomotive 30,400 lb draw bar pull	1	20.00	3,120	62,400	0	1	62,400
*Flat bed cars w/ bulkheads	16	3.00	3,120	9,360	0	1	149,760
Subtotal							212,160
Containers - reusable 50 yd3							
*Type 1: loading door	50	0.00	3,120	0	5,000	1	250,000
*Type 2: loading ports	0	0.00	0	0	0	1	0
Subtotal							250,000
Containers - single use 50 yd3							
*Type 3: loading door	233	0.00	3,120	0	5,000	1	1,165,000
*Type 4: loading ports	0	0.00	0	0	0	1	0
Subtotal							1,165,000
Mobile Laboratories							
*Mobile laboratories (chem and rad)	2	18.50	3,120	57,720	0	1	115,440
Subtotal							115,440
Miscellaneous							
*Overpacks unsheilded for type 1 box	50	0.00	3,120	0	15,000	1	750,000
*Overpacks sheilded for type 3/4 box	0	0.00	0	0	0	1	0
*Walking gantry crane (100 tons)	1	19.50	3,120	60,840	0	1	60,840
*Bridge crane 100 tons (box loading)	1	21.00	3,120	65,520	0	1	65,520
*Bridge crane100tons(container load)	1	21.00	3,120	65,520	0	1	65,520
*Truck mounted articulating crane	1	19.00	3,120	59,280	0	1	59,280
Subtotal							1,001,160
SUBTOTAL CAPITAL COSTS							7,040,376

100 AREA General

Installation Costs	25.00%	1,760,094
Mobilization Costs	25.00%	1,760,094
Pilot Test Costs	25.00%	1,760,094
Technology and Eng. Dev. Costs	5.00%	352,019
TOTAL CAPITAL COSTS		12,672,677

100 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	3,120	1.60	42.250	421,824
*Dump truck, 75-85 ton	2	3,120	1.60	42.250	421,824
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					1,054,560
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	1	3,120	1.60	42.250	210,912
*Caterpillar 992 (w/ 10 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 7 yd bucket)	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-9	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-8	0	0	1.60	42.250	0
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
Subtotal					843,648
Pipeline removal					
*Expose pipe; 2 ops in parallel * backhoe (3 yard bucket)	1	3,120	1.60	42.250	210,912
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					632,736
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	1	3,120	1.60	42.250	210,912
*Universal Processor U90 attachments	0	0	1.60	42.250	0
* -Concrete cracking jaws	0	0	1.60	42.250	0
* -Shear jaws	0	0	1.60	42.250	0
* -Grapple jaws	0	0	1.60	42.250	0
* -Wood shear jaws	0	0	1.60	42.250	0
*Material densifier;WD50 (LaBounty)	0	0	1.60	42.250	0
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	1	3,120	1.60	42.250	210,912
*Truck, flatbed	1	3,120	1.60	42.250	210,912
Subtotal					1,054,560
Pipeline removal, river					
*Clamshell dredge	0	0	1.60	42.250	0
*Container barge & tug	0	0	1.60	42.250	0
Subtotal					0

VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	0	1.60	42.250	0
Subtotal					0
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	3	3,120	1.60	42.250	632,736
*Flat bed cars w/ bulkheads	0	0	1.60	42.250	0
Subtotal					632,736
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	0	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	0	1.60	42.250	0
*Walking gantry crane (100 tons)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (box loading)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (cont. load)	1	3,120	1.60	42.250	210,912
*Truck mounted articulating crane	1	3,120	1.60	42.250	210,912
Subtotal					1,265,472
Operations support manpower					
*Heavy equipment maintenance	3	3,120	1.60	42.250	632,736
*General maintenance	2	3,120	1.60	42.250	421,824
*Quality Assurance	2	3,120	1.60	42.250	421,824
*Management/administration	3	3,120	1.60	59.150	885,830
*Decontamination	3	3,120	1.60	59.150	885,830
*Health physics	4	3,120	1.60	59.150	1,181,107
*Field engineers/scientists	4	3,120	1.60	59.150	1,181,107
*Health and safety	2	3,120	1.60	59.150	590,554
*General laborers	4	3,120	1.60	42.250	843,648
*Samplers	4	3,120	1.60	42.250	843,648
Subtotal					7,888,109
Mobile laboratory personnel					
*Chemists	4	3,120	1.00	59.150	738,192
*Support staff	2	3,120	1.00	42.250	263,640
Subtotal					1,001,832
TOTAL LABOR COSTS	63				14,373,653

100 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	2,704,633
Supplies and materials			1.0%	270,463
Utilities			15.0%	4,056,949
Maintenance			15.0%	4,056,949
Waste site disposal			10.0%	2,704,633
Decontamination and decommissioning			10.0%	2,704,633
Permitting			0.0%	0
Contingency			25.0%	6,761,582
TOTAL ALLOWANCE COSTS				23,259,843

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				1,987,000

TOTAL REMEDIATION COST 100 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				52,293,173

100 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Pre-excavation equipment							
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	11.75	3,120	36,660	0	1	73,320
*Dump trucks, 75-85 ton	2	15.50	3,120	48,360	0	1	96,720
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
Subtotal							213,720
Excavation equipment							
*Containment structures: 1000x400	0	5.00	0	0	0	1	0
*Containment structures: 600x400	0	5.00	0	0	0	1	0
*Containment structures: 400x400	1	5.00	3,120	15,600	0	1	15,600
*Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	1	15.00	3,120	46,800	0	1	46,800
Subtotal							62,400
Containment structure fire suppression							
*Water tank	1	0.00	3,120	0	0	1	0
*Containment structure	1	0.00	3,120	0	0	1	0
Subtotal							0
Conveyor systems							
* 36" belt, 800' long	1	0.00	3,120	0	0	1	0
* 54" apron feeder	1	0.00	3,120	0	0	1	0
*Feed hopper/w 12" grizzly	1	0.00	3,120	0	0	1	0
*Skid 800' long w/ winch	1	6.70	3,120	20,904	0	1	20,904
*Feed bins, 2 compartments	1	0.00	3,120	0	0	1	0
* 36" belt, 400' long	0	0.00	0	0	0	1	0
* 36" belt, 200' long	0	0.00	0	0	0	1	0
*Conveyor dust control; vacuum hood w/ exhauster, pre-filters,HEPA filters	1	3.00	3,120	9,360	0	1	9,360
*CH detector instrument package	1	0.00	3,120	0	0	1	0
*Automatic sampler	1	0.00	3,120	0	0	1	0
Subtotal							30,264
Front-end loaders							
*Caterpillar 992 (w/ 13 yd bucket)	1	11.75	3,120	36,660	0	1	36,660
*Caterpillar 992 (w/ 10 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 7 yd bucket)	1	11.75	3,120	36,660	0	1	36,660
*Bulldozers: Caterpillar D-9	1	10.80	3,120	33,696	0	1	33,696
*Bulldozers: Caterpillar D-8	0	10.80	0	0	0	1	0
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	0	1	49,920

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Subtotal							200,616
Demolition tools, concrete & metal tanks							
*Excavator Caterpillar 235 C (90k lb base)	1	25.90	3,120	80,808	0	1	80,808
*Universal Processor U90 (LaBounty)							
* -Concrete cracking jaws	1	9.00	3,120	28,080	0	1	28,080
* -Shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Grapple jaws	1	9.00	3,120	28,080	0	1	28,080
* -Wood shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Plate shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Hydraulic hammer	1	9.00	3,120	28,080	0	1	28,080
Subtotal							221,208
Pipeline removal							
*Expose pipe; backhoe (3 cy. bucket)	1	14.00	3,120	43,680	0	1	43,680
*Grout pump truck	1	12.00	3,120	37,440	0	1	37,440
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
Subtotal							124,800
Pipeline removal, land							
*Excavator; Caterpillar 235C (90k lb base)	1	25.90	3,120	80,808	0	1	80,808
*Universal Processor U90 attachments	1	15.00	3,120	46,800	0	1	46,800
* -Concrete cracking jaws	1	9.00	3,120	28,080	0	1	28,080
-Hydraulic hammer	1	9.00	3,120	28,080	0	1	28,080
* -Shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Grapple jaws	1	9.00	3,120	28,080	0	1	28,080
* -Wood shear jaws	1	9.00	3,120	28,080	0	1	28,080
*Material densifier;MD50 (LaBounty)	1	9.00	3,120	28,080	0	1	28,080
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
*Group pump truck	1	14.00	3,120	43,680	0	1	43,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	0	1	49,920
*Truck, flatbed	1	14.00	3,120	43,680	0	1	43,680
*Pipe racks	1	4.00	3,120	12,480	0	1	12,480
Subtotal							489,528
Intact drum removal							
*Drum handling attachment for UP90 backhoe (3 yard bucket)	1	9.00	3,120	28,080	0	1	28,080
Subtotal							28,080
Pipeline removal, river							
*Clamshell dredge	0	9.00	0	0	0	1	0
*Gamma scan mole	0	1.00	0	0	0	1	0
*Container barge & tug	0	11.50	0	0	0	1	0

100 AREA General

Subtotal							0
VOC venting equipment							
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	17.00	0	0	0	1	0
*Low temperature thermal desorber	0	1.00	0	0	0	1	0
Subtotal							0
Rail transport							
*Diesel electric locomotive 30,400 lb draw bar pull	1	20.00	3,120	62,400	0	1	62,400
*Flat bed cars w/ bulkheads	16	3.00	3,120	9,360	0	1	149,760
Subtotal							212,160
Containers - reusable 50 yd3							
*Type 1: loading door	50	0.00	3,120	0	0	1	0
*Type 2: loading ports	0	0.00	0	0	0	1	0
Subtotal							0
Containers - single use 50 yd3							
*Type 3: loading door	233	0.00	3,120	0	5,000	1	1,165,000
*Type 4: loading ports	0	0.00	0	0	0	1	0
Subtotal							1,165,000
Mobile Laboratories							
*Mobile laboratories (chem and rad)	2	18.50	3,120	57,720	0	1	115,440
Subtotal							115,440
Miscellaneous							
*Overpacks unsheilded for type 1 box	0	0.00	3,120	0	0	1	0
*Overpacks sheilded for type 3/4 box	0	0.00	0	0	0	1	0
*Walking gantry crane (100 tons)	1	19.50	3,120	60,840	0	1	60,840
*Bridge crane 100 tons (box loading)	1	21.00	3,120	65,520	0	1	65,520
*Bridge crane100tons(container load)	1	21.00	3,120	65,520	0	1	65,520
*Truck mounted articulating crane	1	19.00	3,120	59,280	0	1	59,280
Subtotal							251,160
SUBTOTAL CAPITAL COSTS							3,114,376
Installation Costs	5.00%						155,719
Mobilization Costs	5.00%						155,719

100 AREA General

Pilot Test Costs	0.00%	0
Technology and Eng. Dev. Costs	0.00%	0
TOTAL CAPITAL COSTS		3,425,814

100 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	3,120	1.60	42.250	421,824
*Dump truck, 75-85 ton	2	3,120	1.60	42.250	421,824
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					1,054,560
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	1	3,120	1.60	42.250	210,912
*Caterpillar 992 (w/ 10 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 7 yd bucket)	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-9	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-8	0	0	1.60	42.250	0
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
Subtotal					843,648
Pipeline removal					
*Expose pipe; 2 ops in parallel * backhoe (3 yard bucket)	1	3,120	1.60	42.250	210,912
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					632,736
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	1	3,120	1.60	42.250	210,912
*Universal Processor U90 attachments	0	0	1.60	42.250	0
* -Concrete cracking jaws	0	0	1.60	42.250	0
* -Shear jaws	0	0	1.60	42.250	0
* -Grapple jaws	0	0	1.60	42.250	0
* -Wood shear jaws	0	0	1.60	42.250	0
*Material densifier;MD50 (LaBounty)	0	0	1.60	42.250	0
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	1	3,120	1.60	42.250	210,912
*Truck, flatbed	1	3,120	1.60	42.250	210,912
Subtotal					1,054,560
Pipeline removal, river					
*Clamshell dredge	0	0	1.60	42.250	0
*Container barge & tug	0	0	1.60	42.250	0
Subtotal					0

100 AREA General

VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	0	1.60	42.250	0
Subtotal					0
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	3	3,120	1.60	42.250	632,736
*Flat bed cars w/ bulkheads	0	0	1.60	42.250	0
Subtotal					632,736
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	0	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	0	1.60	42.250	0
*Walking gantry crane (100 tons)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (box loading)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (cont. load)	1	3,120	1.60	42.250	210,912
*Truck mounted articulating crane	1	3,120	1.60	42.250	210,912
Subtotal					1,265,472
Operations support manpower					
*Heavy equipment maintenance	3	3,120	1.60	42.250	632,736
*General maintenance	2	3,120	1.60	42.250	421,824
*Quality Assurance	2	3,120	1.60	42.250	421,824
*Management/administration	3	3,120	1.60	59.150	885,830
*Decontamination	3	3,120	1.60	59.150	885,830
*Health physics	4	3,120	1.60	59.150	1,181,107
*Field engineers/scientists	4	3,120	1.60	59.150	1,181,107
*Health and safety	2	3,120	1.60	59.150	590,554
*General laborers	4	3,120	1.60	42.250	843,648
*Samplers	4	3,120	1.60	42.250	843,648
Subtotal					7,888,109
Mobile laboratory personnel					
*Chemists	4	3,120	1.00	59.150	738,192
*Support staff	2	3,120	1.00	42.250	263,640
Subtotal					1,001,832
TOTAL LABOR COSTS	63				14,373,653

100 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	1,779,947
Supplies and materials			1.0%	177,995
Utilities			15.0%	2,669,920
Maintenance			15.0%	2,669,920
Waste site disposal			10.0%	1,779,947
Decontamination and decommissioning			10.0%	1,779,947
Permitting			0.0%	0
Contingency			25.0%	4,449,867
TOTAL ALLOWANCE COSTS				15,307,541

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				1,987,000

TOTAL REMEDIATION COST 100 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				35,094,008

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200 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Low Activity Surface Soil Excavation System							
*Soil Profiler	0	16.00	0	0	0	1	0
*Water Tanker/ Spray Truck	0	16.00	0	0	0	1	0
*Plant Plucker/Baler	0	16.00	0	0	0	1	0
*Fork Lifts	0	11.25	0	0	0	1	0
*Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
Volume Reduction System (VRS)							
*Soil Washing System	0	16.00	0	0	0	1	0
*Contaminated Soil Loading Stations	0	16.00	0	0	0	1	0
Subtotal							0
Low-Activity Special Case Excavation System							
Front End Loader	0	16.00	0	0	0	1	0
Shovel Excavators	0	18.00	0	0	0	1	0
Boom-Mounted Pipe Shear	0	12.00	0	0	0	1	0
Boom-Mounted Pipe Grappler	0	12.00	0	0	0	1	0
Boom-Mounted Impact Hammer	0	12.00	0	0	0	1	0
Boom-Mounted Torch	0	12.00	0	0	0	1	0
Water Tanker/Spray Truck	0	14.00	0	0	0	1	0
Dust Control System	0	4.00	0	0	0	1	0
Diesel Generator	0	8.00	0	0	0	1	0
Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)							
Bulk Waste Disposal Facility							
Truck Unload & Decon. Station	1	60.00	520	31,200	2,000,000	1	2,031,200
Rail Unload & Decon. Station	1	40.00	520	20,800	2,000,000	1	2,020,800
Container Unload & Decon. Station	1	30.00	520	15,600	2,000,000	1	2,015,600
Pipe Rack Unload & Decon. Station	1	10.00	520	5,200	2,000,000	1	2,005,200
Covered Tunnel System	1	8.00	520	4,160	2,000,000	1	2,004,160
Disposal Trenches (8,448 X 300ft.)	1	2.00	520	1,040	23,000,000	1	23,001,040
Trench Containment Structures	1	5.00	520	2,600	20,000,000	1	20,002,600
Ventilation System	1	9.00	520	4,680	6,000,000	1	6,004,680
Extended-Arm Excavators	1	12.00	520	6,240	240,000	1	246,240
Bucket Wheel Excavator	1	19.00	520	9,880	1,200,000	1	1,209,880
Bulldozers	2	16.00	520	8,320	150,000	1	316,640
Fan Banks	3	4.00	520	2,080	180,000	1	546,240
Fuel Truck	1	12.00	520	6,240	110,000	1	116,240
Fire Truck	1	12.00	520	6,240	140,000	1	146,240
Subtotal							61,666,760
Low Activity Packaged Waste Disposal System							

*Disposal Trenches (8,448 X 300 ft.)	0	2.00	0	0	0	1	0
*Fork Lift	0	11.25	0	0	0	1	0
*Boom Crane	0	15.00	0	0	0	1	0
Subtotal							0
High-Activity Packaged Waste Disposal System							
*Unloading/Decontamination Station	1	60.00	520	31,200	4,000,000	1	4,031,200
*Vaults; (4900 X 150 ft.)	1	3.00	520	1,560	16,000,000	1	16,001,560
*Rail Cranes	1	13.00	520	6,760	400,000	1	406,760
*Bridge Cranes	1	13.00	520	6,760	160,000	1	166,760
Subtotal							20,606,280
Slurry Dewatering Basins							
*Dewatering Basins (600 X 300 ft.)	0	3.00	0	0	0	1	0
*Transfer Piping	0	1.00	0	0	0	1	0
Subtotal							0
Water Treatment Plant							
*Chemical Precipitation System	0	20.00	0	0	0	1	0
*Filtration System	0	17.00	0	0	0	1	0
*Ion Exchange System	0	15.00	0	0	0	1	0
Subtotal							0
Grout Plants							
*Fixed Grout Plant	0	73.00	0	0	5,000,000	1	0
*Mobile Grout Plant	1	14.00	520	7,280	1,700,000	1	1,707,280
Subtotal							1,707,280
Vibration-Aided Grout Injection System							
*Complete System	0	15.50	0	0	0	1	0
Subtotal							0
In Situ Vitrification Stabilization System							
*Electrode Assembly	0	2.00	0	0	0	1	0
*Power Supply	0	8.00	0	0	0	1	0
*Off-Gas Hoods	0	2.00	0	0	0	1	0
Off-Gas Treatment System	0	4.00	0	0	0	1	0
Subtotal							0
Closure - Hanford Barrier							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0
Landplane	0	16.00	0	0	0	1	0
Leveler	0	16.00	0	0	0	1	0

Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Backfilling Operations							
Front End Loaders	1	16.00	520	8,320	100,000	1	108,320
Scraper	1	16.00	520	8,320	90,000	1	98,320
Bulldozer	1	16.00	520	8,320	150,000	1	158,320
Fuel Trucks	1	14.00	520	7,280	110,000	1	117,280
Subtotal							482,240
Transportation System							
Haul Trucks (100 cubic yard)	3	15.50	520	8,060	86,000	1	282,180
Flatbed Trucks	0	8.70	0	0	110,000	1	0
Semi Trucks	0	14.00	0	0	120,000	1	0
Trailers	0	3.00	0	0	40,000	1	0
Subtotal							282,180
Containers							
*Single use containers 50 cubic yard	0	0.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							83,037,460
Installation Costs	20.00%						16,607,492
Mobilization Costs	20.00%						16,607,492
Pilot Test Costs	5.00%						4,151,873
Technology and Eng. Dev. Costs	5.00%						4,151,873
TOTAL CAPITAL COSTS							124,556,190

200 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Low Activity Surface Soil Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Volume Reduction System (VRS)					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low-Activity Special Case Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)					
Bulk Waste Disposal Facility					
Operators	0	520	1.60	42.250	0
Engineers	4	520	1.00	59.150	123,032
RPT	5	520	1.00	59.150	153,790
Management/Admin	1	520	1.00	59.150	30,758
QA/QC	2	520	1.60	42.250	70,304
MTCE	1	520	1.00	59.150	30,758
Subtotal					408,642
Low Activity Packaged Waste Disposal System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0

200 AREA General

Subtotal					0
High-Activity Packaged Waste Disposal System					
Operators	4	520	1.60	42.250	140,608
Engineers	5	520	1.00	59.150	153,790
RPT	1	520	1.00	59.150	30,758
Management/Admin	2	520	1.00	59.150	61,516
QA/QC	1	520	1.60	42.250	35,152
MTCE	1	520	1.00	59.150	30,758
Subtotal					452,582
Slurry Dewatering Basins					
		0			
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Water Treatment Plant					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Grout Plants					
Operators	1	520	1.60	42.250	35,152
Engineers	1	520	1.00	59.150	30,758
RPT	1	520	1.00	59.150	30,758
Management/Admin	1	520	1.00	59.150	30,758
QA/QC	1	520	1.60	42.250	35,152
MTCE	0	0	1.00	59.150	0
Subtotal					162,578
Vibration-Aided Grout Injection System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
In Situ Vitrification Stabilization System					
Operators	0	0	1.60	42.250	0

200 AREA General

Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Closure - Hanford Barrier					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Backfilling Operations					
Operators	1	520	1.60	42.250	35,152
Engineers	1	520	1.00	59.150	30,758
RPT	0	520	1.00	59.150	0
Management/Admin	1	520	1.00	59.150	30,758
QA/QC	1	520	1.60	42.250	35,152
MTCE	1	520	1.00	59.150	30,758
Subtotal					162,578
Transportation System					
Operators	3	520	1.60	42.250	105,456
Engineers	1	520	1.00	59.150	30,758
RPT	0	520	1.00	59.150	0
Management/Admin	1	520	1.00	59.150	30,758
QA/QC	1	520	1.60	42.250	35,152
MTCE	0	520	1.00	59.150	0
Subtotal					202,124
Containers					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
TOTAL LABOR COSTS	43				1,388,504

200 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	12,594,469
Supplies and materials			1.0%	1,259,447
Utilities			15.0%	18,891,704
Maintenance			15.0%	18,891,704
Waste site disposal			10.0%	12,594,469
Decontamination and decommissioning			10.0%	12,594,469
Permitting			0.0%	0
Contingency			20.0%	25,188,939
TOTAL ALLOWANCE COSTS				102,015,202

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

TOTAL REMEDIATION COST 200 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				227,959,896

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200 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Low Activity Surface Soil Excavation System							
*Soil Profiler	0	16.00	0	0	0	1	0
*Water Tanker/ Spray Truck	0	16.00	0	0	0	1	0
*Plant Plucker/Baler	0	16.00	0	0	0	1	0
*Fork Lifts	0	11.25	0	0	0	1	0
*Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
Volume Reduction System (VRS)							
*Soil Washing System	0	16.00	0	0	0	1	0
*Contaminated Soil Loading Stations	0	16.00	0	0	0	1	0
Subtotal							0
Low-Activity Special Case Excavation System							
Front End Loader	0	16.00	0	0	0	1	0
Shovel Excavators	0	18.00	0	0	0	1	0
Boom-Mounted Pipe Shear	0	12.00	0	0	0	1	0
Boom-Mounted Pipe Grappler	0	12.00	0	0	0	1	0
Boom-Mounted Impact Hammer	0	12.00	0	0	0	1	0
Boom-Mounted Torch	0	12.00	0	0	0	1	0
Water Tanker/Spray Truck	0	14.00	0	0	0	1	0
Dust Control System	0	4.00	0	0	0	1	0
Diesel Generator	0	8.00	0	0	0	1	0
Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)							
Bulk Waste Disposal Facility							
Truck Unload & Decon. Station	1	60.00	3,120	187,200	0	1	187,200
Rail Unload & Decon. Station	1	40.00	3,120	124,800	0	1	124,800
Container Unload & Decon. Station	1	30.00	3,120	93,600	0	1	93,600
Pipe Rack Unload & Decon. Station	1	10.00	3,120	31,200	0	1	31,200
Covered Tunnel System	1	8.00	3,120	24,960	0	1	24,960
Disposal Trenches (8,448 X 300ft.)	2	2.00	3,120	6,240	0	1	12,480
Trench Containment Structures	2	5.00	3,120	15,600	0	1	31,200
Ventilation System	1	9.00	3,120	28,080	0	1	28,080
Extended-Arm Excavators	1	12.00	3,120	37,440	0	1	37,440
Bucket Wheel Excavator	1	19.00	0	0	0	1	0
Bulldozers	2	16.00	3,120	49,920	0	1	99,840
Fan Banks	3	4.00	3,120	12,480	0	1	37,440
Fuel Truck	1	12.00	3,120	37,440	0	1	37,440
Fire Truck	1	12.00	3,120	37,440	0	1	37,440
Subtotal							783,120
Low Activity Packaged Waste Disposal System							

*Disposal Trenches (8,448 X 300 ft.)	0	2.00	0	0	0	1	0
*Fork Lift	0	11.25	0	0	0	1	0
*Boom Crane	0	15.00	0	0	0	1	0
Subtotal							0
High-Activity Packaged Waste Disposal System							
*Unloading/Decontamination Station	1	60.00	3,120	187,200	0	1	187,200
*Vaults: (4900 X 150 ft.)	1	3.00	3,120	9,360	0	1	9,360
*Rail Cranes	1	13.00	3,120	40,560	0	1	40,560
*Bridge Cranes	1	13.00	3,120	40,560	0	1	40,560
Subtotal							277,680
Slurry Dewatering Basins							
*Dewatering Basins (600 X 300 ft.)	0	3.00	0	0	0	1	0
*Transfer Piping	0	1.00	0	0	0	1	0
Subtotal							0
Water Treatment Plant							
*Chemical Precipitation System	0	20.00	0	0	0	1	0
*Filtration System	0	17.00	0	0	0	1	0
*Ion Exchange System	0	15.00	0	0	0	1	0
Subtotal							0
Grout Plants							
*Fixed Grout Plant	1	73.00	3,120	227,760	0	1	227,760
*Mobile Grout Plant	0	14.00	0	0	0	1	0
Subtotal							227,760
Vibration-Aided Grout Injection System							
*Complete System	0	15.50	0	0	0	1	0
Subtotal							0
In Situ Vitrification Stabilization System							
*Electrode Assembly	0	2.00	0	0	0	1	0
*Power Supply	0	8.00	0	0	0	1	0
*Off-Gas Hoods	0	2.00	0	0	0	1	0
Off-Gas Treatment System	0	4.00	0	0	0	1	0
Subtotal							0
Closure - Hanford Barrier							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0
Landplane	0	16.00	0	0	0	1	0
Leveler	0	16.00	0	0	0	1	0

200 AREA General

Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Backfilling Operations							
Front End Loaders	1	16.00	3,120	49,920	0	1	49,920
Scraper	1	16.00	3,120	49,920	0	1	49,920
Bulldozer	1	16.00	3,120	49,920	0	1	49,920
Fuel Trucks	1	14.00	3,120	43,680	0	1	43,680
Subtotal							193,440
Transportation System							
Haul Trucks (100 cubic yard)	3	15.50	3,120	48,360	0	1	145,080
Flatbed Trucks	0	8.70	0	0	0	1	0
Semi Trucks	0	14.00	0	0	0	1	0
Trailers	0	3.00	0	0	0	1	0
Subtotal							145,080
Containers							
*Single use containers 50 cubic yard	0	0.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							1,399,320
Installation Costs	5.00%						69,966
Mobilization Costs	5.00%						69,966
Pilot Test Costs	5.00%						69,966
Technology and Eng. Dev. Costs	5.00%						69,966
TOTAL CAPITAL COSTS							1,679,184

200 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Low Activity Surface Soil Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MICE	0	0	1.00	59.150	0
Subtotal					0
Volume Reduction System (VRS)					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MICE	0	0	1.00	59.150	0
Subtotal					0
Low-Activity Special Case Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MICE	0	0	1.00	59.150	0
Subtotal					0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)					
Bulk Waste Disposal Facility					
Operators	0	3,120	1.60	42.250	0
Engineers	4	3,120	1.00	59.150	738,192
RPT	5	3,120	1.00	59.150	922,740
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	2	3,120	1.60	42.250	421,824
MICE	1	3,120	1.00	59.150	184,548
Subtotal					2,451,852
Low Activity Packaged Waste Disposal System		0			
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MICE	0	0	1.00	59.150	0

Subtotal					0
High-Activity Packaged Waste Disposal System					
Operators	4	3,120	1.60	42.250	843,648
Engineers	5	3,120	1.00	59.150	922,740
RPT	1	3,120	1.00	59.150	184,548
Management/Admin	2	3,120	1.00	59.150	369,096
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	1	3,120	1.00	59.150	184,548
Subtotal					2,715,492
Slurry Dewatering Basins					
		0			
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Water Treatment Plant					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Grout Plants					
Operators	1	3,120	1.60	42.250	210,912
Engineers	1	3,120	1.00	59.150	184,548
RPT	1	3,120	1.00	59.150	184,548
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	0	0	1.00	59.150	0
Subtotal					975,468
Vibration-Aided Grout Injection System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
In Situ Vitrification Stabilization System					
Operators	0	0	1.60	42.250	0

200 AREA General

Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Closure - Hanford Barrier					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Backfilling Operations					
Operators	1	3,120	1.60	42.250	210,912
Engineers	1	3,120	1.00	59.150	184,548
RPT	0	0	1.00	59.150	0
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	1	3,120	1.00	59.150	184,548
Subtotal					975,468
Transportation System					
Operators	3	3,120	1.60	42.250	632,736
Engineers	1	3,120	1.00	59.150	184,548
RPT	0	0	1.00	59.150	0
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	0	0	1.00	59.150	0
Subtotal					1,212,744
Containers					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
TOTAL LABOR COSTS	43				8,331,024

200 AREA General

ALLOWANCES

	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	1,001,021
Supplies and materials			1.0%	100,102
Utilities			15.0%	1,501,531
Maintenance			15.0%	1,501,531
Waste site disposal			10.0%	1,001,021
Decontamination and decommissioning			10.0%	1,001,021
Permitting			0.0%	0
Contingency			25.0%	2,502,552
TOTAL ALLOWANCE COSTS				8,608,779

ANALYTICAL

	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

TOTAL REMEDIATION COST 200 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				18,618,987

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200 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Low Activity Surface Soil Excavation System							
*Soil Profiler	0	16.00	0	0	0	1	0
*Water Tanker/ Spray Truck	0	16.00	0	0	0	1	0
*Plant Plucker/Baler	0	16.00	0	0	0	1	0
*Fork Lifts	0	11.25	0	0	0	1	0
*Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
Volume Reduction System (VRS)							
*Soil Washing System	0	16.00	0	0	0	1	0
*Contaminated Soil Loading Stations	0	16.00	0	0	0	1	0
Subtotal							0
Low-Activity Special Case Excavation System							
Front End Loader	0	16.00	0	0	0	1	0
Shovel Excavators	0	18.00	0	0	0	1	0
Boom-Mounted Pipe Shear	0	12.00	0	0	0	1	0
Boom-Mounted Pipe Grappler	0	12.00	0	0	0	1	0
Boom-Mounted Impact Hammer	0	12.00	0	0	0	1	0
Boom-Mounted Torch	0	12.00	0	0	0	1	0
Water Tanker/Spray Truck	0	14.00	0	0	0	1	0
Dust Control System	0	4.00	0	0	0	1	0
Diesel Generator	0	8.00	0	0	0	1	0
Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)							
Bulk Waste Disposal Facility							
Truck Unload & Decon. Station	1	60.00	3,120	187,200	0	1	187,200
Rail Unload & Decon. Station	1	40.00	3,120	124,800	0	1	124,800
Container Unload & Decon. Station	1	30.00	3,120	93,600	0	1	93,600
Pipe Rack Unload & Decon. Station	1	10.00	3,120	31,200	0	1	31,200
Covered Tunnel System	1	8.00	3,120	24,960	0	1	24,960
Disposal Trenches (8,448 X 300ft.)	2	2.00	3,120	6,240	0	1	12,480
Trench Containment Structures	2	5.00	3,120	15,600	0	1	31,200
Ventilation System	1	9.00	3,120	28,080	0	1	28,080
Extended-Arm Excavators	1	12.00	3,120	37,440	0	1	37,440
Bucket Wheel Excavator	1	19.00	0	0	0	1	0
Bulldozers	2	16.00	3,120	49,920	0	1	99,840
Fan Banks	3	4.00	3,120	12,480	0	1	37,440
Fuel Truck	1	12.00	3,120	37,440	0	1	37,440
Fire Truck	1	12.00	3,120	37,440	0	1	37,440
Subtotal							783,120
Low Activity Packaged Waste Disposal System							

200 AREA General

*Disposal Trenches (8,448 X 300.ft.)	0	2.00	0	0	0	1	0
*Fork Lift	0	11.25	0	0	0	1	0
*Boom Crane	0	15.00	0	0	0	1	0
Subtotal							0
High-Activity Packaged Waste Disposal System							
*Unloading/Decontamination Station	1	60.00	3,120	187,200	0	1	187,200
*Vaults: (4900 X 150 ft.)	1	3.00	3,120	9,360	0	1	9,360
*Rail Cranes	1	13.00	3,120	40,560	0	1	40,560
*Bridge Cranes	1	13.00	3,120	40,560	0	1	40,560
Subtotal							277,680
Slurry Dewatering Basins							
*Dewatering Basins (600 X 300 ft.)	0	3.00	0	0	0	1	0
*Transfer Piping	0	1.00	0	0	0	1	0
Subtotal							0
Water Treatment Plant							
*Chemical Precipitation System	0	20.00	0	0	0	1	0
*Filtration System	0	17.00	0	0	0	1	0
*Ion Exchange System	0	15.00	0	0	0	1	0
Subtotal							0
Grout Plants							
*Fixed Grout Plant	1	73.00	3,120	227,760	0	1	227,760
*Mobile Grout Plant	0	14.00	0	0	0	1	0
Subtotal							227,760
Vibration-Aided Grout Injection System							
*Complete System	0	15.50	0	0	0	1	0
Subtotal							0
In Situ Vitrification Stabilization System							
*Electrode Assembly	0	2.00	0	0	0	1	0
*Power Supply	0	8.00	0	0	0	1	0
*Off-Gas Hoods	0	2.00	0	0	0	1	0
Off-Gas Treatment System	0	4.00	0	0	0	1	0
Subtotal							0
Closure - Hanford Barrier							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0
Landplane	0	16.00	0	0	0	1	0
Leveler	0	16.00	0	0	0	1	0

Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Backfilling Operations							
Front End Loaders	1	16.00	3,120	49,920	0	1	49,920
Scraper	1	16.00	3,120	49,920	0	1	49,920
Bulldozer	1	16.00	3,120	49,920	0	1	49,920
Fuel Trucks	1	14.00	3,120	43,680	0	1	43,680
Subtotal							193,440
Transportation System							
Haul Trucks (100 cubic yard)	3	15.50	3,120	48,360	0	1	145,080
Flatbed Trucks	0	8.70	0	0	0	1	0
Semi Trucks	0	14.00	0	0	0	1	0
Trailers	0	3.00	0	0	0	1	0
Subtotal							145,080
Containers							
*Single use containers 50 cubic yard	0	0.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							1,399,320
Installation Costs	5.00%						69,966
Mobilization Costs	5.00%						69,966
Pilot Test Costs	0.00%						0
Technology and Eng. Dev. Costs	0.00%						0
TOTAL CAPITAL COSTS							1,539,252

200 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Low Activity Surface Soil Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Volume Reduction System (VRS)					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low-Activity Special Case Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)					
Bulk Waste Disposal Facility					
Operators	0	3,120	1.60	42.250	0
Engineers	4	3,120	1.00	59.150	738,192
RPT	5	3,120	1.00	59.150	922,740
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	2	3,120	1.60	42.250	421,824
MTCE	1	3,120	1.00	59.150	184,548
Subtotal					2,451,852
Low Activity Packaged Waste Disposal System					
		0			
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0

Subtotal					0
High-Activity Packaged Waste Disposal System					
Operators	4	3,120	1.60	42.250	843,648
Engineers	5	3,120	1.00	59.150	922,740
RPT	1	3,120	1.00	59.150	184,548
Management/Admin	2	3,120	1.00	59.150	369,096
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	1	3,120	1.00	59.150	184,548
Subtotal					2,715,492
Slurry Dewatering Basins					
		0			
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Water Treatment Plant					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Grout Plants					
Operators	1	3,120	1.60	42.250	210,912
Engineers	1	3,120	1.00	59.150	184,548
RPT	1	3,120	1.00	59.150	184,548
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	0	0	1.00	59.150	0
Subtotal					975,468
Vibration-Aided Grout Injection System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
In Situ Vitrification Stabilization System					
Operators	0	0	1.60	42.250	0

200 AREA General

Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Closure - Hanford Barrier					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Backfilling Operations					
Operators	1	3,120	1.60	42.250	210,912
Engineers	1	3,120	1.00	59.150	184,548
RPT	0	0	1.00	59.150	0
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	1	3,120	1.00	59.150	184,548
Subtotal					975,468
Transportation System					
Operators	3	3,120	1.60	42.250	632,736
Engineers	1	3,120	1.00	59.150	184,548
RPT	0	0	1.00	59.150	0
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	0	0	1.00	59.150	0
Subtotal					1,212,744
Containers					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
TOTAL LABOR COSTS	43				8,331,024

200 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	987,028
Supplies and materials			1.0%	98,703
Utilities			15.0%	1,480,541
Maintenance			15.0%	1,480,541
Waste site disposal			10.0%	987,028
Decontamination and decommissioning			10.0%	987,028
Permitting			0.0%	0
Contingency			25.0%	2,467,569
TOTAL ALLOWANCE COSTS				8,488,437

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

TOTAL REMEDIATION COST 200 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				18,358,713

100 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Pre-excavation equipment							
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	0	11.75	0	0	0	1	0
*Dump truck, 75-85 ton (1st unit)	0	15.50	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
Subtotal							0
Excavation equipment							
*Containment structures: 1000x400	0	5.00	0	0	0	1	0
*Containment structures: 600x400	0	5.00	0	0	0	1	0
*Containment structures: 400x400	1	5.00	520	2,600	7,200,000	1	7,202,600
*Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	1	15.00	520	7,800	400,000	1	407,800
Subtotal							7,610,400
Containment structure fire suppression							
*Water tank	1	0.00	520	0	13,000	1	13,000
*Containment structure	1	0.00	520	0	60,000	1	60,000
Subtotal							73,000
Conveyor systems							
* 36" belt, 800' long	0	0.00	0	0	0	1	0
* 54" apron feeder	0	0.00	0	0	0	1	0
*Feed hopper/w 12" grizzly	0	0.00	0	0	0	1	0
*Skid 800' long w/ winch	0	6.70	0	0	0	1	0
*Feed bins, 2 compartments	0	0.00	0	0	0	1	0
* 36" belt, 400' long	0	0.00	0	0	0	1	0
* 36" belt, 200' long	0	0.00	0	0	0	1	0
*Conveyor dust control; vacuum hood w/ exhauster, pre-filters,HEPA filters	0	3.00	0	0	0	1	0
*CM detector instrument package	0	0.00	0	0	0	1	0
*Automatic sampler	0	0.00	0	0	0	1	0
Subtotal							0
Front-end loaders							
*Caterpillar 992 (w/ 13 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 10 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 7 yd bucket)	0	11.75	0	0	0	1	0
*Bulldozers: Caterpillar D-9	0	10.80	0	0	0	1	0
*Bulldozers: Caterpillar D-8	0	10.80	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
*Water truck 8000 gallon tank	0	16.00	0	0	0	1	0

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Containment Structure

Subtotal							0
Demolition tools, concrete & metal tanks							
*Excavator Caterpillar 235 C (90k lb base)	0	25.90	0	0	0	1	0
*Universal Processor U90 (LaBounty)							
* -Concrete cracking jaws	0	9.00	0	0	0	1	0
* -Shear jaws	0	9.00	0	0	0	1	0
* -Grapple jaws	0	9.00	0	0	0	1	0
* -Wood shear jaws	0	9.00	0	0	0	1	0
* -Plate shear jaws	0	9.00	0	0	0	1	0
* -Hydraulic hammer	0	9.00	0	0	0	1	0
Subtotal							0
Pipeline removal							
*Expose pipe; backhoe (3 cy. bucket)	0	14.00	0	0	0	1	0
*Grout pump truck	0	12.00	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
Subtotal							0
Pipeline removal, land							
*Excavator; Caterpillar 235C (90k lb base)	0	25.90	0	0	0	1	0
*Universal Processor U90 attachments	0	15.00	0	0	0	1	0
* -Concrete cracking jaws	0	9.00	0	0	0	1	0
-Hydraulic hammer	0	9.00	0	0	0	1	0
* -Shear jaws	0	9.00	0	0	0	1	0
* -Grapple jaws	0	9.00	0	0	0	1	0
* -Wood shear jaws	0	9.00	0	0	0	1	0
*Material densifier;WD50 (LaBounty)	0	9.00	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
*Grout pump truck	0	14.00	0	0	0	1	0
*Water truck 8000 gallon tank	0	16.00	0	0	0	1	0
*Truck, flatbed	0	14.00	0	0	0	1	0
*Pipe racks	0	4.00	0	0	0	1	0
Subtotal							0
Intact drum removal							
*Drum handling attachment for UP90 backhoe (3 yard bucket)	0	9.00	0	0	0	1	0
Subtotal							0
Pipeline removal, river							
*Clamshell dredge	0	9.00	0	0	0	1	0
*Gamma scan mole	0	1.00	0	0	0	1	0
*Container barge & tug	0	11.50	0	0	0	1	0

100 AREA General

Subtotal							0
VOC venting equipment							
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	17.00	0	0	0	1	0
*Low temperature thermal desorber	0	1.00	0	0	0	1	0
Subtotal							0
Rail transport							
*Diesel electric locomotive 30,400 lb draw bar pull	0	20.00	0	0	0	1	0
*Flat bed cars w/ bulkheads	0	3.00	0	0	0	1	0
Subtotal							0
Containers - reusable 50 yd3							
*Type 1: loading door	0	0.00	0	0	0	1	0
*Type 2: loading ports	0	0.00	0	0	0	1	0
Subtotal							0
Containers - single use 50 yd3							
*Type 3: loading door	0	0.00	0	0	0	1	0
*Type 4: loading ports	0	0.00	0	0	0	1	0
Subtotal							0
Mobile Laboratories							
*Mobile laboratories (chem and rad)	0	18.50	0	0	0	1	0
Subtotal							0
Miscellaneous							
*Overpacks unsheilded for type 1 box	0	0.00	0	0	0	1	0
*Overpacks sheilded for type 3/4 box	0	0.00	0	0	0	1	0
*Walking gantry crane (100 tons)	0	19.50	0	0	0	1	0
*Bridge crane 100 tons (box loading)	0	21.00	0	0	0	1	0
*Bridge crane100tons(container load)	0	21.00	0	0	0	1	0
*Truck mounted articulating crane	0	19.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							7,683,400
Installation Costs	60.00%						4,610,040
Mobilization Costs	60.00%						4,610,040

100 AREA General

Pilot Test Costs	60.00%	4,610,040
Technology and Eng. Dev. Costs	5.00%	384,170
TOTAL CAPITAL COSTS		21,897,690

100 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	0	0	1.60	42.250	0
*Dump truck, 75-85 ton	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
Subtotal					0
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 10 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 7 yd bucket)	0	0	1.60	42.250	0
*Bulldozers: Caterpillar D-9	0	0	1.60	42.250	0
*Bulldozers: Caterpillar D-8	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
Subtotal					0
Pipeline removal					
*Expose pipe; 2 ops in parallel	0	0	1.60	42.250	0
* backhoe (3 yard bucket)			1.60		
*Grout pump truck	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
Subtotal					0
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	0	0	1.60	42.250	0
*Universal Processor U90 attachments	0	0	1.60	42.250	0
* -Concrete cracking jaws	0	0	1.60	42.250	0
* -Shear jaws	0	0	1.60	42.250	0
* -Grapple jaws	0	0	1.60	42.250	0
* -Wood shear jaws	0	0	1.60	42.250	0
*Material densifier;WD50 (LaBounty)	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
*Grout pump truck	0	0	1.60	42.250	0
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
*Truck, flatbed	0	0	1.60	42.250	0
Subtotal					0
Pipeline removal, river					
*Clamshell dredge	0	0	1.60	42.250	0
*Container barge & tug	0	0	1.60	42.250	0
Subtotal					0

100 AREA General

VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	0	1.60	42.250	0
Subtotal					0
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	0	0	1.60	42.250	0
*Flat bed cars w/ bulkheads	0	0	1.60	42.250	0
Subtotal					0
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	0	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	0	1.60	42.250	0
*Walking gantry crane (100 tons)	0	0	1.60	42.250	0
*Bridge crane 100 tons (box loading)	0	0	1.60	42.250	0
*Bridge crane 100 tons (cont. load)	0	0	1.60	42.250	0
*Truck mounted articulating crane	0	0	1.60	42.250	0
Subtotal					0
Operations support manpower					
*Heavy equipment maintenance	0	0	1.60	42.250	0
*General maintenance	0	0	1.60	42.250	0
*Quality Assurance	0	0	1.60	42.250	0
*Management/administration	0	0	1.60	59.150	0
*Decontaimination	0	0	1.60	59.150	0
*Health physics	0	0	1.60	59.150	0
*Field engineers/scientists	0	0	1.60	59.150	0
*Health and safety	0	0	1.60	59.150	0
*General laborers	0	0	1.60	42.250	0
*Samplers	0	0	1.60	42.250	0
Subtotal					0
Mobile laboratory personnel					
*Chemists	0	0	1.00	59.150	0
*Support staff	0	0	1.00	42.250	0
Subtotal					0
TOTAL LABOR COSTS	0				0

100 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	2,189,769
Supplies and materials			1.0%	218,977
Utilities			15.0%	3,284,654
Maintenance			15.0%	3,284,654
Waste site disposal			10.0%	2,189,769
Decontamination and decommissioning			10.0%	2,189,769
Permitting			0.0%	0
Contingency			25.0%	5,474,423
TOTAL ALLOWANCE COSTS				18,832,013

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

TOTAL REMEDIATION COST 100 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				40,729,703

100 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Pre-excavation equipment							
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	0	11.75	0	0	0	1	0
*Front-end loader; Cat 992 (for refill operations)	0	11.75	0	0	~~1,200,000~~	1	0
*Dump truck, 75-85 ton (2nd unit)	0	15.50	0	0	~~86,000~~	1	0
*Dump truck, 75-85 ton (1st unit)	0	15.50	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
Subtotal							0
Excavation equipment							
*Containment structures: 1000x400	0	5.00	0	0	0	1	0
*Containment structures: 600x400	0	5.00	0	0	0	1	0
*Containment structures: 400x400	1	5.00	3,120	15,600	0	1	15,600
*Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	1	15.00	3,120	46,800	0	1	46,800
Subtotal							62,400
Containment structure fire suppression							
*Water tank	1	0.00	3,120	0	0	1	0
*Containment structure	1	0.00	3,120	0	0	1	0
Subtotal							0
Conveyor systems							
* 36" belt, 800' long	0	0.00	0	0	0	1	0
* 54" apron feeder	0	0.00	0	0	0	1	0
*Feed hopper/w 12" grizzly	0	0.00	0	0	0	1	0
*Skid 800' long w/ winch	0	6.70	0	0	0	1	0
*Feed bins, 2 compartments	0	0.00	0	0	0	1	0
* 36" belt, 400' long	0	0.00	0	0	0	1	0
* 36" belt, 200' long	0	0.00	0	0	0	1	0
*Conveyor dust control; vacuum hood w/ exhauster, pre-filters,HEPA filters	0	3.00	0	0	0	1	0
*GM detector instrument package	0	0.00	0	0	0	1	0
*Automatic sampler	0	0.00	0	0	0	1	0
Subtotal							0
Front-end loaders							
*Caterpillar 992 (w/ 13 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 10 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 7 yd bucket)	0	11.75	0	0	0	1	0
*Bulldozers: Caterpillar D-9	0	10.80	0	0	0	1	0

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Cont. Structure

100 AREA General

*Bulldozers: Caterpillar D-8	0	10.80	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
*Water truck 8000 gallon tank	0	16.00	0	0	0	1	0
Subtotal							0
Demolition tools, concrete & metal tanks							
*Excavator Caterpillar 235 C (90k lb base)	0	25.90	0	0	0	1	0
*Universal Processor U90 (LaBounty)							
* -Concrete cracking jaws	0	9.00	0	0	0	1	0
* -Shear jaws	0	9.00	0	0	0	1	0
* -Grapple jaws	0	9.00	0	0	0	1	0
* -Wood shear jaws	0	9.00	0	0	0	1	0
* -Plate shear jaws	0	9.00	0	0	0	1	0
* -Hydraulic hammer	0	9.00	0	0	0	1	0
Subtotal							0
Pipeline removal							
*Expose pipe; backhoe (3 cy. bucket)	0	14.00	0	0	150,000	1	0
*Grout pump truck	0	12.00	0	0	90,000	1	0
*Instrumentation vehicle	0	14.00	0	0	170,000	1	0
Subtotal							0
Pipeline removal, land							
*Excavator; Caterpillar 235C (90k lb base)	0	25.90	0	0	325,000	1	0
*Universal Processor U90 attachments	0	15.00	0	0	67,000	1	0
* -Concrete cracking jaws	0	9.00	0	0	30,000	1	0
-Hydraulic hammer	0	9.00	0	0	42,000	1	0
* -Shear jaws	0	9.00	0	0	47,000	1	0
* -Grapple jaws	0	9.00	0	0	40,000	1	0
* -Wood shear jaws	0	9.00	0	0	44,000	1	0
*Material densifier;HD50 (LaBounty)	0	9.00	0	0	65,000	1	0
*Instrumentation vehicle	0	14.00	0	0	170,000	1	0
*Group pump truck	0	14.00	0	0	150,000	1	0
*Water truck 8000 gallon tank	0	16.00	0	0	110,000	1	0
*Truck, flatbed	0	14.00	0	0	110,000	1	0
*Pipe racks	0	4.00	0	0	30,000	1	0
Subtotal							0
Intact drum removal							
*Drum handling attachment for UP90 backhoe (3 yard bucket)	0	9.00	0	0	0	1	0
Subtotal							0
Pipeline removal, river							

100 AREA General

*Clamshell dredge	0	9.00	0	0	0	1	0
*Gamma scan mole	0	1.00	0	0	0	1	0
*Container barge & tug	0	11.50	0	0	0	1	0
Subtotal							0
VOC venting equipment							
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	17.00	0	0	0	1	0
*Low temperature thermal desorber	0	1.00	0	0	0	1	0
Subtotal							0
Rail transport							
*Diesel electric locomotive 30,400 lb draw bar pull	0	20.00	0	0	0	1	0
*Flat bed cars w/ bulkheads	0	3.00	0	0	0	1	0
Subtotal							0
Containers - reusable 50 yd3							
*Type 1: loading door	0	0.00	0	0	5,000	1	0
*Type 2: loading ports	0	0.00	0	0	0	1	0
Subtotal							0
Containers - single use 50 yd3							
*Type 3: loading door	0	0.00	0	0	5,000	1	0
*Type 4: loading ports	0	0.00	0	0	0	1	0
Subtotal							0
Mobile Laboratories							
*Mobile laboratories (chem and rad)	0	18.50	0	0	0	1	0
Subtotal							0
Miscellaneous							
*Overpacks unsheilded for type 1 box	0	0.00	0	0	15,000	1	0
*Overpacks sheilded for type 3/4 box	0	0.00	0	0	0	1	0
*Walking gantry crane (100 tons)	0	19.50	0	0	0	1	0
*Bridge crane 100 tons (box loading)	0	21.00	0	0	0	1	0
*Bridge crane100tons(container load)	0	21.00	0	0	0	1	0
*Truck mounted articulating crane	0	19.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							62,400

100 AREA General

Installation Costs	5.00%	3,120
Mobilization Costs	5.00%	3,120
Pilot Test Costs	0.00%	0
Technology and Eng. Dev. Costs	0.00%	0
TOTAL CAPITAL COSTS		68,640

100 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	0	0	1.60	42.250	0
*Dump truck, 75-85 ton	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
Subtotal					0
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 10 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 7 yd bucket)	0	0	1.60	42.250	0
*Bulldozers: Caterpillar D-9	0	0	1.60	42.250	0
*Bulldozers: Caterpillar D-8	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
Subtotal					0
Pipeline removal					
*Expose pipe; 2 ops in parallel * backhoe (3 yard bucket)	0	0	1.60	42.250	0
*Grout pump truck	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
Subtotal					0
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	0	0	1.60	42.250	0
*Universal Processor U90 attachments	0	0	1.60	42.250	0
* -Concrete cracking jaws	0	0	1.60	42.250	0
* -Shear jaws	0	0	1.60	42.250	0
* -Grapple jaws	0	0	1.60	42.250	0
* -Wood shear jaws	0	0	1.60	42.250	0
*Material densifier;MD50 (LaBounty)	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
*Grout pump truck	0	0	1.60	42.250	0
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
*Truck, flatbed	0	0	1.60	42.250	0
Subtotal					0
Pipeline removal, river					
*Clamshell dredge	0	0	1.60	42.250	0
*Container barge & tug	0	0	1.60	42.250	0
Subtotal					0

100 AREA General

VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	0	1.60	42.250	0
Subtotal					0
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	0	0	1.60	42.250	0
*Flat bed cars w/ bulkheads	0	0	1.60	42.250	0
Subtotal					0
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	0	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	0	1.60	42.250	0
*Walking gantry crane (100 tons)	0	0	1.60	42.250	0
*Bridge crane 100 tons (box loading)	0	0	1.60	42.250	0
*Bridge crane 100 tons (cont. load)	0	0	1.60	42.250	0
*Truck mounted articulating crane	0	0	1.60	42.250	0
Subtotal					0
Operations support manpower					
*Heavy equipment maintenance	0	0	1.60	42.250	0
*General maintenance	0	0	1.60	42.250	0
*Quality Assurance	0	0	1.60	42.250	0
*Management/administration	0	0	1.60	59.150	0
*Decontaimination	0	0	1.60	59.150	0
*Health physics	0	0	1.60	59.150	0
*Field engineers/scientists	0	0	1.60	59.150	0
*Health and safety	0	0	1.60	59.150	0
*General laborers	0	0	1.60	42.250	0
*Samplers	0	0	1.60	42.250	0
Subtotal					0
Mobile laboratory personnel					
*Chemists	0	0	1.00	59.150	0
*Support staff	0	0	1.00	42.250	0
Subtotal					0
TOTAL LABOR COSTS	0				0

100 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	6,864
Supplies and materials			1.0%	686
Utilities			15.0%	10,296
Maintenance			15.0%	10,296
Waste site disposal			10.0%	6,864
Decontamination and decommissioning			10.0%	6,864
Permitting			0.0%	0
Contingency			25.0%	17,160
TOTAL ALLOWANCE COSTS				59,030

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

TOTAL REMEDIATION COST 100 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				127,670

100 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Pre-excavation equipment							
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	0	11.75	0	0	0	1	0
*Dump trucks, 75-85 ton	0	15.50	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
Subtotal							0
Excavation equipment							
*Containment structures: 1000x400	0	5.00	0	0	0	1	0
*Containment structures: 600x400	0	5.00	0	0	0	1	0
*Containment structures: 400x400	1	5.00	3,120	15,600	0	1	15,600
*Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	1	15.00	3,120	46,800	0	1	46,800
Subtotal							62,400
Containment structure fire suppression							
*Water tank	1	0.00	3,120	0	0	1	0
*Containment structure	1	0.00	3,120	0	0	1	0
Subtotal							0
Conveyor systems							
* 36" belt, 800' long	0	0.00	0	0	0	1	0
* 54" apron feeder	0	0.00	0	0	0	1	0
*Feed hopper/w 12" grizzly	0	0.00	0	0	0	1	0
*Skid 800' long w/ winch	0	6.70	0	0	0	1	0
*Feed bins, 2 compartments	0	0.00	0	0	0	1	0
* 36" belt, 400' long	0	0.00	0	0	0	1	0
* 36" belt, 200' long	0	0.00	0	0	0	1	0
*Conveyor dust control: vacuum hood w/ exhauster, pre-filters,HEPA filters	0	3.00	0	0	0	1	0
*GM detector instrument package	0	0.00	0	0	0	1	0
*Automatic sampler	0	0.00	0	0	0	1	0
Subtotal							0
Front-end loaders							
*Caterpillar 992 (w/ 13 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 10 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 7 yd bucket)	0	11.75	0	0	0	1	0
*Bulldozers: Caterpillar D-9	0	10.80	0	0	0	1	0
*Bulldozers: Caterpillar D-8	0	10.80	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
*Water truck 8000 gallon tank	0	16.00	0	0	0	1	0

FY97 — Containment Structure

Subtotal							0
Demolition tools, concrete & metal tanks							
*Excavator Caterpillar 235 C (90k lb base)	0	25.90	0	0	0	1	0
*Universal Processor U90 (LaBounty)							
* -Concrete cracking jaws	0	9.00	0	0	0	1	0
* -Shear jaws	0	9.00	0	0	0	1	0
* -Grapple jaws	0	9.00	0	0	0	1	0
* -Wood shear jaws	0	9.00	0	0	0	1	0
* -Plate shear jaws	0	9.00	0	0	0	1	0
* -Hydraulic hammer	0	9.00	0	0	0	1	0
Subtotal							0
Pipeline removal							
*Expose pipe; backhoe (3 cy. bucket)	0	14.00	0	0	0	1	0
*Grout pump truck	0	12.00	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
Subtotal							0
Pipeline removal, land							
*Excavator; Caterpillar 235C (90k lb base)	0	25.90	0	0	0	1	0
*Universal Processor U90 attachments	0	15.00	0	0	0	1	0
* -Concrete cracking jaws	0	9.00	0	0	0	1	0
-Hydraulic hammer	0	9.00	0	0	0	1	0
* -Shear jaws	0	9.00	0	0	0	1	0
* -Grapple jaws	0	9.00	0	0	0	1	0
* -Wood shear jaws	0	9.00	0	0	0	1	0
*Material densifier;MD50 (LaBounty)	0	9.00	0	0	0	1	0
*Instrumentation vehicle	0	14.00	0	0	0	1	0
*Group pump truck	0	14.00	0	0	0	1	0
*Water truck 8000 gallon tank	0	16.00	0	0	0	1	0
*Truck, flatbed	0	14.00	0	0	0	1	0
*Pipe racks	0	4.00	0	0	0	1	0
Subtotal							0
Intact drum removal							
*Drum handling attachment for UP90 backhoe (3 yard bucket)	0	9.00	0	0	0	1	0
Subtotal							0
Pipeline removal, river							
*Clamshell dredge	0	9.00	0	0	0	1	0
*Gamma scan mole	0	1.00	0	0	0	1	0
*Container barge & tug	0	11.50	0	0	0	1	0

Subtotal							0
VOC venting equipment							
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	17.00	0	0	0	1	0
*Low temperature thermal desorber	0	1.00	0	0	0	1	0
Subtotal							0
Rail transport							
*Diesel electric locomotive 30,400 lb draw bar pull	0	20.00	0	0	0	1	0
*Flat bed cars w/ bulkheads	0	3.00	0	0	0	1	0
Subtotal							0
Containers - reusable 50 yd3							
*Type 1: loading door	0	0.00	0	0	0	1	0
*Type 2: loading ports	0	0.00	0	0	0	1	0
Subtotal							0
Containers - single use 50 yd3							
*Type 3: loading door	0	0.00	0	0	5,000	1	0
*Type 4: loading ports	0	0.00	0	0	0	1	0
Subtotal							0
Mobile Laboratories							
*Mobile laboratories (chem and rad)	0	18.50	0	0	0	1	0
Subtotal							0
Miscellaneous							
*Overpacks unsheilded for type 1 box	0	0.00	0	0	0	1	0
*Overpacks sheilded for type 3/4 box	0	0.00	0	0	0	1	0
*Walking gantry crane (100 tons)	0	19.50	0	0	0	1	0
*Bridge crane 100 tons (box loading)	0	21.00	0	0	0	1	0
*Bridge crane100tons(container load)	0	21.00	0	0	0	1	0
*Truck mounted articulating crane	0	19.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							62,400
Installation Costs	5.00%						3,120
Mobilization Costs	5.00%						3,120

100 AREA General

Pilot Test Costs	0.00%	0
Technology and Eng. Dev. Costs	0.00%	0
TOTAL CAPITAL COSTS		68,640

100 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	0	0	1.60	42.250	0
*Dump truck, 75-85 ton	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
Subtotal					0
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 10 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 7 yd bucket)	0	0	1.60	42.250	0
*Bulldozers: Caterpillar D-9	0	0	1.60	42.250	0
*Bulldozers: Caterpillar D-8	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
Subtotal					0
Pipeline removal					
*Expose pipe; 2 ops in parallel * backhoe (3 yard bucket)	0	0	1.60	42.250	0
*Grout pump truck	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
Subtotal					0
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	0	0	1.60	42.250	0
*Universal Processor U90 attachments	0	0	1.60	42.250	0
* -Concrete cracking jaws	0	0	1.60	42.250	0
* -Shear jaws	0	0	1.60	42.250	0
* -Grapple jaws	0	0	1.60	42.250	0
* -Wood shear jaws	0	0	1.60	42.250	0
*Material densifier;MD50 (LaBounty)	0	0	1.60	42.250	0
*Instrumentation vehicle	0	0	1.60	42.250	0
*Grout pump truck	0	0	1.60	42.250	0
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
*Truck, flatbed	0	0	1.60	42.250	0
Subtotal					0
Pipeline removal, river					
*Clamshell dredge	0	0	1.60	42.250	0
*Container barge & tug	0	0	1.60	42.250	0
Subtotal					0

VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	0	1.60	42.250	0
Subtotal					0
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	0	0	1.60	42.250	0
*Flat bed cars w/ bulkheads	0	0	1.60	42.250	0
Subtotal					0
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	0	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	0	1.60	42.250	0
*Walking gantry crane (100 tons)	0	0	1.60	42.250	0
*Bridge crane 100 tons (box loading)	0	0	1.60	42.250	0
*Bridge crane 100 tons (cont. load)	0	0	1.60	42.250	0
*Truck mounted articulating crane	0	0	1.60	42.250	0
Subtotal					0
Operations support manpower					
*Heavy equipment maintenance	0	0	1.60	42.250	0
*General maintenance	0	0	1.60	42.250	0
*Quality Assurance	0	0	1.60	42.250	0
*Management/administration	0	0	1.60	59.150	0
*Decontaimination	0	0	1.60	59.150	0
*Health physics	0	0	1.60	59.150	0
*Field engineers/scientists	0	0	1.60	59.150	0
*Health and safety	0	0	1.60	59.150	0
*General laborers	0	0	1.60	42.250	0
*Samplers	0	0	1.60	42.250	0
Subtotal					0
Mobile laboratory personnel					
*Chemists	0	0	1.00	59.150	0
*Support staff	0	0	1.00	42.250	0
Subtotal					0
TOTAL LABOR COSTS	0				0

100 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	6,864
Supplies and materials			1.0%	686
Utilities			15.0%	10,296
Maintenance			15.0%	10,296
Waste site disposal			10.0%	6,864
Decontamination and decommissioning			10.0%	6,864
Permitting			0.0%	0
Contingency			25.0%	17,160
TOTAL ALLOWANCE COSTS				59,030

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

TOTAL REMEDIATION COST 100 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				127,670

200 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Low Activity Surface Soil Excavation System							
*Soil Profiler	0	16.00	0	0	0	1	0
*Water Tanker/ Spray Truck	0	16.00	0	0	0	1	0
*Plant Plucker/Baler	0	16.00	0	0	0	1	0
*Fork Lifts	0	11.25	0	0	0	1	0
*Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
Volume Reduction System (VRS)							
*Soil Washing System	0	16.00	0	0	0	1	0
*Contaminated Soil Loading Stations	0	16.00	0	0	0	1	0
Subtotal							0
Low-Activity Special Case Excavation System							
Front End Loader	0	16.00	0	0	0	1	0
Shovel Excavators	0	18.00	0	0	0	1	0
Boom-Mounted Pipe Shear	0	12.00	0	0	0	1	0
Boom-Mounted Pipe Grappler	0	12.00	0	0	0	1	0
Boom-Mounted Impact Hammer	0	12.00	0	0	0	1	0
Boom-Mounted Torch	0	12.00	0	0	0	1	0
Water Tanker/Spray Truck	0	14.00	0	0	0	1	0
Dust Control System	0	4.00	0	0	0	1	0
Diesel Generator	0	8.00	0	0	0	1	0
Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)							
Bulk Waste Disposal Facility							
Truck Unload & Decon. Station	0	60.00	0	0	2,000,000	1	0
Rail Unload & Decon. Station	0	40.00	0	0	2,000,000	1	0
Container Unload & Decon. Station	0	30.00	0	0	2,000,000	1	0
Pipe Rack Unload & Decon. Station	0	10.00	0	0	2,000,000	1	0
Covered Tunnel System	1	8.00	520	4,160	2,000,000	1	2,004,160
Disposal Trenches (8,448 X 300ft.)	0	2.00	0	0	23,000,000	1	0
Trench Containment Structures	1	5.00	520	2,600	20,000,000	1	20,002,600
Ventilation System	0	9.00	0	0	6,000,000	1	0
Extended-Arm Excavators	0	12.00	0	0	240,000	1	0
Bucket Wheel Excavator	0	19.00	0	0	1,200,000	1	0
Bulldozers	0	16.00	0	0	150,000	1	0
Fan Banks	3	4.00	520	2,080	180,000	1	546,240
Fuel Truck	0	12.00	0	0	110,000	1	0
Fire Truck	0	12.00	0	0	140,000	1	0
Subtotal							22,553,000
Low Activity Packaged Waste Disposal System							

FY95

Containment Facilities

200 AREA General

*Disposal Trenches (8,448 X 300 ft.)	0	2.00	0	0	0	1	0
*Fork Lift	0	11.25	0	0	0	1	0
*Boom Crane	0	15.00	0	0	0	1	0
Subtotal							0
High-Activity Packaged Waste Disposal System							
*Unloading/Decontamination Station	0	60.00	0	0	4,000,000	1	0
*Vaults: (4900 X 150 ft.)	0	3.00	0	0	16,000,000	1	0
*Rail Cranes	0	13.00	0	0	400,000	1	0
*Bridge Cranes	0	13.00	0	0	160,000	1	0
Subtotal							0
Slurry Dewatering Basins							
*Dewatering Basins (600 X 300 ft.)	0	3.00	0	0	0	1	0
*Transfer Piping	0	1.00	0	0	0	1	0
Subtotal							0
Water Treatment Plant							
*Chemical Precipitation System	0	20.00	0	0	0	1	0
*Filtration System	0	17.00	0	0	0	1	0
*Ion Exchange System	0	15.00	0	0	0	1	0
Subtotal							0
Grout Plants							
*Fixed Grout Plant	0	73.00	0	0	5,000,000	1	0
*Mobile Grout Plant	0	14.00	0	0	1,700,000	1	0
Subtotal							0
Vibration-Aided Grout Injection System							
*Complete System	0	15.50	0	0	0	1	0
Subtotal							0
In Situ Vitrification Stabilization System							
*Electrode Assembly	0	2.00	0	0	0	1	0
*Power Supply	0	8.00	0	0	0	1	0
*Off-Gas Hoods	0	2.00	0	0	0	1	0
Off-Gas Treatment System	0	4.00	0	0	0	1	0
Subtotal							0
Closure - Hanford Barrier							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0
Landplane	0	16.00	0	0	0	1	0
Leveler	0	16.00	0	0	0	1	0

Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Backfilling Operations							
Front End Loaders	0	16.00	0	0	100,000	1	0
Scraper	0	16.00	0	0	90,000	1	0
Bulldozer	0	16.00	0	0	150,000	1	0
Fuel Trucks	0	14.00	0	0	110,000	1	0
Subtotal							0
Transportation System							
Haul Trucks (100 cubic yard)	0	15.50	0	0	86,000	1	0
Flatbed Trucks	0	8.70	0	0	110,000	1	0
Semi Trucks	0	14.00	0	0	120,000	1	0
Trailers	0	3.00	0	0	40,000	1	0
Subtotal							0
Containers							
*Single use containers 50 cubic yard	0	0.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							22,553,000
Installation Costs	20.00%						4,510,600
Mobilization Costs	20.00%						4,510,600
Pilot Test Costs	5.00%						1,127,650
Technology and Eng. Dev. Costs	5.00%						1,127,650
TOTAL CAPITAL COSTS							33,829,500

200 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Low Activity Surface Soil Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Volume Reduction System (VRS)					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low-Activity Special Case Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)					
Bulk Waste Disposal Facility					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low Activity Packaged Waste Disposal System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0

Subtotal					0
High-Activity Packaged Waste Disposal System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Slurry Dewatering Basins					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Water Treatment Plant					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Grout Plants					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Vibration-Aided Grout Injection System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
In Situ Vitrification Stabilization System					
Operators	0	0	1.60	42.250	0

200 AREA General

Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Closure - Hanford Barrier					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Backfilling Operations					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Transportation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Containers					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
TOTAL LABOR COSTS	0				0

200 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	3,382,950
Supplies and materials			1.0%	338,295
Utilities			15.0%	5,074,425
Maintenance			15.0%	5,074,425
Waste site disposal			10.0%	3,382,950
Decontamination and decommissioning			10.0%	3,382,950
Permitting			0.0%	0
Contingency			20.0%	6,765,900
TOTAL ALLOWANCE COSTS				27,401,895

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

TOTAL REMEDIATION COST 200 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				61,231,395

200 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Low Activity Surface Soil Excavation System							
*Soil Profiler	0	16.00	0	0	0	1	0
*Water Tanker/ Spray Truck	0	16.00	0	0	0	1	0
*Plant Plucker/Baler	0	16.00	0	0	0	1	0
*Fork Lifts	0	11.25	0	0	0	1	0
*Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
Volume Reduction System (VRS)							
*Soil Washing System	0	16.00	0	0	0	1	0
*Contaminated Soil Loading Stations	0	16.00	0	0	0	1	0
Subtotal							0
Low-Activity Special Case Excavation System							
Front End Loader	0	16.00	0	0	0	1	0
Shovel Excavators	0	18.00	0	0	0	1	0
Boom-Mounted Pipe Shear	0	12.00	0	0	0	1	0
Boom-Mounted Pipe Grappler	0	12.00	0	0	0	1	0
Boom-Mounted Impact Hammer	0	12.00	0	0	0	1	0
Boom-Mounted Torch	0	12.00	0	0	0	1	0
Water Tanker/Spray Truck	0	14.00	0	0	0	1	0
Dust Control System	0	4.00	0	0	0	1	0
Diesel Generator	0	8.00	0	0	0	1	0
Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)							
Bulk Waste Disposal Facility							
Truck Unload & Decon. Station	0	60.00	0	0	0	1	0
Rail Unload & Decon. Station	0	40.00	0	0	0	1	0
Container Unload & Decon. Station	0	30.00	0	0	0	1	0
Pipe Rack Unload & Decon. Station	0	10.00	0	0	0	1	0
Covered Tunnel System	1	8.00	3,120	24,960	0	1	24,960
Disposal Trenches (8,448 X 300ft.)	0	2.00	0	0	0	1	0
Trench Containment Structures	1	5.00	3,120	15,600	0	1	15,600
Ventilation System	0	9.00	0	0	0	1	0
Extended-Arm Excavators	0	12.00	0	0	0	1	0
Bucket Wheel Excavator	0	19.00	0	0	0	1	0
Bulldozers	0	16.00	0	0	0	1	0
Fan Banks	3	4.00	3,120	12,480	0	1	37,440
Fuel Truck	0	12.00	0	0	0	1	0
Fire Truck	0	12.00	0	0	0	1	0
Subtotal							78,000
Low Activity Packaged Waste Disposal System							

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*Disposal Trenches (8,448 X 300 ft.)	0	2.00	0	0	0	1	0
*Fork Lift	0	11.25	0	0	0	1	0
*Boom Crane	0	15.00	0	0	0	1	0
Subtotal							0
High-Activity Packaged Waste Disposal System							
*Unloading/Decontamination Station	0	60.00	0	0	0	1	0
*Vaults; (4900 X 150 ft.)	0	3.00	0	0	0	1	0
*Rail Cranes	0	13.00	0	0	0	1	0
*Bridge Cranes	0	13.00	0	0	0	1	0
Subtotal							0
Slurry Dewatering Basins							
*Dewatering Basins (600 X 300 ft.)	0	3.00	0	0	0	1	0
*Transfer Piping	0	1.00	0	0	0	1	0
Subtotal							0
Water Treatment Plant							
*Chemical Precipitation System	0	20.00	0	0	0	1	0
*Filtration System	0	17.00	0	0	0	1	0
*Ion Exchange System	0	15.00	0	0	0	1	0
Subtotal							0
Grout Plants							
*Fixed Grout Plant	0	73.00	0	0	0	1	0
*Mobile Grout Plant	0	14.00	0	0	0	1	0
Subtotal							0
Vibration-Aided Grout Injection System							
*Complete System	0	15.50	0	0	0	1	0
Subtotal							0
In Situ Vitrification Stabilization System							
*Electrode Assembly	0	2.00	0	0	0	1	0
*Power Supply	0	8.00	0	0	0	1	0
*Off-Gas Hoods	0	2.00	0	0	0	1	0
Off-Gas Treatment System	0	4.00	0	0	0	1	0
Subtotal							0
Closure - Hanford Barrier							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0
Landplane	0	16.00	0	0	0	1	0
Leveler	0	16.00	0	0	0	1	0

200 AREA General

Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Backfilling Operations							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0
Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Transportation System							
Haul Trucks (100 cubic yard)	0	15.50	0	0	0	1	0
Flatbed Trucks	0	8.70	0	0	0	1	0
Semi Trucks	0	14.00	0	0	0	1	0
Trailers	0	3.00	0	0	0	1	0
Subtotal							0
Containers							
*Single use containers 50 cubic yard	0	0.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							78,000
Installation Costs	5.00%						3,900
Mobilization Costs	5.00%						3,900
Pilot Test Costs	5.00%						3,900
Technology and Eng. Dev. Costs	5.00%						3,900
TOTAL CAPITAL COSTS							93,600

200 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Low Activity Surface Soil Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Volume Reduction System (VRS)					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low-Activity Special Case Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)					
Bulk Waste Disposal Facility					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low Activity Packaged Waste Disposal System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0

Subtotal					0
High-Activity Packaged Waste Disposal System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Slurry Dewatering Basins					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Water Treatment Plant					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Grout Plants					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Vibration-Aided Grout Injection System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
In Situ Vitrification Stabilization System					
Operators	0	0	1.60	42.250	0

200 AREA General

Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Closure - Hanford Barrier					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Backfilling Operations					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Transportation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Containers					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
TOTAL LABOR COSTS	0				0

200 AREA General

ALLOWANCES

	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	9,360
Supplies and materials			1.0%	936
Utilities			15.0%	14,040
Maintenance			15.0%	14,040
Waste site disposal			10.0%	9,360
Decontamination and decommissioning			10.0%	9,360
Permitting			0.0%	0
Contingency			25.0%	23,400
TOTAL ALLOWANCE COSTS				80,496

ANALYTICAL

	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL REMEDIATION COST 200 AREA				
TOTAL				174,096

200 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Low Activity Surface Soil Excavation System							
*Soil Profiler	0	16.00	0	0	0	1	0
*Water Tanker/ Spray Truck	0	16.00	0	0	0	1	0
*Plant Plucker/Baler	0	16.00	0	0	0	1	0
*Fork Lifts	0	11.25	0	0	0	1	0
*Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
Volume Reduction System (VRS)							
*Soil Washing System	0	16.00	0	0	0	1	0
*Contaminated Soil Loading Stations	0	16.00	0	0	0	1	0
Subtotal							0
Low-Activity Special Case Excavation System							
Front End Loader	0	16.00	0	0	0	1	0
Shovel Excavators	0	18.00	0	0	0	1	0
Boom-Mounted Pipe Shear	0	12.00	0	0	0	1	0
Boom-Mounted Pipe Grappler	0	12.00	0	0	0	1	0
Boom-Mounted Impact Hammer	0	12.00	0	0	0	1	0
Boom-Mounted Torch	0	12.00	0	0	0	1	0
Water Tanker/Spray Truck	0	14.00	0	0	0	1	0
Dust Control System	0	4.00	0	0	0	1	0
Diesel Generator	0	8.00	0	0	0	1	0
Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)							
Bulk Waste Disposal Facility							
Truck Unload & Decon. Station	0	60.00	0	0	0	1	0
Rail Unload & Decon. Station	0	40.00	0	0	0	1	0
Container Unload & Decon. Station	0	30.00	0	0	0	1	0
Pipe Rack Unload & Decon. Station	0	10.00	0	0	0	1	0
Covered Tunnel System	1	8.00	3,120	24,960	0	1	24,960
Disposal Trenches (8,448 X 300ft.)	0	2.00	0	0	0	1	0
Trench Containment Structures	1	5.00	3,120	15,600	0	1	15,600
Ventilation System	0	9.00	0	0	0	1	0
Extended-Arm Excavators	0	12.00	0	0	0	1	0
Bucket Wheel Excavator	0	19.00	0	0	0	1	0
Bulldozers	0	16.00	0	0	0	1	0
Fan Banks	3	4.00	3,120	12,480	0	1	37,440
Fuel Truck	0	12.00	0	0	0	1	0
Fire Truck	0	12.00	0	0	0	1	0
Subtotal							78,000
Low Activity Packaged Waste Disposal System							

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200 AREA General

*Disposal Trenches (8,448 X 300 ft.)	0	2.00	0	0	0	1	0
*Fork Lift	0	11.25	0	0	0	1	0
*Boom Crane	0	15.00	0	0	0	1	0
Subtotal							0
High-Activity Packaged Waste Disposal System							
*Unloading/Decontamination Station	0	60.00	0	0	0	1	0
*Vaults; (4900 X 150 ft.)	0	3.00	0	0	0	1	0
*Rail Cranes	0	13.00	0	0	0	1	0
*Bridge Cranes	0	13.00	0	0	0	1	0
Subtotal							0
Slurry Dewatering Basins							
*Dewatering Basins (600 X 300 ft.)	0	3.00	0	0	0	1	0
*Transfer Piping	0	1.00	0	0	0	1	0
Subtotal							0
Water Treatment Plant							
*Chemical Precipitation System	0	20.00	0	0	0	1	0
*Filtration System	0	17.00	0	0	0	1	0
*Ion Exchange System	0	15.00	0	0	0	1	0
Subtotal							0
Grout Plants							
*Fixed Grout Plant	0	73.00	0	0	0	1	0
*Mobile Grout Plant	0	14.00	0	0	0	1	0
Subtotal							0
Vibration-Aided Grout Injection System							
*Complete System	0	15.50	0	0	0	1	0
Subtotal							0
In Situ Vitrification Stabilization System							
*Electrode Assembly	0	2.00	0	0	0	1	0
*Power Supply	0	8.00	0	0	0	1	0
*Off-Gas Hoods	0	2.00	0	0	0	1	0
Off-Gas Treatment System	0	4.00	0	0	0	1	0
Subtotal							0
Closure - Hanford Barrier							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0
Landplane	0	16.00	0	0	0	1	0
Leveler	0	16.00	0	0	0	1	0

Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Backfilling Operations							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0
Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Transportation System							
Haul Trucks (100 cubic yard)	0	15.50	0	0	0	1	0
Flatbed Trucks	0	8.70	0	0	0	1	0
Semi Trucks	0	14.00	0	0	0	1	0
Trailers	0	3.00	0	0	0	1	0
Subtotal							0
Containers							
*Single use containers 50 cubic yard	0	0.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							78,000
Installation Costs	5.00%						3,900
Mobilization Costs	5.00%						3,900
Pilot Test Costs	5.00%						3,900
Technology and Eng. Dev. Costs	5.00%						3,900
TOTAL CAPITAL COSTS							93,600

200 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Low Activity Surface Soil Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Volume Reduction System (VRS)					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low-Activity Special Case Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)					
Bulk Waste Disposal Facility					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low Activity Packaged Waste Disposal System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0

Subtotal					0
High-Activity Packaged Waste Disposal System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Slurry Dewatering Basins					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Water Treatment Plant					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Grout Plants					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Vibration-Aided Grout Injection System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
In Situ Vitrification Stabilization System					
Operators	0	0	1.60	42.250	0

200 AREA General

Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Closure - Hanford Barrier					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Backfilling Operations					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Transportation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Containers					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
TOTAL LABOR COSTS	0				0

1/10/92

No Cont. Alt.

FY95

100 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Pre-excavation equipment							
*Front-end loader; caterpillar 992 W/ 13 cubic yard bucket	1	11.75	520	6,110	1,200,000	1	1,206,110
*Front-end loader; Cat 992 (for refill operations)	1	11.75	520	6,110	1,200,000	1	1,206,110
*Dump truck, 75-85 ton (2nd unit)	1	15.50	520	8,060	86,000	1	94,060
*Dump truck, 75-85 ton (1st unit)	1	15.50	520	8,060	86,000	1	94,060
*Instrumentation vehicle	1	14.00	520	7,280	170,000	1	177,280
Subtotal							2,777,620
Conveyor systems							
* 36" belt, 800' long	1	0.00	520	0	8,000	1	8,000
* 54" apron feeder	1	0.00	520	0	5,000	1	5,000
*Feed hopper/W 12" grizzly	1	0.00	520	0	1,200	1	1,200
*Skid 800' long W/ winch	1	6.70	520	3,484	45,000	1	48,484
*Feed bins, 2 compartments	1	0.00	520	0	10,000	1	10,000
* 36" belt, 400' long	0	0.00	0	0	0	1	0
* 36" belt, 200' long	0	0.00	0	0	0	1	0
*Conveyor dust control; vacuum hood W/ exhauster, pre-filters, HEPA filters	1	3.00	520	1,560	25,000	1	26,560
*GW detector instrument package	1	0.00	520	0	20,000	1	20,000
*Automatic sampler	1	0.00	520	0	220,000	1	220,000
Subtotal							339,244
Front-end loaders							
*Caterpillar 992 (W/ 13 yd bucket)	1	11.75	520	6,110	1,200,000	1	1,206,110
*Caterpillar 992 (W/ 10 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (W/ 7 yd bucket)	1	11.75	520	6,110	1,200,000	1	1,206,110
*Bulldozers: Caterpillar D-9	1	10.80	520	5,616	100,000	1	105,616
*Bulldozers: Caterpillar D-8	0	10.80	0	0	0	1	0
*Instrumentation vehicle	1	14.00	520	7,280	170,000	1	177,280
*Water truck 8000 gallon tank	1	16.00	520	8,320	110,000	1	118,320
Subtotal							2,813,436
Demolition tools, concrete & metal tanks							
*Excavator Caterpillar 235 C (90k lb base)	1	25.90	520	13,468	325,000	1	338,468
*Universal Processor U90 (LaBounty)							
* -Concrete cracking jaws	1	9.00	520	4,680	30,000	1	34,680
* -Shear jaws	1	9.00	520	4,680	47,000	1	51,680
* -Grapple jaws	1	9.00	520	4,680	40,000	1	44,680
* -Wood shear jaws	1	9.00	520	4,680	44,000	1	48,680
* -Plate shear jaws	1	9.00	520	4,680	47,000	1	51,680
* -Hydraulic hammer	1	9.00	520	4,680	42,000	1	46,680
Subtotal							569,868

100 AREA General

Pipeline removal							
*Expose pipe; backhoe (3 cy. bucket)	1	14.00	520	7,280	150,000	1	157,280
*Grout pump truck	1	12.00	520	6,240	90,000	1	96,240
*Instrumentation vehicle	1	14.00	520	7,280	170,000	1	177,280
Subtotal							430,800
Pipeline removal, land							
*Excavator; Caterpillar 235C (90k lb base)	1	25.90	520	13,468	325,000	1	338,468
*Universal Processor U90 attachments	1	15.00	520	7,800	67,000	1	74,800
* -Concrete cracking jaws	1	9.00	520	4,680	30,000	1	34,680
-Hydraulic hammer	1	9.00	520	4,680	42,000	1	46,680
* -Shear jaws	1	9.00	520	4,680	47,000	1	51,680
* -Grapple jaws	1	9.00	520	4,680	40,000	1	44,680
* -Wood shear jaws	1	9.00	520	4,680	44,000	1	48,680
*Material densifier;MD50 (LaBounty)	1	9.00	520	4,680	65,000	1	69,680
*Instrumentation vehicle	1	14.00	520	7,280	170,000	1	177,280
*Grout pump truck	1	14.00	520	7,280	150,000	1	157,280
*Water truck 8000 gallon tank	1	16.00	520	8,320	110,000	1	118,320
*Truck, flatbed	1	14.00	520	7,280	110,000	1	117,280
*Pipe racks	1	4.00	520	2,080	30,000	1	32,080
Subtotal							1,311,588
Intact drum removal							
*Drum handling attachment for UP90 backhoe (3 yard bucket)	1	9.00	520	4,680	17,000	1	21,680
Subtotal							21,680
Rail transport							
*Diesel electric locomotive 30,400 lb draw bar pull	1	20.00	520	10,400	750,000	1	760,400
*Flat bed cars w/ bulkheads	16	3.00	520	1,560	85,000	1	1,384,960
Subtotal							2,145,360
Containers - reusable 50 yd3							
*Type 1: loading door	148	0.00	520	0	5,000	1	740,000
*Type 2: loading ports	0	0.00	0	0	0	1	0
Subtotal							740,000
Containers - single use 50 yd3							
*Type 3: loading door	81	0.00	520	0	5,000	1	405,000
*Type 4: loading ports	0	0.00	0	0	0	1	0
Subtotal							405,000

100 AREA General

Mobile Laboratories							
*Mobile laboratories (chem and rad)	2	18.50	520	9,620	3,000,000	1	6,019,240
Subtotal							6,019,240
Miscellaneous							
*Overpacks unsheilded for type 1 box	148	0.00	520	0	15,000	1	2,220,000
*Overpacks sheilded for type 3/4 box	5	0.00	520	0	15,000	1	75,000
*Walking gantry crane (100 tons)	1	19.50	520	10,140	400,000	1	410,140
*Bridge crane 100 tons (box loading)	1	21.00	520	10,920	450,000	1	460,920
*Bridge crane100tons(container load)	1	21.00	520	10,920	450,000	1	460,920
*Truck mounted articulating crane	1	19.00	520	9,880	180,000	1	189,880
Subtotal							3,816,860
SUBTOTAL CAPITAL COSTS							21,390,696
Installation Costs	10.00%						2,139,070
Mobilization Costs	10.00%						2,139,070
Pilot Test Costs	10.00%						2,139,070
Technology and Eng. Dev. Costs	5.00%						1,069,535
TOTAL CAPITAL COSTS							28,877,440

100 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	520	1.60	42.250	70,304
*Dump truck, 75-85 ton	2	520	1.60	42.250	70,304
*Instrumentation vehicle	1	520	1.60	42.250	35,152
Subtotal					175,760
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	1	520	1.60	42.250	35,152
*Caterpillar 992 (w/ 10 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 7 yd bucket)	1	520	1.60	42.250	35,152
*Bulldozers: Caterpillar D-9	1	520	1.60	42.250	35,152
*Bulldozers: Caterpillar D-8	0	0	1.60	42.250	0
*Instrumentation vehicle	1	520	1.60	42.250	35,152
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
Subtotal					140,608
Pipeline removal					
*Expose pipe; 2 ops in parallel * backhoe (3 yard bucket)	1	520	1.60	42.250	35,152
*Grout pump truck	1	520	1.60	42.250	35,152
*Instrumentation vehicle	1	520	1.60	42.250	35,152
Subtotal					105,456
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	1	520	1.60	42.250	35,152
*Universal Processor U90 attachments	0	0	1.60	42.250	0
* -Concrete cracking jaws	0	0	1.60	42.250	0
* -Shear jaws	0	0	1.60	42.250	0
* -Grapple jaws	0	0	1.60	42.250	0
* -Wood shear jaws	0	0	1.60	42.250	0
*Material densifier;MD50 (LaBounty)	0	0	1.60	42.250	0
*Instrumentation vehicle	1	520	1.60	42.250	35,152
*Grout pump truck	1	520	1.60	42.250	35,152
*Water truck 8000 gallon tank	1	520	1.60	42.250	35,152
*Truck, flatbed	1	520	1.60	42.250	35,152
Subtotal					175,760
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	3	520	1.60	42.250	105,456
*Flat bed cars w/ bulkheads	0	0	1.60	42.250	0

100 AREA General

Subtotal					105,456
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	0	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	0	1.60	42.250	0
*Walking gantry crane (100 tons)	2	520	1.60	42.250	70,304
*Bridge crane 100 tons (box loading)	2	520	1.60	42.250	70,304
*Bridge crane 100 tons (cont. load)	1	520	1.60	42.250	35,152
*Truck mounted articulating crane	1	520	1.60	42.250	35,152
Subtotal					210,912
Operations support manpower					
*Heavy equipment maintenance	3	520	1.60	42.250	105,456
*General maintenance	2	520	1.60	42.250	70,304
*Quality Assurance	2	520	1.60	42.250	70,304
*Management/administration	3	520	1.60	59.150	147,638
*Decontaimination	3	520	1.60	59.150	147,638
*Health physics	4	520	1.60	59.150	196,851
*Field engineers/scientists	4	520	1.60	59.150	196,851
*Health and safety	2	520	1.60	59.150	98,426
*General laborers	4	520	1.60	42.250	140,608
*Samplers	4	520	1.60	42.250	140,608
Subtotal					1,314,685
Mobile laboratory personnel					
*Chemists	4	520	1.00	59.150	123,032
*Support staff	2	520	1.00	42.250	43,940
Subtotal					166,972
TOTAL LABOR COSTS	63				2,395,609

100 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	3,127,305
Supplies and materials			1.0%	312,730
Utilities			15.0%	4,690,957
Maintenance			15.0%	4,690,957
Waste site disposal			10.0%	3,127,305
Decontamination and decommissioning			10.0%	3,127,305
Permitting			0.0%	0
Contingency			25.0%	7,818,262
TOTAL ALLOWANCE COSTS				26,894,822

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				408,000

TOTAL REMEDIATION COST 100 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				58,575,870

100 AREA General

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without containment

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Pre-excavation equipment							
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	1	11.75	3,120	36,660	0	1	36,660
*Front-end loader; Cat 992 (for refill operations)	1	11.75	3,120	36,660	1,200,000	1	1,236,660
*Dump truck, 75-85 ton (2nd unit)	1	15.50	3,120	48,360	86,000	1	134,360
*Dump truck, 75-85 ton (1st unit)	1	15.50	3,120	48,360	0	1	48,360
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
Subtotal							1,499,720
Excavation equipment							
*Containment structures: 1000x400	0	5.00	0	0	0	1	0
*Containment structures: 600x400	0	5.00	0	0	0	1	0
*Containment structures: 400x400	0	5.00	0	0	0	1	0
*Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	0	15.00	0	0	0	1	0
Subtotal							0
Containment structure fire suppression							
*Water tank	0	0.00	0	0	0	1	0
*Containment structure	0	0.00	0	0	0	1	0
Subtotal							0
Conveyor systems							
* 36" belt, 800' long	1	0.00	3,120	0	0	1	0
* 54" apron feeder	1	0.00	3,120	0	0	1	0
*Feed hopper/w 12" grizzly	1	0.00	3,120	0	0	1	0
*Skid 800' long w/ winch	1	6.70	3,120	20,904	0	1	20,904
*Feed bins, 2 compartments	1	0.00	3,120	0	0	1	0
* 36" belt, 400' long	0	0.00	0	0	0	1	0
* 36" belt, 200' long	0	0.00	0	0	0	1	0
*Conveyor dust control; vacuum hood w/ exhauster, pre-filters,HEPA filters	1	3.00	3,120	9,360	0	1	9,360
*GM detector instrument package	1	0.00	3,120	0	0	1	0
*Automatic sampler	1	0.00	3,120	0	0	1	0
Subtotal							30,264
Front-end loaders							
*Caterpillar 992 (w/ 13 yd bucket)	1	11.75	3,120	36,660	0	1	36,660
*Caterpillar 992 (w/ 10 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 7 yd bucket)	1	11.75	3,120	36,660	0	1	36,660
*Bulldozers: Caterpillar D-9	1	10.80	3,120	33,696	0	1	33,696

100 AREA General

*Bulldozers: Caterpillar D-8	0	10.80	0	0	0	1	0
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	0	1	49,920
Subtotal							200,616
Demolition tools, concrete & metal tanks							
*Excavator Caterpillar 235 C (90k lb base)	1	25.90	3,120	80,808	0	1	80,808
*Universal Processor U90 (LaBounty)							
* -Concrete cracking jaws	1	9.00	3,120	28,080	0	1	28,080
* -Shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Grapple jaws	1	9.00	3,120	28,080	0	1	28,080
* -Wood shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Plate shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Hydraulic hammer	1	9.00	3,120	28,080	0	1	28,080
Subtotal							221,208
Pipeline removal							
*Expose pipe; backhoe (3 cy. bucket)	1	14.00	3,120	43,680	150,000	1	193,680
*Grout pump truck	1	12.00	3,120	37,440	90,000	1	127,440
*Instrumentation vehicle	1	14.00	3,120	43,680	170,000	1	213,680
Subtotal							534,800
Pipeline removal, land							
*Excavator; Caterpillar 235C (90k lb base)	1	25.90	3,120	80,808	325,000	1	405,808
*Universal Processor U90 attachments	1	15.00	3,120	46,800	67,000	1	113,800
* -Concrete cracking jaws	1	9.00	3,120	28,080	30,000	1	58,080
-Hydraulic hammer	1	9.00	3,120	28,080	42,000	1	70,080
* -Shear jaws	1	9.00	3,120	28,080	47,000	1	75,080
* -Grapple jaws	1	9.00	3,120	28,080	40,000	1	68,080
* -Wood shear jaws	1	9.00	3,120	28,080	44,000	1	72,080
*Material densifier;HD50 (LaBounty)	1	9.00	3,120	28,080	65,000	1	93,080
*Instrumentation vehicle	1	14.00	3,120	43,680	170,000	1	213,680
*Group pump truck	1	14.00	3,120	43,680	150,000	1	193,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	110,000	1	159,920
*Truck, flatbed	1	14.00	3,120	43,680	110,000	1	153,680
*Pipe racks	1	4.00	3,120	12,480	30,000	1	42,480
Subtotal							1,719,528
Intact drum removal							
*Drum handling attachment for UP90 backhoe (3 yard bucket)	1	9.00	3,120	28,080	0	1	28,080
Subtotal							28,080
Pipeline removal, river							

100 AREA General

*Clamshell dredge	0	9.00	0	0	0	1	0
*Gamma scan mole	0	1.00	0	0	0	1	0
*Container barge & tug	0	11.50	0	0	0	1	0
Subtotal							0
VOC venting equipment							
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	17.00	0	0	0	1	0
*Low temperature thermal desorber	0	1.00	0	0	0	1	0
Subtotal							0
Rail transport							
*Diesel electric locomotive 30,400 lb draw bar pull	1	20.00	3,120	62,400	0	1	62,400
*Flat bed cars w/ bulkheads	16	3.00	3,120	9,360	0	1	149,760
Subtotal							212,160
Containers - reusable 50 yd3							
*Type 1: loading door	50	0.00	3,120	0	5,000	1	250,000
*Type 2: loading ports	0	0.00	0	0	0	1	0
Subtotal							250,000
Containers - single use 50 yd3							
*Type 3: loading door	233	0.00	3,120	0	5,000	1	1,165,000
*Type 4: loading ports	0	0.00	0	0	0	1	0
Subtotal							1,165,000
Mobile Laboratories							
*Mobile laboratories (chem and rad)	2	18.50	3,120	57,720	0	1	115,440
Subtotal							115,440
Miscellaneous							
*Overpacks unsheilded for type 1 box	50	0.00	3,120	0	15,000	1	750,000
*Overpacks sheilded for type 3/4 box	0	0.00	0	0	0	1	0
*Walking gantry crane (100 tons)	1	19.50	3,120	60,840	0	1	60,840
*Bridge crane 100 tons (box loading)	1	21.00	3,120	65,520	0	1	65,520
*Bridge crane100tons(container load)	1	21.00	3,120	65,520	0	1	65,520
*Truck mounted articulating crane	1	19.00	3,120	59,280	0	1	59,280
Subtotal							1,001,160
SUBTOTAL CAPITAL COSTS							6,977,976

100 AREA General

Installation Costs	25.00%	1,744,494
Mobilization Costs	25.00%	1,744,494
Pilot Test Costs	25.00%	1,744,494
Technology and Eng. Dev. Costs	5.00%	348,899
TOTAL CAPITAL COSTS		12,560,357

100 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	3,120	1.60	42.250	421,824
*Dump truck, 75-85 ton	2	3,120	1.60	42.250	421,824
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					1,054,560
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	1	3,120	1.60	42.250	210,912
*Caterpillar 992 (w/ 10 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 7 yd bucket)	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-9	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-8	0	0	1.60	42.250	0
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
Subtotal					843,648
Pipeline removal					
*Expose pipe; 2 ops in parallel * backhoe (3 yard bucket)	1	3,120	1.60	42.250	210,912
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					632,736
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	1	3,120	1.60	42.250	210,912
*Universal Processor U90 attachments	0	0	1.60	42.250	0
* -Concrete cracking jaws	0	0	1.60	42.250	0
* -Shear jaws	0	0	1.60	42.250	0
* -Grapple jaws	0	0	1.60	42.250	0
* -Wood shear jaws	0	0	1.60	42.250	0
*Material densifier;MD50 (LaBounty)	0	0	1.60	42.250	0
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	1	3,120	1.60	42.250	210,912
*Truck, flatbed	1	3,120	1.60	42.250	210,912
Subtotal					1,054,560
Pipeline removal, river					
*Clamshell dredge	0	0	1.60	42.250	0
*Container barge & tug	0	0	1.60	42.250	0
Subtotal					0

100 AREA General

VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	0	1.60	42.250	0
Subtotal					0
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	3	3,120	1.60	42.250	632,736
*Flat bed cars w/ bulkheads	0	0	1.60	42.250	0
Subtotal					632,736
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	0	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	0	1.60	42.250	0
*Walking gantry crane (100 tons)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (box loading)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (cont. load)	1	3,120	1.60	42.250	210,912
*Truck mounted articulating crane	1	3,120	1.60	42.250	210,912
Subtotal					1,265,472
Operations support manpower					
*Heavy equipment maintenance	3	3,120	1.60	42.250	632,736
*General maintenance	2	3,120	1.60	42.250	421,824
*Quality Assurance	2	3,120	1.60	42.250	421,824
*Management/administration	3	3,120	1.60	59.150	885,830
*Decontaimination	3	3,120	1.60	59.150	885,830
*Health physics	4	3,120	1.60	59.150	1,181,107
*Field engineers/scientists	4	3,120	1.60	59.150	1,181,107
*Health and safety	2	3,120	1.60	59.150	590,554
*General laborers	4	3,120	1.60	42.250	843,648
*Samplers	4	3,120	1.60	42.250	843,648
Subtotal					7,888,109
Mobile laboratory personnel					
*Chemists	4	3,120	1.00	59.150	738,192
*Support staff	2	3,120	1.00	42.250	263,640
Subtotal					1,001,832
TOTAL LABOR COSTS	63				14,373,653

100 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	2,693,401
Supplies and materials			1.0%	269,340
Utilities			15.0%	4,040,101
Maintenance			15.0%	4,040,101
Waste site disposal			10.0%	2,693,401
Decontamination and decommissioning			10.0%	2,693,401
Permitting			0.0%	0
Contingency			25.0%	6,733,502
TOTAL ALLOWANCE COSTS				23,163,248

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				1,987,000

TOTAL REMEDIATION COST 100 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				52,084,258

100 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Pre-excavation equipment							
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	11.75	3,120	36,660	0	1	73,320
*Dump trucks, 75-85 ton	2	15.50	3,120	48,360	0	1	96,720
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
Subtotal							213,720
Excavation equipment							
*Containment structures: 1000x400	0	5.00	0	0	0	1	0
*Containment structures: 600x400	0	5.00	0	0	0	1	0
*Containment structures: 400x400	0	5.00	0	0	0	1	0
*Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	0	15.00	0	0	0	1	0
Subtotal							0
Containment structure fire suppression							
*Water tank	0	0.00	0	0	0	1	0
*Containment structure	0	0.00	0	0	0	1	0
Subtotal							0
Conveyor systems							
* 36" belt, 800' long	1	0.00	3,120	0	0	1	0
* 54" apron feeder	1	0.00	3,120	0	0	1	0
*Feed hopper/w 12" grizzly	1	0.00	3,120	0	0	1	0
*Skid 800' long w/ winch	1	6.70	3,120	20,904	0	1	20,904
*Feed bins, 2 compartments	1	0.00	3,120	0	0	1	0
* 36" belt, 400' long	0	0.00	0	0	0	1	0
* 36" belt, 200' long	0	0.00	0	0	0	1	0
*Conveyor dust control: vacuum hood w/ exhauster, pre-filters,HEPA filters	1	3.00	3,120	9,360	0	1	9,360
*GM detector instrument package	1	0.00	3,120	0	0	1	0
*Automatic sampler	1	0.00	3,120	0	0	1	0
Subtotal							30,264
Front-end loaders							
*Caterpillar 992 (w/ 13 yd bucket)	1	11.75	3,120	36,660	0	1	36,660
*Caterpillar 992 (w/ 10 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 7 yd bucket)	1	11.75	3,120	36,660	0	1	36,660
*Bulldozers: Caterpillar D-9	1	10.80	3,120	33,696	0	1	33,696
*Bulldozers: Caterpillar D-8	0	10.80	0	0	0	1	0
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	0	1	49,920

FY97 - w/out cont. structure

Subtotal							200,616
Demolition tools, concrete & metal tanks							
*Excavator Caterpillar 235 C (90k lb base)	1	25.90	3,120	80,808	0	1	80,808
*Universal Processor U90 (LaBounty)							
* -Concrete cracking jaws	1	9.00	3,120	28,080	0	1	28,080
* -Shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Grapple jaws	1	9.00	3,120	28,080	0	1	28,080
* -Wood shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Plate shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Hydraulic hammer	1	9.00	3,120	28,080	0	1	28,080
Subtotal							221,208
Pipeline removal							
*Expose pipe; backhoe (3 cy. bucket)	1	14.00	3,120	43,680	0	1	43,680
*Grout pump truck	1	12.00	3,120	37,440	0	1	37,440
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
Subtotal							124,800
Pipeline removal, land							
*Excavator; Caterpillar 235C (90k lb base)	1	25.90	3,120	80,808	0	1	80,808
*Universal Processor U90 attachments	1	15.00	3,120	46,800	0	1	46,800
* -Concrete cracking jaws	1	9.00	3,120	28,080	0	1	28,080
-Hydraulic hammer	1	9.00	3,120	28,080	0	1	28,080
* -Shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Grapple jaws	1	9.00	3,120	28,080	0	1	28,080
* -Wood shear jaws	1	9.00	3,120	28,080	0	1	28,080
*Material densifier;MD50 (LaBounty)	1	9.00	3,120	28,080	0	1	28,080
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
*Group pump truck	1	14.00	3,120	43,680	0	1	43,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	0	1	49,920
*Truck, flatbed	1	14.00	3,120	43,680	0	1	43,680
*Pipe racks	1	4.00	3,120	12,480	0	1	12,480
Subtotal							489,528
Intact drum removal							
*Drum handling attachment for UP90 backhoe (3 yard bucket)	1	9.00	3,120	28,080	0	1	28,080
Subtotal							28,080
Pipeline removal, river							
*Clamshell dredge	0	9.00	0	0	0	1	0
*Gamma scan mole	0	1.00	0	0	0	1	0
*Container barge & tug	0	11.50	0	0	0	1	0

Subtotal							0
VOC venting equipment							
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	17.00	0	0	0	1	0
*Low temperature thermal desorber	0	1.00	0	0	0	1	0
Subtotal							0
Rail transport							
*Diesel electric locomotive 30,400 lb draw bar pull	1	20.00	3,120	62,400	0	1	62,400
*Flat bed cars w/ bulkheads	16	3.00	3,120	9,360	0	1	149,760
Subtotal							212,160
Containers - reusable 50 yd3							
*Type 1: loading door	50	0.00	3,120	0	0	1	0
*Type 2: loading ports	0	0.00	0	0	0	1	0
Subtotal							0
Containers - single use 50 yd3							
*Type 3: loading door	233	0.00	3,120	0	5,000	1	1,165,000
*Type 4: loading ports	0	0.00	0	0	0	1	0
Subtotal							1,165,000
Mobile Laboratories							
*Mobile laboratories (chem and rad)	2	18.50	3,120	57,720	0	1	115,440
Subtotal							115,440
Miscellaneous							
*Overpacks unsheilded for type 1 box	0	0.00	3,120	0	0	1	0
*Overpacks sheilded for type 3/4 box	0	0.00	0	0	0	1	0
*Walking gantry crane (100 tons)	1	19.50	3,120	60,840	0	1	60,840
*Bridge crane 100 tons (box loading)	1	21.00	3,120	65,520	0	1	65,520
*Bridge crane100tons(container load)	1	21.00	3,120	65,520	0	1	65,520
*Truck mounted articulating crane	1	19.00	3,120	59,280	0	1	59,280
Subtotal							251,160
SUBTOTAL CAPITAL COSTS							3,051,976
Installation Costs	5.00%						152,599
Mobilization Costs	5.00%						152,599

100 AREA General

Pilot Test Costs	0.00%	0
Technology and Eng. Dev. Costs	0.00%	0
TOTAL CAPITAL COSTS		3,357,174

100 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	3,120	1.60	42.250	421,824
*Dump truck, 75-85 ton	2	3,120	1.60	42.250	421,824
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					1,054,560
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	1	3,120	1.60	42.250	210,912
*Caterpillar 992 (w/ 10 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 7 yd bucket)	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-9	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-8	0	0	1.60	42.250	0
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
Subtotal					843,648
Pipeline removal					
*Expose pipe; 2 ops in parallel * backhoe (3 yard bucket)	1	3,120	1.60	42.250	210,912
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					632,736
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	1	3,120	1.60	42.250	210,912
*Universal Processor U90 attachments	0	0	1.60	42.250	0
* -Concrete cracking jaws	0	0	1.60	42.250	0
* -Shear jaws	0	0	1.60	42.250	0
* -Grapple jaws	0	0	1.60	42.250	0
* -Wood shear jaws	0	0	1.60	42.250	0
*Material densifier;MD50 (LaBounty)	0	0	1.60	42.250	0
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	1	3,120	1.60	42.250	210,912
*Truck, flatbed	1	3,120	1.60	42.250	210,912
Subtotal					1,054,560
Pipeline removal, river					
*Clamshell dredge	0	0	1.60	42.250	0
*Container barge & tug	0	0	1.60	42.250	0
Subtotal					0

100 AREA General

VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	0	1.60	42.250	0
Subtotal					0
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	3	3,120	1.60	42.250	632,736
*Flat bed cars w/ bulkheads	0	0	1.60	42.250	0
Subtotal					632,736
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	0	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	0	1.60	42.250	0
*Walking gantry crane (100 tons)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (box loading)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (cont. load)	1	3,120	1.60	42.250	210,912
*Truck mounted articulating crane	1	3,120	1.60	42.250	210,912
Subtotal					1,265,472
Operations support manpower					
*Heavy equipment maintenance	3	3,120	1.60	42.250	632,736
*General maintenance	2	3,120	1.60	42.250	421,824
*Quality Assurance	2	3,120	1.60	42.250	421,824
*Management/administration	3	3,120	1.60	59.150	885,830
*Decontaimination	3	3,120	1.60	59.150	885,830
*Health physics	4	3,120	1.60	59.150	1,181,107
*Field engineers/scientists	4	3,120	1.60	59.150	1,181,107
*Health and safety	2	3,120	1.60	59.150	590,554
*General laborers	4	3,120	1.60	42.250	843,648
*Samplers	4	3,120	1.60	42.250	843,648
Subtotal					7,888,109
Mobile laboratory personnel					
*Chemists	4	3,120	1.00	59.150	738,192
*Support staff	2	3,120	1.00	42.250	263,640
Subtotal					1,001,832
TOTAL LABOR COSTS	63				14,373,653

100 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	1,773,083
Supplies and materials			1.0%	177,308
Utilities			15.0%	2,659,624
Maintenance			15.0%	2,659,624
Waste site disposal			10.0%	1,773,083
Decontamination and decommissioning			10.0%	1,773,083
Permitting			0.0%	0
Contingency			25.0%	4,432,707
TOTAL ALLOWANCE COSTS				15,248,511

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				1,987,000

TOTAL REMEDIATION COST 100 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				34,966,337

200 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Low Activity Surface Soil Excavation System							
*Soil Profiler	0	16.00	0	0	0	1	0
*Water Tanker/ Spray Truck	0	16.00	0	0	0	1	0
*Plant Plucker/Baler	0	16.00	0	0	0	1	0
*Fork Lifts	0	11.25	0	0	0	1	0
*Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
Volume Reduction System (VRS)							
*Soil Washing System	0	16.00	0	0	0	1	0
*Contaminated Soil Loading Stations	0	16.00	0	0	0	1	0
Subtotal							0
Low-Activity Special Case Excavation System							
Front End Loader	0	16.00	0	0	0	1	0
Shovel Excavators	0	18.00	0	0	0	1	0
Boom-Mounted Pipe Shear	0	12.00	0	0	0	1	0
Boom-Mounted Pipe Grappler	0	12.00	0	0	0	1	0
Boom-Mounted Impact Hammer	0	12.00	0	0	0	1	0
Boom-Mounted Torch	0	12.00	0	0	0	1	0
Water Tanker/Spray Truck	0	14.00	0	0	0	1	0
Dust Control System	0	4.00	0	0	0	1	0
Diesel Generator	0	8.00	0	0	0	1	0
Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)							
Bulk Waste Disposal Facility							
Truck Unload & Decon. Station	1	60.00	520	31,200	2,000,000	1	2,031,200
Rail Unload & Decon. Station	1	40.00	520	20,800	2,000,000	1	2,020,800
Container Unload & Decon. Station	1	30.00	520	15,600	2,000,000	1	2,015,600
Pipe Rack Unload & Decon. Station	1	10.00	520	5,200	2,000,000	1	2,005,200
Covered Tunnel System	0	8.00	0	0	2,000,000	1	0
Disposal Trenches (8,448 X 300ft.)	1	2.00	520	1,040	23,000,000	1	23,001,040
Trench Containment Structures	0	5.00	0	0	20,000,000	1	0
Ventilation System	1	9.00	520	4,680	6,000,000	1	6,004,680
Extended-Arm Excavators	1	12.00	520	6,240	240,000	1	246,240
Bucket Wheel Excavator	1	19.00	520	9,880	1,200,000	1	1,209,880
Bulldozers	2	16.00	520	8,320	150,000	1	316,640
Fan Banks	0	4.00	0	0	180,000	1	0
Fuel Truck	1	12.00	520	6,240	110,000	1	116,240
Fire Truck	1	12.00	520	6,240	140,000	1	146,240
Subtotal							39,113,760
Low Activity Packaged Waste Disposal System							

FY95 –

W/out containment

Disposal Trenches (8,448 X 300 ft.)	0	2.00	0	0	0	1	0
Fork Lift	0	11.25	0	0	0	1	0
Boom Crane	0	15.00	0	0	0	1	0
Subtotal							0
High-Activity Packaged Waste Disposal System							
Unloading/Decontamination Station	1	60.00	520	31,200	4,000,000	1	4,031,200
Vaults; (4900 X 150 ft.)	1	3.00	520	1,560	16,000,000	1	16,001,560
Rail Cranes	1	13.00	520	6,760	400,000	1	406,760
Bridge Cranes	1	13.00	520	6,760	160,000	1	166,760
Subtotal							20,606,280
Slurry Dewatering Basins							
Dewatering Basins (600 X 300 ft.)	0	3.00	0	0	0	1	0
Transfer Piping	0	1.00	0	0	0	1	0
Subtotal							0
Water Treatment Plant							
Chemical Precipitation System	0	20.00	0	0	0	1	0
Filtration System	0	17.00	0	0	0	1	0
Ion Exchange System	0	15.00	0	0	0	1	0
Subtotal							0
Grout Plants							
Fixed Grout Plant	0	73.00	0	0	5,000,000	1	0
Mobile Grout Plant	1	14.00	520	7,280	1,700,000	1	1,707,280
Subtotal							1,707,280
Vibration-Aided Grout Injection System							
Complete System	0	15.50	0	0	0	1	0
Subtotal							0
In Situ Vitrification Stabilization System							
Electrode Assembly	0	2.00	0	0	0	1	0
Power Supply	0	8.00	0	0	0	1	0
Off-Gas Hoods	0	2.00	0	0	0	1	0
Off-Gas Treatment System	0	4.00	0	0	0	1	0
Subtotal							0
Closure - Hanford Barrier							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0
Landplane	0	16.00	0	0	0	1	0
Leveler	0	16.00	0	0	0	1	0

200 AREA General

Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Backfilling Operations							
Front End Loaders	1	16.00	520	8,320	100,000	1	108,320
Scraper	1	16.00	520	8,320	90,000	1	98,320
Bulldozer	1	16.00	520	8,320	150,000	1	158,320
Fuel Trucks	1	14.00	520	7,280	110,000	1	117,280
Subtotal							482,240
Transportation System							
Haul Trucks (100 cubic yard)	3	15.50	520	8,060	86,000	1	282,180
Flatbed Trucks	0	8.70	0	0	110,000	1	0
Semi Trucks	0	14.00	0	0	120,000	1	0
Trailers	0	3.00	0	0	40,000	1	0
Subtotal							282,180
Containers							
*Single use containers 50 cubic yard	0	0.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							60,484,460
Installation Costs	20.00%						12,096,892
Mobilization Costs	20.00%						12,096,892
Pilot Test Costs	5.00%						3,024,223
Technology and Eng. Dev. Costs	5.00%						3,024,223
TOTAL CAPITAL COSTS							90,726,690

20u AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Low Activity Surface Soil Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Volume Reduction System (VRS)					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low-Activity Special Case Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)					
Bulk Waste Disposal Facility					
Operators	0	520	1.60	42.250	0
Engineers	4	520	1.00	59.150	123,032
RPT	5	520	1.00	59.150	153,790
Management/Admin	1	520	1.00	59.150	30,758
QA/QC	2	520	1.60	42.250	70,304
MTCE	1	520	1.00	59.150	30,758
Subtotal					408,642
Low Activity Packaged Waste Disposal System					
		0			
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0

200 AREA General

Subtotal					0
High-Activity Packaged Waste Disposal System					
Operators	4	520	1.60	42.250	140,608
Engineers	5	520	1.00	59.150	153,790
RPT	1	520	1.00	59.150	30,758
Management/Admin	2	520	1.00	59.150	61,516
QA/QC	1	520	1.60	42.250	35,152
MTCE	1	520	1.00	59.150	30,758
Subtotal					452,582
Slurry Dewatering Basins					
		0			
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Water Treatment Plant					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Grout Plants					
Operators	1	520	1.60	42.250	35,152
Engineers	1	520	1.00	59.150	30,758
RPT	1	520	1.00	59.150	30,758
Management/Admin	1	520	1.00	59.150	30,758
QA/QC	1	520	1.60	42.250	35,152
MTCE	0	0	1.00	59.150	0
Subtotal					162,578
Vibration-Aided Grout Injection System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
In Situ Vitrification Stabilization System					
Operators	0	0	1.60	42.250	0

200 AREA General

Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Closure - Hanford Barrier					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Backfilling Operations					
Operators	1	520	1.60	42.250	35,152
Engineers	1	520	1.00	59.150	30,758
RPT	0	520	1.00	59.150	0
Management/Admin	1	520	1.00	59.150	30,758
QA/QC	1	520	1.60	42.250	35,152
MTCE	1	520	1.00	59.150	30,758
Subtotal					162,578
Transportation System					
Operators	3	520	1.60	42.250	105,456
Engineers	1	520	1.00	59.150	30,758
RPT	0	520	1.00	59.150	0
Management/Admin	1	520	1.00	59.150	30,758
QA/QC	1	520	1.60	42.250	35,152
MTCE	0	520	1.00	59.150	0
Subtotal					202,124
Containers					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
TOTAL LABOR COSTS	43				1,388,504

200 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	9,211,519
Supplies and materials			1.0%	921,152
Utilities			15.0%	13,817,279
Maintenance			15.0%	13,817,279
Waste site disposal			10.0%	9,211,519
Decontamination and decommissioning			10.0%	9,211,519
Permitting			0.0%	0
Contingency			25.0%	23,028,799
TOTAL ALLOWANCE COSTS				79,219,067

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

TOTAL REMEDIATION COST 200 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				171,334,261

200 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Low Activity Surface Soil Excavation System							
*Soil Profiler	0	16.00	0	0	0	1	0
*Water Tanker/ Spray Truck	0	16.00	0	0	0	1	0
*Plant Plucker/Baler	0	16.00	0	0	0	1	0
*Fork Lifts	0	11.25	0	0	0	1	0
*Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
Volume Reduction System (VRS)							
*Soil Washing System	0	16.00	0	0	0	1	0
*Contaminated Soil Loading Stations	0	16.00	0	0	0	1	0
Subtotal							0
Low-Activity Special Case Excavation System							
Front End Loader	0	16.00	0	0	0	1	0
Shovel Excavators	0	18.00	0	0	0	1	0
Boom-Mounted Pipe Shear	0	12.00	0	0	0	1	0
Boom-Mounted Pipe Grappler	0	12.00	0	0	0	1	0
Boom-Mounted Impact Hammer	0	12.00	0	0	0	1	0
Boom-Mounted Torch	0	12.00	0	0	0	1	0
Water Tanker/Spray Truck	0	14.00	0	0	0	1	0
Dust Control System	0	4.00	0	0	0	1	0
Diesel Generator	0	8.00	0	0	0	1	0
Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)							
Bulk Waste Disposal Facility							
Truck Unload & Decon. Station	1	60.00	3,120	187,200	0	1	187,200
Rail Unload & Decon. Station	1	40.00	3,120	124,800	0	1	124,800
Container Unload & Decon. Station	1	30.00	3,120	93,600	0	1	93,600
Pipe Rack Unload & Decon. Station	1	10.00	3,120	31,200	0	1	31,200
Covered Tunnel System	0	8.00	0	0	0	1	0
Disposal Trenches (8,448 X 300ft.)	1	2.00	3,120	6,240	0	1	6,240
Trench Containment Structures	0	5.00	0	0	0	1	0
Ventilation System	1	9.00	3,120	28,080	0	1	28,080
Extended-Arm Excavators	1	12.00	3,120	37,440	0	1	37,440
Bucket Wheel Excavator	1	19.00	0	0	0	1	0
Bulldozers	2	16.00	3,120	49,920	0	1	99,840
Fan Banks	0	4.00	0	0	0	1	0
Fuel Truck	1	12.00	3,120	37,440	0	1	37,440
Fire Truck	1	12.00	3,120	37,440	0	1	37,440
Subtotal							683,280
Low Activity Packaged Waste Disposal System							

FY 96 - w/out containment facilities

*Disposal Trenches (8,448 X 300 ft.)	0	2.00	0	0	0	1	0
*Fork Lift	0	11.25	0	0	0	1	0
*Boom Crane	0	15.00	0	0	0	1	0
Subtotal							0
High-Activity Packaged Waste Disposal System							
*Unloading/Decontamination Station	1	60.00	3,120	187,200	0	1	187,200
*Vaults: (4900 X 150 ft.)	1	3.00	3,120	9,360	0	1	9,360
*Rail Cranes	1	13.00	3,120	40,560	0	1	40,560
*Bridge Cranes	1	13.00	3,120	40,560	0	1	40,560
Subtotal							277,680
Slurry Dewatering Basins							
*Dewatering Basins (600 X 300 ft.)	0	3.00	0	0	0	1	0
*Transfer Piping	0	1.00	0	0	0	1	0
Subtotal							0
Water Treatment Plant							
*Chemical Precipitation System	0	20.00	0	0	0	1	0
*Filtration System	0	17.00	0	0	0	1	0
*Ion Exchange System	0	15.00	0	0	0	1	0
Subtotal							0
Grout Plants							
*Fixed Grout Plant	1	73.00	3,120	227,760	0	1	227,760
*Mobile Grout Plant	0	14.00	0	0	0	1	0
Subtotal							227,760
Vibration-Aided Grout Injection System							
*Complete System	0	15.50	0	0	0	1	0
Subtotal							0
In Situ Vitrification Stabilization System							
*Electrode Assembly	0	2.00	0	0	0	1	0
*Power Supply	0	8.00	0	0	0	1	0
*Off-Gas Hoods	0	2.00	0	0	0	1	0
Off-Gas Treatment System	0	4.00	0	0	0	1	0
Subtotal							0
Closure - Hanford Barrier							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0
Landplane	0	16.00	0	0	0	1	0
Leveler	0	16.00	0	0	0	1	0

200 AREA General

Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Backfilling Operations							
Front End Loaders	1	16.00	3,120	49,920	0	1	49,920
Scraper	1	16.00	3,120	49,920	0	1	49,920
Bulldozer	1	16.00	3,120	49,920	0	1	49,920
Fuel Trucks	1	14.00	3,120	43,680	0	1	43,680
Subtotal							193,440
Transportation System							
Haul Trucks (100 cubic yard)	3	15.50	3,120	48,360	0	1	145,080
Flatbed Trucks	0	8.70	0	0	0	1	0
Semi Trucks	0	14.00	0	0	0	1	0
Trailers	0	3.00	0	0	0	1	0
Subtotal							145,080
Containers							
*Single use containers 50 cubic yard	0	0.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							1,299,480
Installation Costs	5.00%						64,974
Mobilization Costs	5.00%						64,974
Pilot Test Costs	5.00%						64,974
Technology and Eng. Dev. Costs	5.00%						64,974
TOTAL CAPITAL COSTS							1,559,376

200 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Low Activity Surface Soil Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Volume Reduction System (VRS)					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low-Activity Special Case Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)					
Bulk Waste Disposal Facility					
Operators	0	3,120	1.60	42.250	0
Engineers	4	3,120	1.00	59.150	738,192
RPT	5	3,120	1.00	59.150	922,740
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	2	3,120	1.60	42.250	421,824
MTCE	1	3,120	1.00	59.150	184,548
Subtotal					2,451,852
Low Activity Packaged Waste Disposal System		0			
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0

Subtotal					0
High-Activity Packaged Waste Disposal System					
Operators	4	3,120	1.60	42.250	843,648
Engineers	5	3,120	1.00	59.150	922,740
RPT	1	3,120	1.00	59.150	184,548
Management/Admin	2	3,120	1.00	59.150	369,096
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	1	3,120	1.00	59.150	184,548
Subtotal					2,715,492
Slurry Dewatering Basins					
		0			
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Water Treatment Plant					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Grout Plants					
Operators	1	3,120	1.60	42.250	210,912
Engineers	1	3,120	1.00	59.150	184,548
RPT	1	3,120	1.00	59.150	184,548
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	0	0	1.00	59.150	0
Subtotal					975,468
Vibration-Aided Grout Injection System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
In Situ Vitrification Stabilization System					
Operators	0	0	1.60	42.250	0

200 AREA General

Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Closure - Hanford Barrier					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Backfilling Operations					
Operators	1	3,120	1.60	42.250	210,912
Engineers	1	3,120	1.00	59.150	184,548
RPT	0	0	1.00	59.150	0
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	1	3,120	1.00	59.150	184,548
Subtotal					975,468
Transportation System					
Operators	3	3,120	1.60	42.250	632,736
Engineers	1	3,120	1.00	59.150	184,548
RPT	0	0	1.00	59.150	0
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	0	0	1.00	59.150	0
Subtotal					1,212,744
Containers					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
TOTAL LABOR COSTS	43				8,331,024

200 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	989,040
Supplies and materials			1.0%	98,904
Utilities			15.0%	1,483,560
Maintenance			15.0%	1,483,560
Waste site disposal			10.0%	989,040
Decontamination and decommissioning			10.0%	989,040
Permitting			0.0%	0
Contingency			25.0%	2,472,600
TOTAL ALLOWANCE COSTS				8,505,744

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

TOTAL REMEDIATION COST 200 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				18,396,144

200 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Low Activity Surface Soil Excavation System							
*Soil Profiler	0	16.00	0	0	0	1	0
*Water Tanker/ Spray Truck	0	16.00	0	0	0	1	0
*Plant Plucker/Baler	0	16.00	0	0	0	1	0
*Fork Lifts	0	11.25	0	0	0	1	0
*Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
Volume Reduction System (VRS)							
*Soil Washing System	0	16.00	0	0	0	1	0
*Contaminated Soil Loading Stations	0	16.00	0	0	0	1	0
Subtotal							0
Low-Activity Special Case Excavation System							
Front End Loader	0	16.00	0	0	0	1	0
Shovel Excavators	0	18.00	0	0	0	1	0
Boom-Mounted Pipe Shear	0	12.00	0	0	0	1	0
Boom-Mounted Pipe Grappler	0	12.00	0	0	0	1	0
Boom-Mounted Impact Hammer	0	12.00	0	0	0	1	0
Boom-Mounted Torch	0	12.00	0	0	0	1	0
Water Tanker/Spray Truck	0	14.00	0	0	0	1	0
Dust Control System	0	4.00	0	0	0	1	0
Diesel Generator	0	8.00	0	0	0	1	0
Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)							
Bulk Waste Disposal Facility							
Truck Unload & Decon. Station	1	60.00	3,120	187,200	0	1	187,200
Rail Unload & Decon. Station	1	40.00	3,120	124,800	0	1	124,800
Container Unload & Decon. Station	1	30.00	3,120	93,600	0	1	93,600
Pipe Rack Unload & Decon. Station	1	10.00	3,120	31,200	0	1	31,200
Covered Tunnel System	0	8.00	0	0	0	1	0
Disposal Trenches (8,448 X 300ft.)	1	2.00	3,120	6,240	0	1	6,240
Trench Containment Structures	0	5.00	0	0	0	1	0
Ventilation System	1	9.00	3,120	28,080	0	1	28,080
Extended-Arm Excavators	1	12.00	3,120	37,440	0	1	37,440
Bucket Wheel Excavator	1	19.00	0	0	0	1	0
Bulldozers	2	16.00	3,120	49,920	0	1	99,840
Fan Banks	0	4.00	0	0	0	1	0
Fuel Truck	1	12.00	3,120	37,440	0	1	37,440
Fire Truck	1	12.00	3,120	37,440	0	1	37,440
Subtotal							683,280
Low Activity Packaged Waste Disposal System							

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w/out containment facilities

*Disposal Trenches (8,448 X 300 ft.)	0	2.00	0	0	0	1	0
*Fork Lift	0	11.25	0	0	0	1	0
*Boom Crane	0	15.00	0	0	0	1	0
Subtotal							0
High-Activity Packaged Waste Disposal System							
*Unloading/Decontamination Station	1	60.00	3,120	187,200	0	1	187,200
*Vaults; (4900 X 150 ft.)	1	3.00	3,120	9,360	0	1	9,360
*Rail Cranes	1	13.00	3,120	40,560	0	1	40,560
*Bridge Cranes	1	13.00	3,120	40,560	0	1	40,560
Subtotal							277,680
Slurry Dewatering Basins							
*Dewatering Basins (600 X 300 ft.)	0	3.00	0	0	0	1	0
*Transfer Piping	0	1.00	0	0	0	1	0
Subtotal							0
Water Treatment Plant							
*Chemical Precipitation System	0	20.00	0	0	0	1	0
*Filtration System	0	17.00	0	0	0	1	0
*Ion Exchange System	0	15.00	0	0	0	1	0
Subtotal							0
Grout Plants							
*Fixed Grout Plant	1	73.00	3,120	227,760	0	1	227,760
*Mobile Grout Plant	0	14.00	0	0	0	1	0
Subtotal							227,760
Vibration-Aided Grout Injection System							
*Complete System	0	15.50	0	0	0	1	0
Subtotal							0
In Situ Vitrification Stabilization System							
*Electrode Assembly	0	2.00	0	0	0	1	0
*Power Supply	0	8.00	0	0	0	1	0
*Off-Gas Hoods	0	2.00	0	0	0	1	0
Off-Gas Treatment System	0	4.00	0	0	0	1	0
Subtotal							0
Closure - Hanford Barrier							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0
Landplane	0	16.00	0	0	0	1	0
Leveler	0	16.00	0	0	0	1	0

Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Backfilling Operations							
Front End Loaders	1	16.00	3,120	49,920	0	1	49,920
Scraper	1	16.00	3,120	49,920	0	1	49,920
Bulldozer	1	16.00	3,120	49,920	0	1	49,920
Fuel Trucks	1	14.00	3,120	43,680	0	1	43,680
Subtotal							193,440
Transportation System							
Haul Trucks (100 cubic yard)	3	15.50	3,120	48,360	0	1	145,080
Flatbed Trucks	0	8.70	0	0	0	1	0
Semi Trucks	0	14.00	0	0	0	1	0
Trailers	0	3.00	0	0	0	1	0
Subtotal							145,080
Containers							
*Single use containers 50 cubic yard	0	0.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							1,299,480
Installation Costs	5.00%						64,974
Mobilization Costs	5.00%						64,974
Pilot Test Costs	5.00%						64,974
Technology and Eng. Dev. Costs	5.00%						64,974
TOTAL CAPITAL COSTS							1,559,376

200 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Low Activity Surface Soil Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Volume Reduction System (VRS)					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low-Activity Special Case Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)					
Bulk Waste Disposal Facility					
Operators	0	3,120	1.60	42.250	0
Engineers	4	3,120	1.00	59.150	738,192
RPT	5	3,120	1.00	59.150	922,740
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	2	3,120	1.60	42.250	421,824
MTCE	1	3,120	1.00	59.150	184,548
Subtotal					2,451,852
Low Activity Packaged Waste Disposal System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0

200 AREA General

Subtotal					0
High-Activity Packaged Waste Disposal System					
Operators	4	3,120	1.60	42.250	843,648
Engineers	5	3,120	1.00	59.150	922,740
RPT	1	3,120	1.00	59.150	184,548
Management/Admin	2	3,120	1.00	59.150	369,096
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	1	3,120	1.00	59.150	184,548
Subtotal					2,715,492
Slurry Dewatering Basins					
		0			
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Water Treatment Plant					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Grout Plants					
Operators	1	3,120	1.60	42.250	210,912
Engineers	1	3,120	1.00	59.150	184,548
RPT	1	3,120	1.00	59.150	184,548
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	0	0	1.00	59.150	0
Subtotal					975,468
Vibration-Aided Grout Injection System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
In Situ Vitrification Stabilization System					
Operators	0	0	1.60	42.250	0

200 AREA General

Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Closure - Hanford Barrier					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Backfilling Operations					
Operators	1	3,120	1.60	42.250	210,912
Engineers	1	3,120	1.00	59.150	184,548
RPT	0	0	1.00	59.150	0
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	1	3,120	1.00	59.150	184,548
Subtotal					975,468
Transportation System					
Operators	3	3,120	1.60	42.250	632,736
Engineers	1	3,120	1.00	59.150	184,548
RPT	0	0	1.00	59.150	0
Management/Admin	1	3,120	1.00	59.150	184,548
QA/QC	1	3,120	1.60	42.250	210,912
MTCE	0	0	1.00	59.150	0
Subtotal					1,212,744
Containers					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
TOTAL LABOR COSTS	43				8,331,024

200 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	989,040
Supplies and materials			1.0%	98,904
Utilities			15.0%	1,483,560
Maintenance			15.0%	1,483,560
Waste site disposal			10.0%	989,040
Decontamination and decommissioning			10.0%	989,040
Permitting			0.0%	0
Contingency			25.0%	2,472,600
TOTAL ALLOWANCE COSTS				8,505,744

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

TOTAL REMEDIATION COST 200 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				18,396,144

200 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Low Activity Surface Soil Excavation System							
*Soil Profiler	0	16.00	0	0	0	1	0
*Water Tanker/ Spray Truck	0	16.00	0	0	0	1	0
*Plant Plucker/Baler	0	16.00	0	0	0	1	0
*Fork Lifts	0	11.25	0	0	0	1	0
*Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
Volume Reduction System (VRS)							
*Soil Washing System	0	16.00	0	0	0	1	0
*Contaminated Soil Loading Stations	0	16.00	0	0	0	1	0
Subtotal							0
Low-Activity Special Case Excavation System							
Front End Loader	0	16.00	0	0	0	1	0
Shovel Excavators	0	18.00	0	0	0	1	0
Boom-Mounted Pipe Shear	0	12.00	0	0	0	1	0
Boom-Mounted Pipe Grappler	0	12.00	0	0	0	1	0
Boom-Mounted Impact Hammer	0	12.00	0	0	0	1	0
Boom-Mounted Torch	0	12.00	0	0	0	1	0
Water Tanker/Spray Truck	0	14.00	0	0	0	1	0
Dust Control System	0	4.00	0	0	0	1	0
Diesel Generator	0	8.00	0	0	0	1	0
Fuel Truck	0	14.00	0	0	0	1	0
Subtotal							0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)							
Bulk Waste Disposal Facility							
Truck Unload & Decon. Station	0	60.00	0	0	2,000,000	1	0
Rail Unload & Decon. Station	0	40.00	0	0	2,000,000	1	0
Container Unload & Decon. Station	0	30.00	0	0	2,000,000	1	0
Pipe Rack Unload & Decon. Station	0	10.00	0	0	2,000,000	1	0
Covered Tunnel System	0	8.00	0	0	2,000,000	1	0
Disposal Trenches (8,448 X 300ft.)	0	2.00	0	0	23,000,000	1	0
Double liner system for the disposal trench	1	0.00	0	0	8,300,000	1	8,300,000
Trench Containment Structures	0	5.00	0	0	20,000,000	1	0
Ventilation System	0	9.00	0	0	6,000,000	1	0
Extended-Arm Excavators	0	12.00	0	0	240,000	1	0
Bucket Wheel Excavator	0	19.00	0	0	1,200,000	1	0
Bulldozers	0	16.00	0	0	150,000	1	0
Fan Banks	0	4.00	0	0	180,000	1	0
Fuel Truck	0	12.00	0	0	110,000	1	0
Fire Truck	0	12.00	0	0	140,000	1	0
Subtotal							8,300,000

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Double Liner System

Low Activity Packaged Waste Disposal System							
*Disposal Trenches (8,448 X 300 ft.)	0	2.00	0	0	0	1	0
*Fork Lift	0	11.25	0	0	0	1	0
*Boom Crane	0	15.00	0	0	0	1	0
Subtotal							0
High-Activity Packaged Waste Disposal System							
*Unloading/Decontamination Station	0	60.00	0	0	4,000,000	1	0
*Vaults: (4900 X 150 ft.)	0	3.00	0	0	16,000,000	1	0
*Rail Cranes	0	13.00	0	0	400,000	1	0
*Bridge Cranes	0	13.00	0	0	160,000	1	0
Subtotal							0
Slurry Dewatering Basins							
*Dewatering Basins (600 X 300 ft.)	0	3.00	0	0	0	1	0
*Transfer Piping	0	1.00	0	0	0	1	0
Subtotal							0
Water Treatment Plant							
*Chemical Precipitation System	0	20.00	0	0	0	1	0
*Filtration System	0	17.00	0	0	0	1	0
*Ion Exchange System	0	15.00	0	0	0	1	0
Subtotal							0
Grout Plants							
*Fixed Grout Plant	0	73.00	0	0	5,000,000	1	0
*Mobile Grout Plant	0	14.00	0	0	1,700,000	1	0
Subtotal							0
Vibration-Aided Grout Injection System							
*Complete System	0	15.50	0	0	0	1	0
Subtotal							0
In Situ Vitrification Stabilization System							
*Electrode Assembly	0	2.00	0	0	0	1	0
*Power Supply	0	8.00	0	0	0	1	0
*Off-Gas Hoods	0	2.00	0	0	0	1	0
Off-Gas Treatment System	0	4.00	0	0	0	1	0
Subtotal							0
Closure - Hanford Barrier							
Front End Loaders	0	16.00	0	0	0	1	0
Scraper	0	16.00	0	0	0	1	0
Bulldozer	0	16.00	0	0	0	1	0

200 AREA General

Landplane	0	16.00	0	0	0	1	0
Leveler	0	16.00	0	0	0	1	0
Fuel Trucks	0	14.00	0	0	0	1	0
Subtotal							0
Backfilling Operations							
Front End Loaders	0	16.00	0	0	100,000	1	0
Scraper	0	16.00	0	0	90,000	1	0
Bulldozer	0	16.00	0	0	150,000	1	0
Fuel Trucks	0	14.00	0	0	110,000	1	0
Subtotal							0
Transportation System							
Haul Trucks (100 cubic yard)	0	15.50	0	0	86,000	1	0
Flatbed Trucks	0	8.70	0	0	110,000	1	0
Semi Trucks	0	14.00	0	0	120,000	1	0
Trailers	0	3.00	0	0	40,000	1	0
Subtotal							0
Containers							
Single use containers 50 cubic yard	0	0.00	0	0	0	1	0
Subtotal							0
SUBTOTAL CAPITAL COSTS							8,300,000
Installation Costs	20.00%						1,660,000
Mobilization Costs	20.00%						1,660,000
Pilot Test Costs	5.00%						415,000
Technology and Eng. Dev. Costs	5.00%						415,000
TOTAL CAPITAL COSTS							12,450,000

200 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Low Activity Surface Soil Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Volume Reduction System (VRS)					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low-Activity Special Case Excavation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
HANFORD MONITORED WASTE DISPOSAL SYSTEM (HMWDS)					
Bulk Waste Disposal Facility					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Low Activity Packaged Waste Disposal System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0

200 AREA General

Subtotal					0
High-Activity Packaged Waste Disposal System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Slurry Dewatering Basins					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Water Treatment Plant					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Grout Plants					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Vibration-Aided Grout Injection System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
In Situ Vitrification Stabilization System					
Operators	0	0	1.60	42.250	0

200 AREA General

Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Closure - Hanford Barrier					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Backfilling Operations					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Transportation System					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
Containers					
Operators	0	0	1.60	42.250	0
Engineers	0	0	1.00	59.150	0
RPT	0	0	1.00	59.150	0
Management/Admin	0	0	1.00	59.150	0
QA/QC	0	0	1.60	42.250	0
MTCE	0	0	1.00	59.150	0
Subtotal					0
TOTAL LABOR COSTS	0				0

200 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	1,245,000
Supplies and materials			1.0%	124,500
Utilities			15.0%	1,867,500
Maintenance			15.0%	1,867,500
Waste site disposal			10.0%	1,245,000
Decontamination and decommissioning			10.0%	1,245,000
Permitting			0.0%	0
Contingency			20.0%	2,490,000
TOTAL ALLOWANCE COSTS				10,084,500

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				0

TOTAL REMEDIATION COST 200 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				22,534,500

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100 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Pre-excavation equipment							
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	11.75	3,120	36,660	1,200,000	1	2,473,320
*Dump truck, 75-85 ton (1st unit)	2	15.50	3,120	48,360	86,000	1	268,720
*Instrumentation vehicle	1	14.00	3,120	43,680	170,000	1	213,680
Subtotal							2,955,720
Excavation equipment							
*Containment structures: 1000x400	0	5.00	0	0	0	1	0
*Containment structures: 600x400	0	5.00	0	0	0	1	0
*Containment structures: 400x400	1	5.00	3,120	15,600	7,200,000	1	7,215,600
*Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	1	15.00	3,120	46,800	400,000	1	446,800
Subtotal							7,662,400
Containment structure fire suppression							
*Water tank	1	0.00	3,120	0	13,000	1	13,000
*Containment structure	1	0.00	3,120	0	60,000	1	60,000
Subtotal							73,000
Conveyor systems							
* 36" belt, 800' long	1	0.00	3,120	0	8,000	1	8,000
* 54" apron feeder	1	0.00	3,120	0	5,000	1	5,000
*Feed hopper/w 12" grizzly	1	0.00	3,120	0	1,200	1	1,200
*Skid 800' long w/ winch	1	6.70	3,120	20,904	45,000	1	65,904
*Feed bins, 2 compartments	1	0.00	3,120	0	10,000	1	10,000
* 36" belt, 400' long	0	0.00	0	0	0	1	0
* 36" belt, 200' long	0	0.00	0	0	0	1	0
*Conveyor dust control: vacuum hood w/ exhauster, pre-filters,HEPA filters	1	3.00	3,120	9,360	25,000	1	34,360
*GM detector instrument package	1	0.00	520	0	20,000	1	20,000
*Automatic sampler	1	0.00	520	0	220,000	1	220,000
Subtotal							364,464
Front-end loaders							
*Caterpillar 992 (w/ 13 yd bucket)	1	11.75	3,120	36,660	1,200,000	1	1,236,660
*Caterpillar 992 (w/ 10 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 7 yd bucket)	1	11.75	3,120	36,660	1,200,000	1	1,236,660
*Bulldozers: Caterpillar D-9	1	10.80	3,120	33,696	100,000	1	133,696
*Bulldozers: Caterpillar D-8	0	10.80	0	0	0	1	0
*Instrumentation vehicle	1	14.00	3,120	43,680	170,000	1	213,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	110,000	1	159,920

100 B
Alternative
FY96

Subtotal							2,980,616
Demolition tools, concrete & metal tanks							
*Excavator Caterpillar 235 C (90k lb base)	1	25.90	3,120	80,808	325,000	1	405,808
*Universal Processor U90 (LaBounty)							
* -Concrete cracking jaws	1	9.00	3,120	28,080	30,000	1	58,080
* -Shear jaws	1	9.00	3,120	28,080	47,000	1	75,080
* -Grapple jaws	1	9.00	3,120	28,080	40,000	1	68,080
* -Wood shear jaws	1	9.00	3,120	28,080	44,000	1	72,080
* -Plate shear jaws	1	9.00	3,120	28,080	47,000	1	75,080
* -Hydraulic hammer	1	9.00	3,120	28,080	42,000	1	70,080
Subtotal							754,208
Pipeline removal							
*Expose pipe; backhoe (3 cy. bucket)	1	14.00	3,120	43,680	150,000	1	193,680
*Grout pump truck	1	12.00	3,120	37,440	90,000	1	127,440
*Instrumentation vehicle	1	14.00	3,120	43,680	170,000	1	213,680
Subtotal							534,800
Pipeline removal, land							
*Excavator; Caterpillar 235C (90k lb base)	1	25.90	3,120	80,808	325,000	1	405,808
*Universal Processor U90 attachments	1	15.00	3,120	46,800	67,000	1	113,800
* -Concrete cracking jaws	1	9.00	3,120	28,080	30,000	1	58,080
-Hydraulic hammer	1	9.00	3,120	28,080	42,000	1	70,080
* -Shear jaws	1	9.00	3,120	28,080	47,000	1	75,080
* -Grapple jaws	1	9.00	3,120	28,080	40,000	1	68,080
* -Wood shear jaws	1	9.00	3,120	28,080	44,000	1	72,080
*Material densifier;MD50 (LaBounty)	1	9.00	3,120	28,080	65,000	1	93,080
*Instrumentation vehicle	1	14.00	3,120	43,680	170,000	1	213,680
*Group pump truck	1	14.00	3,120	43,680	150,000	1	193,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	110,000	1	159,920
*Truck, flatbed	1	14.00	3,120	43,680	110,000	1	153,680
*Pipe racks	1	4.00	3,120	12,480	30,000	1	42,480
Subtotal							1,719,528
Intact drum removal							
*Drum handling attachment for UP90 backhoe (3 yard bucket)	1	9.00	3,120	28,080	17,000	1	45,080
Subtotal							45,080
Pipeline removal, river							
*Clamshell dredge	0	9.00	0	0	0	1	0
*Gamma scan mole	0	1.00	0	0	0	1	0
*Container barge & tug	0	11.50	0	0	0	1	0

Subtotal							0
VOC venting equipment							
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	17.00	0	0	0	1	0
*Low temperature thermal desorber	0	1.00	0	0	0	1	0
Subtotal							0
Rail transport							
*Diesel electric locomotive 30,400 lb draw bar pull	1	20.00	3,120	62,400	750,000	1	812,400
*Flat bed cars w/ bulkheads	16	3.00	3,120	9,360	85,000	1	1,509,760
Subtotal							2,322,160
Containers - reusable 50 yd3							
*Type 1: loading door	148	0.00	3,120	0	5,000	1	740,000
*Type 2: loading ports	0	0.00	0	0	0	1	0
Subtotal							740,000
Containers - single use 50 yd3							
*Type 3: loading door	233	0.00	3,120	0	5,000	1	1,165,000
*Type 4: loading ports	0	0.00	0	0	0	1	0
Subtotal							1,165,000
Mobile Laboratories							
*Mobile laboratories (chem and rad)	2	18.50	3,120	57,720	3,000,000	1	6,115,440
Subtotal							6,115,440
Miscellaneous							
*Overpacks unsheilded for type 1 box	148	0.00	3,120	0	15,000	1	2,220,000
*Overpacks sheilded for type 3/4 box	5	0.00	3,120	0	15,000	1	75,000
*Walking gantry crane (100 tons)	1	19.50	3,120	60,840	400,000	1	460,840
*Bridge crane 100 tons (box loading)	1	21.00	3,120	65,520	450,000	1	515,520
*Bridge crane100tons(container load)	1	21.00	3,120	65,520	450,000	1	515,520
*Truck mounted articulating crane	1	19.00	3,120	59,280	180,000	1	239,280
Subtotal							4,026,160
SUBTOTAL CAPITAL COSTS							31,458,576
Installation Costs	25.00%						7,864,644
Mobilization Costs	25.00%						7,864,644

100 AREA General

Pilot Test Costs	25.00%	7,864,644
Technology and Eng. Dev. Costs	5.00%	1,572,929
TOTAL CAPITAL COSTS		56,625,437

100 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	3,120	1.60	42.250	421,824
*Dump truck, 75-85 ton	2	3,120	1.60	42.250	421,824
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					1,054,560
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	1	3,120	1.60	42.250	210,912
*Caterpillar 992 (w/ 10 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 7 yd bucket)	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-9	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-8	0	0	1.60	42.250	0
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
Subtotal					843,648
Pipeline removal					
*Expose pipe; 2 ops in parallel	1	3,120	1.60	42.250	210,912
* backhoe (3 yard bucket)			1.60		
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					632,736
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	1	3,120	1.60	42.250	210,912
*Universal Processor U90 attachments	0	0	1.60	42.250	0
* -Concrete cracking jaws	0	0	1.60	42.250	0
* -Shear jaws	0	0	1.60	42.250	0
* -Grapple jaws	0	0	1.60	42.250	0
* -Wood shear jaws	0	0	1.60	42.250	0
*Material densifier;MD50 (LaBounty)	1	3,120	1.60	42.250	210,912
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	1	3,120	1.60	42.250	210,912
*Truck, flatbed	1	3,120	1.60	42.250	210,912
Subtotal					1,265,472
Pipeline removal, river					
*Clamshell dredge	0	0	1.60	42.250	0
*Container barge & tug	0	0	1.60	42.250	0
Subtotal					0

100 AREA General

VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	0	1.60	42.250	0
Subtotal					0
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	3	3,120	1.60	42.250	632,736
*Flat bed cars w/ bulkheads	0	0	1.60	42.250	0
Subtotal					632,736
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	0	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	0	1.60	42.250	0
*Walking gantry crane (100 tons)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (box loading)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (cont. load)	1	3,120	1.60	42.250	210,912
*Truck mounted articulating crane	1	3,120	1.60	42.250	210,912
Subtotal					1,265,472
Operations support manpower					
*Heavy equipment maintenance	3	3,120	1.60	42.250	632,736
*General maintenance	2	3,120	1.60	42.250	421,824
*Quality Assurance	2	3,120	1.60	42.250	421,824
*Management/administration	3	3,120	1.60	59.150	885,830
*Decontamination	3	3,120	1.60	59.150	885,830
*Health physics	4	3,120	1.60	59.150	1,181,107
*Field engineers/scientists	4	3,120	1.60	59.150	1,181,107
*Health and safety	2	3,120	1.60	59.150	590,554
*General laborers	4	3,120	1.60	42.250	843,648
*Samplers	4	3,120	1.60	42.250	843,648
Subtotal					7,888,109
Mobile laboratory personnel					
*Chemists	4	3,120	1.00	59.150	738,192
*Support staff	2	3,120	1.00	42.250	263,640
Subtotal					1,001,832
TOTAL LABOR COSTS	64				14,584,565

100 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	7,121,000
Supplies and materials			1.0%	712,100
Utilities			15.0%	10,681,500
Maintenance			15.0%	10,681,500
Waste site disposal			10.0%	7,121,000
Decontamination and decommissioning			10.0%	7,121,000
Permitting			0.0%	0
Contingency			25.0%	17,802,500
TOTAL ALLOWANCE COSTS				61,240,601

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				1,987,000

TOTAL REMEDIATION COST 100 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				134,437,603

FY97 —

100B Alternative

100 AREA General

CAPITAL	Qty	Op Cost per/hr	Duration Hours	Net	Cost per Item	Replace Factor	Total Cost
Pre-excavation equipment							
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	11.75	3,120	36,660	0	1	73,320
*Dump trucks, 75-85 ton	2	15.50	3,120	48,360	0	1	96,720
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
Subtotal							213,720
Excavation equipment							
*Containment structures: 1000x400	0	5.00	0	0	0	1	0
*Containment structures: 600x400	0	5.00	0	0	0	1	0
*Containment structures: 400x400	1	5.00	3,120	15,600	0	1	15,600
*Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	1	15.00	3,120	46,800	0	1	46,800
Subtotal							62,400
Containment structure fire suppression							
*Water tank	1	0.00	3,120	0	0	1	0
*Containment structure	1	0.00	3,120	0	0	1	0
Subtotal							0
Conveyor systems							
* 36" belt, 800' long	1	0.00	3,120	0	0	1	0
* 54" apron feeder	1	0.00	3,120	0	0	1	0
*Feed hopper/w 12" grizzly	1	0.00	3,120	0	0	1	0
*Skid 800' long w/ winch	1	6.70	3,120	20,904	0	1	20,904
*Feed bins, 2 compartments	1	0.00	3,120	0	0	1	0
* 36" belt, 400' long	0	0.00	0	0	0	1	0
* 36" belt, 200' long	0	0.00	0	0	0	1	0
*Conveyor dust control: vacuum hood w/ exhauster, pre-filters,HEPA filters	1	3.00	3,120	9,360	0	1	9,360
*GH detector instrument package	1	0.00	3,120	0	0	1	0
*Automatic sampler	1	0.00	3,120	0	0	1	0
Subtotal							30,264
Front-end loaders							
*Caterpillar 992 (w/ 13 yd bucket)	1	11.75	3,120	36,660	0	1	36,660
*Caterpillar 992 (w/ 10 yd bucket)	0	11.75	0	0	0	1	0
*Caterpillar 992 (w/ 7 yd bucket)	1	11.75	3,120	36,660	0	1	36,660
*Bulldozers: Caterpillar D-9	1	10.80	3,120	33,696	0	1	33,696
*Bulldozers: Caterpillar D-8	0	10.80	0	0	0	1	0
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	0	1	49,920

100 AREA General

Subtotal							0
VOC venting equipment							
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	17.00	0	0	0	1	0
*Low temperature thermal desorber	0	1.00	0	0	0	1	0
Subtotal							0
Rail transport							
*Diesel electric locomotive 30,400 lb draw bar pull	1	20.00	3,120	62,400	0	1	62,400
*Flat bed cars w/ bulkheads	16	3.00	3,120	9,360	0	1	149,760
Subtotal							212,160
Containers - reusable 50 yd3							
*Type 1: loading door	0	0.00	3,120	0	0	1	0
*Type 2: loading ports	0	0.00	0	0	0	1	0
Subtotal							0
Containers - single use 50 yd3							
*Type 3: loading door	233	0.00	3,120	0	5,000	1	1,165,000
*Type 4: loading ports	0	0.00	0	0	0	1	0
Subtotal							1,165,000
Mobile Laboratories							
*Mobile laboratories (chem and rad)	2	18.50	3,120	57,720	0	1	115,440
Subtotal							115,440
Miscellaneous							
*Overpacks unsheilded for type 1 box	0	0.00	3,120	0	0	1	0
*Overpacks sheilded for type 3/4 box	0	0.00	0	0	0	1	0
*Walking gantry crane (100 tons)	1	19.50	3,120	60,840	0	1	60,840
*Bridge crane 100 tons (box loading)	1	21.00	3,120	65,520	0	1	65,520
*Bridge crane100tons(container load)	1	21.00	3,120	65,520	0	1	65,520
*Truck mounted articulating crane	1	19.00	3,120	59,280	0	1	59,280
Subtotal							251,160
SUBTOTAL CAPITAL COSTS							3,114,376
Installation Costs	5.00%						155,719
Mobilization Costs	5.00%						155,719

100 AREA General

Pilot Test Costs	0.00%	0
Technology and Eng. Dev. Costs	0.00%	0
TOTAL CAPITAL COSTS		3,425,814

100 AREA General

LABOR	Staff size	Duration Hours	Efficiency Factor	Cost/hr w/ OH	Total Cost
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	3,120	1.60	42.250	421,824
*Dump truck, 75-85 ton	2	3,120	1.60	42.250	421,824
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					1,054,560
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	1	3,120	1.60	42.250	210,912
*Caterpillar 992 (w/ 10 yd bucket)	0	0	1.60	42.250	0
*Caterpillar 992 (w/ 7 yd bucket)	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-9	1	3,120	1.60	42.250	210,912
*Bulldozers: Caterpillar D-8	0	0	1.60	42.250	0
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	0	0	1.60	42.250	0
Subtotal					843,648
Pipeline removal					
*Expose pipe; 2 ops in parallel * backhoe (3 yard bucket)	1	3,120	1.60	42.250	210,912
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
Subtotal					632,736
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	1	3,120	1.60	42.250	210,912
*Universal Processor U90 attachments	0	0	1.60	42.250	0
* -Concrete cracking jaws	0	0	1.60	42.250	0
* -Shear jaws	0	0	1.60	42.250	0
* -Grapple jaws	0	0	1.60	42.250	0
* -Wood shear jaws	0	0	1.60	42.250	0
*Material densifier;MD50 (LaBounty)	0	0	1.60	42.250	0
*Instrumentation vehicle	1	3,120	1.60	42.250	210,912
*Grout pump truck	1	3,120	1.60	42.250	210,912
*Water truck 8000 gallon tank	1	3,120	1.60	42.250	210,912
*Truck, flatbed	1	3,120	1.60	42.250	210,912
Subtotal					1,054,560
Pipeline removal, river					
*Clamshell dredge	0	0	1.60	42.250	0
*Container barge & tug	0	0	1.60	42.250	0
Subtotal					0

100 AREA General

VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	0	0	1.60	42.250	0
Subtotal					0
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	3	3,120	1.60	42.250	632,736
*Flat bed cars w/ bulkheads	0	0	1.60	42.250	0
Subtotal					632,736
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	0	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	0	1.60	42.250	0
*Walking gantry crane (100 tons)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (box loading)	2	3,120	1.60	42.250	421,824
*Bridge crane 100 tons (cont. load)	1	3,120	1.60	42.250	210,912
*Truck mounted articulating crane	1	3,120	1.60	42.250	210,912
Subtotal					1,265,472
Operations support manpower					
*Heavy equipment maintenance	3	3,120	1.60	42.250	632,736
*General maintenance	2	3,120	1.60	42.250	421,824
*Quality Assurance	2	3,120	1.60	42.250	421,824
*Management/administration	3	3,120	1.60	59.150	885,830
*Decontaimination	3	3,120	1.60	59.150	885,830
*Health physics	4	3,120	1.60	59.150	1,181,107
*Field engineers/scientists	4	3,120	1.60	59.150	1,181,107
*Health and safety	2	3,120	1.60	59.150	590,554
*General laborers	4	3,120	1.60	42.250	843,648
*Samplers	4	3,120	1.60	42.250	843,648
Subtotal					7,888,109
Mobile laboratory personnel					
*Chemists	4	3,120	1.00	59.150	738,192
*Support staff	2	3,120	1.00	42.250	263,640
Subtotal					1,001,832
TOTAL LABOR COSTS	63				14,373,653

Subtotal							200,616
Demolition tools, concrete & metal tanks							
*Excavator Caterpillar 235 C (90k lb base)	1	25.90	3,120	80,808	0	1	80,808
*Universal Processor U90 (LaBounty)							
* -Concrete cracking jaws	1	9.00	3,120	28,080	0	1	28,080
* -Shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Grapple jaws	1	9.00	3,120	28,080	0	1	28,080
* -Wood shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Plate shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Hydraulic hammer	1	9.00	3,120	28,080	0	1	28,080
Subtotal							221,208
Pipeline removal							
*Expose pipe; backhoe (3 cy. bucket)	1	14.00	3,120	43,680	0	1	43,680
*Grout pump truck	1	12.00	3,120	37,440	0	1	37,440
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
Subtotal							124,800
Pipeline removal, land							
*Excavator; Caterpillar 235C (90k lb base)	1	25.90	3,120	80,808	0	1	80,808
*Universal Processor U90 attachments	1	15.00	3,120	46,800	0	1	46,800
* -Concrete cracking jaws	1	9.00	3,120	28,080	0	1	28,080
-Hydraulic hammer	1	9.00	3,120	28,080	0	1	28,080
* -Shear jaws	1	9.00	3,120	28,080	0	1	28,080
* -Grapple jaws	1	9.00	3,120	28,080	0	1	28,080
* -Wood shear jaws	1	9.00	3,120	28,080	0	1	28,080
*Material densifier;WD50 (LaBounty)	1	9.00	3,120	28,080	0	1	28,080
*Instrumentation vehicle	1	14.00	3,120	43,680	0	1	43,680
*Grout pump truck	1	14.00	3,120	43,680	0	1	43,680
*Water truck 8000 gallon tank	1	16.00	3,120	49,920	0	1	49,920
*Truck, flatbed	1	14.00	3,120	43,680	0	1	43,680
*Pipe racks	1	4.00	3,120	12,480	0	1	12,480
Subtotal							489,528
Intact drum removal							
*Drum handling attachment for UP90 backhoe (3 yard bucket)	1	9.00	3,120	28,080	0	1	28,080
Subtotal							28,080
Pipeline removal, river							
*Clamshell dredge	0	9.00	0	0	0	1	0
*Gamma scan mole	0	1.00	0	0	0	1	0
*Container barge & tug	0	11.50	0	0	0	1	0

100 AREA General

ALLOWANCES	XXXXXX	XXXXXX	Percent	Total Cost
Operating contractor costs			10.0%	1,779,947
Supplies and materials			1.0%	177,995
Utilities			15.0%	2,669,920
Maintenance			15.0%	2,669,920
Waste site disposal			10.0%	1,779,947
Decontamination and decommissioning			10.0%	1,779,947
Permitting			0.0%	0
Contingency			25.0%	4,449,867
TOTAL ALLOWANCE COSTS				15,307,541

ANALYTICAL	XXXXXX	XXXXXX	XXXXXX	Total Cost
Total analytical (from other worksheet)				1,987,000

TOTAL REMEDIATION COST 100 AREA	XXXXXX	XXXXXX	XXXXXX	Total Cost
TOTAL				35,094,008

9 2 1 2 1 7 3 0 9 1 6

100 AREA General

[redacted]	(A) Qty	(B) Op Cost per/hr	(C) Duration Hours	(D) Net (B)*(C)	(E) Cost per Item	(F) Replace Factor	Total Cost (A)*[(D)+((E)*(F))]	
Pre-excavation equipment								
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	1	11.75	62,400	733,200	120,000*	4	1,213,200	EECG - EARTH MOVING EQUIPMENT - P.3 *DOES NOT INCLUDE SPARE SHIELDING
*Dump truck, 75-85 ton	5	15.50	62,400	967,200	86,000	4	6,556,000	EECG - TRUCKS & TRAILERS P.1
*Instrumentation vehicle	1	14.00	62,400	873,600	170,000	4	1,553,600	ATK ESTIMATES
Subtotal							9,322,800	
Excavation equipment								
*Containment structures: 1000x400	1	5.00	62,400	312,000	18,000,000	4	72,312,000	$45/ft² AVE NEAR F. LAMPSON CO. (UHL STUDY)
*Containment structures: 600x400	1	5.00	62,400	312,000	10,800,000	4	43,512,000	
*Containment structures: 400x400	1	5.00	62,400	312,000	7,200,000	4	29,112,000	
*Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	5	15.00	62,400	936,000	400,000	4	12,680,000	TRUCK - $100,000 / OTHER $300,000 / OPERATING COST EST.
Subtotal							157,616,000	
Containment structure fire suppression								
*Water tank	3	0.00	62,400	0	13,000	4	156,000	EECG
*Containment structure	3	0.00	62,400	0	60,000	1	180,000	CONST. - ESTIMATED
Subtotal							336,000	
Conveyor systems								
* 36" belt, 800' long	3	0.00	62,400	0	8,000	4	96,000	TOTAL CONVEYOR SYSTEM COST $100K
* 54" apron feeder	3	0.00	62,400	0	5,000	4	60,000	OPERATING COSTS = $9.70 PER HOUR
*Feed hopper/w 12" grizzly	3	0.00	62,400	0	1,200	4	14,400	
*Skid 800' long w/ winch	3	6.70	62,400	418,080	45,000	4	1,794,240	BASED ON EECG FOR INDIVIDUAL PARTS + ATK EST.
*Feed bins, 2 compartments	3	0.00	62,400	0	10,000	4	120,000	
* 36" belt, 400' long	2	0.00	62,400	0	4,000	4	32,000	
* 36" belt, 200' long	2	0.00	62,400	0	2,000	4	16,000	
*Conveyor dust control; vacuum hood w/ exhauster, pre-filters, HEPA filters	3	3.00	62,400	187,200	25,000	4	861,600	
*GH detector instrument package	4	0.00	62,400	0	20,000	4	320,000	ATK EST.
*Automatic sampler	4	0.00	62,400	0	220,000	4	3,520,000	
Subtotal							6,834,240	
Front-end loaders								
*Caterpillar 992 (w/ 13 yd bucket)	5	11.75	62,400	733,200	120,000	4	6,066,000	EECG - EARTH MOVING EQUIPMENT P.3
*Caterpillar 992 (w/ 10 yd bucket)	1	11.75	62,400	733,200	120,000	4	1,213,200	
*Caterpillar 992 (w/ 7 yd bucket)	3	11.75	62,400	733,200	120,000	4	3,639,600	
*Bulldozers: Caterpillar D-9	3	10.80	62,400	673,920	100,000	4	3,221,760	EECG - EARTH MOVING EQUIPMENT P.1
*Bulldozers: Caterpillar D-8	2	10.80	62,400	673,920	100,000	4	2,147,840	
*Instrumentation vehicle	5	14.00	62,400	873,600	170,000	4	7,768,000	ATK ESTIMATES
*Water truck 8000 gallon tank	5	16.00	62,400	998,400	110,000	4	7,192,000	EECG - HEAVY TRUCK SECTION

*QTY REPRESENTS NUMBER OF ITEMS REQUIRED AT A GIVEN POINT IN TIME -- SUPPLIED BY AREA COORDINATOR

*DURATION HOURS HOURS OF USE (2080 HR YR) SUPPLIED BY AREA COORDINATOR

*REPLACE FACTOR - FACTOR UTILIZED TO ACCOUNT FOR NUMBER OF TIMES EQUIPMENT IS REPLACED - UTILIZED 4 CONSISTENT ACROSS THE BOARD

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Subtotal							31,248,400	
Demolition tools, concrete & metal tanks								
•Excavator Caterpillar 235 C (90k lb base)	5	25.90	62,400	1,616,160	325,000	4	14,580,800	EECG - HEAVY EQUIPMENT P15
•Universal Processor U90 (LaBounty)								
• -Concrete cracking jaws	4	9.00	62,400	561,600	30,000	4	2,726,400	LABOUNTY WEST REGION SALES MAP
• -Shear jaws	4	9.00	62,400	561,600	47,000	4	2,998,400	
• -Grapple jaws	4	9.00	62,400	561,600	40,000	4	2,886,400	
• -Wood shear jaws	1	9.00	62,400	561,600	44,000	4	737,600	
• -Plate shear jaws	4	9.00	62,400	561,600	47,000	4	2,998,400	
• -Hydraulic hammer	2	9.00	62,400	561,600	42,000	4	1,459,200	
Subtotal							26,928,000	
Pipeline removal								
•Expose pipe; 2 ops in parallel backhoe (3 yard bucket)	2	14.00	62,400	873,600	150,000	4	2,947,200	EECG
•Grout pump truck	2	12.00	62,400	748,800	90,000	4	2,217,600	EECG
•Instrumentation vehicle	2	14.00	62,400	873,600	170,000	4	3,107,200	ATK ESTIMATE
Subtotal							8,272,000	
Pipeline removal, land								
•Excavator; Caterpillar 235C (90k lb base)	5	25.90	62,400	1,616,160	325,000	4	14,580,800	
•Universal Processor U90 attachments	4	15.00	62,400	936,000	67,000	4	4,816,000	LABOUNTY WEST REGION SALES MAP
• -Concrete cracking jaws	2	9.00	62,400	561,600	30,000	4	1,363,200	
-Hydraulic hammer	1	9.00	62,400	561,600	42,000	4	729,600	
• -Shear jaws	1	9.00	62,400	561,600	47,000	4	749,600	
• -Grapple jaws	1	9.00	62,400	561,600	40,000	4	721,600	
• -Wood shear jaws	1	9.00	62,400	561,600	44,000	4	737,600	
•Material densifier;MD50 (LaBounty)	1	9.00	62,400	561,600	65,000	4	821,600	
•Instrumentation vehicle	1	14.00	62,400	873,600	170,000	4	1,553,600	ATK ESTIMATE
•Group pump truck	1	14.00	62,400	873,600	150,000	4	1,473,600	
•Water truck 8000 gallon tank	1	16.00	62,400	998,400	110,000	4	1,438,400	EECG - HEAVY EQUIPMENT SECTION
•Truck, flatbed	2	14.00	62,400	873,600	110,000	4	2,627,200	EECG - TRUCKS & TRAILERS P3
•Pipe racks	18	4.00	62,400	249,600	30,000	4	6,652,800	EST. BASED ON THINK COSTS - W/ LONG DISTANCE AK TO MAKE-UP / QTY ETC.
Subtotal							38,265,600	
Intact drum removal								
•Drum handling attachment for UP90 backhoe (3 yard bucket)	2	9.00	62,400	561,600	17,000	4	1,259,200	PER LABOUNTY, WEST REGION SALES MAP
Subtotal							1,259,200	
Pipeline removal, river								
•Clamshell dredge	1	9.00	62,400	561,600	45,000	4	741,600	PER DISCUSSION W/ PACIFIC SHIPPING EX-EXECUTIVE - EXTENSIVE WORK W/ THE ATK EST.
•Gamma scan mole	1	1.00	62,400	62,400	100,000	4	462,400	

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*Container barge & tug	1	11.50	62,400	717,600	175,000	4	1,417,600	PER DISCUSSION W/ THE LIFE SHIPPING BX-BX & BX-BC (TOTAL
Subtotal							2,621,600	
VOC venting equipment								
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	1	17.00	62,400	1,060,800	225,000	4	1,960,800	TRAILER COST PER EECG + PUMP + INC COST PER PERSONAL EXPERIENCE
*Low temperature thermal desorber	1	1.00	62,400	62,400	50,000	4	262,400	ATC ESTIMATE
Subtotal							2,223,200	
Rail transport								
*Diesel electric locomotive 30,400 lb draw bar pull	3	20.00	62,400	1,248,000	150,000	4	5,544,000	PER REC (BRIAN WILLIAMS)
*Flat bed cars w/ bulkheads	48	3.00	62,400	187,200	85,000	4	25,305,600	- USED LWLD, $75,000 EA LIFE - 5 YRS - NEW $400,000 LIFE - 20 YRS TOTAL COSTS ARE EQUAL (SEE BACK-UP)
Subtotal							30,849,600	
Containers - reusable 50 yd3								
*Type 1: loading door	109	0.00	62,400	0	5,000	1	545,000	PER CONTRACTOR ESTIMATES IN CONSTRUCT
*Type 2: loading ports	345	0.00	62,400	0	5,000	1	1,725,000	
Subtotal							2,270,000	W LIFT-UP (UTILIZED)
Containers - single use 50 yd3								
*Type 3: loading ports	8,042	0.00	62,400	0	5,000	1	40,210,000	HIGHEST EST COST
*Type 4: loading ports	12,495	0.00	62,400	0	5,000	1	62,475,000	FOR CONSERVATISM
Subtotal							102,685,000	
Miscellaneous								
*Overpacks unsheilded for type 1 box	109	0.00	62,400	0	15,000	1	1,635,000	ATC ESTIMATE
*Overpacks sheilded for type 3/4 box	23	0.00	62,400	0	15,000	1	345,000	
*Walking gantry crane (100 tons)	3	19.50	62,400	1,216,800	400,000	4	8,450,400	PER THE LIFE SHIPPING BX-BX &
*Bridge crane 100 tons (box loading)	3	21.00	62,400	1,310,400	450,000	4	9,331,200	
*Bridge crane100tons(container load)	3	21.00	62,400	1,310,400	450,000	4	9,331,200	
*Truck mounted articulating crane	3	19.00	62,400	1,185,600	180,000	4	5,716,800	
Subtotal							34,809,600	
SUBTOTAL CAPITAL COSTS							455,541,240	
Installation Costs	25.00%						113,885,310	
Mobilization Costs	25.00%						113,885,310	
Pilot Test Costs	25.00%						113,885,310	
Technology and Eng. Dev. Costs	25.00%						113,885,310	
TOTAL CAPITAL COSTS							911,082,480	

Table 8-58. System Capital Expenditure Allowances.

Capital Cost Category	Percent **	Description
Installation Costs	25%	All costs associated with construction of major equipment and remediation support systems.
Mobilization Costs	25%	All costs for setting up capital equipment.
Pilot Test Costs	25%	All costs for testing system throughput assumptions and system components.
Technology and Engineering Development Costs	25%	All costs for enhancing existing technologies.
TOTAL	100%	

** % OF CAPITAL COSTS

100 AREA General

[redacted]	(A) Staff size	(B) Duration Hours	(C) Efficiency Factor	(D) Cost/hr w/ OH	Total Cost (A)x(B)x(C)x(D)
Pre-excavation equipment					
*Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2.0	62,400	1.60	42.250	8,436,480
*Dump truck, 75-85 ton	10.0	62,400	1.60	42.250	42,182,400
*Instrumentation vehicle	2.0	62,400	1.60	42.250	8,436,480
Subtotal					59,055,360
Front-end loaders					
*Caterpillar 992 (w/ 13 yd bucket)	10.0	62,400	1.60	42.250	42,182,400
*Caterpillar 992 (w/ 10 yd bucket)	2.0	62,400	1.60	42.250	8,436,480
*Caterpillar 992 (w/ 7 yd bucket)	6.0	62,400	1.60	42.250	25,309,440
*Bulldozers: Caterpillar D-9	6.0	62,400	1.60	42.250	25,309,440
*Bulldozers: Caterpillar D-8	4.0	62,400	1.60	42.250	16,872,960
*Instrumentation vehicle	10.0	62,400	1.60	42.250	42,182,400
*Water truck 8000 gallon tank	0.0	62,400	1.60	42.250	0
Subtotal					160,293,120
Pipeline removal					
*Expose pipe; 2 ops in parallel	4.0	62,400	1.60	42.250	16,872,960
* backhoe (3 yard bucket)			1.60		
*Grout pump truck	4.0	62,400	1.60	42.250	16,872,960
*Instrumentation vehicle	4.0	62,400	1.60	42.250	16,872,960
Subtotal					50,618,880
Pipeline removal, land					
*Excavator; Caterpillar 235C (90k lb base)	10.0	62,400	1.60	42.250	42,182,400
*Universal Processor U90 attachments	0.0	62,400	1.60	42.250	0
* -Concrete cracking jaws	0.0	62,400	1.60	42.250	0
* -Shear jaws	0.0	62,400	1.60	42.250	0
* -Grapple jaws	0.0	62,400	1.60	42.250	0
* -Wood shear jaws	0.0	62,400	1.60	42.250	0
*Material densifier;MD50 (LaBounty)	0.0	62,400	1.60	42.250	0
*Instrumentation vehicle	2.0	62,400	1.60	42.250	8,436,480
*Group pump truck	2.0	62,400	1.60	42.250	8,436,480
*Water truck 8000 gallon tank	2.0	62,400	1.60	42.250	8,436,480
*Truck, flatbed	2.0	62,400	1.60	42.250	8,436,480
Subtotal					75,928,320
Pipeline removal, river					
*Clamshell dredge	6.0	62,400	1.60	42.250	25,309,440
*Container barge & tug	6.0	62,400	1.60	42.250	25,309,440
Subtotal					50,618,880

SOURCE

STAFF SIZE / HRS = GIVEN BY CONTRACTOR
YEAR = 2080 HRS
EFF. FACTOR = GIVEN BY WHC

COST/HR:

EXEMPT 35 X 1.3 X 1.3 = 59.15
NONEXEMPT 25 X 1.3 X 1.3 = 42.25

STAFF SIZE

GIVEN BY CONTRACTOR

100 AREA General

VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	2.0	62,400	1.60	42.250	8,436,480
Subtotal					8,436,480
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	18.0	62,400	1.60	42.250	75,928,320
*Flat bed cars w/ bulkheads	0.0	62,400	1.60	42.250	0
Subtotal					75,928,320
Miscellaneous					
*Overpacks unsheilded for type 1 box	0.0	62,400	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0.0	62,400	1.60	42.250	0
*Walking gantry crane (100 tons)	12.0	62,400	1.60	42.250	50,618,880
*Bridge crane 100 tons (box loading)	12.0	62,400	1.60	42.250	50,618,880
*Bridge crane 100 tons (cont. load)	4.0	62,400	1.60	42.250	16,872,960
*Truck mounted articulating crane	6.0	62,400	1.60	42.250	25,309,440
Subtotal					143,420,160
Operations support manpower					
*Heavy equipment maintenance	16.0	62,400	1.60	42.250	67,491,840
*General maintenance	10.0	62,400	1.60	42.250	42,182,400
*Quality Assurance	12.0	62,400	1.60	42.250	50,618,880
*Management/administration	20.0	62,400	1.60	59.150	118,110,720
*Decontaimination	18.0	62,400	1.60	59.150	106,299,648
*Health physics	24.0	62,400	1.60	59.150	141,732,864
*Field engineers/scientists	24.0	62,400	1.60	59.150	141,732,864
*Health and safety	12.0	62,400	1.60	59.150	70,866,432
*General laborers	24.0	62,400	1.60	42.250	101,237,760
*Samplers	24.0	62,400	1.60	42.250	101,237,760
Subtotal	332				941,511,168
TOTAL LABOR COSTS					1,565,810,688

SEE NOTE

PRELIM & FINAL DESIGN 5,000,000

1,570,810,688

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100 ARE. General

ALLOWANCES

	xxxxxx	xxxxxx	Percent	Total Cost
Operating contractor costs			10.0%	247,689,317
Supplies and materials			1.0%	24,768,932
Utilities			15.0%	371,533,975
Maintenance			15.0%	371,533,975
Waste site disposal			10.0%	247,689,317
Decontamination and decommissioning			10.0%	247,689,317
Permitting			10.0%	247,689,317
Contingency			25.0%	619,223,292
TOTAL ALLOWANCE COSTS				2,377,817,441

ANALYTICAL

	xxxxxx	xxxxxx	xxxxxx	Total Cost
Total analytical (from other worksheet)				23,299,778

TOTAL REMEDIATION COST 100 AREA

	xxxxxx	xxxxxx	xxxxxx	Total Cost
TOTAL				4,878,010,387

+ 5 000 000

4883,010,387

Table 8-5A. System Operational Cost All s.

Allowance Category	Percent	Descrip
Engineering Design Support	10%	All contractor costs associated with engineering design support prior to and during construction and operations.
Supplies and Materials	1%	All general supplies and materials including office and construction (small tools, safety clothing, hygiene equipment, etc.).
Utilities	15%	Electricity, water, fuels at each construction site including associated labor costs.
Maintenance	15%	Allocation of downtime and major off-site maintenance required on equipment and facilities maintenance.
Waste Disposal from Operations	10%	Cost of off-site disposal including pick-up, processing, and disposal.
Decontamination & Decommissioning	10%	Cost of decontamination of equipment and personnel; capital and labor.
Permitting	10%	Permitting costs and factor to account for possible delays in permitting process.
Contingency	25%	Factor for unforeseen problems that could lead to additional capital costs or delays in progress.
TOTAL	96%	

% CAPITAL + PERSONNEL COST

SEE FOLDER

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100 AREA Industrial

	Qty (R)	Op Cost per/hr (B)	Duration Hours (L)	Net (D) (B*C)	Cost per Item (E)	Replace Factor (F)	Total Cost (R*[D+(E*F)])	
Pre-excavation equipment								
•Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	1	11.75	24,900	292,575	120,000	2	532,575	EECG - EARTH MOVING EQUIP - P. 3
•Dump truck, 75-85 ton	5	15.50	24,900	385,950	86,000	2	2,789,750	EECG - TRUCKS & TRAILERS - P. 1
•Instrumentation vehicle	1	14.00	24,900	348,600	170,000	2	688,600	ATK ESTIMATE
Subtotal							4,010,925	
Excavation equipment								
•Containment structures: 1000x400	1	5.00	24,900	124,500	18,000,000	2	36,124,500	$.15/ft² Per Neal & Jackson Co. [illegible]
•Containment structures: 600x400	1	5.00	24,900	124,500	10,800,000	2	21,724,500	
•Containment structures: 400x400	1	5.00	24,900	124,500	7,200,000	2	14,524,500	
•Cont. structure ventilation: truck mounted 50k SCFM system, blower; one 10'x10' bank prefilters; one 10'x10' HEPA filters	5	15.00	24,900	373,500	400,000	2	5,867,500	TRUCK $100K; OTHER $3 00K
Subtotal							78,241,000	
Containment structure fire suppression								
•Water tank	3	0.00	24,900	0	13,000	2	78,000	EEC G
•Containment structure	3	0.00	24,900	0	60,000	1	180,000	ATK ESTIMATE
Subtotal							258,000	
Conveyor systems								
• 36" belt, 800' long	3	0.00	24,900	0	8,000	2	48,000	
• 54" apron feeder	3	0.00	24,900	0	5,000	2	30,000	
•Feed hopper/w 12" grizzly	3	0.00	24,900	0	1,200	2	7,200	
•Skid 800' long w/ winch	3	6.70	24,900	166,830	45,000	2	770,490	
•Feed bins, 2 compartments	3	0.00	24,900	0	10,000	2	60,000	
• 36" belt, 400' long	2	0.00	24,900	0	4,000	2	16,000	
• 36" belt, 200' long	2	0.00	24,900	0	2,000	2	8,000	
•Conveyor dust control; vacuum hood w/ exhauster, pre-filters, HEPA filters	3	3.00	24,900	74,700	25,000	2	374,100	
•GM detector instrument package	4	0.00	24,900	0	20,000	2	160,000	
•Automatic sampler	4	0.00	24,900	0	220,000	2	1,760,000	
Subtotal							3,233,790	
Front-end loaders								
•Caterpillar 992 (w/ 13 yd bucket)	5	11.75	24,900	292,575	120,000	2	2,662,875	EECG - EARTH MOVING EQUIPMENT P. 3
•Caterpillar 992 (w/ 10 yd bucket)	1	11.75	24,900	292,575	120,000	2	532,575	
•Caterpillar 992 (w/ 7 yd bucket)	3	11.75	24,900	292,575	120,000	2	1,597,725	
•Bulldozers: Caterpillar D-9	3	10.80	24,900	268,920	100,000	2	1,406,760	EECG - EARTH MOVING EQUIPMENT P. 1
•Bulldozers: Caterpillar D-8	2	10.80	24,900	268,920	100,000	2	937,840	
•Instrumentation vehicle	5	14.00	24,900	348,600	170,000	2	3,443,000	ATK ESTIMATE
•Water truck 8000 gallon tank	5	16.00	24,900	398,400	110,000	2	3,092,000	EECG - HEAVY TRUCK SECTION

■ QTY - Equipment number of items required at a given point in time -- Supplied by Area Coordinator

■ Duration Hours - Hours of use (2080 hr/yr) Supplied by Area Coordinator

■ Replace Factor - Factor utilized to account for number of times equipment is replaced - utilized 4 generally across the board

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Subtotal							13,672,775	
Demolition tools, concrete & metal tanks								
•Excavator Caterpillar 235 C (90k lb base)	5	25.90	24,900	644,910	325,000	2	6,474,550	ECCG - HEAVY EQUIPMENT T.15
•Universal Processor U90 (LaBounty)								
• -Concrete cracking jaws	4	9.00	24,900	224,100	30,000	2	1,136,400	LABOUNTY WEST REGION SALES REP
• -Shear jaws	4	9.00	24,900	224,100	47,000	2	1,272,400	
• -Grapple jaws	4	9.00	24,900	224,100	40,000	2	1,216,400	
• -Wood shear jaws	1	9.00	24,900	224,100	44,000	2	312,100	
• -Plate shear jaws	4	9.00	24,900	224,100	47,000	2	1,272,400	
• -Hydraulic hammer	2	9.00	24,900	224,100	42,000	2	616,200	
Subtotal							11,684,250	
Pipeline removal								
•Expose pipe; 2 ops in parallel backhoe (3 yard bucket)	2	14.00	24,900	348,600	150,000	2	1,297,200	
•Grout pump truck	2	12.00	24,900	298,800	90,000	2	957,600	
•Instrumentation vehicle	2	14.00	24,900	348,600	170,000	2	1,377,200	
Subtotal							3,632,000	
Pipeline removal, land								
•Excavator; Caterpillar 235C (90k lb base)	5	25.90	24,900	644,910	325,000	2	6,474,550	
•Universal Processor U90 attachments	4	15.00	24,900	373,500	67,000	2	2,030,000	LABOUNTY WEST REGION SALES REP
• -Concrete cracking jaws	2	9.00	24,900	224,100	30,000	2	568,200	
-Hydraulic hammer	1	9.00	24,900	224,100	42,000	2	308,100	
• -Shear jaws	1	9.00	24,900	224,100	47,000	2	318,100	
• -Grapple jaws	1	9.00	24,900	224,100	40,000	2	304,100	
• -Wood shear jaws	1	9.00	24,900	224,100	44,000	2	312,100	
•Material densifier;MD50 (LaBounty)	1	9.00	24,900	224,100	65,000	2	354,100	
•Instrumentation vehicle	1	14.00	24,900	348,600	170,000	2	688,600	ATK EST
•Group pump truck	1	14.00	24,900	348,600	150,000	2	648,600	
•Water truck 8000 gallon tank	1	16.00	24,900	398,400	110,000	2	618,400	ECCG - HEAVY EQUIPMENT SUPPL.
•Truck, flatbed	2	14.00	24,900	348,600	110,000	2	1,137,200	ECCG - TRUCK & TRAILER T.5
•Pipe racks	18	4.00	24,900	99,600	30,000	2	2,872,800	EST. BASED ON TRIOR EXPERIENCE
Subtotal							16,634,850	
Intact drum removal								
•Drum handling attachment for UP90 backhoe (3 yard bucket)	2	9.00	24,900	224,100	17,000	2	516,200	PER LABOUNTY WEST REGION SALES REP
Subtotal							516,200	
Pipeline removal, river								
•Clamshell dredge	1	9.00	24,900	224,100	45,000	2	314,100	PER DISCUSSION! PACIFIC SHIPPING & EXCAVATING
•Gamma scan mole	1	1.00	24,900	24,900	100,000	2	224,900	ATK EST.

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•Container barge & tug	1	11.50	24,900	286,350	175,000	2	636,350	PER DISCUSSION W/ TRAFFIC SHIPPING
Subtotal							1,175,350	
VOC venting equipment								
•Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	1	17.00	24,900	423,300	225,000	2	873,300	TRAILER COST PER EECG + PUMP + INC (PRIVATE)
•Low temperature thermal desorber	1	1.00	24,900	24,900	50,000	2	124,900	ATK EST.
Subtotal							998,200	
Rail transport								
•Diesel electric locomotive 30,400 lb draw bar pull	3	20.00	24,900	498,000	150,000	2	2,394,000	SEE BACKUP PER REC AND
•Flat bed cars w/ bulkheads	48	3.00	24,900	74,700	85,000	2	11,745,600	GE REFERENCES
Subtotal							14,139,600	
Containers - reusable 50 yd3								
•Type 1: loading door	109	0.00	24,900	0	5,000	1	545,000	PER CONTRACTOR ESTIMATES
•Type 2: loading ports	345	0.00	24,900	0	5,000	1	1,725,000	
Subtotal							2,270,000	
Containers - single use 50 yd3								
•Type 3: loading ports	8,042	0.00	24,900	0	5,000	1	40,210,000	SEE APPENDIX 100 AREA (USED) HIGHEST COST TO BE CONSERVATIVE
•Type 4: loading ports	12,495	0.00	24,900	0	5,000	1	62,475,000	
Subtotal							102,685,000	
Miscellaneous								
•Overpacks unshelded for type 1 box	28	0.00	24,900	0	15,000	1	420,000	ATK ESTIMATES
•Overpacks sheilded for type 3/4 box	5	0.00	24,900	0	15,000	1	75,000	
•Walking gantry crane (100 tons)	3	19.50	24,900	485,550	400,000	2	3,856,650	PER TRAFFIC SHIPPING ETC.
•Bridge crane 100 tons (box loading)	3	21.00	24,900	522,900	450,000	2	4,268,700	
•Bridge crane100tons(container load)	3	21.00	24,900	522,900	450,000	2	4,268,700	
•Truck mounted articulating crane	3	19.00	24,900	473,100	180,000	2	2,499,300	
Subtotal							15,388,350	
SUBTOTAL CAPITAL COSTS							268,540,290	
Installation Costs	25.00%						67,135,073	
Mobilization Costs	25.00%						67,135,073	
Pilot Test Costs	25.00%						67,135,073	
Technology and Eng. Dev. Costs	25.00%						67,135,073	
TOTAL CAPITAL COSTS							537,080,580	

Table 8-58. System Capital Expenditure Allowances.

Capital Cost Category	Percent **	Description
Installation Costs	25%	All costs associated with construction of major equipment and remediation support systems.
Mobilization Costs	25%	All costs for setting up capital equipment.
Pilot Test Costs	25%	All costs for testing system throughput assumptions and system components.
Technology and Engineering Development Costs	25%	All costs for enhancing existing technologies.
TOTAL	100%	

** % OF CAPITAL COSTS

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[redacted]	(A) Staff size	(B) Duration Hours	(C) Efficiency Factor	(D) Cost/hr w/ OH	Total Cost
Pre-excavation equipment					(A)*(B)*(C)*(D)
•Front-end loader; caterpillar 992 w/ 13 cubic yard bucket	2	24,900	1.60	42.250	3,366,480
•Dump truck, 75-85 ton	10	24,900	1.60	42.250	16,832,400
•Instrumentation vehicle	2	24,900	1.60	42.250	3,366,480
Subtotal					23,565,360
Front-end loaders					
•Caterpillar 992 (w/ 13 yd bucket)	10	24,900	1.60	42.250	16,832,400
•Caterpillar 992 (w/ 10 yd bucket)	2	24,900	1.60	42.250	3,366,480
•Caterpillar 992 (w/ 7 yd bucket)	6	24,900	1.60	42.250	10,099,440
•Bulldozers: Caterpillar D-9	6	24,900	1.60	42.250	10,099,440
•Bulldozers: Caterpillar D-8	4	24,900	1.60	42.250	6,732,960
•Instrumentation vehicle	10	24,900	1.60	42.250	16,832,400
•Water truck 8000 gallon tank	0	24,900	1.60	42.250	0
Subtotal					63,963,120
Pipleline removal					
•Expose pipe; 2 ops in parallel	4	24,900	1.60	42.250	6,732,960
• backhoe (3 yard bucket)			1.60		
•Grout pump truck	4	24,900	1.60	42.250	6,732,960
•Instrumentation vehicle	4	24,900	1.60	42.250	6,732,960
Subtotal					20,198,880
Pipeline removal, land					
•Excavator; Caterpillar 235C (90k lb base)	10	24,900	1.60	42.250	16,832,400
•Universal Processor U90 attachments	0	24,900	1.60	42.250	0
• -Concrete cracking jaws	0	24,900	1.60	42.250	0
• -Shear jaws	0	24,900	1.60	42.250	0
• -Grapple jaws	0	24,900	1.60	42.250	0
• -Wood shear jaws	0	24,900	1.60	42.250	0
•Material densifier;MD50 (LaBounty)	0	24,900	1.60	42.250	0
•Instrumentation vehicle	2	24,900	1.60	42.250	3,366,480
•Group pump truck	2	24,900	1.60	42.250	3,366,480
•Water truck 8000 gallon tank	2	24,900	1.60	42.250	3,366,480
•Truck, flatbed	2	24,900	1.60	42.250	3,366,480
Subtotal					30,298,320
Pipeline removal, river					
•Clamshell dredge	6	24,900	1.60	42.250	10,099,440
•Container barge & tug	6	24,900	1.60	42.250	10,099,440
Subtotal					20,198,880

SOURCE

STAFF SIZE / HRS = GIVEN BY CONTRACTOR
YEAR = 2080 HRS
EFF. FACTOR = GIVEN BY WHC

COST/HR:

EXEMPT 35 X 1.3 X 1.3 = 59.15
NONEXEMPT 25 X 1.3 X 1.3 = 42.25

STAFF SIZE

GIVEN BY CONTRACTOR

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VOC venting equipment					
*Trailer w vacuum pump, 1000 SCFM at 80-inches water vacuum; 3 M Btu/hr vapor incinerator	2	24,900	1.60	42.250	3,366,480
Subtotal					3,366,480
Rail transport					
*Diesel electric locomotive 30,400 lb draw bar pull	18	24,900	1.60	42.250	30,298,320
*Flat bed cars w/ bulkheads	0	24,900	1.60	42.250	0
Subtotal					30,298,320
Miscellaneous					
*Overpacks unsheilded for type 1 box	0	24,900	1.60	42.250	0
*Overpacks sheilded for type 3/4 box	0	24,900	1.60	42.250	0
*Walking gantry crane (100 tons)	12	24,900	1.60	42.250	20,198,880
*Bridge crane 100 tons (box loading)	12	24,900	1.60	42.250	20,198,880
*Bridge crane 100 tons (cont. load)	4	24,900	1.60	42.250	6,732,960
*Truck mounted articulating crane	6	24,900	1.60	42.250	10,099,440
Subtotal					57,230,160
Operations support manpower					
*Heavy equipment maintenance	16	24,900	1.60	59.150	37,704,576
*General maintenance	10	24,900	1.60	59.150	23,565,360
*Quality Assurance	12	24,900	1.60	59.150	28,278,432
*Management/administration	20	24,900	1.60	59.150	47,130,720
*Decontaimination	18	24,900	1.60	59.150	42,417,648
*Health physics	24	24,900	1.60	59.150	56,556,864
*Field engineers/scientists	24	24,900	1.60	59.150	56,556,864
*Health and safety	12	24,900	1.60	59.150	28,278,432
*General laborers	24	24,900	1.60	59.150	56,556,864
*Samplers	24	24,900	1.60	59.150	56,556,864
Subtotal					433,602,624
TOTAL LABOR COSTS	332				682,722,144

Prelim & Final Design Costs 5,000,000

687,722,144

Sub Notes

9 2 1 2 3 7 9 9 9 2 7

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[redacted]

	xxxxxx	xxxxxx	Percent	Total Cost
Operating contractor costs			10.0%	121,980,272
Supplies and materials			1.0%	12,198,027
Utilities			15.0%	182,970,409
Maintenance			15.0%	182,970,409
Waste site disposal			10.0%	121,980,272
Decontamination and decommissioning			10.0%	121,980,272
Permitting			10.0%	121,980,272
Contingency			25.0%	304,950,681
TOTAL ALLOWANCE COSTS				1,171,010,615

[redacted]

	xxxxxx	xxxxxx	xxxxxx	Total Cost
Total analytical (from other worksheet)				23,299,778

	xxxxxx	xxxxxx	xxxxxx	Total Cost
TOTAL REMEDIATION COST 100 AREA				
TOTAL				2,414,113,117

Table B-5A. System Operational Cost Allowances.

Allowance Category	Percent *	Description
Engineering Design Support	10%	All contractor costs associated with engineering design support prior to and during construction and operations.
Supplies and Materials	1%	All general supplies and materials including office and construction (small tools, safety clothing, hygiene equipment, etc.).
Utilities	15%	Electricity, water, fuels at each construction site including associated labor costs.
Maintenance	15%	Allocation of downtime and major off-site maintenance required on equipment and facilities maintenance.
Waste Disposal from Operations	10%	Cost of off-site disposal including pick-up, processing, and disposal.
Decontamination & Decommissioning	10%	Cost of decontamination of equipment and personnel; capital and labor.
Permitting	10%	Permitting costs and factor to account for possible delays in permitting process.
Contingency	25%	Factor for unforeseen problems that could lead to additional capital costs or delays in progress.
TOTAL	96%	

* % OF CAPITAL + PERSONNEL COSTS

SEE FOLDER

A to J 5,000,000

2,419,113,117

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