

Part B Permit Closure Cost Calculations for EnergySolutions

I TREATMENT OF STORED WASTE

Maximum volume of waste allowed in storage 7,000 cy
 Assume that it will take 6 months to treat and that the maximum of waste allowed will need to be treated.
 Treat stored waste to LDR using permitted treatment processes.
 All 7,000 cy is awaiting treatment (worst case)
 Formula Development for waste awaiting treatment:
 Assumed that there are 4 waste streams without existing formulas. This is not a compliance point for the surety because wastes may become designated for treatment or require new formulas due to information generated after a given waste arrives on site (HSWA Analysis).
 Quantity limitations for treatment waste are changed according to facility needs as long as overall treatment costs within the surety remain constant in accordance with Attachment II-7.
 The maximum quantity of waste in storage at the site, untreated or awaiting disposal, shall not exceed 7,000 cubic yards.
 Waste in storage is inclusive of all waste outside of permitted disposal areas.
 This limit includes waste that was generated both on site and off site and includes materials that when declared a waste would become an untreated hazardous waste, such as the decontamination water within the 90-day tanks at the wash bay and laboratory chemicals.

II STAGING AREA

Assume closure is completed within 24 month period. Existing buildings will be demolished and temporary facilities brought in.
 Assume use of existing clean line and office facilities for half of closure period; trailers to be brought in for half
 Clean Line- Assume 50' x 12' trailer
 Field Office- Assume 50' x 12' trailer
 Trailer delivery - assume 150 miles round trip from Salt Lake City per trailer
 Temporary Decontamination facility- assume use of existing pads as long as possible; will need temporary pad for 2 months.

III STORAGE PADS AND MW TRUCK UNLOADING FACILITY

Assume all storage pads are excavated 0.5 ft deep; the pad base is 1 ft thick (above grade) throughout the site.

EXCAVATION

East Container Storage Area (includes 150' x 160' holding area at the south end of the pad)

Asphalt	500 ft l x	160 ft w x	4 in th	0.33 =	988 cy
	500 ft l x	160 ft w		=	8,889 sy
Asphalt Extension	22 ft l x	160 ft w		=	392 sy
	22 ft l x	160 ft w	4 in th	0.33 =	44 cy
Storage Pad Base	500 ft l x	160 ft w x	0.67 ft th	=	1,986 cy
Extension	22 ft l x	160 ft w x	0.67 ft th	=	88 cy
Soil Excavation	500 ft l x	160 ft w x	0.5 ft th	=	1,482 cy
Extension	22 ft l x	160 ft w x	0.5 ft th	=	66 cy
Southeast Container Storage Area (concrete upgrade October 2003; drawing 03023-C03)					
Concrete	70 ft l x	96 ft w x	10 in th	0.83 =	208 cy
	70 ft l x	96 ft w		=	6,720 sf
Storage Pad Base	70 ft l x	96 ft w x	0.67 ft th	=	167 cy
Soil Excavation	70 ft l x	96 ft w x	0.5 ft th	=	125 cy
South Container Storage Area (resurfacing upgrade September 2000; drawing 0013-01)					
Asphalt	383 ft l x	117 ft w x	4 in th	0.33 =	554 cy
	383 ft l x	117 ft w		=	4,979 sy
Storage Pad Base	383 ft l x	117 ft w x	1 ft th	=	1,660 cy
Soil Excavation	383 ft l x	117 ft w x	0.5 ft th	=	830 cy
Drainage Trough upgrade (2000)					
Concrete bottom	340 ft l x	3 ft w x	8 in th	0.67 =	26 cy
	340 ft l x	3 ft w		=	1,020 sf
Concrete sides	340 ft l x	4.5 ft ht x	6 in th	0.5 =	29 cy
	340 ft l x	4.5 ft w		=	1,530 sf
(Note: Two sides with width increasing from 0.5' to 4' as the trough slopes east to west; calculated as a single 4.5' wide wall)					
Central Container Storage Area					
Asphalt	300 ft l x	65 ft w x	4 in th	0.33 =	241 cy
	300 ft l x	65 ft w		=	2,167 sy
Storage Pad Base	300 ft l x	65 ft w x	0.67 ft th	=	484 cy
Soil Excavation	300 ft l x	65 ft w x	0.5 ft th	=	362 cy

Totals:					
Debris Excavation				=	2,090 cy
Base & Soil Excavation				=	7,250 cy
Restoration of Grade (soil excavation volume only)				=	2,865 cy
Final Grade				=	17,174 sy

MW TRUCK UNLOADING FACILITY

This is the 'outside' dock located south of the East Container Storage Area; see drawing 9846-01.
 Entire facility is maintained outside of the Restricted Area.
 The Container Holding Pad (approx. 150' x 160') is included in calcs for the East Container Storage Area above.

DOCK

Retaining walls (2 each)	30 ft l x	3.33 ft ht x	8 in th	0.67 =	5 cy
	50 ft l x	3.33 ft ht x	8 in th	0.67 =	100 sf
					9 cy
					167 sf
Floor	50 ft l x	30 ft w x	8 in th	0.67 =	75 cy
					1,500 sf
Ramp	20 ft l x	10 ft w x	8 in th	0.67 =	10 cy
					200 sf
Footings (2 each)	30 ft l x	4 ft w x	12 in th	1 =	9 cy
					120 sf
	50 ft l x	4 ft w x	12 in th	1 =	15 cy
					200 sf
Retaining wall (between truck access paved asphalt area and East Container Storage Area)	124 ft l x	3 ft ht x	12 in th	1 =	28 cy

Part B Permit Closure Cost Calculations for EnergySolutions

Retaining wall footing	124 ft l x	3 ft ht x	12 in th	1 =	372 sf 28 cy
Fencing and gates (assume)					372 sf 2 cy
TRUCK ACCESS PAVED ASPHALT AREA					
Asphalt	105 ft l x	96 ft w		=	1,120 sy
	105 ft l x	96 ft w	4 in th	0.33 =	125 cy
Haul volume					306 cy
Concrete 8" thick demolition area total					1,967 sf
Concrete 12" thick demolition area total					1,064 sf

IV PUMP HOUSE AND WATER TANK

Fig. 9317-M1

COST TO HAUL OFF SITE IS ASSUMED TO BE SAME AS SALVAGE VALUE FOR THE FOLLOWING:

Fire Pump
Water Pump
Water Tank

DEMOLITION

Pump House Steel Exterior

Wall Dimensions	North	20 ft l x	10 ft ht x	3 in th	0.25 =	2 cy
Wall Dimensions	South	20 ft l x	10 ft ht x	3 in th	0.25 =	2 cy
Wall Dimensions	East	14 ft l x	10 ft ht x	3 in th	0.25 =	2 cy
Wall Dimensions	West	14 ft l x	10 ft ht x	3 in th	0.25 =	2 cy
Roof Dimensions		23 ft l x	15 ft w x	3 in th	0.25 =	4 cy

Building Demolition Volume	20 ft l x	14 ft w x	10 ft ht	=	2,800 cf
----------------------------	-----------	-----------	----------	---	----------

Pump House

Floors	20 ft l x	14 ft w x	8 in th	0.67 =	7 cy
Flooring	20 ft l x	14 ft w		=	280 sf

Foundation (Pump House)

Stem Wall		68 ft l x	2 ft ht	=	136 sf
Footings		68 ft l x	1 ft w	=	68 sf

Debris Volume Estimate

Stem Wall		136 sf x	6 in th	0.5 =	3 cy
Footings		68 sf x	2 ft w	=	6 cy

Total Debris volume

28 cy

EXCAVATION

None needed, outside of Restricted Area

Va MIXED WASTE STORAGE BUILDING

Figures 9517-1,9517-2,9517-3,9535-2,9535-3,

DECONTAMINATION

Sludge Tank #0275

Top Dimensions		25 ft l x	5 ft w x	0.25 in th	=	32 cf
Bottom Dimensions		25 ft l x	5 ft w x	0.25 in th	=	32 cf
Wall Dimensions		25 ft l x	8 ft w x	0.25 in th	=	50 cf
Wall Dimensions		25 ft l x	8 ft w x	0.25 in th	=	50 cf
Debris Volume (cy)						6 cy

Misc equipment decontamination (2 days)

DEMOLITION

Mixed Waste Storage building (building metal exterior)

Wall Dimensions	North	100 ft l x	20.25 ft ht x	3 in th	0.25 =	19 cy
Wall Dimensions	South	100 ft l x	20.25 ft ht x	3 in th	0.25 =	19 cy
Wall Dimensions	East	60 ft l x	22 ft ht x	3 in th	0.25 =	13 cy
Wall Dimensions	West	60 ft l x	22 ft ht x	3 in th	0.25 =	13 cy
Wall Dimensions	Interior	60 ft l x	22 ft ht x	3 in th	0.25 =	13 cy
Roof Dimensions		101 ft l x	60 ft ht x	3 in th	0.25 =	56 cy

Wall Dimensions	North	25 ft l x	6 ft ht x	3 in th	0.25 =	2 cy
(Raised Roof Section)	South	25 ft l	6 ft ht x	3 in th	0.25 =	2 cy
	East	60 ft l	6 ft ht x	3 in th	0.25 =	4 cy
	West	60 ft l	6 ft ht x	3 in th	0.25 =	4 cy

Building Demolition Volume	101 ft l x	60 ft w x	21 ft ht	=	126,945 cf
Debris Volume (cy)					151 cy

Mixed Waste Storage building (Observation Area)

Wall Dimensions	South	24 ft l x	12 ft ht x	3 in th	=	32 cy
	East	12 ft l x	12.5 ft ht x	3 in th	=	17 cy
	West	12 ft l x	12.5 ft ht x	3 in th	=	17 cy
Demolition Volume						1,782 cf

Foundation (Observation Area) Demolition

Stem Wall/Footing		68 lf x	2.5 ft ht	=	170 sf
Floor Slab		24 lf x	12 ft w	=	288 sf
Footing		24 lf		=	288 sf

DEBRIS VOLUME

Foundation (Observation Area) Debris

Wall Dimensions	South	24 ft l x	12 ft ht x	3 in th	=	32 cy
-----------------	-------	-----------	------------	---------	---	-------

Part B Permit Closure Cost Calculations for EnergySolutions

	East	12 ft l	12.5 ft ht	3 in th	=	17 cy
	West	12 ft l	12.5 ft ht	3 in th	=	17 cy
Stem Wall/Footing		68 ft l	2.5 lf w x	1 ft ht	=	7 cy
Floor Slab		24 ft l	12 lf w x	0.5 ft th	=	6 cy
<hr/>						79 cy
Mixed Waste Storage Building (Interior Wall)						
Wall Dimensions	Interior	12 lf l x	12.5 ft ht x	4 in th	0.33 =	2 cy
<hr/>						2 cy
Foundation (Mixed Waste Storage Building)						
Stem Wall			322 lf x	3 ft ht	=	966 sf
Footing Dimensions			322 lf x	3 ft w	=	966 sf
<hr/>						966 sf
Debris Volume Estimate (Mixed Waste Storage foundation)						
Floor Dimensions		100 ft l x	60 ft w x	12 in th	1 =	223 cy
Stem Wall			966 sf x	8 in th	0.67 =	24 cy
Footing			966 sf x	1 ft th	=	36 cy
Floor Area		100 ft l x	60 ft w		=	667 sy
<hr/>						283 cy
Mixed Waste Storage Building Secondary Containment Vault						
Wall Dimensions	long wall	33 ft l x	8 ft ht x	8 in th	0.67 =	7 cy
Wall Dimensions	short wall	15 ft l x	8 ft ht x	8 in th	0.67 =	3 cy
<hr/>						
Debris Area (sf)			176 sf x	2 sides	=	352 sf
Debris Volume (cy)			10 cy x	2 sides	=	20 cy
Cover Dimensions		35 ft l x	17 ft w x	8 in th	0.67 =	15 cy
Cover Area		35 ft l x	17 ft w		=	595 sf
Floor Dimensions		33 ft l x	15 ft w x	10 in th	0.83 =	16 cy
Floor Area		33 ft l x	15 ft w		=	55 sy
<hr/>						51 cy
Secondary Containment Vault Footings						
Footing Dimensions			68 lf x	3 ft w	=	204 sf
Footing Dimensions			30 lf x	3 ft w	=	90 sf
<hr/>						98 lf
Debris Volume			294 sf x	12 in w	1 =	11 cy
Foundation (Outside Wash Pad)						
Stem Wall	East and West		120 lf x	6 in ht	0.5 =	60 sf
Stem Wall	South		30 lf x	6 in ht	0.5 =	15 sf
Stem Wall	North		30 lf x	6 in ht	0.5 =	15 sf
<hr/>						30 sf
Debris Volume Estimate (Outside Wash Pad)						
Floor Dimensions		60 ft l x	30 ft w x	12 in th	1 =	67 cy
Floor Area		60 ft l x	30 ft w x		=	200 sy
Stem Wall	East and West		60 ft l x	6 in th	0.5 =	2 cy
Stem Wall			30 sf x	12 in th	1 =	2 cy
<hr/>						71 cy
Outside Dock Walls (dimensions of ht are halved to account for ramp)						
Wall Dimensions	N Ramp wall	67 ft l x	2 ft ht x	8 in th	0.67 =	2 cy
Wall Dimensions	S Ramp wall	67 ft l x	2 ft ht x	8 in th	0.67 =	2 cy
Wall Dimensions	E wall	26 ft l x	4 ft ht x	8 in th	0.67 =	3 cy
<hr/>						238 sf
Wall Total (sf)						7 cy
Wall Total (cy)						44 cy
Floor Dimensions		67 ft l x	26 ft w x	8 in th	0.67 =	44 cy
Floor Area		67 ft l x	26 ft w		=	1,742 sf
<hr/>						51 cy
Outside Dock Footings						
Footing Dimensions		67 lf x	2 ft w x	12 in th	1 =	5 cy
Footing Dimensions		67 lf x	2 ft w x	12 in th	1 =	5 cy
Footing Dimensions		26 lf x	2 ft w x	12 in th	1 =	2 cy
<hr/>						12 cy
Drive Pad (North of Building in restricted area)						
Asphalt		250 ft l x	75 ft w x	3 in th	0.25 =	174 cy
<hr/>						2,084 sy
Debris Area Total (SY)		250 ft l x	75 ft w		=	174 cy
<hr/>						885 cy
Total Haul Volume Est						
EXCAVATION OUTSIDE OF RESTRICTED AREA						
Parking lot						
Asphalt		200 ft l x	200 ft w		=	4,445 sy
<hr/>						371 cy
Haul volume		200 ft l x	200 ft w	3 in th	0.25 =	371 cy

Part B Permit Closure Cost Calculations for EnergySolutions

EXCAVATION

Soil Excavation						
Drive Pad Base	250 ft l x	75 ft w x	12 in th	1 =	695 cy	
Soil Excavation of Building	100 ft l x	60 ft w x	6 in th	0.5 =	112 cy	
Soil Excavation Drive Pad	250 ft l x	75 ft w x	6 in th	0.5 =	348 cy	
Soil Excavation of Outside Pad	60 ft l x	30 ft w x	6 in th	0.5 =	34 cy	
Soil Excavation of 2nd Containment	33 ft l x	15 ft w x	6 in th	0.5 =	10 cy	
Soil Excavation of Outside Dock	67 ft l x	26 ft w x	6 in th	0.5 =	33 cy	
Total Soil						1,232 cy
Restoration of Grade						
Soil Restoration						
Soil Excavation Storage Building	100 ft l x	60 ft w x	6 in ht	0.5 =	112 cy	
Soil Excavation Drive Pad	250 ft l x	75 ft w x	6 in th	0.5 =	348 cy	
Soil Excavation Outside Pad	60 ft l x	30 ft w x	6 in th	0.5 =	34 cy	
Secondary Containment	33 ft l x	15 ft w x	8 ft ht	=	147 cy	
Outside dock	26 ft l x	67 ft w x	2 ft ht	=	130 cy	
Total Grade Restoration Area						3,199 sy
Total Backfill Volume						771 cy
Total Debris Volume						
Mixed Waste Storage building (building metal exterior)						152 cy
Mixed Waste Storage building (Framing walls)						2 cy
Debris Volume Estimate (Mixed Waste Storage foundation)						283 cy
Secondary Containment Stem Wall and Floor)						51 cy
Secondary Containment Footings						11 cy
Outside Wash Pad						71 cy
Outside Dock Walls						51 cy
Outside Dock Footings						12 cy
Drive Pad (North of Building in restricted area)						174 cy
Total Debris Volume						807 cy
Soil Excavation						1,232 cy
Total Volume						2,039 cy

Vb THERMAL DESORPTION UNIT

Costs are estimated for triple rinsing of the unit, decontamination, removal, and demolition.

General assumption that debris volume is 34 cy = 34 cy

Via MIXED WASTE TREATMENT BUILDING

DEMOLITION

Mixed Waste Treatment building

Mixed Waste Treatment building (building metal exterior)

Wall Dimensions	N Long	60 ft l x	30 ft ht x	3 in th	0.25 =	17 cy
Wall Dimensions	N Short	30 ft l x	30 ft ht x	3 in th	0.25 =	9 cy
Wall Dimensions	South	90 ft l x	30 ft ht x	3 in th	0.25 =	25 cy
Wall Dimensions	East	110 ft l x	30 ft ht x	3 in th	0.25 =	31 cy
Wall Dimensions	W Long	90 ft l x	30 ft ht x	3 in th	0.25 =	25 cy
Wall Dimensions	W Short	20 ft l x	30 ft ht x	3 in th	0.25 =	6 cy
Wall Dimensions	View W	20 ft l x	8 ft ht x	3 in th	0.25 =	2 cy
Wall Dimensions	View N	10 ft l x	8 ft ht x	3 in th	0.25 =	1 cy
Wall Dimensions	View S	10 ft l x	8 ft ht x	3 in th	0.25 =	1 cy
Roof Dimensions	View	21 ft l x	11 ft w x	3 in th	0.25 =	3 cy
Roof Dimensions	Long	95 ft l x	95 ft w x	3 in th	0.25 =	84 cy
Roof Dimensions	Short	62 ft l x	22 ft w x	3 in th	0.25 =	13 cy
Demolition Volume						243,000 cf
Demolition Volume						36,000 cf
Demolition Volume						1,600 cf
Demolition Volume Total						280,600 cf
Debris Volume (cy)						217 cy

Foundation (Mixed Waste Treatment Building)

Stem Wall (Main Building)		360 ft l x	8 ft ht	=	2,880 sf	
Stem wall (Equipment Room)		100 ft l x	4 ft ht	=	400 sf	
Stem Wall Total Area					3,280 sf	
Footing Dimensions (Exterior N,S)		8 am x	10 ft l x	8 ft w	=	80 sf
Footing Dimensions (Exterior E,W)		12 am x	7 ft l x	7 ft w	=	49 sf
Footing Dimensions (Equip room)		7 am x	3 ft l x	3 ft w	=	9 sf
Footing					138 sf	

Debris Volume Estimate (Mixed Waste Treatment foundation)

Floor Dimensions		90 ft l x	90 ft w x	12 in th	1 =	300 cy
Area		90 ft l x	90 ft w		=	900 sy
Floor Equipment Area		60 ft l x	20 ft w x	8 in th	0.67 =	30 cy
Area		60 ft l x	20 ft w		=	1,200 sf
Floor View Area		20 ft l x	10 ft w x	6 in th	0.5 =	4 cy
Area		20 ft l x	10 ft w		=	23 sy
Stem Wall		3,280 sf	x	12 in th	1 =	122 cy
Footing		138 sf	x	2 ft th	=	11 cy

Part B Permit Closure Cost Calculations for EnergySolutions

Debris Volume						467 cy
Misc Walkways						
Assume a standard for all machines						3 cy
Outside slab footings						
Footing Dimensions (Two Rollup Door)	54 lf	x	8 in w	0.67 =		36 sf
Footing Dimensions (Receiving Vault)	40 lf	x	8 in w	0.67 =		27 sf
						63 sf
Misc Footings Volume	63.0 sf	x	10.0 in th	0.83 =		2 cy
Footing Dimensions (W. Sidewalk)	22 ft	x	6 in w	0.5 =		11 sf
Footing Dimensions (N. Sidewalk)	21 ft	x	6 in w	0.5 =		11 sf
Footing Dimensions (E. Sidewalk)	11 ft	x	6 in w	0.5 =		6 sf
Footing Dimensions (NE Sidewalk)	19 ft	x	6 in w	0.5 =		10 sf
						38 sf
Misc Footings Volume	38.0 sf	x	6.0 in th	0.5 =		1 cy
Total volume of outside slab footings	1.9 cy	+	0.7 cy	=		3 cy
Misc Slab of Concrete						
Slab Dimensions (Two Rollup Door)	34 ft l x	10 ft w x	10 in th	0.83 =		11 cy
Area	34 ft l x	10 ft w		=		38 sy
Slab Dimensions (Receiving Vault)	20 ft l x	10 ft w x	10 in th	0.83 =		7 cy
Area	20 ft l x	10 ft w		=		23 sy
Slab Dimensions (W. Sidewalk)	14 ft l x	4 ft w x	6 in th	0.5 =		2 cy
Area	14 ft l x	4 ft w		=		7 sy
Slab Dimensions (N. Sidewalk)	7 ft l x	7 ft w x	6 in th	0.5 =		1 cy
Area	7 ft l x	7 ft w		=		6 sy
Slab Dimensions (E. Sidewalk)	5 ft l x	3.33 ft w x	6 in th	0.5 =		1 cy
Area	5 ft l x	3.33 ft w		=		2 sy
Slab Dimensions (NE Sidewalk)	9 ft l x	5 ft w x	6 in th	0.5 =		1 cy
Area	9 ft l x	5 ft w		=		5 sy
Slab Dimensions (Baghouse)	28 ft l x	16 ft w x	24 in th	2 =		34 cy
Area	28 ft l x	16 ft w		=		50 sy
Outside slab footings						3 cy
Ramp Dimensions	32 ft l x	29 ft w x	10 in th	0.83 =		29 cy
Area	32 ft l x	29 ft w		=		104 sy
Misc concrete volume						89 cy
Misc concrete area						235 sy
Interior Concrete (Tank walls and footings - see sections VIb-VIc for calculations)						
Waste Receiving Tank #1						41 cy
Tank #4 & #5 and Wash Tank #6						58 cy
Interior concrete volume						99 cy
Summary of Debris Total						
Building Volume						217 cy
Floor and Footing Volume (building)						467 cy
Misc Volume						89 cy
Interior Concrete						99 cy
Primary and Tertiary Shredder Steel						6 cy
Mixer Tank #8						2 cy
Dust Collection System						16 cy
Debris Total						896 cy
EXCAVATION OF MIXED WASTE TREATMENT BUILDING						
Soil Main Area	90 ft l x	90 ft w x	6 in th	0.5 =		150 cy
Soil Equipment Room	60 ft l x	20 ft w x	6 in th	0.5 =		23 cy
Soil View Room	20 ft l x	10 ft w x	6 in th	0.5 =		4 cy
Soil Volume						177 cy
Exterior Soil Excavation						
Soil Excavation Two Rollup Door	34 ft l	10 ft w x	6 in th	0.5 =		7 cy
Soil Excavation (Receiving Vault)	20 ft l	10 ft w x	6 in th	0.5 =		4 cy
Soil Excavation (W. Sidewalk)	14 ft l	4 ft w x	6 in th	0.5 =		2 cy
Soil Excavation (N. Sidewalk)	7 ft l	7 ft w x	6 in th	0.5 =		1 cy
Soil Excavation (E. Sidewalk)	5 ft l	3.33 ft w x	6 in th	0.5 =		1 cy
Soil Excavation (NE Sidewalk)	9 ft l	5 ft w x	6 in th	0.5 =		1 cy
Soil Excavation Bag House	28 ft l	16 ft w x	6 in th	0.5 =		9 cy
						1,185 sy
Soil Totals						25 cy
Total Soil						202 cy
Restoration of Grade (soil excavation volume)						202 cy
VIb WASTE RECEIVING TANK #1						
DEMOLITION						
Waste Receiver Tank #1 (fig. 9317-c5,c8)						
Walls	14 ft l x	5 ft ht x	1 ft th	=		3 cy
Walls	15 ft l x	8 ft ht x	1 ft th	=		5 cy
Debris Volume						8 cy
Area	14 ft l x	5 ft ht		=		8 sy

Part B Permit Closure Cost Calculations for EnergySolutions

	15 ft l	x	8 ft	ht	=	14 sy	
Foundation (Waste Receiver Tank #1)							
Footing Dimensions (south footing)	20 ft	l	x	13 ft	w	= 260 sf	
Footing Dimensions	28 ft	l	x	3 ft	w	= 84 sf	
Footing Dimensions	28 ft	l	x	3 ft	w	= 84 sf	
Footing	84 sf	+		84 sf		= 168 sf	
Area	168 sf	+		260 sf		= 48 sy	
Total Area	8 sy	+		14 sy	+	48 sy	= 70 sy
Debris Volume Estimate							
Footings	168 sf	x		2 ft	th	= 13 cy	
Footing Dimensions (south footing)	260 sf	x		2 ft	th	= 20 cy	
Walls						= 8 cy	
Total Debris						= 41 cy	

Vic LIQUID WASTE STORAGE TANKS

DECONTAMINATION

Triple Rinse 2 Days

DEMOLITION

Tank steel

Torch Cutting of each tank into fourths to size for disposal

8 cuts per tank to account for double-walled tanks

15 ft l	x	8 cuts	x	2 tanks	=	232 lf	
15 ft l	x	3 ft	h	x	3 ft	th	= 5 cy
3 cy						= 3 cy	

Micellaneous Piping Estimated Volume

Concrete

14 ft l	x	10 ft	w	x	0.667 ft	th	= 4 cy
14 ft l	x	10 ft	w	x	0.667 ft	th	= 4 cy
26 ft l	x	12 ft	w	x	0.75 ft	th	= 9 cy
12 ft l	x	12 ft	w	x	0.5 ft	th	= 3 cy

Leveling Pad

Tank Pad (26'L x 12'w overall), which for ease of volume calculations is subdivided into 3 sections

Debris Total 20 cy

Area

14 ft l	x	10 ft	w	= 16 sy
14 ft l	x	10 ft	w	= 16 sy
26 ft l	x	12 ft	w	= 35 sy
12 ft l	x	12 ft	w	= 16 sy

83 sy

Sump Pump Vault

5 ft l	x	5 ft	ht	x	1 ft	th	= 1 cy
6 ft l	x	5 ft	ht	x	1 ft	th	= 1 cy
5 ft l	x	5 ft	ht	x	1 ft	th	= 1 cy

Debris Total 4 cy

Area 9 sy

Foundation

23 ft l	x	2 ft	w	= 46 sf
3 ft l	x	2 ft	w	= 6 sf
11 ft l	x	2 ft	w	= 22 sf
11 ft l	x	2 ft	w	= 22 sf
11 ft l	x	5 ft	w	= 55 sf

151 sf

17 sy

Debris Volume Estimate

5 cy	+	3 cy	= 8 cy	
			= 20 cy	
151 sf	x	2 ft	th	= 12 cy
			= 4 cy	

Total Debris 44 cy

Total Area 109 sy

Total Debris 44 cy

Vid PRIMARY & TERTIARY SHREDDERS, SIZING SCREEN TANK #4, AND TANK #5 & #6

DECONTAMINATION

Triple Rinse 2 Days

Radiological Decontamination 4 Days

DEMOLITION

Sizing Tank #4, #5, #6

43 ft l	x	9 ft	ht	x	1 ft	th	= 15 cy
13 ft l	x	9 ft	ht	x	1 ft	th	= 5 cy
13 ft l	x	9 ft	ht	x	1 ft	th	= 5 cy
13 ft l	x	9 ft	ht	x	1 ft	th	= 5 cy
13 ft l	x	9 ft	ht	x	1 ft	th	= 5 cy

Debris Total 35 cy

Area 52 sy

Foundation (Sizing Tank #4, #5, #6)

43 ft l	x	2 ft	w	= 86 sf
12 ft l	x	3 ft	w	= 36 sf
12 ft l	x	5 ft	w	= 60 sf

Part B Permit Closure Cost Calculations for EnergySolutions

Footing Dimension #3	12 ft	l	x	5 ft	w	=	60 sf
Footing Dimension #4	12 ft	l	x	5 ft	w	=	60 sf
Debris Total							302 sf
Area							34 sy
Debris Volume Estimate							
Footing Dimensions	302 sf		x	2 ft	th	=	23 cy
Walls							35 cy
Total Debris							58 cy
Total Area							86 sy
Tertiary Shredder							
Tube Lengths	2 pc		x	10 ft	l	=	1 cy
Tube Lengths	2 pc		x	6 ft	l	=	1 cy
Tube Lengths	2 pc		x	5.5 ft	l	=	1 cy
Tube Lengths	2 pc		x	5 ft	l	=	1 cy
Tube Lengths	2 pc		x	4.5 ft	l	=	1 cy
Tube Lengths	8 pc		x	2.5 ft	l	=	1 cy
Total Debris							6 cy

Vie MIXER TANK #8

DECONTAMINATION

Triple Rinse							2 Days
Radiological Decontamination							4 Days

DEMOLITION

Mixer Tank #8							
Walls (East)	44 ft	l	x	6 in	ht	x	0.5 in th 0.04 = 0.4 cy
Walls (from North to South)							
Wall 1	10 ft	l	x	1 ft	ht	x	0.5 in th 0.04 = 0.0 cy
Wall 2	9 ft	l	x	1 ft	ht	x	0.5 in th 0.04 = 0.0 cy
Wall 3	7 ft	l	x	1 ft	ht	x	0.5 in th 0.04 = 0.0 cy
Wall 4	25 ft	l	x	1 ft	ht	x	0.5 in th 0.04 = 0.0 cy
Wall 5	14 ft	l	x	1 ft	ht	x	0.5 in th 0.04 = 0.0 cy
Floor	44 ft	l	x	14 ft	ht	x	0.75 in th 0.06 = 1.4 cy
Debris Total							2 cy
Torch Cutting to Max dimension of 8ft							
				46 ft	l	\	8 ft sq = 5 cuts
				16 ft	l	\	8 ft sq = 1 cuts
				Total Cuts			6 cuts
5	Cuts	@		16 ft	l	=	80 lf
1	Cut	@		46 ft	l	=	46 lf
Total torch cutting length							126 lf

VIf DUST COLLECTION SYSTEM

DEMOLITION

Removal of machinery (for both the original and supplemental baghouses)							6 days
NOTE: Slab is accounted for in bag house footings in Waste Treatment Building Section VIa							
Fans and Motors for Dust Collection							
Fans	9 ft	l	x	5 ft	ht	x	4 ft th = 7 cy
Motor	2 ft	l	x	2 ft	ht	x	2 ft th = 1 cy
Total Debris							8 cy
Supplemental baghouse (2002)							
Assume debris volume three times the smaller primary baghouse	8 cy		x	3			= 24 cy
Total debris volume for dust collection systems	8 cy		+	24 cy			= 32 cy

Vig TURN AROUND AREA

Assume area will be excavated 0.5 ft deep

EXCAVATION

Asphalt	110 ft	l	x	170 ft	w		= 2,078 sy
	110 ft	l	x	170 ft	w	x	0.25 ft th = 174 cy
Base	110 ft	l	x	170 ft	w	x	0.67 ft th = 465 cy
Soil Excavation	110 ft	l	x	170 ft	w	x	0.5 ft th = 347 cy
Haul Volumes:							
Debris							= 174 cy
Soil							= 347 cy
Base							= 465 cy
Total Haul Volume							= 986 cy
Restoration of Grade (soil excavation volume only)							= 347 cy
Final Grade							= 2,078 sy

VIIa MIXED WASTE OPERATIONS BUILDING

DECONTAMINATION

Assume 5 Days for misc equipment and furniture

DEMOLITION OF CONTAMINATED AREA

NOTE: All foundation and first floor concrete with building supports are considered in the contaminated area.

Operations Building (Exterior)

Mixed Waste Operation building (building metal exterior)

Wall Dimensions	NE	30 ft	l	x	27 ft	ht	x	3 in th 0.25 = 8 cy
Wall Dimensions	East Short	20 ft	l	x	27 ft	ht	x	3 in th 0.25 = 5 cy
Wall Dimensions	East Long	145 ft	l	x	25 ft	ht	x	3 in th 0.25 = 34 cy
Wall Dimensions	NW	88 ft	l	x	27 ft	ht	x	3 in th 0.25 = 22 cy
Wall Dimensions	South	88 ft	l	x	27 ft	ht	x	3 in th 0.25 = 22 cy

Part B Permit Closure Cost Calculations for EnergySolutions

Wall Dimensions	West	175 ft l x	25 ft ht x	3 in th	0.25 =	41 cy
Roof Dimensions	Long	180 ft l x	95 ft w x	3 in th	0.25 =	159 cy
Roof Dimensions	Short	60 ft l x	30 ft w x	3 in th	0.25 =	17 cy
Demolition Volume		175 ft l x	88 ft w x	27 ft ht	=	415,800 cf
Demolition Volume		145 ft l x	30 ft w x	25 ft ht	=	108,750 cf
Demolition Volume Total						524,550 cf
Building Debris Subtotal						308 cy
Interior Walls						
Fire Wall Process area		90 ft l x	25 ft ht	6 in th	0.5 =	42 cy
Fire Wall Office area		145 ft l x	25 ft ht	6 in th	0.5 =	68 cy
Office area		756 lf l x	10 ft ht	6 in th	0.5 =	140 cy
Building Debris Subtotal (Interior Walls)						250 cy
Adjustment Building Debris Subtotal (Interior Walls)	50% reduction for hollow space betten studs and wallboard.					125 cy
Foundation (Operations Building)						
Stem Wall		584 ft l x	2 ft ht		=	1,168 sf
		584 ft l x	2 ft ht	6 in w	0.5 =	22 cy
Footing Dimensions		16 am x	10 ft l x	8 ft w	=	80 sf
Footing Dimensions		14 am x	6 ft l x	6 ft w	=	36 sf
Footing Dimensions		12 am x	4 ft l x	3 ft w	=	12 sf
Footing		80 sf +	36 sf +	12.0 sf	=	128 sf
Footings Subtotal			128 sf x	2.0 ft th	=	10 cy
Door Footing Dimensions						
Footing Dimensions One Man Door		18 am	3.5 ft l x	6 in w	0.5 =	32 sf
Footing Dimensions One Man Door		8 am	4 ft l x	6 in w	0.5 =	16 sf
Footing Dimensions Two Man Door		2 am	3.5 ft l x	6 in w	0.5 =	4 sf
Footing Dimensions Two Man Door		1 am	7.33 ft l x	7 ft w	=	52 sf
Footings Subtotal			104 sf x	10.0 in th	0.83 =	4 cy
Footing Dimensions Roll Up Door		12 am	9 ft l x	12 in w	1 =	108 sf
Footing Dimensions Roll Up Door		6 am	14 ft l x	12 in w	1 =	84 sf
Footing						192 sf
Footings Subtotal			192.0 sf x	3.0 in th	0.25 =	2 cy
Footing Debris Volume						16 cy
Secondary Containment						
Bracing		150 lf x	3 ft ht	1 ft th	=	17 cy
Bracing		30 lf x	3 ft ht	1 ft th	=	4 cy
Concrete (Drainage Trench)		129 lf x	3 ft w x	1 ft th	=	15 cy
Subtotal Debris						36 cy
Second Floor Dimensions						
Second Floor Dimensions		96 ft l x	29 ft w x	6.0 in th	0.5 =	5 cy
First Floor Dimensions		175 ft l x	90 ft w x	10.0 in th	0.83 =	487 cy
First Floor Dimensions(Office lab area)		148 ft l x	30 ft w x	6.0 in th	0.5 =	83 cy
Floor Subtotal						575 cy
Door Floor Dimensions						
Slab Dimensions (Baghouse)		28 ft l	16 ft w x	24 in th	2 =	34 cy
Roll Up Door		14 ft l	9 ft w x	10 in w	0.83 =	4 cy
One Man Door	9 am	4 ft l	3.5 ft w x	3 in th	0.25 =	14 cy
Two Man Door		8 ft l	3.5 ft l x	3 in th	0.25 =	1 cy
Floors Subtotal						53 cy
Floor Total						628 cy
Total Demolition Debris						
Operations Building						308 cy
Interior Walls						125 cy
Footing Total						16 cy
Secondary Containment Footing Systems						36 cy
Floor Dimensions						628 cy
HDPE Liner		145 ft l x	90 ft w x	0.28 in th	0.02 =	12 cy
Drum Mixer						1 cy
Drum Compactor						2 cy
Micro Extruder and Crusher						7 cy
Kinetic Mixer						2 cy
Dust collection						10 cy
Building Volume Debris Total						1,147 cy
EXCAVATION OF SECONDARY CONTAINMENT PROCESS AREA						
Pea Gravel Main Area		145 ft l x	90 ft w x	1 ft th	=	484 cy
Soil Excavation Main Area		175 ft l x	90 ft w x	6 in th	0.5 =	292 cy
Area		175 ft l x	90 ft w		=	1,750 sy
Soil Excavation East Area		148 ft l x	30 ft w x	6 in th	0.5 =	83 cy
Area		148 ft l x	30 ft w		=	494 sy
Total Contaminated Soil						375 cy

Part B Permit Closure Cost Calculations for EnergySolutions

Backfill volume = sum of pea gravel and soil excavation volumes = 859 cy
 Restoration of Grade (soil excavation area only) = 2,244 sy

Total Excavation Debris
 Total Pea Gravel 484 cy
 Total Contaminated Soil 375 cy

EXCAVATION OUTSIDE OF RESTRICTED AREA

Parking lot
 Asphalt 150 ft l x 15 ft w 250 sy
 Asphalt 150 ft l x 15 ft w x 3 in th 0.25 = 21 cy
 Haul volume 21 cy

VIIb SMALL-SCALE MIXER #1

DECONTAMINATION

Assume one day decontamination
 Total Estimated Debris Volume 1 cy

VIIc RESERVED

VIIId DRUM COMPACTOR

Debris (estimated) 2 cy

VIIe Gray Water Tank

DECONTAMINATION

Triple Rinse 1 Days

DEMOLITION

Tank steel
 Torch Cutting of each tank into fourths to size for disposal

8 cuts per tank to account for double-walled tanks 11 ft l x 8 cuts = 88 lf
 Cut pieces will be nested for disposal 11 ft l x 3 ft h x 3 ft th = 4 cy
 Micellaneous Piping Estimated Volume 2 cy = 2 cy

Concrete

Tank Pad 8'L x 8'w overall 8 ft l x 8 w = 8 sy
 8 ft l x 8 ft w x 1 ft th = 3 cy
 Debris Total 9 cy

VIIIf MICROENCAPSULATION EXTRUDER and CRUSHER

DECONTAMINATION

Debris Volumes

Extruder 10 ft l x 3 ft w x 5 ft ht = 6 cy
 Crusher (Estimated) 1 cy
 TOTAL volume 7 cy

VIIg KINETIC MIXER

DECONTAMINATION

Two days
 Debris Volume (Estimated) 2 cy

VIIh [RESERVED]

Box hopper and elevator have been removed.

VIIi DUST COLLECTION SYSTEM

DEMOLITION

NOTE: Slab is accounted for in bag house footings in Section VIIa

Fans and Motors for Dust Collection

Fans 9 ft l x 5 ft ht x 4 ft th = 7 cy
 Motor 2 ft l x 2 ft ht x 2 ft th = 1 cy
 Total Debris 8 cy

Assume Debris Volume Estimated at 10 cy

VIII RAIL CAR UNLOADING FACILITY

DEMOLITION

Railroad Pad

Retaining walls 30 ft l x 4 ft ht x 1 ft th = 5 cy
 Retaining walls 30 ft l x 4 ft ht x 1 ft th = 5 cy
 Retaining walls 15 ft l x 4 ft ht x 1 ft th = 3 cy
 Retaining walls 15 ft l x 4 ft ht x 1 ft th = 3 cy
 Area 30 ft l x 4 ft ht x 2 am = 240 sf
 Area 15 ft l x 4 ft ht x 2 am = 120 sf
 360 sf

Floor concrete 15 ft l x 30 ft w x 1 ft th = 17 cy

Footing Dimension #1 30 ft l x 2 ft w x 1 ft th = 3 cy

Part B Permit Closure Cost Calculations for EnergySolutions

Footing Dimension #2	30 ft l x	2 ft w x	1 ft th	=	3 cy
Footing Dimension #3	15 ft l x	2 ft w x	1 ft th	=	2 cy
Footing Dimension #4	15 ft l x	2 ft w x	1 ft th	=	2 cy
Debris Total					10 cy
Footing length	30 ft l +	15 ft l x	2 ea	=	90 lf
Total Volume of Debris	16 cy +	17 cy +	10 cy	=	43 cy
EXCAVATION					
Soil excavation	30 ft l x	15 ft w x	6 in th	0.5 =	9 cy
Earthen Ramp	15 ft l x	8 ft w x	2 ft ht	240	9 cy
Took Half of cy to account for slope					
Pad Fill	15 ft l x	30 ft w x	4 ft ht	=	67 cy
Total soil volume					85 cy
Backfill volume	30 ft l x	15 ft w x	6 in th	0.5 =	9 cy
Restoration of Grade	30 ft l x	15 ft w		=	50 sy

IX RAILROADS INSIDE RESTRICTED AREA

This item includes the removal of all railroad track and bed within the Restricted Area and removal of the Rail Digging Facility.

This Surety item includes demolition and disposal of the rail ties and track as well as the excavation and disposal of the ballast and base soils.

Defined as the entire length of rail within the Restricted Area

DEMOLITION

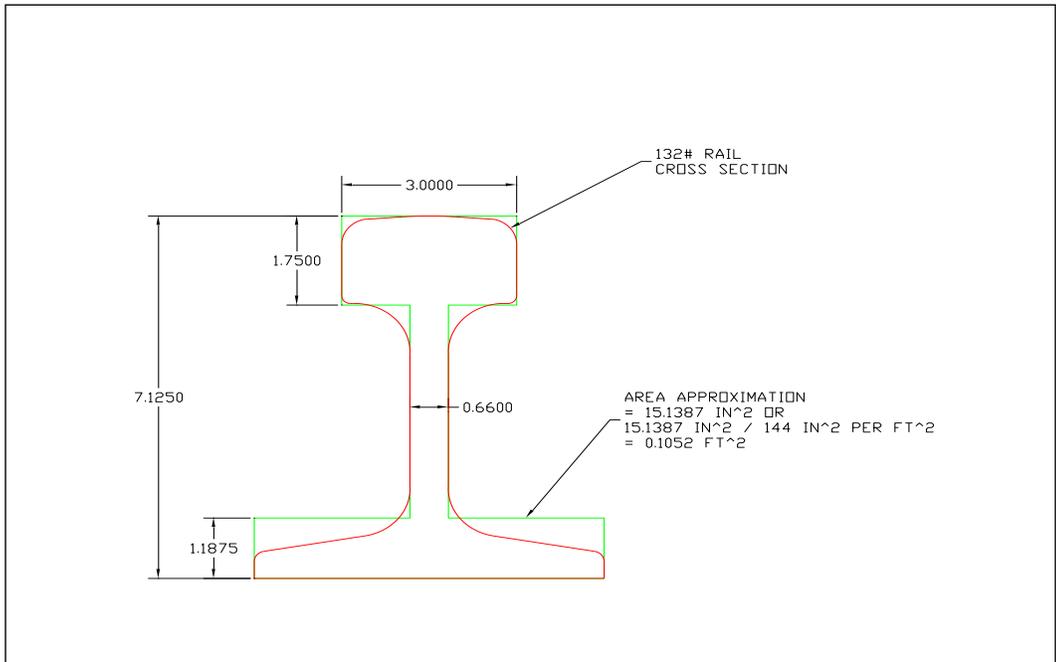
Ties, Track - (Figure 9416-1); typical spacing is shown below from visual inspection and Figure 9315-1)

Ties at 1.5 feet c.c.

Ties are 9 ft x 0.58333333 ft x 0.75 ft = 0.15 cy/Ea

Track cross section area is 0.1052ft²

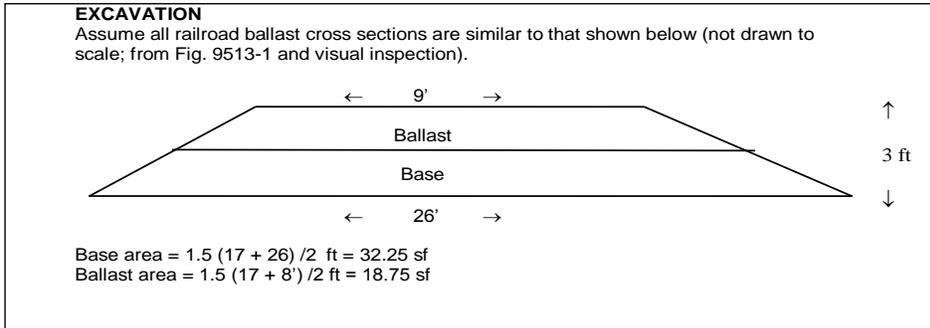
Most of the rail within the restricted are is 110# to 115#. Conservative assumption is 132# rail with an approximate area of 15.1387 in² or 0.1052 ft² as shown in the figure below.



Calculations

Debris Volume - ties	1,750 ft divide by	1.5 ft			1,167 ft
	1,167.0 Ea x	0.1500 cy/ea			176 cy
Debris Volume - rails	2 Ea x	1,750 ft	x	0.1052 sf	369 cy
Debris Volume - hardware	1,750 ft x	0.5 ft di		100	9 cy
Total Debris	176 cy +	369 cy +		9 cy	554 cy
Debris per linear foot	1,750 lf divide by	554 cy =		3.16 LF/CY	

Part B Permit Closure Cost Calculations for EnergySolutions



EXCAVATION

Excavate and dispose of ballast and base material				
Ballast	18.75 sf	x	1,750 ft	1,216 cy
Base	32.25 sf	x	1,750 ft	2,091 cy
Total Soil for Disposal	1216 cy	+	2091 cy	3,307 cy
Preliminary excavation along railbed	1,750 lf	x	50 ft w	87,500 sf
LESS Area for Railbed	1,750 lf	x	26 ft w	45,500 sf
	87,500 sf	-	45,500 sf	42,000 sf
Total Preliminary Excavation Volume	42,000 sf	x	0.5 ft	778 cy
Haul Volume				
Assume that half of the rail has an average distance to the embankment of 1 mile				
and that half has an average distance to the embankment of 0.5 mile for hauling purposes				
	3307 cy	+	778 cy	4,085 cy
Restoration of grade (preliminary excavation only)				
Final grade	1,750 lf	x	50 ft	9,723 sy

Xa ROADS INSIDE RESTRICTED AREA

NOTE: All roads are assumed to be 25 feet wide and to be excavated at a 6 inch depth of native soil excavation.

EXCAVATION

Asphalt Chips	3,449 lf	x	25 ft w	x	8 in th	=	2,130 cy
Road Base	3,449 lf	x	25 ft w	x	12 in th	1 =	3,194 cy
Soil	3,449 lf	x	25 ft w	x	6 in th	0.5 =	1,597 cy
Total Excavation							6,921 cy
Backfill = soil excavation volume							1,597 cy
Final Grade			3,449 lf	x	25 ft w	=	9,581 sy

Xb RESERVED

Xc RESERVED

Xd ASPHALT PAD INTERMODAL TRANSFER AREA

EXCAVATION

Asphalt Pad							
Asphalt	100 ft l	x	26 ft w				290 sy
Asphalt	100 ft l	x	26 ft w	x	3 in th	0.25 =	25 cy
Asphalt	62 ft l	x	35.7 ft w				248 sy
Asphalt	62 ft l	x	35.7 ft w	x	3 in th	0.25 =	21 cy
Asphalt	145 ft l	x	70 ft w				1,128 sy
Asphalt	145 ft l	x	70 ft w	x	3 in th	0.25 =	94 cy
Asphalt	90 ft l	x	55 ft w	x			550 sy
Asphalt	90 ft l	x	55 ft w	x	3 in th	0.25 =	46 cy
Asphalt Total							2,216 sy
Final Grade							2,216 sy

XI REAGENT DELIVERY SILOS

DISMANTLEMENT

Assume 3 days

DEMOLITION

Concrete Pad	25 ft l	x	25 ft w	x	24 in th	2 =	47 cy
Estimated Debris			5 cy	x	2 ea	=	10 cy
Total debris							57 cy

XIIa EVAPORATION POND

DEMOLITION

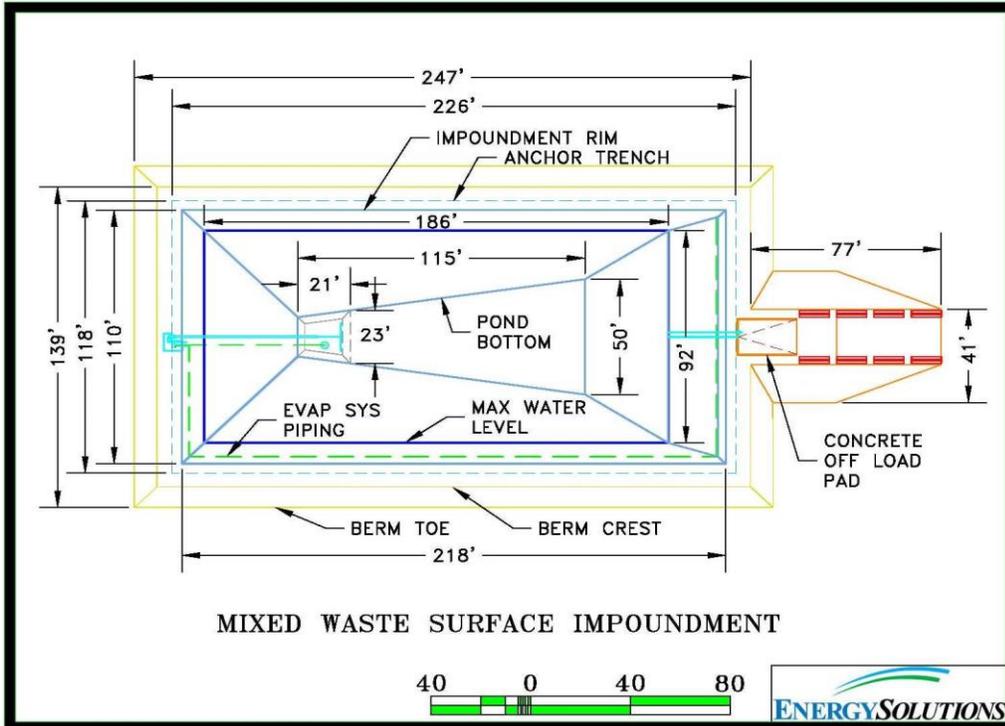
Pond Size	250 ft l	x	150 ft w	x	7 ft dp	=	9,723 cy
HDPE Liner	250 ft l	x	150 ft w	x	0.28 in th	0.02 =	33 cy

EXCAVATION

Sludge removal	250 ft l	x	150 ft w	x	6 in th	0.5 =	695 cy
Soil Excavation	250 ft l	x	150 ft w	x	6 in th	0.5 =	695 cy
Restoration of Grade	250 ft l	x	150 ft w	x	6 in th	0.5 =	695 cy
Add Pond Depth	250 ft l	x	150 ft w	x	7 ft dp	=	9,723 cy
Haul volume							1,423 cy
Backfill							10,418 cy
Final grade	250 ft l	x	150 ft w			=	4,167 sy

XIIb MIXED WASTE SURFACE IMPOUNDMENT

This item includes the demolition and disposal of the offloading pad, MW surface impoundment, berms, and sedimentation basin; as well as excavation of contaminated soils. This is the area from the south edge of the Impoundment offloading pad to the northern berm; and from the Impoundment's west berm edge to the east berm edge.



Impoundment Size	236 ft	x	110 ft	w x	3.99 ft	dp	=	3,835 cy
DEMOLITION								
Debris								
Pump Station	1 ea	x	10 cy				=	10 cy
Primary Pond Liner (estimated)	256 ft	x	130 ft	w x	0.08 in	th	=	9 cy
Secondary Pond Liner (estimated)	256 ft	x	130 ft	w x	0.08 in	th	=	9 cy
Pond Liner Drainage Net (estimated)	256 ft	x	130 ft	w x	0.08 in	th	=	9 cy
Pad Piping	20 ft	x	4.5 in	dia x	2 ea		=	0.2 cy
Evaporation System Piping	446 ft	x	1 in	dia			=	0.1 cy
Evaporation System Equipment	8 cf						=	0.3 cy
Leak Detection System Piping	85 ft	x	10 in	dia			=	2 cy
Leak Detection System Equipment	8 cf						=	1 cy
Debris Total							=	37 cy
Concrete								
Offload Pad								
Concrete Pad	16 ft	x	24 ft	w x	8 in	th	=	10 cy
Concrete Pad Curbing	62 ft	x	8 in	w x	8 in	th	=	2 cy
Leak Detection System								
Pipe Support Concrete Anchor	11 ft	x	5.50 ft	w x	0.5 ft	th	=	2 cy
Concrete Containment Pad Curbing	2 ft	x	3.33 ft	w x	3.00 ft	th	=	1 cy
Concrete Total							=	12 cy
Berms (includes gravel)								
North Berm (clean; use as fill)	130 ft	x	19 ft	w x	3 ft	h	=	275 cy
South Berm (clean; use as fill)	130 ft	x	19 ft	w x	3 ft	h	=	275 cy
East Berm (clean, use as fill)	256 ft	x	19 ft	w x	3 ft	h	=	541 cy
West Berm (clean, use as fill)	256 ft	x	19 ft	w x	3 ft	h	=	541 cy
Offload Ramp (clean; use as fill)	32 ft	x	22 ft	w x	4 ft	h	=	105 cy
Berm Soil Total							=	1,735 cy
EXCAVATION								
Sludge removal	236 ft	x	110 ft	w x	6 in	dp	=	481 cy
Granular Fill Excavation (sump)	15 ft	x	20 ft	w x	1 ft	dp	=	12 cy
Impoundment Soil Excavation (under HDPE)	236 ft	x	110 ft	w x	6 in	th	=	481 cy
Restoration of Grade	236 ft	x	110 ft	w x	6 in	th	=	481 cy
Available clean fill							=	1,735 cy
Backfill Required for Impoundment	236 ft	x	110 ft	w x	4 ft	dp	=	3,835 cy
Excavation Total							=	974 cy

Part B Permit Closure Cost Calculations for EnergySolutions

Borrow required to backfill impoundment				=	2,100 cy
Contaminated haul volume				=	1,023 cy
Placement haul volume				=	1,023 cy
Compaction Volume				=	1,023 cy
Final Grade	254 ft	x	128 ft	w	= 1,806 sy

XIII EVAPORATION TANKS (4)

DEMOLITION

Tank #125, #150, #175, #200,
Evaporation Tanks Pads (2)

Stem Wall (sf)	100 lf	x	1 ft	ht	x	2 ea	=	200 sf
Stem Wall	100 lf	x	1 ft	ht	x	6.0 in	w	0.5 = 2 cy
Floor	30 ft	l	x	20 ft	w	x	1 ft	th = 23 cy
Area	30 ft	l	x	20 ft	w			= 67 sy
Wash Pad	30 ft	l	x	12 ft	w	x	1 ft	th = 14 cy
Area	30 ft	l	x	12 ft	w			= 40 sy
Footing Dimensions	100 ft	l	x	2 ft	w	x	1 ft	th = 8 cy
Area	100 ft	l	x	2 ft	w			= 23 sy
Tank steel	15 ft	l	x	8 ft	w	x	2 in	th 0.17 = cy/each
Tank debris				1 cy	x	4 am	=	4 cy
Subtotal Debris				51 cy	x	2 ea	=	102 cy
Stem Wall Total (sf)								400 sf
Footing/pad total area				130 sy	x	2 ea	=	260 sy
Footing/pad total volume								90 cy
Total debris for all tanks						102 cy	=	102 cy
Soil Excavation Tanks	2 am	x	30 ft	l	x	20 ft	w	x 6 in dp 0.5 = 12 cy
Total in (sy)								67 sy
Total Soil								12 cy
Haul volume = debris + soil				102 cy	+	12 cy	=	114 cy
Backfill = soil excavation volume								12 cy
Final grade = soil excavation area								67 sy

XIV ON SITE OPEN AREAS

Includes anything not covered by other sections and will include heavy machinery, power poles, fencing, utilities, etc.

DEMOLITION

Propane Tanks Pad	30 ft	l		6 ft	w	4 in	th	0.33 = 3 cy
Cement Exchange Ramp								
Holding Tank				3.14 pi	x	5 ft	rd	25 = 3 cy
	2 Sides	x	20 ft	ht	x	3.14 pi	x	10 ft di = 3 cy
Tank Total								6 cy
Tank Volume	20 ft	ht	x	3.14 pi	x	5 ft	rd	25 = 59 cy
Retaining Wall	8 ft	l	x	10 ft	ht	x	1 ft	th = 3 cy
Retaining Wall	8 ft	l	x	10 ft	ht	x	1 ft	th = 3 cy
Retaining Wall	15 ft	l	x	10 ft	ht	x	1 ft	th = 6 cy
Debris (sf)								310 sf
Debris Total								12 cy
B-25 Equivalents								
Each container is estimated at	6 lf	x	2000	containers				= 12,000 lf
Each container is estimated at	1 cy	x	2000	containers				= 2,000 cy
Debris Total								2,000 cy
Assume B-25 container torch cut, assume \$106.66 per B-25 equivalent; adjusted annually for inflation								
Power Poles								
Assume 1 ft diameter. Cut into pieces less than 8' x 10". Dispose of all poles in embankment.								
Assume 1 cy / pole and wire								
Total Poles Assume 2 days	14 am	x	1 cy	x				= 14 cy
Misc debris Assume 5 days								14 cy
Fencing	6514 lf	l	x	6 ft	ht	x	1 in	0.08 = 272 cy
Total debris								300 cy

EXCAVATION

Cement Exchange Ramp	30 ft	l	x	10 ft	ht	x	15 ft	w = 167 cy
Tank Volume								59 cy
Debris Subtotal								226 cy
Ramp Soil Subtotal								108 cy
Section Between Earthen Ramp and MW Treatment Building	200 ft	l	x	75 ft	w	x	6 in	dp 0.5 = 278 cy
Section Between MW Operations Building and Cell south to MW Treatment building	525 ft	l	x	100 ft	w	x	6 in	dp 0.5 = 973 cy
Section of Land West of Cell to Evaporation Pond (Section Xa & XIII is accounted for in 25 ft less actual measurement)	1,000 ft	l	x	100 ft	w	x	6 in	dp 0.5 = 1,852 cy
Section Along South of cell to storage pad	750 ft	l	x	75 ft	w	x	6 in	dp 0.5 = 1,042 cy
Berm	3,200 lf	x	10 ft	w	x	4 ft	ht	= 4,741 cy
soil	3,200 lf	x	10 ft	w	x	6 in	dp	0.5 = 1,334 cy
Total Haul Soil								10,328 cy

Part B Permit Closure Cost Calculations for EnergySolutions

Haul Volumes	
Poles	14 cy
B-25 Equivalent Containers	2,000 cy
Misc Debris	14 cy
Fencing	272 cy
Cement Exchange Ramp	300 cy
Debris Total	2,600 cy
Soil Total	10,328 cy
Total Volume	12,928 cy

XV HEALTH PHYSICS STAFF AND RADIATION SURVEY EQUIPMENT

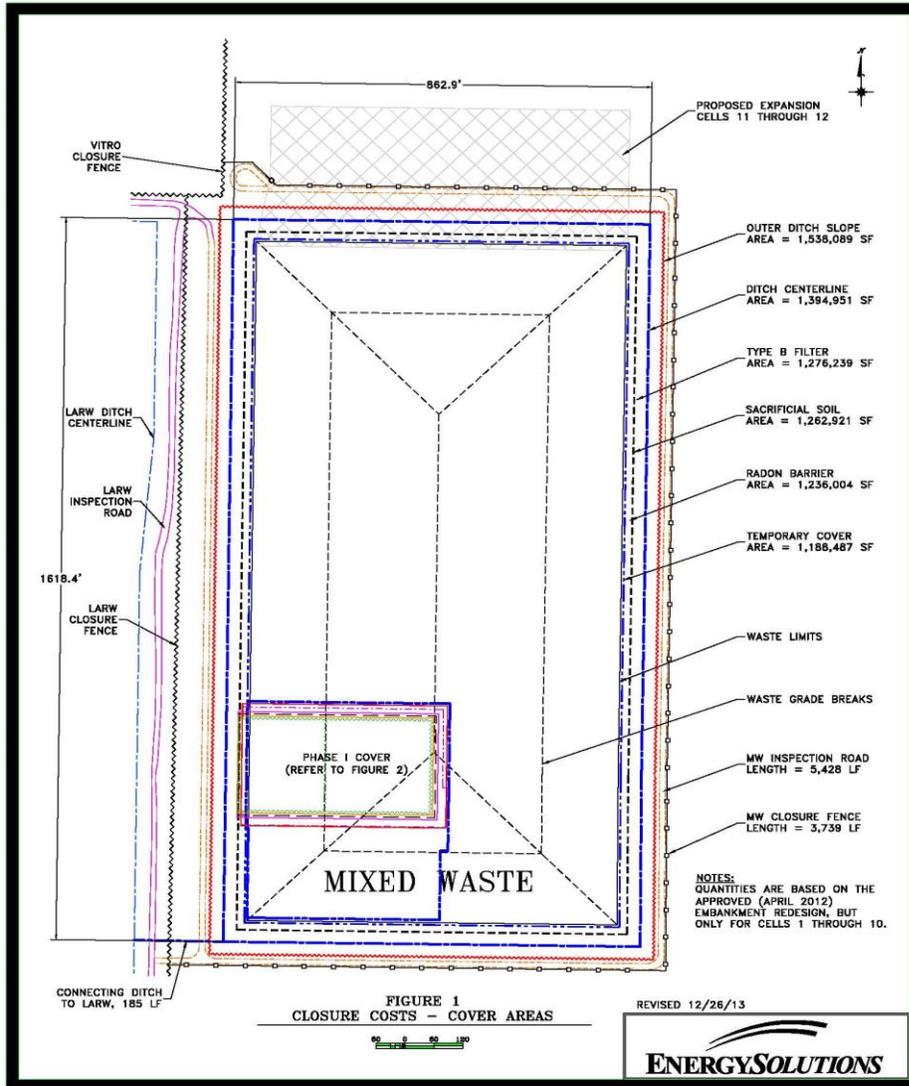
Assume HP support is needed for 18 months to account for pre-closure site preparation and post-closure shut down. Fully fund HP staff for radiation survey, hazardous waste survey, and construction monitoring activities. Fully fund PPE survey equipment, badging, and QC confirmatory analytical analysis; take no credit for existing equipment at the site. The entire site will be monitored to determine the spread of contamination, if any. If contamination is found near the boundaries, off site monitoring will also be performed.

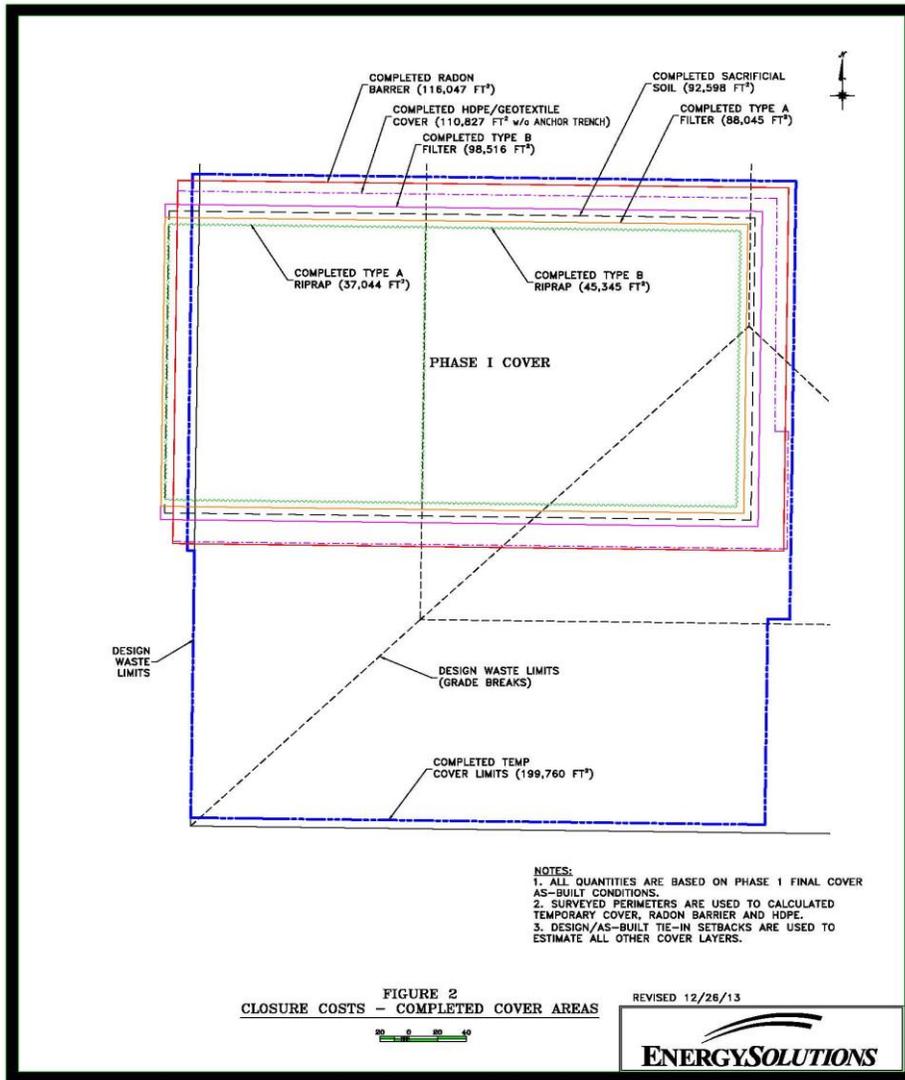
NOTE: Left column reflects original estimated cost; right column incorporates adjustment for inflation.

Equipment: assume				
PPE and Misc Supplies (Lump Sum)				13,524
In-situ gamma spectrometer (2)				75,035
Badging				20,286
QUAI Confirmatory Analysis	400	samples	x	\$ 269.00 ea updated annually for inflation
				107,600
Personnel: assume 18 months for all staff				
Senior Health Physicist (per hour)				86.57
Senior HP Technician (per hour)				53.90
HP Technicians (3) (per hour)				44.92
Closure Report: Estimated cost				67,227
Monuments: Assume 2				3,318

XVI CELL CLOSURE

This item includes the construction of the final cover, roads around the embankments, drainage structures around the embankments, and permanent fencing. The final cover design is assumed to be consistent with approved plan drawings of the Groundwater Quality Discharge Permit. The assumed maximum quantities of stored waste and waste from site reclamation should bring the embankment up to final grade in preparation for construction of the final cover; no clean fill will be added to achieve the final grade. If the maximum quantities of waste are not on site, and clean fill is needed, the costs associated with the disposal of the assumed maximum waste volume would more than account for the excavation of clean fill and the reclamation of the clean fill areas. Reclamation of the pits, used for erosion barrier and filter material, is covered under a bond with the BLM. The embankment closure design is shown below. All cover calculations are based on this drawing.





TEMPORARY Cover

Temporary Cover

Volume	988,727 sf	x	1 ft	=	36,620 cy
Remove Overburden	36,620 cy	x	0.11	=	4,029 cy

FINAL Cover - Assume uniform cover design; construct ~1,276,243 sf of cover; 11% of mined volume is overburden

Radon Barrier

Radon Barrier Volume	1,119,957 sf	x	2 ft	=	82,960 cy
Radon Barrier Stockpiled (w/ deflocculant)	3,900 cy			=	3,900 cy
Remove Overburden	79,060 cy	x	0.11	=	8,697 cy

Deflocculant (STPP)

Applied at a rate of 3.5 lbs STPP per 50 cf of radon barrier clay.	2,134,620 cf	x	0.07 lbs/cf	=	149,424 lbs
--	--------------	---	-------------	---	-------------

Geosynthetics (HDPE & Textiles, includes material in anchor trench)

	1,153,518 sf			=	128,169 sy
--	--------------	--	--	---	------------

Erosion Barrier

Assume 1.25 cy excavation per cy product (riprap + filter + sac soil) => Excavation Factor of 2.15
 Filter Zone material cost is covered by this excavation and screening

Erosion Barrier Volume (top slope+side slope to ditch CL)	1,394,951 sf	x	1.50 ft	=	77,498 cy
Erosion Barrier Volume (ditch centerline to ditch outside)	143,138 sf	x	1.00 ft	=	5,302 cy
Total Erosion Barrier Volume	77,498 cy	+	5,302.00 cy	=	82,800 cy

Part B Permit Closure Cost Calculations for EnergySolutions

Total Erosion Barrier Borrow Volume Required	82,800	cy	x	2.15	cy/cy	=	178,020	cy
Erosion Barrier Volume Excavated & Hauled (Stockpiled on Section 5)						=	178,020	cy
Erosion Barrier Borrow Volume (Excavate, Load & Haul)	178,020	cy	-	178,020	cy	=	0	cy
Erosion Barrier Placed (Completed Final Cover)	2,058	cy	+	2,519	cy	=	4,577	cy
Placement: Assume 1.6 tons/cy	78,223	cy	x	1.60	tons/cy	=	125,157	tons
Type A & B Riprap (Erosion Barrier) Volume Stockpiled	16,842	cy	+	981.00	cy	=	17,823	cy

Screening Plant								
Approved Screened Material, All Cover Types	10,546	cy	+	23,943	cy	=	34,489	cy
Processing Hours: Assume 280 cy/hr can be processed	143,531	cy	/	280	cy/hr	=	513	hrs
Processing Days: Assume 7 hrs production/day	513	hrs	/	7	hrs/day	=	74	days
Processing Months: Assume 992 hrs is equal to 6 months (plant rental)	513	hrs	/	992	hrs/6 months	=	3.2	months

Sacrificial Soil (produced from erosion borrow material--included in the 2.15 excavation factor)

Sacrificial Soil Volume	1,170,323	sf	x	1.00	ft	=	43,346	cy
Sacrificial Soil Stockpiled	6,120	cy				=	6,120	cy

Filter Zone

Type A Filter Zone Volume (includes ditch centerline to outer slope)	1,450,044	sf	x	0.50	ft	=	26,853	cy
Type B Filter Zone Volume	1,177,723	sf	x	0.50	ft	=	21,810	cy
Total Filter Zone Material Volume (including ditch)	26,853	cy	+	21,810	cy	=	48,663	cy
Type A Filter Zone Volume Stockpiled	4,870	cy				=	4,870	cy
Type B Filter Zone Volume Stockpiled	5,676	cy				=	5,676	cy
Total Filter Zone Volume to Process Type A + B	48663	cy	-	4,870	cy	-	5,676	cy
Total Filter Zone Volume to Place (Type A + B)						=	48,663	cy

ROAD AROUND EMBANKMENT

Roads (As shown in Figure 1)	5,428	ft				=	5,428	lf
<hr/>								
Total Roads						=	5,428	lf
Roads-Grading	5,428	lf	x	15.00	ft w	=	9,047	sy
Roads-Roadbase	81,420	sf	x	1.00	ft th	=	3,016	cy

DRAINAGE

Ditch Length (East)	1618.4	lf				=	1,619	lf
Ditch Length (West)	1618.4	lf				=	1,619	lf
Ditch Length (North)	862.9	lf				=	863	lf
Ditch Length (South)	862.9	lf				=	863	lf
Ditch Length (connector)	185	lf				=	185	lf
<hr/>								
Excavation of Ditches	5149	lf	x	22.5	ft w	x	4.5	ft dp
Note: Ditch dimensions updated to those in drawing 11009-W02, Rev 0 & 11009-W04, Rev 0.								
Note: Ditch filter and erosion barrier materials and placement are included in the Erosion Barrier and Filter Zone calculations above.								

FENCES

Installation of permanent Fencing (As shown in Figure 1)	3739	lf				=	3,739	lf	
Signs	3739	lf		1	per	100	ft	=	
								=	37

XVII GENERAL CLOSURE OF SECTION

Revegetation Total Restricted Area Less Mixed Waste Cell
Fig 9301-4

Removal of signs Assume 2 days
Restoration of Grade Fill in any depressions not filled in previous sections:

HAUL TO LANDFILL

Debris Loading, hauling, and Disposal - assume 50 cy not covered previously; 100 miles round trip.

ROTARY DUMP PCB DECONTAMINATION AND VERIFICATION

(Only necessary if PCBs have been off-loaded in the Facility)	
Standard Wipe Test Samples (five total each round; assume two rounds of sampling)	10
Decontamination and sampling (assume 2 laborers; one week)	80 hrs

CLEANUP OF VARIOUS ITEMS

NOTE: equipment quantities derive in part from Approval Order by the Utah Division of Air Quality

Heavy Equipment - misc.								3	ea
Small Equipment								6	ea
6-Wheel Trucks - assume 3 days each to decontaminate								4	ea
Bulldozers - assume 2 days each to decontaminate								4	ea
Front-end Loaders - assume 1.5 days each to decontaminate								3	ea
Backhoe - assume 1.5 days each to decontaminate								7	ea
Compactors - assume wash 1/ day								0	ea
Water Trucks - assume 2 days each to decontaminate								1	ea
Graders - assume wash 1/ day								0	ea
John Deer Tractors - assume wash 1 / day								1	ea
Pickup - assume wash 4 / day								2	ea
Rail Cars - 0 max - 1.5 days / car								0	ea
JCB's - Assume 3 days each to decontaminate								4	ea
Forklifts - Assume 1 day each to decontaminate								8	ea
Other - Assume 3 days each to decontaminate								0	ea
NOTE: time to clean equipment for 2 laborers									
Heavy Equipment - misc.	1	days						24	hours
Small Equipment	1	days						48	hours
6-Wheel Trucks - assume 3 days each to decontaminate	3	days						96	hours
Bulldozers - assume 2 days each to decontaminate	2	days						64	hours
Front-end Loaders - assume 1.5 days each to decontaminate	2	days						36	hours

Part B Permit Closure Cost Calculations for EnergySolutions

Backhoe - assume 1.5 days each to decontaminate	2	days	84	hours
Compactors - assume wash 1/ day	1	days	0	hours
Water Trucks - assume 2 days each to decontaminate	2	days	16	hours
Graders - assume wash 1/ day	1	days	0	hours
John Deer Tractors - assume wash 1 / day	1	days	8	hours
Pickup - assume wash 4 / day	4	days	64	hours
Rail Cars - 0 max - 1.5 days / car	2	days	0	hours
JCB's - Assume 3 days each to decontaminate	3	days	96	hours
Forklifts - Assume 1 day each to decontaminate	1	days	64	hours
Other - Assume 3 days each to decontaminate	3	days	0	hours

XVIII STOCKPILE OF CLOSURE ASSETS

EnergySolutions takes credit for material stockpiled temporarily for active cover construction projects.

XIX MOBILIZATION

Assume 4% of direct costs for mobilization and 1.86% for demobilization

XX CONTINGENCY

Assume 11% of direct costs

XXI ENGINEERING AND REDESIGN

If the cell is to be closed prior to completion, the only major change will be to cell, adjusting footprints, etc.
The cover design will remain the same.
Assume 2.25% of direct cost.

XXII WORKING CONDITIONS

Assume 5.5% of direct cost

XXIII PROFIT AND OVERHEAD

Assume 19% of direct cost

XXIV MANAGEMENT FEE AND LEGAL EXPENSES

Assume 4% of direct cost for management and legal expense

XXV DEQ OVERSIGHT OF PROJECT

Assume 4% of direct costs

XXVI POST OPERATIONAL MONITORING AND MAINTENANCE

Required for 100 years of post-closure period.

Travel 2 hours/ day for 1 week 10 hours per week

Off site Features 4 hours per year

Access road Maintenance - Assume no maintenance needed for first five years; after that a dozer or grader is needed for 1 day 10 hr / 5 yrs

2 Hours of equipment 0.25

4 Hours of inspection

2 Hours average per year.

Fence Maintenance - Fence is essentially maintenance free; assume some vandalism or broken wires.

4 Hour of inspection

2 Hours repair per year

Gates - assume some vandalism 2 Gate Every 5 Years

4 Hours of inspection

Signs 2 Sign Every 10 Years

4 Hours of inspection

Monuments 2 Mon. Every 100 Years

4 Hours of inspection

Wells 2 Well Every 10 Years

Surface Completion per year \$100

4 Hours of inspection

\$ 490.14 Average well replacement per year.

\$100.00 Average surface completion

\$ 590.14 Total average per year.

Slopes - largely maintenance free. 10 cy \$ 134 Every 5 Years

No other material needed.

2 Hours inspection

2 Hours of equipment 8 hr day 0.25

2 cy of riprap per year

\$ 26.88 Average cost per year

Cell Structure - Riprap 10 cy \$ 134 Every 5 Years

Equipment 10 hr \$ 436.96 Every 5 Years

2 cy of riprap per year

2 Average hours of equipment per year

2 Hours of Inspection and vegetation control

Diversion Channels - inspect, remove vegetation, regrade

2 Hours of inspection/ labor per year.

2 Hours of equipment 8 hr day 0.25

Written report of inspection and Maintenance activities for regulators

XXVII WATER SAMPLES -- RADIOLOGICAL (years 1-100)

Number of wells - Ground Water Quality Discharge Permit total is

Part B Permit Closure Cost Calculations for EnergySolutions

14 Monitoring wells (Module VI)
 Frequency - annual for 100 years post-closure monitoring period. Frequency 1
 Sampling - assume two field technicians for two days:
 2 Days per year total
 Analysis - radiologic parameters specified by Condition I.F.5 of GWQDP
 Average cost per sample to EnergySolutions.
 14 Radiologic parameters
 Report - included in cost of analysis.

XXVIII WATER SAMPLES -- RCRA (years 1-30)

Number of wells - State-issued Part B Permit total is
 14 Monitoring wells (Module VI)
 Frequency - annual for 30 years post-closure monitoring period. Frequency 1
 Sampling - assume two field technicians for two days:
 2 Days per year total
 Analysis - all field and radiologic parameters specified by State-issued Part B Permit
 Average cost per sample to EnergySolutions.
 14 RCRA parameters
 Report - included in cost of analysis.

XXIX EMBANKMENT SURVEY (years 1-30)

Fund for 30 year post-closure monitoring period.
 Aerial survey of Mixed Waste embankment: cost estimated on current cost of site-wide aerial survey

XXX AIRBORNE PARTICULATE MONITORING

To be performed only in the first year of post-closure 52 weekly visits.

GROSS ALPHA

9 Samples
 52 Weeks (1 year) frequency
 2 Personnel required for all required sampling
 2 Days total
 Analysis cost estimate from Testamerica

ISOTOPIC ANALYSIS

6 Samples
 1 Frequency
 Analysis cost estimate from Testamerica

XXXI SOIL SAMPLING

ALPHA

45 Samples
 1 Frequency
 Analysis cost estimate from Testamerica

ISOTOPIC ANALYSIS

6 Samples
 1 Frequency
 Analysis cost estimate from Testamerica

XXXII VEGETATION SAMPLING

Information from 1994 Trust and Table 7.2 of Radiological Monitoring Program (mar 1995)
 4 Samples
 1 Frequency
 Analysis cost estimate from Testamerica

XXXIII GAMMA EXPOSURE MONITORING

8 Samples
 4 Frequency
 Equipment - assume use "electret" reader owned by EnergySolutions
 Analysis cost estimate from Testamerica

XXXIV RADON EXPOSURE MONITORING

8 Samples
 4 Frequency
 Analysis cost estimate from Testamerica