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July 1, 2009

Mr. David Cobrain
 State of New Mexico Environment Department
 Hazardous Waste Bureau
 2905 Rodeo Park Drive East, Building 1
 Santa Fe, NM 87505-6303

Reference: Work Assignment No. 06280.220; State of New Mexico Environment Department, Santa Fe, New Mexico; General Permit Support Contract; Los Alamos National Laboratory, Los Alamos, New Mexico; Closure Cost Estimates for Attachments G.1 through G.26

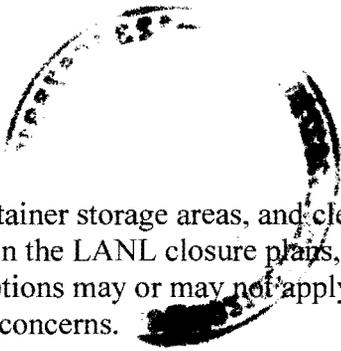
Dear Mr. Cobrain:

TechLaw, Inc. (TechLaw) has prepared 26 closure cost estimates for hazardous waste storage and treatment units at the Los Alamos National Laboratory (LANL), as requested by the New Mexico Environment Department (NMED). The cost estimates were prepared based upon the information contained in unit-specific closure plans (Attachments G.1 through G.26) provided by Ms. Rebecca Kay of NMED. Each of the cost estimates are divided into five worksheets: Summary; General Unit Description; Removal, Records Review and Structural Assessment, and Development of the Sampling and Analysis Plan; Decontamination; and Analysis and Sample Management Procedures. Within each worksheet, the costs surrounding a specific section of the closure procedures are estimated based on professional experience and/or the assumptions which are described in detail in Addendum 1.

All cost estimates were derived using unit costs from the Environmental Cost Handling Options and Solutions, dated 2006 (ECHOS – 2006). Per NMED technical direction received on June 22, 2009, a 3.5 per cent (3.5%) escalation rate was applied to the ECHOS-2006 unit cost for labor, disposal, and analytical reporting for each year from 2007 to 2010. Since the closure plans are somewhat indefinite as to the actual closure procedures that will be implemented, various assumptions had to be made to support the cost estimates. The assumptions included overhead costs, which were set at 200% of “bare” costs, applied to all tasks except sample chemical analyses and off-site disposal costs, which were assumed to be performed by an off-site contractor laboratory and waste management contractors. This relatively high overhead estimate was based on the large organization and high security requirements in place at LANL. Overhead is accounted for in the estimate spreadsheets by multiplying the bare labor and equipment costs by 3. As requested by the NMED, a localization factor was not included within the cost estimate as non-local contractors were assumed to provide technical support for all closure activities proposed for each of the units.

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Demolition of outdoor container storage areas, and clean closure of storage areas in buildings (no demolition) are suggested in the LANL closure plans, and the cost estimates reflect these general approaches. These assumptions may or may not apply to the actual closures, due to discovery of historical releases or other concerns.

Table A, Summary of Estimated Costs provides a summary of the overall estimated costs for each of the units.

Table A: Summary of Estimated Costs

Attachment No	Unit	Total Estimated Costs (\$)
G.1	TA-3-29	425,423.92
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G.3	TA-16-399	142,469.72
G.4	TA-50-69	329,151.07
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G.6	TA-54-G-Pad 1	2,316,271.09
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G.8	TA-54-G-Pad 5	2,425,481.38
G.9	TA-54-G-Pad 6	2,279,823.75
G.10	TA-54-G-Pad 9	3,534,999.71
G.11	TA-54-G-Pad 10	1,658,458.85
G.12	TA-54-G-Pad 11	2,015,383.56
G.13	TA-54-G-8	1,148,828.10
G.14	TA-54-G-33	1,456,692.76
G.15	TA-54-Area L	2,554,496.97
G.16	TA-54-B38W	270,783.53
G.17	TA-54-West-OSU	518,794.03
G.18	TA-55-4-B40	336,615.62
G.19	TA-55-4-K13	564,777.29
G.20	TA-55-4-B05	204,689.29
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G.23	TA-55-Building 4	349,207.95
G.24	TA-55-4 IMWSTU	265,313.47
G.25	TA-55-B185	584,043.32
G.26	TA-55-OSU	657,511.42

Permitted Capacity – On June 19, 2009, TechLaw requested that the permitted capacity of hazardous waste for all units be provided as the Closure Plans did not provide a specific volume for the maximum permitted capacity. NMED provided Attachment B, Part A Permit Application which provided the maximum permitted capacity for each of the technical areas.

TechLaw generated estimates for the removal of hazardous wastes. In most cases, the closure plans stated whether the stored hazardous wastes were liquid and/or solid. For purposes of developing disposal costs, TechLaw provided cost estimates for the removal and disposal of liquid and solid hazardous wastes. For units that store both liquid and non-liquid hazardous wastes, the permitted capacity was divided in half as it was assumed that the liquid and non-liquid hazardous wastes were equivalent. If the closure plan did not specify whether the unit stored liquid or solid wastes, it was assumed that the stored hazardous wastes were liquid. The units of volume for the hazardous wastes were converted from gallons to cubic feet (and also to cubic yards) to provide consistency within the calculations.

TechLaw provided a specific area and volume for the structures and equipment requiring removal from the unit based on the information provided within the closure plan.

For units that did not require removal of equipment and structures and only decontamination, the entire area of the unit was used for the calculating decontamination costs.

Removal, Records Review, and Structural Assessment; and Development of Sampling and Analysis Plan

A five person crew including a Project Manager and four field engineers were assumed to provide support in removing the permitted hazardous wastes from the Unit. The number of hours estimated for the completion of the task was based on professional experience. It was assumed that 200 cubic feet of hazardous material can be removed and disposed within an hour considering a five-person crew. It was also assumed that all equipment necessary to assist in the removal of the waste (i.e., forklift, dollies, trucks, etc.) will be provided by the designated crew.

Decontamination

The Decontamination Worksheet includes a cost estimate for the following: removal of identified structures and equipment (i.e., domes, asphalt/concrete pads, etc.), if applicable; the disposal of the hazardous waste derived from the demolition of the identified structures and equipment; decontaminating identified structures and equipment, if applicable; and the collection of the specified decontaminate verification samples.

An identical five person crew (Removal of Hazardous Waste) is considered for the removal of the identified structure and equipment. It is assumed that the crew is capable of operating equipment necessary for the demolition and transportation of the hazardous material. It was assumed that 1,500 square feet of hazardous material can be demolished and disposed within an hour by use of necessary equipment.

Removal of Hazardous Waste Derived from Identified Structures and Equipment

Area of structures and equipment identified (square feet) / 1500 square feet per hour.

An identical five person crew (Removal of Hazardous Waste) is considered for the decontamination of the equipment, structures, and/or unit. Should the closure plan require that only specific equipment and/or structures be decontaminated, assumptions surrounding the suggested volume were made as no specific dimensions were provided for all equipment and/or structures. As a result, it was assumed that 2% of the area of the structures and equipment identified be considered as the area of the equipment and/or structures requiring decontamination. However, should an entire unit be considered for decontamination, the area of the unit will be considered. It was further assumed, based on professional experience, that an area of 200 square feet can be decontaminated within an hour period.

Decontamination (for units that only require a certain number of equipment/structures to be decontaminated)

Area of the decontaminated structures (square feet) / 200 square feet per hour.

The number of hours estimated for the collection of Data Verification samples were based on the types of samples to be collected. Two field engineers are included within this section of the cost estimate. It was assumed that 0.5 hours would be required to collect a wipe sample and 0.33 hours for the collection of a liquid sample. The collection of liquid samples was not provided within the closure plan. However, liquid samples were considered if a sump, drain, curb, or any structure that serves as a surface water container of some sort was identified within the unit. The collection and analyses of a minimum of eight Quality Assurance/Quality Control (QA/QC) field samples was included within all cost estimates.

Mr. David Cobrain
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The cost estimates are formatted in Excel. An electronic copy of the individual estimates was sent directly to you and Ms. Rebecca Kay on July 1, 2009. A formalized hard (paper) copy of this letter and a CD with all of the estimates will be sent via mail. If you have any questions, please call me at 312/345-8966.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Young', with a stylized flourish at the end.

Robert Young
Program Manager

cc: Ms. Rebecca Kay, NMED
TechLaw Files

Addendum I - Overall Assumptions

Travel

The travel costs units associated with the development of all the cost estimates are provided in the table below. Estimated cost units were developed by either estimation from professional understanding, ECHOS, or GSA. An overhead factor of 3 (200%) was applied to all travel costs. Travel costs included airfare, two vehicle rentals, hotel, and per diem. All travel costs are based on the number of estimated work days which are assumed to cover an 8-hour period. The per diem calculations include the 75% demobilization and mobilization days.

For overall travel costs, a flat rate of \$1,000.00 was designated for individual flight charges, \$70.00 per day for a rental vehicle which includes fuel (it is assumed that 2 rental vehicles are necessary for the completion of each task requiring travel), and \$100.00 per night per person for lodging (\$89.00 per night is the GSA lodging rate in Los Alamos County. An additional \$11 is estimated for city, state and local taxes). The GSA per diem rate of \$49.00 per day for Los Alamos County is used for this cost estimate.

Description	Cost (\$)/Person	Origin of Cost	Overhead Addition
Airfare	1,000.00/person	Estimated	3
Per Diem	49.00 a day/person	GSA	3
Vehicle Rental (2 vehicles)	70.00 a day/vehicle	Estimated	3
Hotel	100.00 per person/night	GSA	3

Labor

For the completion of the removal of hazardous wastes; removal of structures and equipment; and decontamination, a five person crew which consists of a Project Manager and four laborers/technicians were included within each cost estimate. The suggested personnel to complete the records review, structural assessment, and reporting; decontamination verification; and sample management procedures included two field engineers. A Quality Control (QC) Manager was also included for the development of the Sampling and Analysis Plan (SAP) and the completion of the Data Validation.

General Unit Description

The General Unit Description section of the cost estimate provides information pertaining to a Unit's permitted hazardous waste capacity, the area and volume of the hazardous waste to be removed from the Unit's structures and associated equipment, and level of personal protective equipment (PPE). The following assumptions were made for all units.



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Vehicle Rental (2 vehicles)	70.00 a day/vehicle	Estimated	3
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Removal of Hazardous Waste Derived from Identified Structures and Equipment

Area of structures and equipment identified (square feet) / 1500 square feet per hour.

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Decontamination (for units that only require a certain number of equipment/structures to be decontaminated)

Area of the decontaminated structures (square feet) / 200 square feet per hour.

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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 3, Building 29 (TA-3-29) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-3-29 P1), pre-closure activities (Worksheet TA-3-29 P2), decontamination of the unit structures (Worksheet TA-3-29 P3), and analysis and sample management procedures (Worksheet TA-3-29 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.1; Technical Area 3, Building 29, Rooms 9010, 9020 and 9030 Closure Plan (Closure Plan).

Unit Name: LANL TA-3-29

The Unit consists of all of Room 9010 and portions of Rooms 9020 and 9030. There is a chain link fence that runs along the side of Room 9020.

Contamination: Building 29 contains hazardous waste in both liquid and solid form. The wastes stored include corrosive liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-3-29 P2	2-A	234,266.55
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-3-29 P3	3-A	43,261.99
4	Disposal of Hazardous Material		3-B	112.04
5	Decontamination		3-C	50,819.42
6	Decontamination Verification Samples		3-D	13,269.85
7	Analyses	TA-3-29 P4	4-A	12,665.14
8	Data Validation		4-B	10,857.15
9	Sample Logbook		4-C	23,804.26
10	Sample Documentation		4-C	5,854.35
11	Subtotal of Closure Costs			409,386.96
12	Certification of Closure	TA-3-29 P4	4-C	16,036.96
13	Total Cost of Closure (Add cost of certification report to closure costs)			425,423.92

I. GENERAL UNIT DESCRIPTION

TA-3-29 Room 9010

According to the Part A Permit Application, 18,500 gallons of hazardous waste is permitted to be stored on the entire TA-3-29 Unit. All hazardous wastes will be disposed of at an off-site facility during the Removal of Hazardous Wastes. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, three metal cabinets will be removed from the unit following the structural assessment. No structures will be removed from the Unit; only decontamination will be conducted.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous waste to be removed from the Unit is equivalent to the maximum permitted volume. It was also assumed that the level of Personal Protective Equipment is

1-A	Permitted Unit Volume Capacity (cubic feet)	2,473.09	According to the Part A Permit Application, the maximum permitted capacity of the entire Technical Area 3, Building 29 Unit is 18,500 gallons (2,473.09 cubic feet) for all 3 container storage units.
	Known Releases?	N/A	
1-B	Length of TA-3-29 Room 9010 (feet)	107	Identified Structures on the Unit: There are no identified structures within the Unit. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-3-29 Room 9010 (feet)	22	
	Height of TA-3-29 (feet) (based on the decontamination height)	8	Structures and Related Equipment Required for Demolition and Debris Disposal: Two room enclosures within Room 9010 and the chain link fence that runs along Room 9020 will be removed and disposed of.
	Area of TA-3-29 Room 9010 (square feet)	2,330	Rooms 9010, 9020 and 9030 will be decontaminated.
	Volume of TA-3-29 Room 9010 (cubic feet)	18,643	<u>The height of the Room 9010 is 8 feet for decontamination purposes.</u>
1-B	Length of TA-3-29 Room 9020 (feet)	25	Identified Structures on the Unit: There are no identified structures within the Unit. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-3-29 Room 9020 (feet)	19	
	Height of TA-3-29 (feet) (based on the decontamination height)	8	Structures and Related Equipment Required for Demolition and Debris Disposal: Two room enclosures within Room 9010 and the chain link fence that runs along Room 9020 will be removed and disposed of.
	Area of TA-3-29 Room 9020 (square feet)	475	Rooms 9010, 9020 and 9030 will be decontaminated.
	Volume of TA-3-29 Room 9020 (cubic feet)	3,800	<u>The height of the Room 9020 is 8 feet for decontamination purposes.</u>
1-B	Length of TA-3-29 Room 9030 (feet)	30	Identified Structures on the Unit: There are no identified structures within Room 9030. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-3-29 Room 9030 (feet)	8	
	Height of TA-3-29 (feet) (based on the decontamination height)	6	Structures and Related Equipment Required for Demolition and Debris Disposal: There are no identified structures within Room 9030. No removal or disposal costs will be associated within the cost estimate.
	Area of TA-3-29 Room 9030 (square feet)	240	Rooms 9010, 9020 and 9030 will be decontaminated.
	Volume of TA-3-29 Room 9030 (cubic feet)	1,440	<u>The height of the Room 9030 is 6 feet for decontamination purposes.</u>
1-B	Total Area of TA-3-29 to be decontaminated (Rooms 9010, 9020 & 9030) (square feet)	3,045	Rooms 9010, 9020 and 9030 will be decontaminated.
1-B	Total volume of structures/equipment to be removed at TA-3-29 (cubic feet)	61	Two room enclosures within Room 9010 and a chain-link fence will be removed. Assumed to be 2% of the total volume for the Unit.
1-C	Materials identified within TA-3-29		Solid and liquid hazardous wastes.
1-D	Maximum volume of waste to be removed from TA-3-29 (gallons)	18,500.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

The following worksheet provides a cost estimate for: the removal and disposal of hazardous waste stored within Rooms 9010, 9020 and 9030; conducting a record review an

Removal of Hazardous Wastes						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	35	Hours	177.40	6,120.44	3	18,361.33
4-Person Labor Crew	35	Hours	70.96	2,448.17	3	7,344.50
	35	Hours	70.96	2,448.17	3	7,344.50
	35	Hours	70.96	2,448.17	3	7,344.50
	35	Hours	70.96	2,448.17	3	7,344.50
Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	171.50	857.50	3	2,572.50
Disposal of Non-liquid Hazardous Wastes	0	Cubic yards	116.485	-	---	-
Disposal of liquid Hazardous Wastes	168	Drums	647.160	108,840.55		108,840.55
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 4 estimated work days	5	People /Night	100.00	2,000.00	3	6,000.00
Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00
Total for Removal of Waste from Unit				15,913.12	15	181,832.39
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	195.14	2,375.85	3	7,127.54
Field Engineer	12	Hours	195.14	2,375.85	3	7,127.54
<i>Structural Assessment</i>						
Field Engineer	16	Hours	195.14	3,167.79	3	9,503.38
Field Engineer	16	Hours	195.14	3,167.79	3	9,503.38
<i>Reporting</i>						
Field Engineer	18	Hours	195.14	3,563.77	3	10,691.31
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.50	147.00	3	441.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				14,651.05	15	52,434.15
Total for Step 2-A				30,564.17	30	234,266.55
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				1,703.08	6	14,476.20
Total for Step 2				32,267.25	36	248,742.75

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	16	Hours	177.40	2,839.91	3	8,519.72
	4-Person Labor Crew	16	Hours	70.96	1,135.96	3	3,407.88
		16	Hours	70.96	1,135.96	3	3,407.88
		16	Hours	70.96	1,135.96	3	3,407.88
		16	Hours	70.96	1,135.38	3	3,406.13
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	151.50	\$757.50	3	2,272.50
Total for Removal of Equipment					7,383.16	15	43,261.98

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the 2 room enclosures within Building 29, Room 9010, and the chain link fence that runs along the side of Room 9020.

Disposal of Hazardous Wastes							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Wastes - converted volume (cubic feet to cubic yards) provided for "Total Volume of Structures/Equipment Removed"	2.26	Cubic yards	49.67	112.04	---	112.04
	Total for Removal of Equipment					112.04	---

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	21	Hours	177.40	3,665.32	3	10,995.96
	4-Person Labor Crew	21	Hours	70.96	1,466.12	3	4,398.37
		21	Hours	70.96	1,466.12	3	4,398.37
		21	Hours	70.96	1,466.12	3	4,398.37
		21	Hours	70.96	1,466.12	3	4,398.37
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
Per Diem (for Project Engineer and 4-Person Labor Crew) includes 3 estimated work days	5	People/Day	98.00	490.00	3	1,470.00	
Total for Decontamination					16,939.81	30	50,819.42

Assume 200 square feet of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Equipment Wipes	9	3	195.14	1,691.26	3	5,073.77
	Field Engineer - Equipment Wipes	26	9	195.14	1,691.26	3	5,073.77
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Total Number of Samples	34	---	---	---	---	---
	Total Number of Types of Samples	2	---	---	---	---	---
Total for Decontamination Verification					520.39	9	13,269.85
Total for Step 3					17,460.19	39	107,463.31

Assumed 26 wipe samples and 8 QA/QC samples will be collected.

4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of wipe samples (26) was included within the cost estimate as there were 26 wipes samples identified within the Closure Plan. Analysis of wipe samples were estimated by the suggested analyses provided within Tables G-1.6. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet. The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	194.15	---	---	---
Organics Soil - Unit	---	---	45.30	---	---	---
Cyanide Soil - Unit	---	---	76.85	---	---	---
Metals Liquid - Unit	---	---	380.21	---	---	---
Organics Liquid - Unit	---	---	424.71	---	---	---
Cyanide Liquid - Unit	---	---	64.72	---	---	---
Metals Equipment Wipes	26	---	194.15	5,047.88	---	5,047.88
Organics Equipment Wipes	26	---	45.30	1,177.91	---	1,177.91
Cyanide Equipment Wipes	0	---	76.85	-	---	-
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	0	---	64.72	-	---	-
Total for Analysis of the Decontamination Verification Samples				12,665.14	---	12,665.14

Assumed 26 wipe samples and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	17	Hours	212.89	3,619.05	3	10,857.15
Total for Data Validation				3,619.05	3	10,857.15

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	41	Hours	195.14	7,934.75	3	23,804.26
Sample Documentation - Field Engineer	10	Hours	195.14	1,951.45	3	5,854.35
Certification Report - Field Engineer	18	Hours	195.14	3,563.77	3	10,691.31
Certification Report - Field Engineer	9	Hours	195.14	1,781.88	3	5,345.65
Total for Sample Management				15,231.86	12	45,695.57

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				31,516.05	15	69,217.86
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 16 388 Flash Pad (TA-16-388) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-16-388 P1), pre-closure activities (Worksheet TA-16-388 P2), decontamination of the unit structures (Worksheet TA-16-388 P3), and analysis and sample management procedures (Worksheet TA165-388 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.2; Technical Area 16, 388nFlash Pad Closure Plan (Closure Plan).

Unit Name: LANL TA-16-388

The unit consists of a flash pad which includes a metal cover and mechanisms, and three propane burners.

Contamination: High explosives (HE) (bulk wet and dry HE), combustible and non-combustible solids that are contaminated with HE, and oils from equipment that are contaminated with HE.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-16-388 P2	2-A	52,068.82
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-16-388 P3	3-A	-
4	Disposal of Hazardous Material		3-B	-
5	Decontamination		3-C	-
6	Decontamination Verification Samples		3-D	4,683.48
7	Analyses	TA-16-388 P4	4-A	8,222.32
8	Data Validation		4-B	6,067.23
9	Sample Logbook		4-C	3,122.32
10	Sample Documentation		4-C	1,561.16
11	Subtotal of Closure Costs			90,201.52
12	Certification of Closure	TA-16-388 P4	4-C	15,902.36
13	Total Cost of Closure (Add cost of certification report to closure costs)			106,103.89

1. GENERAL UNIT DESCRIPTION

TA-16-388 consists of a 1 foot-thick concrete flash pad measuring 22 feet by 22 feet. The waste that is treated at the permitted unit consists of detonable quantities of high explosives (HE) (bulk wet and dry HE), combustible and non-combustible solids that are contaminated with HE, and oils from equipment that are contaminated with HE.

According to the Part A Permit Application, 100 gallons per burn of hazardous material is permitted at the TA-16 Unit. After hazardous wastes are treated at the permitted unit, treatment residues and any non-combustible debris, as applicable, are removed, characterized, and disposed of in accordance with Permit Section 6.3.3.3. Therefore, removal of hazardous waste from the permitted unit prior to initiation of closure activities is not applicable to the closure procedures for this particular permitted unit. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, the burn tray, the three propane burners, the metal retractable cover will be removed and disposed of. According to the closure plan, no equipment or structures will be require decontamination. It was also assumed that the level of Personal Protective Equipment is Level C.

1-A	Permitted Unit Volume Capacity (cubic feet)	13.37	According to the Part A Permit Application, 100 gallons per burn of hazardous material is permitted at the TA-16 Unit.
	Known Releases?	N/A	
1-B	Length of TA-16-388 (pan & cover) (feet)	22	Identified Structures on the Unit: Metal burn pan, three propane burners, metal burn cover and its mechanisms. It is assumed that the metal cover has the same dimensions as the burn pan. Therefore a total of 968 square feet at TA-16-388 will require removal and disposal. The entire Unit will be removed and disposed of.
	Width of TA-16-388 pan & cover (feet)	22	
	Height of TA-16-388 (feet) (pan and cover)	1	
	Area of TA-16-388 (pan and cover) (square feet)	968	
	Volume of TA-16-388 (pan and cover) (cubic feet)	968	
1-C	Materials identified within TA-16-388		Metal burn pan, 3 propane burners, metal cover and associated mechanisms.
1-D	Maximum area of waste to be removed from TA-16-388 (square feet)	-	No wastes will be removed from the unit at closure per the Closure Plan.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	There was no mention of the specific type of PPE required for the decontamination of the Unit. Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	-	Hours	177.40	-	3	-	
4-Person Labor Crew	-	Hours	70.96	-	3	-	
	-	Hours	70.96	-	3	-	
	-	Hours	70.96	-	3	-	
	-	Hours	70.96	-	3	-	
Number of estimated work days (including 2 days for mobilization and demobilization)	-	Days	---	---	---	---	
Per Diem (for Project Manager and 4-Person Labor Crew)	-	People	(24.50)	-	3	-	
Disposal of Non-liquid Hazardous Material	-	Cubic yards	49.673	-	---	-	
Airfare	-	People	1,000.00	-	3	-	
Hotel/Lodging - Bare Task includes the 2 estimated work days	-	People /Night	100.00	-	3	-	
Vehicle Rental includes the 2 estimated work days	-	Vehicles/Day	70.00	-	3	-	
Total for Removal of Waste from Unit				-	-	-	
Records Review, Structural Assessment, and Reporting							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
<i>Records Review</i>							
Field Engineer	12	Hours	195.14	2,355.91	3	7,067.72	
Field Engineer	12	Hours	195.14	2,355.91	3	7,067.72	
<i>Structural Assessment</i>							
Field Engineer	16	Hours	195.14	3,141.21	3	9,423.62	
Field Engineer	16	Hours	195.14	3,141.21	3	9,423.62	
<i>Reporting</i>							
Field Engineer	18	Hours	195.14	3,533.86	3	10,601.58	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
Airfare	2	People	1,000.00	2,000.00	3	6,000.00	
Per Diem (for the two Field Engineers)	2	People	74.09	148.19	3	444.56	
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Total for the Records Review, Inspection, and Reporting				17,356.27	-	52,068.82	
Total for Step 2-A				17,356.27	-	52,068.82	
Development of the Sampling and Analysis Plan							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25	
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95	
Total for Step 2-B				4,825.40	-	14,476.20	
Total for Step 2				22,181.67	-	66,545.02	

3. DECONTAMINATION

Removal of Equipment Structures								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-A	Site Project Manager	16	Hours	177.40	\$2,861.36	3	8,584.09	
		16	Hours	70.96	\$1,144.54	3	3,433.63	
	4-Person Labor Crew		16	Hours	70.96	\$1,144.54	3	3,433.63
			16	Hours	70.96	\$1,144.54	3	3,433.63
			16	Hours	70.96	\$1,144.54	3	3,433.63
			16	Hours	70.96	\$1,144.54	3	3,433.63
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
	Airfare	5	People	1,000.00	\$5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	\$1,000.00	3	3,000.00	
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	\$280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	73.50	\$735.00	3	2,205.00		
Total for Removal of Equipment					7,439.53	15	43,363.58	

Assumed 1500 square feet of equipment and material removed and disposed within one hour.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	35.85	Cubic yards	49.67	1,780.88	---	1,780.88
	Total for Removal of Equipment					1,780.88	---

Decontamination								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C	Site Project Manager	0	Hours	177.40	-	3	-	
		0	Hours	70.96	-	3	-	
	4-Person Labor Crew		0	Hours	70.96	-	3	-
			0	Hours	70.96	-	3	-
			0	Hours	70.96	-	3	-
			0	Hours	70.96	-	3	-
	Number of estimated work days (including 2 days for mobilization and demobilization)	0	Days	---	---	3	---	
	Airfare	0	People	1,000.00	-	3	-	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	0	People /Night	100.00	-	3	-	
	Vehicle Rental includes the 2 estimated work days	0	Vehicles/Day	70.00	-	3	-	
Per Diem (for Project Engineer and 4-Person Labor Crew)	0	People	(24.50)	-	3	-		
Total for Decontamination					-	-	-	

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	6	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	1	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Chip Samples	4	1	195.14	260.19	3	780.58
	Field Engineer - Chip Samples	---	1	195.14	260.19	3	780.58
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples	---	3	195.14	520.39	3	1,561.16
	Total Number of Samples	19	---	---	---	---	---
	Total Number of Types of Samples	4	---	---	---	---	---
Total for Decontamination Verification					1,561.16	---	4,683.48

Assumed 4 chip samples, 6 soil samples, 1 water sample and 8 QA/QC samples will be collected.

Total for Step 3					10,781.57	---	49,827.94
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4- Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	6	---	194.15	---	---	---
Organics Soil - Unit	6	---	45.30	---	---	---
Cyanide Soil - Unit	6	---	76.85	---	---	---
Metals Liquid - Unit	1	---	380.21	---	---	---
Organics Liquid - Unit	1	---	424.71	---	---	---
Cyanide Liquid - Unit	1	---	64.72	---	---	---
Metals Chip Samples	4	---	194.15	776.60	---	776.60
Organics Chip Samples	4	---	45.30	181.22	---	181.22
Cyanide Chip Samples	4	---	76.85	307.40	---	307.40
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				8,222.32	---	8,222.32

Assumed 4 chip samples, 6 soil samples, 1 water sample and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	10	Hours	212.89	2,022.41	3	6,067.23
Total for Data Validation				2,022.41	3	6,067.23

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	5	Hours	195.14	1,040.77	3	3,122.32
Sample Documentation - Field Engineer	3	Hours	195.14	520.39	3	1,561.16
Certification Report - Field Engineer	18	Hours	195.14	3,533.86	3	10,601.58
Certification Report - Field Engineer	9	Hours	195.14	1,766.93	3	5,300.79
Total for Sample Management				6,861.95	12	20,585.84

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				17,106.68	15	34,875.40
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 16 399 Outdoor Treatment Unit (TA-16-399) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-16-399 P1), pre-closure activities (Worksheet TA-16-399 P2), decontamination of the unit structures (Worksheet TA-16-399 P3), and analysis and sample management procedures (Worksheet TA-16-399 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.3; Technical Area 16, 399 Outdoor Treatment Closure Plan (Closure Plan).

Unit Name: LANL TA-16-399

The unit consists of a burn tray and pad used for the treatment of high explosive wastes.

Contamination: High explosives (HE) (bulk wet and dry HE), combustible and non-combustible solids that are contaminated with HE, and oils from equipment that are contaminated with HE.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-16-399 P2	2-A	51,838.29
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-16-399 P3	3-A	43,208.60
4	Disposal of Hazardous Material		3-B	235.49
5	Decontamination		3-C	-
6	Decontamination Verification Samples		3-D	3,122.32
7	Analyses	TA-16-399 P4	4-A	6,957.11
8	Data Validation		4-B	4,470.59
9	Sample Logbook		4-C	1,561.16
10	Sample Documentation		4-C	780.58
11	Subtotal of Closure Costs			126,650.34
12	Certification of Closure	TA-16-399 P4	4-C	15,819.38
13	Total Cost of Closure (Add cost of certification report to closure costs)			142,469.72

1. GENERAL UNIT DESCRIPTION

TA-16-399 consists of burn pan measuring 16 feet by 4 feet. The waste that is treated at the permitted unit consists of detonable quantities of high explosives (HE) (bulk wet and dry HE), combustible and non-combustible solids that are contaminated with HE, and oils from equipment that are contaminated with HE.

According to the Part A Permit Application, 100 gallons per burn of hazardous material is permitted at the TA-16 Unit. After hazardous wastes are treated at the permitted unit, treatment residues and any non-combustible debris, as applicable, are removed, characterized, and disposed of in accordance with Permit Section 6.3.3.3. Therefore, removal of hazardous waste from the permitted unit prior to initiation of closure activities is not applicable to the closure procedures for this particular permitted unit. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, the burn tray, concrete pad, metal cover, cover tracks and ignition assembly will be removed and disposed of. According to the closure plan, no equipment or structures will be require decontamination. It was also assumed that the level of Personal Protective Equipment is Level C.

1-A	Permitted Unit Volume Capacity (cubic feet)	13.37	According to the Part A Permit Application, 100 gallons per burn of hazardous material is permitted at the TA-16 Unit.
	Known Releases?	N/A	
1-B	Length of TA-16-399 (pan & cover) (feet)	16	Identified Structures on the Unit: Metal burn pan, concrete pad, metal burn cover, cover tracks and electronic ignition assembly. It is assumed that the metal cover has the same dimensions as the burn pan. Therefore a total of 128 square feet at TA-16-399 will require removal and disposal. The entire Unit will be removed and disposed of.
	Width of TA-16-399 pan & cover (feet)	4	
	Height of TA-16-399 (feet) (pan and cover)	1	
	Area of TA-16-399 (pan and cover) (square feet)	128	
	Volume of TA-16-399 (pan and cover) (cubic feet)	128	
1-C	Materials identified within TA-16-399		Metal burn pan, concrete pad, metal cover, cover tracks and electronic ignition assembly.
1-D	Maximum area of waste to be removed from TA-16-399 (square feet)	-	No wastes will be removed from the unit at closure per the Closure Plan.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	There was no mention of the specific type of PPE required for the decontamination of the Unit. Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	-	Hours	177.40	-	3	-	
4-Person Labor Crew	-	Hours	70.96	-	3	-	
	-	Hours	70.96	-	3	-	
	-	Hours	70.96	-	3	-	
	-	Hours	70.96	-	3	-	
Number of estimated work days (including 2 days for mobilization and demobilization)	-	Days	---	---	---	---	
Per Diem (for Project Manager and 4-Person Labor Crew)	-	People	(24.50)	-	3	-	
Disposal of Non-liquid Hazardous Material	-	Cubic yards	49.673	-	---	-	
Airfare	-	People	1,000.00	-	3	-	
Hotel/Lodging - Bare Task includes the 2 estimated work days	-	People /Night	100.00	-	3	-	
Vehicle Rental includes the 2 estimated work days	-	Vehicles/Day	70.00	-	3	-	
Total for Removal of Waste from Unit				-	-	-	
Records Review, Structural Assessment, and Reporting							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
<i>Records Review</i>							
Field Engineer	12	Hours	195.14	2,343.61	3	7,030.84	
Field Engineer	12	Hours	195.14	2,343.61	3	7,030.84	
<i>Structural Assessment</i>							
Field Engineer	16	Hours	195.14	3,124.82	3	9,374.45	
Field Engineer	16	Hours	195.14	3,124.82	3	9,374.45	
<i>Reporting</i>							
Field Engineer	18	Hours	195.14	3,515.42	3	10,546.25	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
Airfare	2	People	1,000.00	2,000.00	3	6,000.00	
Per Diem (for the two Field Engineers)	2	People	73.58	147.16	3	441.47	
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Total for the Records Review, Inspection, and Reporting				17,279.43	-	51,838.29	
Total for Step 2-A				17,279.43	-	51,838.29	
Development of the Sampling and Analysis Plan							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25	
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95	
Total for Step 2-B				4,825.40	-	14,476.20	
Total for Step 2				22,104.83	-	66,314.49	

3. DECONTAMINATION

Removal of Equipment Structures							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	16	Hours	177.40	\$2,841.49	3	8,524.48	
	16	Hours	70.96	\$1,136.59	3	3,409.78	
4-Person Labor Crew	16	Hours	70.96	\$1,136.59	3	3,409.78	
	16	Hours	70.96	\$1,136.59	3	3,409.78	
	16	Hours	70.96	\$1,136.59	3	3,409.78	
3-A Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Airfare	5	People	1,000.00	\$5,000.00	3	15,000.00	
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	\$1,000.00	3	3,000.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	\$280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	73.50	\$735.00	3	2,205.00	
Total for Removal of Equipment				7,387.87	15	43,208.60	

Disposal of Hazardous Material							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-B Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	4.74	Cubic yards	49.67	235.49	---	235.49	
Total for Removal of Equipment				235.49	---	235.49	

Decontamination							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C Labor							
Site Project Manager	0	Hours	177.40	-	3	-	
	0	Hours	70.96	-	3	-	
4-Person Labor Crew	0	Hours	70.96	-	3	-	
	0	Hours	70.96	-	3	-	
	0	Hours	70.96	-	3	-	
3-C Number of estimated work days (including 2 days for mobilization and demobilization)	0	Days	---	---	3	---	Assume 200 square meters of material decontaminated within one hour.
Airfare	0	People	1,000.00	-	3	-	
Hotel/Lodging - Bare Task includes the 2 estimated work days	0	People /Night	100.00	-	3	-	Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.
Vehicle Rental includes the 2 estimated work days	0	Vehicles/Day	70.00	-	3	-	
Per Diem (for Project Engineer and 4-Person Labor Crew)	0	People	(24.50)	-	3	-	
Total for Decontamination				-	-	-	

Collection of Decontamination Verification Samples							
Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D Field Engineer - Soil Sample from the Unit	5	---	---	---	---	---	Assumed 5 soil samples, 1 water sample and 8 QA/QC samples will be collected.
Field Engineer - Soil Sample from the Unit		---	---	---	---	---	
Field Engineer - Liquid from the Sump	1	---	---	---	---	---	
Field Engineer - Liquid from the Sump		---	---	---	---	---	
Field Engineer - Chip Samples	0	0	195.14	-	3	-	
Field Engineer - Chip Samples		0	195.14	-	3	-	
Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16	
Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16	
Total Number of Samples	14	---	---	---	---	---	
Total Number of Types of Samples	3	---	---	---	---	---	
Total for Decontamination Verification				1,040.77		3,122.32	

Total for Step 3				8,664.13		46,566.41	
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4. Analysis and Sample Management Procedures

Analysis							Assumed 5 soil samples, 1 water sample and 8 field QA/QC samples.
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Metals Soil - Unit	5	---	194.15	---	---	---	
Organics Soil - Unit	5	---	45.30	---	---	---	
Cyanide Soil - Unit	5	---	76.85	---	---	---	
Metals Liquid - Unit	1	---	380.21	---	---	---	
Organics Liquid - Unit	1	---	424.71	---	---	---	
Cyanide Liquid - Unit	1	---	64.72	---	---	---	
Metals Equipment Wipes	0	---	194.15	-	---	-	
Organics Equipment Wipes	0	---	45.30	-	---	-	
Cyanide Equipment Wipes	0	---	76.85	-	---	-	
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67	
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68	
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76	
Total for Analysis of the Decontamination Verification Samples				6,957.11	---	6,957.11	

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	7 Hours	212.89	1,490.20	3	4,470.59	
Total for Data Validation			1,490.20	3	4,470.59	

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	3 Hours	195.14	520.39	3	1,561.16	
Sample Documentation - Field Engineer	1 Hours	195.14	260.19	3	780.58	
Certification Report - Field Engineer	18 Hours	195.14	3,515.42	3	10,546.25	
Certification Report - Field Engineer	9 Hours	195.14	1,757.71	3	5,273.13	
Total for Sample Management			6,053.71	12	18,161.12	

Total for Step 4			14,501.01	15	29,588.82
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 50, Building 69 (TA-50-69) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-50-69 P1), pre-closure activities (Worksheet TA-50-69 P2), decontamination of the unit structures (Worksheet TA-50-69 P3), and analysis and sample management procedures (Worksheet TA-50-69 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.4; Technical Area 50, Building 69 Closure Plan (Closure Plan).

Unit Name: LANL TA-50-69

The Unit consists of adjacent Rooms 102 and 103.

Contamination: Hazardous waste in both liquid and solid form.

Origin of Contamination: Room 102 serves as the main process room as well as a hazardous materials storage area. Room 103 serves as an unloading area as well as the prime location for the Unit surface water drainage system.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-50-69 P2	2-A	151,018.84
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-50-69 P3	3-A	42,927.72
4	Disposal of Hazardous Material		3-B	1,085.53
5	Decontamination		3-C	51,917.74
6	Decontamination Verification Samples		3-D	8,976.66
7	Analyses	TA-50-69 P4	4-A	11,701.66
8	Data Validation		4-B	7,344.54
9	Sample Logbook		4-C	19,922.73
10	Sample Documentation		4-C	3,707.75
11	Subtotal of Closure Costs			313,079.37
12	Certification of Closure	TA-50-69 P4	4-C	16,071.69
13	Total Cost of Closure (Add cost of certification report to closure costs)			329,151.07

1. GENERAL UNIT DESCRIPTION

TA-54W-38 contains Rooms 101 and 102 (High and Low Bay respectively). The rooms stored liquid and solid hazardous wastes. The Unit was constructed in 1989 and operations for hazardous storage began in 1989. The Unit measures approximately 3,294 square feet

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous material permitted on the TA-55-4-B40 unit is assumed to be 29,750 gallons. The hazardous waste stored on the Unit is classified as liquid and non-liquid. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, four metal cabinets which were used for hazardous storage will be removed prior to decontamination.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is L

1-A	Permitted Unit Volume Capacity (cubic feet)	2,105.44	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 50 Unit is 31,500 gallons (4,210.89 cubic feet) for 2 container storage units. It is assumed tht TA-50 is one of the 2 units with permitted design capacity of 15,750 gallons (2,105.45 cubic feet) of hazardous material has been stored on the Unit.
	Known Releases?	Yes	
1-B	Length of TA-50-69 Room 102 (ft)	52	Room 102 of the TA-50-69 Unit contains a large glovebox which occupies a great portion of the Unit. Room 102 served as a storage area for hazardous wastes. Room 103 of the TA-50-69 Unit serves as the unloading area and has an operational drain located in the middle of the room. The square footage of the Unit is calculated by considering both Rooms 102 and 103's dimensions.
	Width of TA-50-69 Room 102 (ft)	45	
	Height of TA-50-69 Room 102 (based on the height of the decontamination) (ft)	11	
	Area of TA-50-69 Room 102 (ft2)	2,340	
	Volume of TA-50-69 Room 102 (cubic feet)	25,740	
	Length of TA-50-69 Room 103 (ft)	19	
	Width of TA-50-69 Room 103 (ft)	18	
	Height of TA-50-69 Room 103 (based on the height of the decontamination) (ft)	11	
	Area of TA-50-69 Room 103 (ft2)	342	
	Volume of TA-50-69 Room 103 (cubic feet)	3,762	
	Area of TA-50-69 (ft2)	2,682	No specific dimensions were provided for the removal of the gloveboxes and lift rack. Therefore, it is assumed that the square footage of the equipment structures is 2 percent of the total area of the Unit.
	Volume of TA-50-69 (based on the height of decontamination) (cubic feet)	29,502	
	Estimated volume of the hazardous equipment and structures requiring to be removed from the Unit (assuming 2 percent of the total area of the Unit) (cubic feet).	590	
1-C	Materials identified within TA-50-69		Two gloveboxes and one lift rack is located within Room 102 and are proposed to be removed prior to the decontamination process. Several other equipment structures are mentioned throughout the Closure Plan that will not removed but will remain in place and would only require decontamination. The number of those equipment structures is not provided within the Closure Plan. The floors for both Rooms 102 and 103 are of concrete with an epoxy-coat. There is a drain located in both Rooms.
1-D	Maximum volume of waste to be removed from TA-50-69 (gallons)	31,500	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	D	There was no specific information providing evidence for a more conservative approach to the PPE. As a result, it is assumed that Level D will be used for the extent of the decontamination activities.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	18	Hours	177.40	3,211.98	3	9,635.94
4-Person Labor Crew	18	Hours	70.96	1,284.79	3	3,854.36
	18	Hours	70.96	1,284.79	3	3,854.36
	18	Hours	70.96	1,284.79	3	3,854.36
	18	Hours	70.96	1,284.79	3	3,854.36
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	86.40	431.98	3	1,295.94
Disposal of Liquid Hazardous Material	286	Drums	179.33	51,353.59	---	51,353.59
Disposal of Non-liquid Hazardous Material	39	Cubic yards	49.673	1,936.73	---	1,936.73
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				68,353.42		98,479.64
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	195.14	2,380.99	3	7,142.98
Field Engineer	12	Hours	195.14	2,380.99	3	7,142.98
<i>Structural Assessment</i>						
Field Engineer	16	Hours	195.14	3,174.66	3	9,523.97
Field Engineer	16	Hours	195.14	3,174.66	3	9,523.97
<i>Reporting</i>						
Field Engineer	18	Hours	195.14	3,571.49	3	10,714.46
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	75.14	150.29	3	450.86
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				17,513.07		52,539.20
Total for Step 2-A				85,866.49	-	151,018.84
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				4,825.40		14,476.20
Total for Step 2				90,691.89	-	165,495.04

3. DECONTAMINATION								
3-A	Removal of Equipment Structures							Assumed 1500 square feet of equipment and material removed and disposed within one hour. Removal and disposal of the four metal cabinets.
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Site Project Manager	17	Hours	177.40	2943.14	3	8829.43	
	4-Person Labor Crew	17	Hours	70.96	1177.25	3	3531.76	
		17	Hours	70.96	1177.25	3	3531.76	
		17	Hours	70.96	1177.25	3	3531.76	
		17	Hours	70.96	1177.25	3	3531.76	
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
	Airfare	5	People	1,000.00	5000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1000.00	3	3,000.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00		
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	75.42	377.09	3	1,131.26		
Total for Removal of Equipment					14,309.24		42,927.73	
3-B	Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Disposal of the total volume of the hazardous structures and equipment to be removed - converted volume (cubic feet to cubic yards)	21.85	Cubic yards	49.67	1,085.53	---	1,085.53	
Total for Removal of Equipment					1,085.53		1,085.53	
3-C	Decontamination							Assume 200 square meters of material decontaminated within one hour. Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Site Project Manager	21	Hours	177.40	3,790.06	3	11,370.19	
	4-Person Labor Crew	21	Hours	70.96	1,516.02	3	4,548.06	
		21	Hours	70.96	1,516.02	3	4,548.06	
		21	Hours	70.96	1,516.02	3	4,548.06	
		21	Hours	70.96	1,516.02	3	4,548.06	
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00	
Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00		
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	106.35	531.77	3	1,595.32		
Total for Decontamination					17,305.91		51,917.74	
3-D	Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
	Field Engineer - Equipment Wipes	15	5	195.14	975.72	3	2,927.17	
	Field Engineer - Equipment Wipes		5	195.14	975.72	3	2,927.17	
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16	
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16	
Total Number of Samples	23	---	---	---	---	---		
Total Number of Types of Samples	3	---	---	---	---	---		
Total for Decontamination Verification					2,992.22		8,976.66	
Total for Step 3					35,692.90		104,907.65	

4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	194.15	---	---	---
Organics Soil - Unit	---	---	45.30	---	---	---
Cyanide Soil - Unit	---	---	76.85	---	---	---
Metals Liquid - Unit	---	---	380.21	---	---	---
Organics Liquid - Unit	---	---	424.71	---	---	---
Cyanide Liquid - Unit	---	---	64.72	---	---	---
Metals Equipment Wipes	15	---	194.15	2,912.24	---	2,912.24
Organics Equipment Wipes	15	---	45.30	679.56	---	679.56
Cyanide Equipment Wipes	15	---	76.85	1,152.74	---	1,152.74
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				11,701.66	---	11,701.66

8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	12	Hours	212.89	2,448.18	3	7,344.54
Total for Data Validation				2,448.18	3	7,344.54

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	34	Hours	195.14	6,640.91	3	19,922.73
Sample Documentation - Field Engineer	6	Hours	195.14	1,235.92	3	3,707.75
Certification Report - Field Engineer	18	Hours	195.14	3,571.49	3	10,714.46
Certification Report - Field Engineer	9	Hours	195.14	1,785.74	3	5,357.23
Total for Sample Management				13,234.06	12	39,702.18

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			27,383.90		15	58,748.38
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 50, Building 69 Outdoor Storage Unit (TA-50-Bldg 69 OSU) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-50-Bldg 69 OSU P1), pre-closure activities (Worksheet TA-50-Bldg 69 OSU P2), decontamination of the unit structures (Worksheet TA-50-Bldg 69 OSU P3), and analysis and sample management procedures (Worksheet TA-50-Bldg 69 OSU P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.5; Technical Area 50, Building 69 Outdoor Storage Unit Closure Plan (Closure Plan).

Unit Name: LANL TA-50-Building 69 OSU

The Unit consists of a four-inch thick rectangular-shaped, asphalt pad measuring 90 feet by 24 feet. Storage of hazardous waste has occurred on the pad and in two transportainers that are situated on the asphalt pad. Each transportainer measures 40 feet long and 8 feet wide and 8.5 feet high.

Contamination: Building 69 contains hazardous and mixed wastes in both liquid and solid form. The wastes stored include corrosive liquids, sludge, debris and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-50 Building 69	2-A	157,542.89
2	Sampling and Analysis Plan	OSU P2	2-B	14,476.20
3	Removal of Equipment and Structures	TA-50 Building 69 OSU P3	3-A	44,191.25
4	Disposal of Hazardous Material		3-B	9,125.17
5	Decontamination		3-C	43,971.29
6	Decontamination Verification Samples		3-D	9,659.67
7	Analyses	TA-50 Building 69 OSU P4	4-A	11,267.28
8	Data Validation		4-B	8,302.53
9	Sample Logbook		4-C	18,214.82
10	Sample Documentation		4-C	4,049.26
11	Subtotal of Closure Costs			320,800.34
12	Certification of Closure	TA-50 Building 69 OSU P4	4-C	15,913.43
13	Total Cost of Closure (Add cost of certification report to closure costs)			336,713.77

1. GENERAL UNIT DESCRIPTION

TA-50 Building 69 outdoor storage area (Unit) consists of a rectangular-shaped asphalt pad with two transportainers which store hazardous waste; The pad measures approximately 90 feet long by 24 feet wide. Two transportainers are situated on the asphalt pad. Each transportainer is anchored by concrete blocks at either end of the asphalt pad. Each transportainer measures 40 feet long by 8 feet wide and 8.5 feet high.

According to the Part A Permit Application, 31,500 gallons of hazardous waste is permitted to be stored in TA-50 Building 69 at 2 units and will be disposed of at an off-site facility during the Removal of Waste. As stated in Section 5.3.1; Removal of Structures, and Related Equipment of the Closure Plan, all materials and equipment that comprise the asphalt pad, and all materials associated with the pad (asphalt berm and a minimum of six inches of base course and soil underlying the pad) will be disposed and considered as hazardous waste.

According to Section 5.3.2; Decontamination of Structures of the Closure Plan the two transportainers will require decontamination and decontamination verification. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the maximum permitted capacity.

It was also assumed that the level of Personal Protective Equipment is Level C.

1-A	Permitted Unit Volume Capacity (cubic feet)	4,210.93	According to the Part A Permit Application, the permitted capacity of Technical Area 50 is 31,500 gallons (4,210.93 cubic feet) in 2 container storage units. It is assumed that this permitted capacity applies to wastes stored on the pad and wastes stored in transportainers.
	Known Releases?	N/A	
1-B	Length of TA-50 Building 69 Transportainer (feet)	40	Identified Structures on the Unit: The Unit is an asphalt pad which provides the base to TA-50 Building 69 Outside Storage Area. Hazardous wastes are stored on the asphalt pad and within the two transportainers. Wastes, Structures and Related Equipment Requiring Disposal include the hazardous waste stored on the asphalt pad and within the two transportainers, the asphalt pad, and all the materials associated with the pad which includes minimum of 6 inches of the base course and soil underlying the pad. It is assumed that approximately 2,160 square feet of asphalt and an additional 6" of soil underlying the pad which would measure to an identical area and volume as the asphalt pad (a total of 4,960 square feet) will be not be decontaminated and will be disposed of as hazardous waste. Surfaces, Structures, and Related Equipment recommended to be decontaminated included the two transportainers. A total of 640 square feet will require decontamination. <u>The height of the transportainer is assumed to be 8.5 feet for decontamination purposes.</u>
	Width of TA-50 Building 69 Transportainer (feet)	8	
	Height of TA-50 Building 69 transportainer (feet) (based on decontamination of the transportainers)	9	
	Area of TA-50 Building 69 transportainers (2)(square feet)	640	
	Volume of TA-50 Building 69 Transportainers(2) (based on the decontamination height) (cubic feet)	10,880	
	Length of TA-50 Building 69 - asphalt pad (feet)	90	
	Width of TA-50 Building 69 - asphalt pad (feet)	24	
	Thickness of TA-50 Building 69 - asphalt pad (feet)	0.50	
	Area of TA-50 Building 69 - asphalt pad (square feet)	2,160	
	Volume of TA-50 Building 69 -asphalt (cubic feet)	1,080	
	Length of TA-50 Building 69 - soil underlying the asphalt pad (feet)	90	
	Width of TA-50 Building 69 - soil underlying the asphalt pad (feet)	24	
	Thickness of TA-50 Building 69 - soil underlying the asphalt pad (feet)	0.50	
	Area of TA-50 Building 69 - soil underlying the asphalt pad (square feet)	2,160	
	Volume of TA-50 Building 69 -soil underlying the asphalt pad (cubic feet)	1,080	
Estimated total area of the hazardous waste storage area (2 transportainers and the pad) (square feet)	4,960		
Total volume of the hazardous material storage areas (cubic feet)	13,040		
Estimated total area of the decontaminated structures - (2 transportainers) (square feet)	640.00		
1-C	Materials identified within TA-50 Building 69 Outdoor Container Storage Unit		Materials identified in the Unit include hazardous wastes, two transportainers, the asphalt pad, and all materials associated with the pad.
1-D	Maximum volume of waste to be removed from TA-50 Building 69 (gallons)	31,500	Assume the minimum volume of waste to be removed is equivalent to the maximum permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)		Based on the discussion provided within the closure plan (Section 5.3.2 Decontamination of Structures) the decontamination procedure, pressure and steam washing methods were proposed for the transportainers. As a result, the level of PPE recommended for the closure activities is Level C.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	20	Hours	177.40	3,585.50	3	10,756.51
4-Person Labor Crew	20	Hours	70.96	1,434.20	3	4,302.59
	20	Hours	70.96	1,434.20	3	4,302.59
	20	Hours	70.96	1,434.20	3	4,302.59
	20	Hours	70.96	1,434.20	3	4,302.59
Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	99.29	496.46	3	1,489.38
Disposal of Liquid Hazardous Material	286	Drums	179.33	51,353.59	---	51,353.59
Disposal of Non-liquid Hazardous Material	78	Cubic yards	49.673	3,873.51	---	3,873.51
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
Total for Removal of Waste from Unit				9,322.29	15	105,443.34
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	195.14	2,357.55	3	7,072.64
Field Engineer	12	Hours	195.14	2,357.55	3	7,072.64
<i>Structural Assessment</i>						
Field Engineer	16	Hours	195.14	3,143.39	3	9,430.18
Field Engineer	16	Hours	195.14	3,143.39	3	9,430.18
<i>Reporting</i>						
Field Engineer	18	Hours	195.14	3,536.32	3	10,608.95
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	74.16	148.32	3	444.97
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				14,538.19	15	52,099.55
Total for Step 2-A				23,860.48	30	157,542.89
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				1,703.08	6	14,476.20
Total for Step 2				25,563.56	36	172,019.09

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	17	Hours	177.40	2,955.79	3	8,867.37
	4-Person Labor Crew	17	Hours	70.96	1,182.31	3	3,546.93
		17	Hours	70.96	1,182.31	3	3,546.93
		17	Hours	70.96	1,182.31	3	3,546.93
		17	Hours	70.96	1,182.31	3	3,546.93
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
	Per Diem (for Project Engineer and 4-Person Labor Crew) includes the 2 estimated work days	5	People	73.50	765.38	3	2,296.14
Total for Removal of Equipment					7,685.04	15	44,191.25

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the asphalt structure of the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	183.70	Cubic yards	49.673	9,125.17	---	9,125.17
Total for Removal of Equipment					9,125.17	---	9,125.17

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	17	Hours	177.40	3,065.54	3	9,196.63
	4-Person Labor Crew	17	Hours	70.96	1,226.21	3	3,678.64
		17	Hours	70.96	1,226.21	3	3,678.64
		17	Hours	70.96	1,226.21	3	3,678.64
		17	Hours	70.96	1,226.21	3	3,678.64
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	81.34	406.70	3	1,220.10	
Total for Decontamination					14,657.10	30	43,971.29

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples								
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D	Field Engineer - Soil Sample from the Unit	7	2	195.14	341.50	3	1,024.51	
	Field Engineer - Soil Sample from the Unit		2	195.14	341.50	3	1,024.51	
	Field Engineer - Sediment Sample of the Berm	1	1	195.14	97.57	3	292.72	
	Field Engineer - Sediment Sample of the Berm		1	195.14	97.57	3	292.72	
	Field Engineer - Equipment Wipes	10	3	195.14	650.48	3	1,951.45	
	Field Engineer - Equipment Wipes		3	195.14	650.48	3	1,951.45	
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16	
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16	
	Total Number of Samples		26	---	---	---	---	---
	Total Number of Types of Samples		4	---	---	---	---	---
Total for Decontamination Verification					520.39	21	9,659.67	

Assumed 10 equipment wipe samples, 7 soil samples and 1 sediment sample to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					15,177.48	51	106,947.37
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and sediment samples collected from the Unit. As discussed in Sections 2 and 3, the number of wipe samples (10) was included within the cost estimate. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazardous nature of the debris and

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	8	---	194.15	1,553.20	---	1,553.20
Organics Soil - Unit	8	---	45.30	362.43	---	362.43
Cyanide Soil - Unit	0	---	76.85	-	---	-
Metals Liquid - Unit	0	---	380.21	-	---	-
Organics Liquid - Unit	0	---	424.71	-	---	-
Cyanide Liquid - Unit	0	---	64.72	-	---	-
Metals Equipment Wipes	10	---	194.15	1,941.49	---	1,941.49
Organics Equipment Wipes	10	---	45.30	453.04	---	453.04
Cyanide Equipment Wipes	0	---	76.85	-	---	-
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				11,267.28	---	11,267.28

Assumed 10 equipment wipes, 7 soil samples, 1 sediment sample and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	13	Hours	212.89	2,767.51	3	8,302.53
Total for Data Validation				2,767.51	3	8,302.53

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	31	Hours	195.14	6,071.61	3	18,214.82
Sample Documentation - Field Engineer	7	Hours	195.14	1,349.75	3	4,049.26
Certification Report - Field Engineer	18	Hours	195.14	3,536.32	3	10,608.95
Certification Report - Field Engineer	9	Hours	195.14	1,768.16	3	5,304.48
Total for Sample Management				12,725.84	12	38,177.51

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				26,760.62	15	57,747.31
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 1 (TA-54-G-Pad 1) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 1 P1), pre-closure activities (Worksheet TA-54-G-Pad 1 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 1 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 1 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.6; Technical Area 54, Area G, Pad 1 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 1

The Unit is situated on a Pad which has two structures constructed on its surface; Domes 226 and Volume Reduction System (DVRS) Building 412.

Contamination: Dome 226 contains hazardous waste containers which are stored on pallets to prevent contact with accumulated liquids. Building 412 stores both liquid and non-liquid mixed waste and has stored the following types of waste: solidified inorganic solids, leached process residues, salts and cement paste, ash, dewatered aqueous sludge, chemical treatment sludge, soils, combustible debris, and heterogeneous debris.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 1 P2	2-A	1,105,917.03
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-54-G-Pad 1 P3	3-A	83,699.94
4	Disposal of Hazardous Material		3-B	858,711.31
5	Decontamination		3-C	55,099.65
6	Decontamination Verification Samples		3-D	32,589.19
7	Analyses	TA-54-G-Pad 1 P4	4-A	37,875.56
8	Data Validation		4-B	33,210.11
9	Sample Logbook		4-C	44,797.64
10	Sample Documentation		4-C	15,514.02
11	Subtotal of Closure Costs			2,281,890.66
12	Certification of Closure	TA-54-G-Pad 1 P4	4-C	34,380.44
13	Total Cost of Closure (Add cost of certification report to closure costs)			2,316,271.09

1. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 1 consists of two structures which stored hazardous waste; Dome 226 and Building 412. Pad 1 measures approximately 76,000 square feet and is comprised of an asphalt material. Dome 226 is comprised of an aluminum framework and consists of approximately 33 percent of the Unit. Building 412 is situated on approximately 13,200 square feet (comprises approximately 17 percent of the Unit) and houses two confinement structures, equipment (gloveboxes, enclosure components, cabinets, shearing and bailing equipment, electronic devices, etc.).

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous material is permitted to be stored in Dome 226 and Building 412 and will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Surfaces, Structures, and Related Equipment of the Closure Plan, all materials and equipment that comprise Dome 226, Building 412, the asphalt pad, and all materials associated with the pad (the concrete ringwall, sump, and a minimum of six inches of soil underlying the pad) will be disposed and considered as potentially hazardous.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the gloveboxes, enclosure components, and cabinets in Building 412, bailing equipment,

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume.

It was also assumed that the level of Personal Protective Equipment is Level C/D.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-Pad 1 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.20 cubic feet) of hazardous material has been stored in Dome 226 and Building 412.
	Known Releases?	N/A	
1-B	Length of TA-54-G-Pad 1 - Dome 226 (feet) Width of TA-54-G-Pad 1 - Dome 226 (feet) Height of TA-54-G-Pad 1 - Dome 226 (feet) (based on decontamination of the Unit structure) Area of TA-54-G-Pad 1 - Dome 226 (square feet) Volume of TA-54-G-Pad 1 - Dome 226 (based on the decontamination height) (cubic feet) Length of TA-54-G-Pad 1 - Building 412 (feet) Width of TA-54-G-Pad 1 - Building 412 (feet) Height of TA-54-G-Pad 1 - Building 412 (feet) (based on decontamination of the Unit structure) Area of TA-54-G-Pad 1 - Building 412 (square feet) Volume of TA-54-G-Pad 1 - Building 412 (cubic feet) Length of TA-54-G-Pad 1 - asphalt pad (feet) Width of TA-54-G-Pad 1 - asphalt pad (feet) Thickness of TA-54-G-Pad 1 - asphalt pad (feet) Area of TA-54-G-Pad 1 - asphalt pad (square feet) Volume of TA-54-G-Pad 1 - asphalt (cubic feet) Length of TA-54-G-Pad 1 - soil underlying the asphalt pad (feet) Width of TA-54-G-Pad 1 - soil underlying the asphalt pad (feet) Thickness of TA-54-G-Pad 1 - soil underlying the asphalt pad (feet) Area of TA-54-G-Pad 1 - soil underlying the asphalt pad (square feet) Volume of TA-54-G-Pad 1 - soil underlying the asphalt pad (cubic feet) Estimated total area of the structures and equipment to be removed from the Unit (Building 412, Dome 226, and the pad) (square feet) Total volume of the structures and equipment to be removed from the Unit (cubic feet) Estimated total area of the decontaminated structures - assuming 2 percent of the area of the structures and equipment to be removed from the Unit (square feet)	286 89 11 22,300 245,300 220 60 11 13,200 145,200 358 213 0.50 76,254 38,127 358 213 0.50 76,254 38,127 188,008 466,754 3760.16	Identified Structures on the Unit: The Unit is a pad which provides the base to Dome 226 and Building 412. The area of the Unit is approximately 76,000 square feet. The hazardous materials were stored within Dome 226 and Building 412. The dimensions of the two structures, as opposed to the entire Unit, will be considered for the purposes of completing the cost estimate. Dome 226 has dimensions of 286 feet long, 89 feet wide, and has a surface area of approximately 22,300 square feet. Building 412 is a one story building that is approximately 220 feet long by 60 feet wide and encompasses approximately 13,200 square feet. Structures and Related Equipment Required for Demolition and Debris Disposal include the hazardous waste material stored on the Unit; specifically, in Dome 226 and Building 412, materials and equipment that comprise Dome 226 and Building 412, the asphalt pad, and all the materials associated with the pad which includes the sump identified within Building 412. It is assumed that approximately 76,000 square feet of asphalt, 25,454 square feet of material from Dome 226, 13,200 square feet of material from Building 412, and an additional 6" of soil underlying the pad which would be removed. Surfaces, Structures, and Related Equipment recommended to be left in the Unit but decontaminated. The height of the dome and building are assumed to be 11 feet for decontamination purposes.
1-C	Materials identified within TA-54-G-Pad 1		Materials identified in the Unit include hazardous material, materials and equipment that comprise Dome 226, Building 412, the asphalt pad, and all materials associated with the pad. Other equipment structures that require only decontamination and not removal include gloveboxes, electronic devices, portable air monitors, bailing equipment, spill cleanup equipment containers from within Dome 226, enclosure components, and cabinets in Building 412.
1-D	Maximum volume of waste to be removed from TA-54-G-Pad 1(gallons)	458,018.75	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C/D	Based on the discussion provided within the decontamination procedure, pressure and steam washing methods were proposed for the non-water sensitive equipment. However, should an equipment structure be water-sensitive, a simple wipe down process will be utilized. As a result, the level of PPE recommended for the closure activities is Level C/D.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	177.40	13,700.61	3	41,101.83
4-Person Labor Crew	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	3,759.68	18,798.41	3	56,395.24
Disposal of Liquid Hazardous Material	4,164	Drums	179.33	746,695.48	---	746,695.48
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	49.673	56,322.03	---	56,322.03
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00
Total for Removal of Waste from Unit				868,837.41	15	1,000,477.24
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	26	Hours	195.14	5,093.40	3	15,280.19
Field Engineer	26	Hours	195.14	5,093.40	3	15,280.19
<i>Structural Assessment</i>						
Field Engineer	35	Hours	195.14	6,791.20	3	20,373.59
Field Engineer	35	Hours	195.14	6,791.20	3	20,373.59
<i>Reporting</i>						
Field Engineer	39	Hours	195.14	7,640.10	3	22,920.29
Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	188.65	377.31	3	1,131.93
Hotel/Lodging - Bare Task includes the 4 estimated work days	2	People /Night	100.00	800.00	3	2,400.00
Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00
Total for the Records Review, Inspection, and Reporting				31,409.29	15	105,439.79
Total for Step 2-A				900,246.70	30	1,105,917.03
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				4,825.40	6	14,476.20
Total for Step 2				905,072.10	36	1,120,393.23

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	41	Hours	177.40	7,285.59	3	21,856.76
	4-Person Labor Crew	41	Hours	70.96	2,914.22	3	8,742.67
		41	Hours	70.96	2,914.22	3	8,742.67
		41	Hours	70.96	2,914.22	3	8,742.67
		41	Hours	70.96	2,914.22	3	8,742.67
		41	Hours	70.96	2,914.22	3	8,742.67
	Number of estimated work days (including 2 days for mobilization and demobilization)	5	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 5 estimated work days	5	People /Night	100.00	2,500.00	3	7,500.00
	Vehicle Rental includes the 5 estimated work days	2	Vehicles/Day	70.00	700.00	3	2,100.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	151.50	757.50	3	2,272.50	
Total for Removal of Equipment					27,899.98	15	83,699.94

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Building 412, Dome 226, and the asphalt structure of the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	17,287.19	Cubic yards	49.673	858,711.31	---	858,711.31
Total for Removal of Equipment					858,711.31	---	858,711.31

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	24	Hours	177.40	4,172.60	3	12,517.81
	4-Person Labor Crew	24	Hours	70.96	1,669.03	3	5,007.10
		24	Hours	70.96	1,669.03	3	5,007.10
		24	Hours	70.96	1,669.03	3	5,007.10
		24	Hours	70.96	1,669.03	3	5,007.10
		24	Hours	70.96	1,669.03	3	5,007.10
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	119.56	597.81	3	1,793.43	
Total for Decontamination					18,366.55	30	55,099.65

Assume 200 cubic meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	84	21	195.14	4,098.04	3	12,294.13
	Field Engineer - Soil Sample from the Unit		21	195.14	4,098.04	3	12,294.13
	Field Engineer - Liquid from the Sump	1	1	195.14	97.57	3	292.72
	Field Engineer - Liquid from the Sump		1	195.14	97.57	3	292.72
	Field Engineer - Equipment Wipes	11	4	195.14	715.53	3	2,146.59
	Field Engineer - Equipment Wipes		4	195.14	715.53	3	2,146.59
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Total Number of Samples	104	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					10,863.06	21	32,589.19

Assumed 1 liquid sample, 11 equipment wipe samples, 84 soil samples to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					915,846.91	51	1,030,100.10
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4- Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	84	---	194.15	16,308.55	---	16,308.55
Organics Soil - Unit	84	---	45.30	3,805.55	---	3,805.55
Cyanide Soil - Unit	84	---	76.85	6,455.37	---	6,455.37
Metals Liquid - Unit	1	---	380.21	380.21	---	380.21
Organics Liquid - Unit	1	---	424.71	424.71	---	424.71
Cyanide Liquid - Unit	1	---	64.72	64.72	---	64.72
Metals Equipment Wipes	11	---	194.15	2,135.64	---	2,135.64
Organics Equipment Wipes	11	---	45.30	498.35	---	498.35
Cyanide Equipment Wipes	11	---	76.85	845.35	---	845.35
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				37,875.56	---	37,875.56

Assumed 11 equipment wipes, 84 soil samples, 1 liquid samples, and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	52	Hours	212.89	11,070.04	3	33,210.11
Total for Data Validation				11,070.04	3	33,210.11

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	77	Hours	195.14	14,932.55	3	44,797.64
Sample Documentation - Field Engineer	27	Hours	195.14	5,171.34	3	15,514.02
Certification Report - Field Engineer	39	Hours	195.14	7,640.10	3	22,920.29
Certification Report - Field Engineer	20	Hours	195.14	3,820.05	3	11,460.15
Total for Sample Management				31,564.03	12	94,692.10

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				80,509.62	15	165,777.76
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 3 (TA-54-G-Pad 3) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 3 P1), pre-closure activities (Worksheet TA-54-G-Pad 3 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 3 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 3 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.7; Technical Area 54, Area G, Pad 3 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 3

The Unit is situated on a Pad which has a Dome constructed on its surface; Dome 48 is an aluminum framework of trusses covered with tension-fitted ultraviolet resistant, fire-retardant coated, polyester fabric that is anchored to the pad with standard drift pins.

Contamination: Dome 48 contains liquid and solid hazardous waste containers which are stored on pallets to prevent contact with accumulated liquids. Building 48 stores both liquid and non-liquid hazardous waste.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 3 P2	2-A	1,007,566.52
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-54-G-Pad 3 P3	3-A	55,966.39
4	Disposal of Hazardous Material		3-B	88,584.04
5	Decontamination		3-C	22,607.60
6	Decontamination Verification Samples		3-D	13,269.85
7	Analyses	TA-54-G-Pad 3 P4	4-A	16,762.51
8	Data Validation		4-B	12,453.79
9	Sample Logbook		4-C	12,836.24
10	Sample Documentation		4-C	5,854.35
11	Subtotal of Closure Costs			1,250,377.48
12	Certification of Closure	TA-54-G-Pad 3 P4	4-C	16,644.00
13	Total Cost of Closure (Add cost of certification report to closure costs)			1,267,021.48

1. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 3 consists of a single structure which stores hazardous waste; Dome 48. Pad 3 measures approximately 17,000 square feet and is comprised of an asphalt material. Dome 48 is comprised of an aluminum framework and covers approximately 84 percent of Pad 3.

According to the Part A Permit Application, 3,664,150 gallons of hazardous waste is permitted to be stored in TA-54 Area G at 8 units and will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Surfaces, Structures, and Related Equipment of the Closure Plan, all materials and equipment that comprise Dome 48, the asphalt pad, and all materials associated with the pad (the curbing ramps, and a minimum of six inches of base course and soil underlying the pad) will be disposed and considered as hazardous.

According to Section 5.3.2; Decontamination of Equipment of the Closure Plan the equipment cabinets; bailing equipment; portable air monitors; all electronic devices and tools, and spill cleanup equipment containers from with Dome 48 will require decontamination and decontamination verification. No decontamination wash water or verification water will be collected for use of decontaminati

It was assumed that the minimum amount of hazardous waste to removed from the Unit is equivalent to the maximum permitted capacity.

It was also assumed that the level of Personal Protective Equipment is Level C/D.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.00	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 54, Area G Unit is 3,664,150 gallons for 8 container storage units. It is assumed that TA-54-G-Pad 3 is one of the 8 units with a permitted design caacity of 458,018.75 gallons (61,227.80 cubic feet) of hazardous material has been stored in Dome 48.
	Known Releases?	N/A	
1-B	Length of TA-54-G-Pad 3 - Dome 48 (feet) Width of TA-54-G-Pad 3 - Dome 48 (feet) Height of TA-54-G-Pad 3 - Dome 48 (feet) (based on decontamination of the Unit structure) Area of TA-54-G-Pad 3 - Dome 48 (square feet) Volume of TA-54-G-Pad 3 - Dome 48 (based on the decontamination height) (cubic feet) Length of TA-54-G-Pad 3 - asphalt pad (feet) Width of TA-54-G-Pad 3 - asphalt pad (feet) Thickness of TA-54-G-Pad 3 - asphalt pad (feet) Area of TA-54-G-Pad 3 - asphalt pad (square feet) Volume of TA-54-G-Pad 3 - asphalt (cubic feet) Length of TA-54-G-Pad 3 - soil underlying the asphalt pad (feet) Width of TA-54-G-Pad 3 - soil underlying the asphalt pad (feet) Thickness of TA-54-G-Pad 3 - soil underlying the asphalt pad (feet) Area of TA-54-G-Pad 3 - soil underlying the asphalt pad (square feet) Volume of TA-54-G-Pad 3 -soil underlying the asphalt pad (cubic feet) Estimated total area of the hazardous waste storage area (Dome 48 and the pad) (square feet) Total volume of the equipment/structures to be removed (cubic feet) Estimated total area of the structures/equipment to be decontaminated - assuming 2 percent of the area that stored hazardous material(square feet)	285 50 11 14,250 156,750 339 50 0.50 16,950 8,475 339 50 0.50 16,950 8,475 48,150 173,700 963.00	Identified Structures on the Unit: The Unit is an asphalt pad which provides the base to Dome 48. The hazardous wastes are stored within Dome 48 only. Structures and Related Equipment Required for Demolition and Debris Disposal include the hazardous waste stored at Area G Pad 3; specifically, in Dome 48, materials and equipment that comprise Dome 48, the asphalt pad, and all the materials associated with the pad which includes the curbing ramps, minimum of 6 inches of the base course and soil underlying the pad. It is assumed that approximately 16,950 square feet of asphalt, 14,250 square feet of material from Dome 48, and an additional 6" of soil underlying the pad which would measure to an identical area and volume as the asphalt pad (a total of 48,150 square feet) will be not be decontaminated and will be disposed of as hazardous waste. Surfaces, Structures, and Related Equipment recommended to be left in the Unit but decontaminated included the equipment cabinets in Dome 48; bailing equipment, portable air monitors, all electronic devices and tools, and spill cleanup equipment containers found within Dome 48. Due to the fact that The height of the dome is assumed to be 11 feet for decontamination purposes.
1-C	Materials identified within TA-54-G-Pad 3		Materials identified in the Unit include hazardous wastes, materials and equipment that comprise Dome 48, the asphalt pad, and all materials associated with the pad. Other equipment structures that require only decontamination and not removal include equipment cabinets, electronic devices, portable air monitors, bailing equipment, spill cleanup equipment containers from within Dome48.
1-D	Maximum volume of waste to be removed from TA-54-G-Pad 3 (gallons)	458,018.75	Assume the minimum volume of waste to be removed is equivalent to the maximum permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C/D	Based on the discussion provided within the decontamination procedure, pressure and steam washing methods were proposed for the non-water sensitive equipment. However, should an equipment structure be water-sensitive, a simple wipe down process will be utilized. As a result, the level of PPE recommended for the closure activities is Level C/D.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	177.40	13,700.57	3	41,101.71
4-Person Labor Crew	77	Hours	70.96	5,480.21	3	16,440.62
	77	Hours	70.96	5,480.21	3	16,440.62
	77	Hours	70.96	5,480.21	3	16,440.62
	77	Hours	70.96	5,480.21	3	16,440.62
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.61	3	6,727.82
Disposal of Liquid Hazardous Material	4,164	Drums	179.33	746,695.48	---	746,695.48
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	49.673	56,322.01	---	56,322.01
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00
Total for Removal of Waste from Unit				35,621.39	15	950,809.50
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	13	Hours	195.14	2,465.78	3	7,397.33
Field Engineer	13	Hours	195.14	2,465.78	3	7,397.33
<i>Structural Assessment</i>						
Field Engineer	17	Hours	195.14	3,287.70	3	9,863.11
Field Engineer	17	Hours	195.14	3,287.70	3	9,863.11
<i>Reporting</i>						
Field Engineer	19	Hours	195.14	3,698.67	3	11,096.00
Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	176.69	353.38	3	1,060.15
Hotel/Lodging - Bare Task includes the 4 estimated work days	2	People /Night	100.00	800.00	3	2,400.00
Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00
Total for the Records Review, Inspection, and Reporting				15,205.63	15	56,757.03
Total for Step 2-A				50,827.02	30	1,007,566.52
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				1,703.08	6	14,476.20
Total for Step 2				52,530.10	36	1,022,042.72

3. DECONTAMINATION

Removal of Equipment Structures							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	22	Hours	177.40	3,977.40	3	11,932.21	
4-Person Labor Crew	22	Hours	70.96	1,590.95	3	4,772.86	
	22	Hours	70.96	1,590.95	3	4,772.86	
	22	Hours	70.96	1,590.95	3	4,772.86	
	22	Hours	70.96	1,590.95	3	4,772.86	
	22	Hours	70.96	1,590.95	3	4,772.86	
Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---	Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Airfare	5	People	1,000.00	5,000.00	3	15,000.00	Removal and disposal of equipment and materials associated with the Dome 48, and the asphalt structure of the Unit.
Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00	
Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	99.50	1,394.24	3	4,182.73	
Total for Removal of Equipment				10,341.22	15	55,966.39	

Disposal of Hazardous Material							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for "Total Volume of Equipment/Structures to be Removed"	1,783.33	Cubic yards	49.673	88,584.04	---	88,584.04	
Total for Removal of Equipment				88,584.04	---	88,584.04	

Decontamination							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	2	Hours	177.40	341.68	3	1,025.04	
4-Person Labor Crew	2	Hours	70.96	136.67	3	410.01	
	2	Hours	70.96	136.67	3	410.01	
	2	Hours	70.96	136.67	3	410.01	
	2	Hours	70.96	136.67	3	410.01	
	2	Hours	70.96	136.67	3	410.01	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---	Assume 200 square feet of material decontaminated within one hour.
Airfare	5	People	1,000.00	5,000.00	3	15,000.00	Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50	
Total for Decontamination				7,535.87	30	22,607.60	

Collection of Decontamination Verification Samples							
Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Field Engineer - Soil Sample from the Unit	20	5	195.14	975.72	3	2,927.17	Assumed 11 equipment wipe samples, 20 soil samples to be collected from the Unit. Also assumed 8 QA/QC samples will be collected.
Field Engineer - Soil Sample from the Unit		5	195.14	975.72	3	2,927.17	
Field Engineer - Liquid from the Sump	0		195.14	-	3	-	
Field Engineer - Liquid from the Sump	0		195.14	-	3	-	
Field Engineer - Equipment Wipes	11	4	195.14	715.53	3	2,146.59	
Field Engineer - Equipment Wipes		4	195.14	715.53	3	2,146.59	
Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16	
Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16	
Total Number of Samples	39	---	---	---	---	---	
Total Number of Types of Samples	3	---	---	---	---	---	
Total for Decontamination Verification				520.39	21	13,269.85	
Total for Step 3				8,056.25	51	180,427.88	

4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and liquid samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of wipe samples (11) was included within the cost estimate as there were 11 types of equipment structures provided within the Closure Plan. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	20	---	194.15	3,882.99	---	3,882.99
Organics Soil - Unit	20	---	45.30	906.08	---	906.08
Cyanide Soil - Unit	20	---	76.85	1,536.99	---	1,536.99
Metals Liquid - Unit	0	---	380.21	-	---	-
Organics Liquid - Unit	0	---	424.71	-	---	-
Cyanide Liquid - Unit	0	---	64.72	-	---	-
Metals Equipment Wipes	11	---	194.15	2,135.64	---	2,135.64
Organics Equipment Wipes	11	---	45.30	498.35	---	498.35
Cyanide Equipment Wipes	11	---	76.85	845.35	---	845.35
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				16,762.51	---	16,762.51

Assumed 11 equipment wipes, 20 soil samples, and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	20	Hours	212.89	4,151.26	3	12,453.79
Total for Data Validation				4,151.26	3	12,453.79

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	22	Hours	195.14	4,278.75	3	12,836.24
Sample Documentation - Field Engineer	10	Hours	195.14	1,951.45	3	5,854.35
Certification Report - Field Engineer	19	Hours	195.14	3,698.67	3	11,096.00
Certification Report - Field Engineer	9	Hours	195.14	1,849.33	3	5,548.00
Total for Sample Management				11,778.19	12	35,334.58

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				32,691.97	15	64,550.88
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**TA-54-G-Pad 5
Summary**

The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 5 (TA-54-G-Pad 5) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 5 P1), pre-closure activities (Worksheet TA-54-G-Pad 5 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 5 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 5 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.8; Technical Area 54, Area G, Pad 5 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 5

Contamination: Hazardous waste in both liquid and solid form is stored in Domes 224 and 49; eight Storage sheds: Sheds 144, 145, 147, 177, 1027, 1028, 1040, and 1041).

Origin of Contamination: Stored hazardous materials

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 5 P2	2-A	1,072,074.43
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-54-G-Pad 5 P3	3-A	93,663.70
4	Disposal of Hazardous Material		3-B	871,553.58
5	Decontamination		3-C	80,245.24
6	Decontamination Verification Samples		3-D	55,518.71
7	Analyses	TA-54-G-Pad 5 P4	4-A	60,884.86
8	Data Validation		4-B	51,411.80
9	Sample Logbook		4-C	76,347.06
10	Sample Documentation		4-C	26,978.78
11	Subtotal of Closure Costs			2,403,154.36
12	Certification of Closure	TA-54-G-Pad 5 P4	4-C	22,327.01
13	Total Cost of Closure (Add cost of certification report to closure costs)			2,425,481.38

1. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 5 consists of Domes 49 and 224 which are used for the storage of hazardous waste. The dimensions of Domes 49 and 224 measure approximately 440 feet long by 60 feet wide and 110 feet long and 60 feet wide respectively. Domes 49 contains an asphalt curb measuring 6 inches high and 8 inches wide which surrounds the entire perimeter of the dome. Dome 224 contains a deep concrete ring wall which surrounds the interior of the dome and leads to a concrete sump. Storage sheds 144, 145, 146, and 177 measure 6 feet long by 5 feet wide and 9 feet high. A sump is constructed within each sump to prevent run-off. Storage sheds 1027, 1028, 1029, and 1041 measure approximately 23 feet long, 9 feet wide and 8.5 feet high. Each storage shed has a sump.

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous material is permitted to be stored on the Unit. The hazardous material stored will be drummed and properly disposed at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, all materials and equipment that comprise the dome structures, the asphalt pad, and all materials associated with the pad (the curb sump, and a minimum of six inches of soil underlying the pad) will be disposed and considered as potentially hazardous.

According to Section 5.3.2; Decontamination of Equipment of the Closure Plan the storage sheds, portable air monitors, all electronic devices and tools, and spill cleanup equipment containers from within the Unit.

It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is Level 1.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed tht TA-54-G-Pad 5 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228,20 cubic feet) of hazardous material has been stored in the Unit.
	Known Releases?	N/A	
	Length of TA-54-G-Pad 5 - Dome 49 (feet)	440	
	Width of TA-54-G-Pad 5 - Dome 49 (feet)	60	
	Height of TA-54-G-Pad 5 - Dome 49 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 5 - Dome 49 (square feet)	26,400	
	Volume of TA-54-G-Pad 5 - Dome 49 (based on the decontamination of the Unit structure)	290,400	
	Length of TA-54-G-Pad 5 - Dome 224 (feet)	110	
	Width of TA-54-G-Pad 5 - Dome 224 (feet)	60	
	Height of TA-54-G-Pad 5 - Dome 224 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 5 - Dome 224 (square feet)	6,600	
	Volume of TA-54-G-Pad 5 - Dome 224 (cubic feet)	72,600	
	Length of TA-54-G-Pad 5 - total storage sheds (feet)	116	
	Width of TA-54-G-Pad 5 - total storage sheds (feet)	56	
	Height of TA-54-G-Pad 5 - total storage sheds (feet) (based on decontamination height)	11	
	Area of TA-54-G-Pad 5 - total storage sheds (feet)	6,496	
	Volume of TA-54-G-Pad 5 - total storage sheds (feet)	71,456	
	Length of TA-54-G-Pad 5 - asphalt pad (feet)	550	
	Width of TA-54-G-Pad 5 - asphalt pad (feet)	120	
	Thickness of TA-54-G-Pad 5 - asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 5 - asphalt pad (square feet)	66,000	
	Volume of TA-54-G-Pad 5 -asphalt (cubic feet)	33,000	
1-B	Length of TA-54-G-Pad 5 - soil underlying the asphalt pad (feet)	550	Identified Structures on the Unit: The Unit contains 2 domes, measuring 440 feet long by 60 feet wide and 110 feet long and 60 feet wide. An asphalt curb (measuring 6 inches high and 8 inches wide surrounds the perimeter of the Dome 49. Dome 224 contains a deep concrete ring wall which surrounds the interior of the dome and leads to a concrete sump. Eight storage sheds are also contained within the Unit. Each storage shed contains a sump. No dimensions for the sumps were provided within the Closure Plan. As a result, no dimensions specifically pertaining to the sumps contained within the Unit are included within the cost estimate. No dimension of the asphalt pad was provided within the Closure Plan either. As a result, the pad measures the total area and volume of the two domes (66,000 square feet and 33,000 cubic feet respectively).

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Wastes						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	177.40	13,700.61	3	41,101.83
4-Person Labor Crew	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	3,759.68	18,798.41	3	56,395.24
Disposal of Liquid Hazardous Material	4,164	Drums	179.33	746,695.40	---	746,695.40
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	49.673	56,322.03	---	56,322.03
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,680.00	3	5,040.00
Total for Removal of Waste from Unit				869,117.33	15	1,001,317.16
2-A						
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	17	Hours	195.14	3,307.71	3	9,923.12
Field Engineer	17	Hours	195.14	3,307.71	3	9,923.12
<i>Structural Assessment</i>						
Field Engineer	23	Hours	195.14	4,410.27	3	13,230.82
Field Engineer	23	Hours	195.14	4,410.16	3	13,230.49
<i>Reporting</i>						
Field Engineer	25	Hours	195.14	4,961.56	3	14,884.67
Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	113.93	227.85	3	683.55
Hotel/Lodging - Bare Task includes the 3 estimated work days	2	People /Night	100.00	565.00	3	1,695.00
Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	395.50	3	1,186.50
Total for the Records Review, Inspection, and Reporting				23,585.76	15	70,757.27
Total for Step 2-A				892,703.09	30	1,072,074.43
2-B						
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				4,825.40	6	14,476.20
Total for Step 2				1,766,645.82	36	1,086,550.63

3. DECONTAMINATION

Removal of Equipment Structures								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-A	Site Project Manager	47	Hours	177.40	8,309.75	3	24,929.26	
		47	Hours	70.96	3,323.89	3	9,971.66	
	4-Person Labor Crew		47	Hours	70.96	3,323.89	3	9,971.66
			47	Hours	70.96	3,323.89	3	9,971.66
			47	Hours	70.96	3,323.89	3	9,971.66
	Number of estimated work days (including 2 days for mobilization and demobilization)	6	Days	---	---	---	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 6 estimated work days	5	People /Night	100.00	2,927.55	3	8,782.65	
	Vehicle Rental includes the 6 estimated work days	2	Vehicles/Day	70.00	819.71	3	2,459.14	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	173.73	868.66	3	2,605.99	
Total for Removal of Equipment					31,221.23	15	93,663.70	

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	17,545.72	Cubic yards	49.673	871,553.58	---	871,553.58
	Total for Removal of Equipment					871,553.58	---

Decontamination								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C	Site Project Manager	38	Hours	177.40	6,784.69	3	20,354.06	
		38	Hours	70.96	2,713.86	3	8,141.59	
	4-Person Labor Crew		38	Hours	70.96	2,713.86	3	8,141.59
			38	Hours	70.96	2,713.86	3	8,141.59
			38	Hours	70.96	2,713.86	3	8,141.59
	Number of estimated work days (including 2 days for mobilization and demobilization)	5	Days	---	---	3	-	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 5 estimated work days	5	People /Night	100.00	2,390.27	3	7,170.80	
	Vehicle Rental includes the 5 estimated work days	2	Vehicles/Day	70.00	669.27	3	2,007.82	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	209.75	1,048.73	3	3,146.19	
Total for Decontamination					26,748.41	30	80,245.24	

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	95	24	195.14	4,634.69	3	13,904.07
	Field Engineer - Soil Sample from the Unit		24	195.14	4,634.69	3	13,904.07
	Field Engineer - Liquid from the Sump	10	5	195.14	975.72	3	2,927.17
	Field Engineer - Liquid from the Sump		5	195.14	975.72	3	2,927.17
	Field Engineer - Equipment Wipes	48	16	195.14	3,122.32	3	9,366.95
	Field Engineer - Equipment Wipes		16	195.14	3,122.32	3	9,366.95
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16
	Total Number of Samples	161	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					18,506.24	21	55,518.71

Also assumed 8 QA/QC samples will be collected.

Total for Step 3					948,029.47	51	1,100,981.24
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4. Analysis and Sample Management Procedures

Analysis							
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Metals Soil - Unit	95	---	194.15	18,444.19	---	18,444.19	
Organics Soil - Unit	95	---	45.30	4,303.90	---	4,303.90	
Cyanide Soil - Unit	95	---	76.85	7,300.71	---	7,300.71	
Metals Liquid - Unit	10	---	380.21	3,802.09	---	3,802.09	
Organics Liquid - Unit	10	---	424.71	4,247.10	---	4,247.10	
Cyanide Liquid - Unit	10	---	64.72	647.20	---	647.20	
Metals Equipment Wipes	48	---	194.15	9,319.17	---	9,319.17	
Organics Equipment Wipes	48	---	45.30	2,174.60	---	2,174.60	
Cyanide Equipment Wipes	48	---	76.85	3,688.78	---	3,688.78	
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67	
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68	
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76	
Total for Analysis of the Decontamination Verification Samples				60,884.86	---	60,884.86	

Data Validation							
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	81	Hours	212.89	17,137.27	3	51,411.80	
Total for Data Validation				17,137.27	3	51,411.80	

Sample Management Procedures							
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	130	Hours	195.14	25,449.02	3	76,347.06	Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples
Sample Documentation - Field Engineer	46	Hours	195.14	8,992.93	3	26,978.78	
Certification Report - Field Engineer	25	Hours	195.14	4,961.56	3	14,884.67	
Certification Report - Field Engineer	13	Hours	195.14	2,480.78	3	7,442.34	
Total for Sample Management				41,884.28	12	125,652.85	

Total for Step 4				119,906.41	15	237,949.51	
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 6 (TA-54-G-Pad 6) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 6 P1), pre-closure activities (Worksheet TA-54-G-Pad 6 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 6 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 6 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.9; Technical Area 54, Area G, Pad 6 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 6

Contamination: Hazardous waste in both liquid and solid form is stored in Domes 153 and 283 on the pad and within the one transportainer and five storage sheds on the south and est ends of the Unit.
Origin of Contamination: Stored hazardous materials

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 6 P2	2-A	1,019,954.16
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-54-G-Pad 6 P3	3-A	93,868.18
4	Disposal of Hazardous Material		3-B	913,951.76
5	Decontamination		3-C	45,783.35
6	Decontamination Verification Samples		3-D	35,321.22
7	Analyses	TA-54-G-Pad 6 P4	4-A	38,824.47
8	Data Validation		4-B	34,168.09
9	Sample Logbook		4-C	44,595.28
10	Sample Documentation		4-C	16,880.03
11	Subtotal of Closure Costs			2,257,822.76
12	Certification of Closure	TA-54-G-Pad 6 P4	4-C	22,001.00
13	Total Cost of Closure (Add cost of certification report to closure costs)			2,279,823.75

1. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 6 consists of Domes 153 and 326 which are constructed on an asphalt pad measuring approximately 633 feet long by 99 feet wide. Domes 153 and 283 stored both liquid and solid forms of hazardous material. Dome 153 measures 326 feet long by 60 feet wide (19,600 square feet). Dome 283 measures 260 feet long by 60 feet wide (15,600 square feet). An asphalt curb that is approximately 8 inches thick surrounds the interior floor perimeter of both domes.

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous material is permitted to be stored in the two identified dome structures. The hazardous material stored in the dome structures will be drummed and properly disposed at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, all materials and equipment that comprise the dome structures, the asphalt pad, and all materials associated with the pad (the curb sump, and a minimum of six inches of soil underlying the pad) will be disposed and considered as potentially hazardous.

According to Section 5.3.2; Decontamination of Equipment of the Closure Plan the transportainer, modular units, equipment cabinets, portable air monitoring, electronic devices and tools, spill cleanup e

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is L

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed tht TA-54-G-Pad 6 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228,20 cubic feet) of hazardous material has been stored in Domes 136 and 326.
	Known Releases?	N/A	
	Length of TA-54-G-Pad 6 - Dome 136 (feet)	326	
	Width of TA-54-G-Pad 6 - Dome 136 (feet)	60	
	Height of TA-54-G-Pad 6 - Dome 136 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 6 - Dome 136 (square feet)	19,600	
	Volume of TA-54-G-Pad 6 - Dome 136 (based on the decontamination height) (cubic feet)	215,600	
	Length of TA-54-G-Pad 6 - Dome 283 (feet)	260	
	Width of TA-54-G-Pad 6 - Dome 283 (feet)	60	
	Height of TA-54-G-Pad 6 - Dome 283 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 6 - Dome 283 (square feet)	15,600	
	Volume of TA-54-G-Pad 6 - Dome 283 (based on the decontamination height) (cubic feet)	171,600	
	Length of TA-54-G-Pad 6 - asphalt pad (feet)	633	
	Width of TA-54-G-Pad 6 - asphalt pad (feet)	99	
	Thickness of TA-54-G-Pad 6 - asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 6 - asphalt pad (square feet)	62,700	
1-B	Volume of TA-54-G-Pad 6 -asphalt (cubic feet)	31,350	Identified Structures on the Unit: The Unit is a pad provides the base to Domes 153 and 283. The area of the Unit is approximately 62,700 square feet. Both liquid and non-liquid hazardous waste materials were stored in Domes 153 and 283. The dimensions of the two domes, as opposed to the entire Unit, will be considered for the purposes of completing the cost estimate surrounding the hazardous material storage area. Each dome is approximately 19,600 and 15,600 square feet respectively (total area of 35,200 square feet).
	Length of TA-54-G-Pad 6 - soil underlying the asphalt pad (feet)	633	Structures and Related Equipment Required for Demolition and Debris Disposal: The hazardous waste material was specifically stored on the two domes. The structures required for removal include the two domes, the asphalt pad, and all the materials associated with the pad which includes

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	177.40	13,700.61	3	41,101.83
4-Person Labor Crew	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.61	3	6,727.84
Disposal of Liquid Hazardous Material	4,164	Drums	179.33	746,695.48	---	746,695.48
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	49.673	56,322.03	---	56,322.03
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	4,826.76	3	14,480.29
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,351.49	3	4,054.48
Total for Removal of Waste from Unit				852,059.87		950,144.61
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	17	Hours	195.14	3,259.41	3	9,778.22
Field Engineer	17	Hours	195.14	3,259.41	3	9,778.22
<i>Structural Assessment</i>						
Field Engineer	22	Hours	195.14	4,345.88	3	13,037.63
Field Engineer	22	Hours	195.14	4,345.77	3	13,037.30
<i>Reporting</i>						
Field Engineer	25	Hours	195.14	4,889.11	3	14,667.33
Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	111.90	223.81	3	671.42
Hotel/Lodging - Bare Task includes the 3 estimated work days	2	People /Night	100.00	556.75	3	1,670.25
Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	389.73	3	1,169.18
Total for the Records Review, Inspection, and Reporting				23,269.85		69,809.55
Total for Step 2-A				875,329.72		1,019,954.16
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				4,825.40	6	14,476.20
Total for Step 2				880,155.12		1,034,430.36

3. DECONTAMINATION

Removal of Equipment Structures								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-A	Site Project Manager	47	Hours	177.40	8,300.62	3	24,901.87	
		47	Hours	70.96	3,320.24	3	9,960.71	
	4-Person Labor Crew		47	Hours	70.96	3,320.24	3	9,960.71
			47	Hours	70.96	3,320.24	3	9,960.71
			47	Hours	70.96	3,320.24	3	9,960.71
	Number of estimated work days (including 2 days for mobilization and demobilization)	6	Days	---	---	---	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 6 estimated work days	5	People /Night	100.00	3,000.00	3	9,000.00	
	Vehicle Rental includes the 6 estimated work days	2	Vehicles/Day	70.00	840.00	3	2,520.00	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	173.57	867.83	3	2,603.48	
Total for Removal of Equipment					31,289.39		93,868.18	

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Domes 153 and 283, and the asphalt pad and associated material.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	18,399.26	Cubic yards	49.673	913,951.76	---	913,951.76
Total for Removal of Equipment					913,951.76		913,951.76

Decontamination								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C	Labor							
	Site Project Manager	19	Hours	177.40	3,283.40	3	9,850.19	
		19	Hours	70.96	1,313.35	3	3,940.06	
	4-Person Labor Crew		19	Hours	70.96	1,313.35	3	3,940.06
			19	Hours	70.96	1,313.35	3	3,940.06
			19	Hours	70.96	1,313.35	3	3,940.06
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	88.86	444.31	3	1,332.92		
Total for Decontamination					15,261.12		45,783.35	

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	68	17	195.14	3,317.46	3	9,952.39
	Field Engineer - Soil Sample from the Unit		17	195.14	3,317.46	3	9,952.39
	Field Engineer - Liquid from the Sump	1	1	195.14	97.57	3	292.72
	Field Engineer - Liquid from the Sump		1	195.14	97.57	3	292.72
	Field Engineer - Equipment Wipes		10	195.14	1,951.45	3	5,854.35
	Field Engineer - Equipment Wipes	30	10	195.14	1,951.45	3	5,854.35
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Total Number of Samples	107	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					11,773.74		35,321.22

Assumed 1 liquid sample collected from the curb, 30 equipment wipe samples, and 68 soil samples to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					972,276.01		1,088,924.52
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4. Analysis and Sample Management Procedures

Analysis							
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Metals Soil - Unit	68	---	194.15	13,202.16	---	13,202.16	1 liquid sample collected from the curb, 30 equipment wipe samples, 68 soil samples to be collected from the Unit, and a total of 8 field QA/QC samples.
Organics Soil - Unit	68	---	45.30	3,080.69	---	3,080.69	
Cyanide Soil - Unit	68	---	76.85	5,225.77	---	5,225.77	
Metals Liquid - Unit	1	---	380.21	380.21	---	380.21	
Organics Liquid - Unit	1	---	424.71	424.71	---	424.71	
Cyanide Liquid - Unit	1	---	64.72	64.72	---	64.72	
Metals Equipment Wipes	30	---	194.15	5,824.48	---	5,824.48	
Organics Equipment Wipes	30	---	45.30	1,359.13	---	1,359.13	
Cyanide Equipment Wipes	30	---	76.85	2,305.49	---	2,305.49	
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67	
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68	
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76	
Total for Analysis of the Decontamination Verification Samples				38,824.47	---	38,824.47	

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	54	Hours	212.89	11,389.36	3	34,168.09
Total for Data Validation				11,389.36	3	34,168.09

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	76	Hours	195.14	14,865.09	3	44,595.28
Sample Documentation - Field Engineer	29	Hours	195.14	5,626.68	3	16,880.03
Certification Report - Field Engineer	25	Hours	195.14	4,889.11	3	14,667.33
Certification Report - Field Engineer	13	Hours	195.14	2,444.56	3	7,333.67
Total for Sample Management				27,825.44	12	83,476.31

Total for Step 4				78,039.27		156,468.87
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 9 (TA-54-G-Pad 9) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 9 P1), pre-closure activities (Worksheet TA-54-G-Pad 9 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 9 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 9 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.10; Technical Area 54, Area G, Pad 9 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 9

The Unit is situated on a Pad with four domes, Domes 229, 230, 231, and 232. The Unit also contains a transportainer, and two storage sheds where hazardous waste is stored.

Contamination: The Unit has stored solidified inorganic solids, leached process residues, salts and cement paste, ash, dewatered aqueous sludge, chemical treatment sludge, soils, combustible debris, and heterogeneous debris.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 9 P2	2-A	1,029,397.46
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-54-G-Pad 9 P3	3-A	132,159.29
4	Disposal of Hazardous Material		3-B	1,956,551.21
5	Decontamination		3-C	69,605.67
6	Decontamination Verification Samples		3-D	59,324.04
7	Analyses	TA-54-G-Pad 9 P4	4-A	75,671.06
8	Data Validation		4-B	60,991.64
9	Sample Logbook		4-C	76,525.82
10	Sample Documentation		4-C	28,881.44
11	Subtotal of Closure Costs			3,503,583.83
12	Certification of Closure	TA-54-G-Pad 9 P4	4-C	31,415.88
13	Total Cost of Closure (Add cost of certification report to closure costs)			3,534,999.71

1. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 9 consists of four domes, Domes 229, 230, 231, and 232; a transportainer, and two storage sheds. Pad 9 measures approximately 158,000 square feet and is comprised of an asphalt material base. Each dome is situated onto approximately 20,400 square feet (246 feet long by 89 feet wide). At the base of each dome, a concrete ring wall surrounds the interior floor perimeter to provide run-on and run-off protection. Dome 231 contains a Perma-Con modular panel containment structure which measures 68 feet long by 28 feet wide. Domes 230 and 231 have been used for the storage of both liquid and non-liquid hazardous waste and Domes 229 and 232 have been used for the storage of only non-liquid hazardous waste.

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous material is permitted to be stored in the four identified dome structures. The hazardous material stored in the four dome structures will be drummed and properly disposed at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, all materials and equipment that comprise the four dome structures, the asphalt pad, and all materials associated with the pad (the concrete ringwall, sump, and a minimum of six inches of soil)

According to Section 5.3.2; Decontamination of Equipment of the Closure Plan the transportainer, the two storage sheds, the PermaCon, the portable air monitors, all electronic devices and tools, and the

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is L

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed tht TA-54-G-Pad 9 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228,20 cubic feet) of hazardous material has been stored in Domes 229, 230, 231, and 232.
	Known Releases?	N/A	
	Length of TA-54-G-Pad 9 - Dome 229 (feet)	246	Identified Structures on the Unit: The Unit is a pad provides the base to Domes 229, 230, 231, and 232. The area of the Unit is approximately 158,000 square feet. Both liquid and non-liquid hazardous waste materials were stored in Domes 230 and 231 where non-liquid hazardous waste were stored within Domes 229 and 232. The dimensions of the four domes, as opposed to the entire Unit, will be considered for the purposes of completing the cost estimate surrounding the hazardous
	Width of TA-54-G-Pad 9 - Dome 229 (feet)	89	
	decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 9 - Dome 229 (square feet)	20,400	
	Volume of TA-54-G-Pad 9 - Dome 229 (based on the decontamination base)(cubic feet)	224,400	
	Length of TA-54-G-Pad 9 - Dome 230 (feet)	246	
	Width of TA-54-G-Pad 9 - Dome 230 (feet)	89	
	decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 9 - Dome 230 (square feet)	20,400	
	Volume of TA-54-G-Pad 9 - Dome 230 (based on the decontamination base)(cubic feet)	224,400	
	Length of TA-54-G-Pad 9 - Dome 231 (feet)	246	
	Width of TA-54-G-Pad 9 - Dome 231 (feet)	89	
	decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 9 - Dome 231 (square feet)	20,400	
	Volume of TA-54-G-Pad 9 - Dome 231 (based on the decontamination base)(cubic feet)	224,400	
	Length of TA-54-G-Pad 9 - Dome 232 (feet)	246	
	Width of TA-54-G-Pad 9 - Dome 232 (feet)	89	
	decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 9 - Dome 232 (square feet)	20,400	
	Volume of TA-54-G-Pad 9- Dome 232 (based on the decontamination base)(cubic feet)	224,400	
	Length of TA-54-G-Pad 9 - asphalt pad (feet)	570	
	Width of TA-54-G-Pad 9 - asphalt pad (feet)	275	
	Thickness of TA-54-G-Pad 9 - asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 9 - asphalt pad (square feet)	158,000	
	Volume of TA-54-G-Pad 9 - asphalt (cubic feet)	79,000	
	Length of TA-54-G-Pad 1 - soil underlying the asphalt pad (feet)	570	

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Material						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	177.40	13,700.61	3	41,101.83
4-Person Labor Crew	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.61	3	6,727.84
Disposal of Liquid Hazardous Material	4,164	Drums	179.33	746,695.48	---	746,695.48
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	49.673	56,322.03	---	56,322.03
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00
Total for Removal of Waste from Unit				852,281.61		950,809.84
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	24	Hours	195.14	4,654.21	3	13,962.62
Field Engineer	24	Hours	195.14	4,654.21	3	13,962.62
<i>Structural Assessment</i>						
Field Engineer	32	Hours	195.14	6,205.61	3	18,616.82
Field Engineer	32	Hours		-		-
<i>Reporting</i>						
Field Engineer	36	Hours	195.14	6,981.31	3	20,943.92
Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	170.28	340.55	3	1,021.65
Hotel/Lodging - Bare Task includes the 4 estimated work days	2	People /Night	100.00	800.00	3	2,400.00
Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00
Total for the Records Review, Inspection, and Reporting				26,195.87		78,587.62
Total for Step 2-A				878,477.49	-	1,029,397.46
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				4,825.40		14,476.20
Total for Step 2				883,302.89	-	1,043,873.66

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	69	Hours	177.40	12,329.35	3	36,988.06
		69	Hours	70.96	4,931.72	3	14,795.17
	4-Person Labor Crew	69	Hours	70.96	4,931.72	3	14,795.17
		69	Hours	70.96	4,931.72	3	14,795.17
		69	Hours	70.96	4,931.72	3	14,795.17
	Number of estimated work days (including 2 days for mobilization and demobilization)	9	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 9 estimated work days	5	People /Night	100.00	4,500.00	3	13,500.00
	Vehicle Rental includes the 9 estimated work days	2	Vehicles/Day	70.00	1,260.00	3	3,780.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	247.37	1,236.85	3	3,710.56
Total for Removal of Equipment					44,053.10		132,159.29

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Domes 229, 230, 231, and 232, and the asphalt pad and associated material.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	39,388.40	Cubic yards	49.673	1,956,551.21	---	1,956,551.21
Total for Removal of Equipment					1,956,551.21		1,956,551.21

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	32	Hours	177.40	5,685.73	3	17,057.20
		32	Hours	70.96	2,274.28	3	6,822.85
	4-Person Labor Crew	32	Hours	70.96	2,274.28	3	6,822.85
		32	Hours	70.96	2,274.28	3	6,822.85
		32	Hours	70.96	2,274.28	3	6,822.85
	Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 4 estimated work days	5	People /Night	100.00	2,000.00	3	6,000.00
	Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	171.80	859.02	3	2,577.06	
Total for Decontamination					23,201.89		69,605.67

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	170	43	195.14	8,293.66	3	24,880.97
	Field Engineer - Soil Sample from the Unit		43	195.14	8,293.66	3	24,880.97
	Field Engineer - Liquid from the Sump	7	4	195.14	683.01	3	2,049.02
	Field Engineer - Liquid from the Sump		4	195.14	683.01	3	2,049.02
	Field Engineer - Equipment Wipes	6	2	195.14	390.29	3	1,170.87
	Field Engineer - Equipment Wipes		2	195.14	390.29	3	1,170.87
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16
	Total Number of Samples	191	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					19,774.68		59,324.04

Assumed 8 QA/QC samples will be collected.

Total for Step 3					2,043,580.88	0	2,217,640.20
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	170	---	194.15	33,005.40	---	33,005.40
Organics Soil - Unit	170	---	45.30	7,701.72	---	7,701.72
Cyanide Soil - Unit	170	---	76.85	13,064.43	---	13,064.43
Metals Liquid - Unit	7	---	380.21	2,661.46	---	2,661.46
Organics Liquid - Unit	7	---	424.71	2,972.97	---	2,972.97
Cyanide Liquid - Unit	7	---	64.72	453.04	---	453.04
Metals Equipment Wipes	6	---	194.15	1,164.90	---	1,164.90
Organics Equipment Wipes	6	---	45.30	271.83	---	271.83
Cyanide Equipment Wipes	6	---	76.85	461.10	---	461.10
Metals Field QA/QC	16	---	380.21	6,083.34	---	6,083.34
Organics Field QA/QC	16	---	424.71	6,795.36	---	6,795.36
Cyanide Field QA/QC	16	---	64.72	1,035.52	---	1,035.52
Total for Analysis of the Decontamination Verification Samples				75,671.06	---	75,671.06

Assumed 6 equipment wipes, 170 soil samples, 7 liquid samples, and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	96	Hours	212.89	20,330.55	3	60,991.64
Total for Data Validation				20,330.55	3	60,991.64

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	131	Hours	195.14	25,508.61	3	76,525.82
Sample Documentation - Field Engineer	49	Hours	195.14	9,627.15	3	28,881.44
Certification Report - Field Engineer	36	Hours	195.14	6,981.31	3	20,943.92
Certification Report - Field Engineer	18	Hours	195.14	3,490.65	3	10,471.96
Total for Sample Management				45,607.72	12	136,823.15

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			141,609.33	15	273,485.85
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 10 (TA-54-G-Pad 10) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 10 P1), pre-closure activities (Worksheet TA-54-G-Pad 10 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 10 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 10 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.11; Technical Area 54, Area G, Pad 10 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 10

The Unit consists of an irregular-shaped asphalt pad located at the eastern end of Area G. The pad is 4-6 inches thick and overlies approximately six inches of base course material situated on top of six inches of fill material. The asphalt pad is equipped with curbing on the northern side and a portion of the eastern side. Waste characterization trailers are situated on Pad 10.

Contamination: Pad 10 contains mixed and hazardous waste in drums, transportainers and metal boxes.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 10 P2	2-A	1,065,307.07
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-54-G-Pad 10 P3	3-A	81,299.97
4	Disposal of Hazardous Material		3-B	160,978.26
5	Decontamination		3-C	56,221.86
6	Decontamination Verification Samples		3-D	54,250.27
7	Analyses	TA-54-G-Pad 10 P4	4-A	61,992.31
8	Data Validation		4-B	53,647.09
9	Sample Logbook		4-C	64,592.95
10	Sample Documentation		4-C	25,563.98
11	Subtotal of Closure Costs			1,638,329.96
12	Certification of Closure	TA-54-G-Pad 10 P4	4-C	20,128.89
13	Total Cost of Closure (Add cost of certification report to closure costs)			1,658,458.85

1. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 11 consists of an irregularly-shaped asphalt pad which covers approximately 89,600 square feet. The pad is equipped with curbing on the northern side and on portions of the eastern side. Transuranic waste characterization trailers are situated on the Unit and hazardous waste containers are stored near the trailers for staging associated with waste characterization. According to Section 2.0 of the Closure Plan, large portions of the Unit are used for the storage of empty feed stock drums for transuranic waste characterization activities. Storage of oversized mixed waste in transporters and metal boxes also occurs at the Unit.

According to the Part A Permit Application, the permitted design capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-Pad 11 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.20 cubic feet). The permitted unit has been used for the storage of mixed waste in solid form with small quantities of liquid form waste since 2004. The hazardous waste stored at the permitted unit has been: solidified inorganic solids; leached process residues; salts and cement paste; ash; d. It was assumed that the minimum amount of hazardous waste to be removed from the Unit is equivalent to the permitted volume. The volume of material to be disposed of is equal to the total volume of the

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the permitted design capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-Pad 10 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.20 cubic feet) of hazardous waste.
	Known Releases?	N/A	
	Length of TA-54-G-Pad 10 - asphalt pad (feet)	350	
	Width of TA-54-G-Pad 10 - asphalt pad (feet)	250	
	Thickness of TA-54-G-Pad 10 - asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 10 - asphalt pad (square feet)	87,500	
	Volume of TA-54-G-Pad 10 -asphalt (cubic feet)	43,750	
	Length of TA-54-G-Pad 10 - soil underlying the asphalt pad (feet)	350	
	Width of TA-54-G-Pad 10 - soil underlying the asphalt pad (feet)	250	
	Thickness of TA-54-G-Pad 10 - soil underlying the asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 10 - soil underlying the asphalt pad (square feet)	87,500	
	Volume of TA-54-G-Pad 10 -soil underlying the asphalt pad (cubic feet)	43,750	
	Estimated total area of the hazardous waste storage areas (asphalt pad and soil underneath) (square feet)	175,000	
	Total volume of the structures/equipment to be disposed of (cubic feet)	87,500	
	Estimated total area to be decontaminated (square feet). Estimated to be 2% of the total square footage of Unit (87,500 square feet)	3,500	
1-C	Wastes identified within TA-54-G-Pad 10		The permitted unit has been used for the storage of mixed waste in solid form with small quantities of liquid form waste since 2004. The hazardous waste stored at the permitted unit has been: solidified inorganic solids; leached process residues; salts and cement paste; ash; dewatered aqueous sludge; chemical treatment sludge; soils; combustible debris (e.g., plastics, rubber, laboratory trash, building debris); and heterogeneous debris.
1-D	Maximum volume of waste to be removed from TA-54-G-Pad 10 (gallons)	458,019	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	According to the closure plan, decontamination procedures will include steam cleaning and pressure washing. In addition, since mixed waste was managed at the unit, the level of PPE recommended for the closure activities is Modified Level C.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	177.40	13,700.61	3	41,101.83
4-Person Labor Crew	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	3,759.68	18,798.41	3	56,395.24
Disposal of Liquid Hazardous Waste	4,164	Drums	179.33	746,695.48	---	746,695.48
Disposal of Non-liquid Hazardous Waste	1,134	Cubic yards	49.673	56,322.01	---	56,322.01
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00
Total for Removal of Waste from Unit				35,621.50	15	1,000,477.22
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	15	Hours	195.14	2,982.06	3	8,946.17
Field Engineer	15	Hours	195.14	2,982.06	3	8,946.17
<i>Structural Assessment</i>						
Field Engineer	20	Hours	195.14	3,976.08	3	11,928.23
Field Engineer	20	Hours	195.14	3,976.08	3	11,928.23
<i>Reporting</i>						
Field Engineer	23	Hours	195.14	4,473.09	3	13,419.26
Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	100.30	200.59	3	601.78
Hotel/Lodging - Bare Task includes the 3 estimated work days	2	People /Night	100.00	600.00	3	1,800.00
Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
Total for the Records Review, Inspection, and Reporting				18,389.35	15	64,829.84
Total for Step 2-A				54,010.85	30	1,065,307.07
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				1,703.08	6	14,476.20
Total for Step 2				55,713.93	36	1,079,783.27

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	39	Hours	177.40	6,977.90	3	20,933.69
	4-Person Labor Crew	39	Hours	70.96	2,791.15	3	8,373.44
		39	Hours	70.96	2,791.15	3	8,373.44
		39	Hours	70.96	2,791.15	3	8,373.44
		39	Hours	70.96	2,791.15	3	8,373.44
	Number of estimated work days (including 2 days for mobilization and demobilization)	5	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 5 estimated work days	5	People /Night	100.00	2,500.00	3	7,500.00
	Vehicle Rental includes the 5 estimated work days	2	Vehicles/Day	70.00	700.00	3	2,100.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	151.50	757.50	3	2,272.50
Total for Removal of Equipment					18,142.49	15	81,299.97

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the asphalt pad, materials associated with the pad (i.e., curbing and ramps) and a minimum of 6 inches of the base course and soil underlying the asphalt pad of the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for "Total Volume of Structures/Equipment to be Disposed Of"	3,240.74	Cubic yards	49.673	160,978.26	---	160,978.26
Total for Removal of Equipment					160,978.26	---	160,978.26

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	23	Hours	177.40	4,080.30	3	12,240.89
	4-Person Labor Crew	23	Hours	70.96	1,632.11	3	4,896.34
		23	Hours	70.96	1,632.11	3	4,896.34
		23	Hours	70.96	1,632.11	3	4,896.34
		23	Hours	70.96	1,632.11	3	4,896.34
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	5	Vehicles/Day	70.00	1,050.00	3	3,150.00
Per Diem (for Project Engineer and 4-Person Labor Crew) for an estimated 3 work days.	5	People	116.38	581.88	3	1,745.63	
Total for Decontamination					18,740.62	30	56,221.86

Assume 200 square feet of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples								
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D	Field Engineer - Soil Sample from the Unit	116	29	195.14	5,659.20	3	16,977.60	
	Field Engineer - Soil Sample from the Unit		29	195.14	5,659.20	3	16,977.60	
	Field Engineer - Liquid from the Sump	0	0	195.14	-	3	-	
	Field Engineer - Liquid from the Sump	0	0	195.14	-	3	-	
	Field Engineer - Equipment Wipes	36	12	195.14	2,341.74	3	7,025.22	
	Field Engineer - Equipment Wipes		12	195.14	2,341.74	3	7,025.22	
	Field Engineer - Field QA/QC Samples	16	5	195.14	1,040.77	3	3,122.32	
	Field Engineer - Field QA/QC Samples		5	195.14	1,040.77	3	3,122.32	
	Total Number of Samples	168	---	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---	---
Total for Decontamination Verification					1,040.77	21	54,250.27	
Total for Step 3					19,781.39	51	352,750.36	

Assumed 116 soil samples and 36 wipe samples to be collected from the Unit.
Also assumed 16 QA/QC samples will be collected.

4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and QC samples collected from the Unit. Analysis of the samples were estimated by the suggested analyses provided within Table G-11.3. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazardous nature of the debris and

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	116	---	194.15	22,521.33	---	22,521.33
Organics Soil - Unit	116	---	45.30	5,255.29	---	5,255.29
Cyanide Soil - Unit	116	---	76.85	8,914.56	---	8,914.56
Metals Liquid - Unit	0	---	380.21	-	---	-
Organics Liquid - Unit	0	---	424.71	-	---	-
Cyanide Liquid - Unit	0	---	64.72	-	---	-
Metals Equipment Wipes	36	---	194.15	6,989.38	---	6,989.38
Organics Equipment Wipes	36	---	45.30	1,630.95	---	1,630.95
Cyanide Equipment Wipes	36	---	76.85	2,766.59	---	2,766.59
Metals Field QA/QC	16	---	380.21	6,083.34	---	6,083.34
Organics Field QA/QC	16	---	424.71	6,795.36	---	6,795.36
Cyanide Field QA/QC	16	---	64.72	1,035.52	---	1,035.52
Total for Analysis of the Decontamination Verification Samples				61,992.31	---	61,992.31

Assumed 116 soil samples, 36 wipe samples and a total of 16 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	84	Hours	212.89	17,882.36	3	53,647.09
Total for Data Validation				17,882.36	3	53,647.09

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	110	Hours	195.14	21,530.98	3	64,592.95
Sample Documentation - Field Engineer	44	Hours	195.14	8,521.33	3	25,563.98
Certification Report - Field Engineer	23	Hours	195.14	4,473.09	3	13,419.26
Certification Report - Field Engineer	11	Hours	195.14	2,236.54	3	6,709.63
Total for Sample Management				36,761.94	12	110,285.81

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			116,636.62	15	225,925.22
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 11 (TA-54-G-Pad 11) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 11 P1), pre-closure activities (Worksheet TA-54-G-Pad 11 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 11 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 11 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.12; Technical Area 54, Area G, Pad 11 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 11

The Unit consists of an asphalt pad located in the western portion of Area G. The pad is equipped with curbing on the southern and eastern sides of the pad. Dome 375 is situated upon the pad and is used to store hazardous waste.

Contamination: Dome 375 contains hazardous waste in both liquid and solid form. Waste stored at Dome 375 contains metals, volatile and semi-volatile constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 11 P2	2-A	1,011,598.92
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-54-G-Pad 11 P3	3-A	78,711.80
4	Disposal of Hazardous Material		3-B	727,595.97
5	Decontamination		3-C	-
6	Decontamination Verification Samples		3-D	34,930.93
7	Analyses	TA-54-G-Pad 11 P4	4-A	44,911.94
8	Data Validation		4-B	36,403.39
9	Sample Logbook		4-C	31,808.61
10	Sample Documentation		4-C	15,904.31
11	Subtotal of Closure Costs			1,996,342.07
12	Certification of Closure	TA-54-G-Pad 11 P4	4-C	19,041.48
13	Total Cost of Closure (Add cost of certification report to closure costs)			2,015,383.56

I. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 11 consists of an asphalt pad which underlies Dome 375. Pad 11 measures approximately 76,000 square feet and is comprised of an asphalt material. Dome 375 is comprised of an aluminum framework covered with tension-fitted ultraviolet resistant, fire-retardant coated, polyester fabric. Dome 375 measures 300 feet long by 100 feet wide and covers a surface area of approximately 30,000 square feet.

According to the Part A Permit Application, the permitted design capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed the TA-54-G-Pad 11 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.20 cubic feet) of hazardous waste has been stored in Dome 375. Based on the Closure Plan, Dome 375 will be removed and characterized. It is assumed that all of the wastes, structures and equipment associated with Pad 11 will be removed and disposed. No decontamination will be required.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume.
It was also assumed that the level of Personal Protective Equipment is Level C/D.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the permitted design capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed the TA-54-G-Pad 11 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.20 cubic feet) of hazardous waste has been stored in Dome 375.
	Known Releases?	N/A	
1-B	Length of TA-54-G-Pad 11 - Dome 375 (feet)	300	Identified Structures on the Unit: The Unit is an asphalt pad which provides the base to Dome 375. The area of the asphalt pad is approximately 65,486 square feet. The hazardous materials were stored within Dome 375. Dome 375 has dimensions of 300 feet long, 100 feet wide, and has a surface area of approximately 30,000 square feet. Structures and Related Equipment Required for Demolition and Debris Disposal include the hazardous waste material stored on the Unit; in Dome 375 and the asphalt pad, and all the materials associated with the pad which includes the curbing, ramps, and an additional 6" of soil underlying the pad. The tensioned-fabric membranes on the Dome 375 structure, the aluminum beams, trusses and ancillary equipment supporting the dome will be removed and characterized. Based on the results of characterization, the dome materials may be reused, recycled or disposed of. For the purposes of this cost estimate, it is assumed that all of the dome structures will be removed and disposed of. A total of 160,972 square feet will be disposed of. In addition, the Closure Plan does not specify the volume of solid versus liquid wastes that are stored at the Unit. Therefore, it is assumed the closure plan does not identify any Surfaces, Structures, and Related Equipment that have been removed.
	Width of TA-54-G-Pad 11 - Dome 375 (feet)	100	
	Height of TA-54-G-Pad 11 - Dome 375 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 11 - Dome 375 (square feet)	30,000	
	Volume of TA-54-G-Pad 11 - Dome 375 (based on the decontamination height) (cubic feet)	330,000	
	Length of TA-54-G-Pad 11 - asphalt pad (feet)	478	
	Width of TA-54-G-Pad 11 - asphalt pad (feet)	137	
	Thickness of TA-54-G-Pad 11 - asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 11 - asphalt pad (square feet)	65,486	
	Volume of TA-54-G-Pad 11 -asphalt (cubic feet)	32,743	
	Length of TA-54-G-Pad 11 - soil underlying the asphalt pad (feet)	478	
	Width of TA-54-G-Pad 11 - soil underlying the asphalt pad (feet)	137	
	Thickness of TA-54-G-Pad 11 - soil underlying the asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 11 - soil underlying the asphalt pad (square feet)	65,486	
Volume of TA-54-G-Pad 11 -soil underlying the asphalt pad (cubic feet)	32,743		
Estimated total area of the hazardous waste storage areas (Dome 375, and the pad) (square feet)	160,972		
Total volume of structures/equipment to be removed (cubic feet)	395,486		
Estimated total area of the decontaminated structures(square feet)	0		
1-C	Wastes identified within TA-54-G-Pad 11		Materials identified in the Unit include hazardous wastes, materials and equipment that comprise Dome 375, the asphalt pad, and all materials associated with the pad.
1-D	Maximum volume of waste to be removed from TA-54-G-Pad 11 (gallons)	458,019	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C/D	All equipment and structures at Pad 11 will be removed. As a result, the level of PPE recommended for the closure activities is Level C/D.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	177.40	13,700.61	3	41,101.83
4-Person Labor Crew	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.61	3	6,727.84
Disposal of Liquid Hazardous Waste	4,164	Drums	179.33	746,695.48	---	746,695.48
Disposal of Non-liquid Hazardous Waste	1,134	Cubic yards	49.673	56,322.01	---	56,322.01
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00
Total for Removal of Waste from Unit				35,621.50	15	950,809.82
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	14	Hours	195.14	2,820.96	3	8,462.88
Field Engineer	14	Hours	195.14	2,820.96	3	8,462.88
<i>Structural Assessment</i>						
Field Engineer	19	Hours	195.14	3,761.28	3	11,283.84
Field Engineer	19	Hours	195.14	3,761.28	3	11,283.84
<i>Reporting</i>						
Field Engineer	22	Hours	195.14	4,231.44	3	12,694.32
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	93.56	187.11	3	561.33
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				17,395.92	15	60,789.10
Total for Step 2-A				53,017.42	30	1,011,598.92
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				1,703.08	6	14,476.20
Total for Step 2				54,720.50	36	1,026,075.12

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	37	Hours	177.40	6,646.08	3	19,938.24
	4-Person Labor Crew	37	Hours	70.96	2,658.42	3	7,975.27
		37	Hours	70.96	2,658.42	3	7,975.27
		37	Hours	70.96	2,658.42	3	7,975.27
		37	Hours	70.96	2,658.42	3	7,975.27
		37	Hours	70.96	2,658.42	3	7,975.27
	Number of estimated work days (including 2 days for mobilization and demobilization)	5	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 5 estimated work days	5	People /Night	100.00	2,500.00	3	7,500.00
	Vehicle Rental includes the 5 estimated work days	2	Vehicles/Day	70.00	700.00	3	2,100.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	151.50	757.50	3	2,272.50	
Total for Removal of Equipment					17,279.77	15	78,711.80

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Dome 375, and the asphalt structure of the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for "Total Volume of Structures/equipment to be removed"	14,647.63	Cubic yards	49.673	727,595.97	---	727,595.97
Total for Removal of Equipment					727,595.97	---	727,595.97

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	0	Hours	177.40	-	3	-
	4-Person Labor Crew	0	Hours	70.96	-	3	-
		0	Hours	70.96	-	3	-
		0	Hours	70.96	-	3	-
		0	Hours	70.96	-	3	-
		0	Hours	70.96	-	3	-
	Number of estimated work days (including 2 days for mobilization and demobilization)	0	Days	---	---	3	---
	Airfare	0	People	1,000.00	-	3	-
	Hotel/Lodging - Bare Task includes the 2 estimated work days	0	People /Night	100.00	-	3	-
	Vehicle Rental includes the 2 estimated work days	0	Vehicles/Day	70.00	-	3	-
Per Diem (for Project Engineer and 4-Person Labor Crew)	0	People	73.50	-	3	-	
Total for Decontamination					-	30	-

Assume 200 cubic feet of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples								
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D	Field Engineer - Soil Sample from the Unit	98	25	195.14	4,781.05	3	14,343.15	
	Field Engineer - Soil Sample from the Unit		25	195.14	4,781.05	3	14,343.15	
	Field Engineer - Liquid from the Sump	0	0	195.14	-	3	-	
	Field Engineer - Liquid from the Sump		0	195.14	-	3	-	
	Field Engineer - Equipment Wipes	0	0	195.14	-	3	-	
	Field Engineer - Equipment Wipes		0	195.14	-	3	-	
	Field QA/QC Samples	16	5	195.14	1,040.77	3	3,122.32	
	Field QA/QC Samples		5	195.14	1,040.77	3	3,122.32	
	Total Number of Samples		114	---	---	---	---	---
	Total Number of Types of Samples		2	---	---	---	---	---
	Total for Decontamination Verification					1,040.77	21	34,930.93
	Total for Step 3					1,040.77	51	841,238.71

Assumed 98 soil samples to be collected from the Unit.
Also assumed 16 QA/QC samples will be collected.

4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and liquid samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of wipe samples (11) was included within the cost estimate as there were 11 types of equipment structures provided within the Closure Plan. There was mention of the possibility of collecting liquid samples from the sumps and pipes of the Unit. As a result, it was assumed that one liquid samples would be collected from the sump. Analysis of the assumed liquid and equipment wipe samples were estimated by the suggested analyses provided within Table G-12.3. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included. The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazard

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	98	---	194.15	19,026.64	---	19,026.64
Organics Soil - Unit	98	---	45.30	4,439.81	---	4,439.81
Cyanide Soil - Unit	98	---	76.85	7,531.26	---	7,531.26
Metals Liquid - Unit	0	---	380.21	-	---	-
Organics Liquid - Unit	0	---	424.71	-	---	-
Cyanide Liquid - Unit	0	---	64.72	-	---	-
Metals Equipment Wipes	0	---	194.15	-	---	-
Organics Equipment Wipes	0	---	45.30	-	---	-
Cyanide Equipment Wipes	0	---	76.85	-	---	-
Metals Field QA/QC	16	---	380.21	6,083.34	---	6,083.34
Organics Field QA/QC	16	---	424.71	6,795.36	---	6,795.36
Cyanide Field QA/QC	16	---	64.72	1,035.52	---	1,035.52
Total for Analysis of the Decontamination Verification Samples				44,911.94	---	44,911.94

Assumed 98 soil samples, and a total of 16 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	57	Hours	212.89	12,134.46	36,403.39	
Total for Data Validation			12,134.46	3	36,403.39	

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	54	Hours	195.14	10,602.87	31,808.61	
Sample Documentation - Field Engineer	27	Hours	195.14	5,301.44	15,904.31	
Certification Report - Field Engineer	22	Hours	195.14	4,231.44	12,694.32	
Certification Report - Field Engineer	11	Hours	195.14	2,115.72	6,347.16	
Total for Sample Management			22,251.47	12	66,754.40	

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			79,297.87	15	148,069.73
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Storage Shed 8 (TA-54-8) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-8 P1), pre-closure activities (Worksheet TA-54-8 P2), decontamination of the unit structures (Worksheet TA-54-8 P3), and analysis and sample management procedures (Worksheet TA-54-8 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.13; Technical Area 54, Storage Shed 8 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-8

Contamination: Mixed waste in solid and liquid form; identification of specific hazardous constituents (trichloroethylene and lead).

Origin of Contamination: The Unit served as a waste storage area which consisted of hazardous and mixed waste in both solid and liquid form. Sludge, debris, oils, and chemical wastes with metals and volatile and semi-volatile organic compounds were the types of wastes stored on the Unit.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-8 P2	2-A	1,004,600.09
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-54-8 P3	3-A	---
4	Disposal of Hazardous Material		3-B	---
5	Decontamination		3-C	67,209.73
6	Decontamination Verification Samples		3-D	6,147.06
7	Analyses	TA-54-8 P4	4-A	10,040.87
8	Data Validation		4-B	5,109.25
9	Sample Logbook		4-C	22,429.95
10	Sample Documentation		4-C	2,292.95
11	Subtotal of Closure Costs			1,132,306.11
12	Certification of Closure	TA-54-8 P4	4-C	16,521.99
13	Total Cost of Closure (Add cost of certification report to closure costs)			1,148,828.10

1. GENERAL UNIT DESCRIPTION

TA-54-8 does not contain any structures other than a sump and a concrete barrier. Both solid and liquid non-hazardous waste have been stored on the Unit. The Unit measures approximately 640 square feet.

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous waste is permitted to be stored on the Unit. The hazardous waste stored will be drummed and properly disposed at an off-site facility during the Removal of Hazardous Material. No equipment or structures have been identified for removal from the Unit.

No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is Level D.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed tht TA-54-8 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228,20 cubic feet) of hazardous waste has been stored in the Unit.
	Known Releases?	N/A	
1-B	Length of TA-54-8 (feet)	40	Identified Structures on the Unit: The Unit does not contain any structures with the exception of a concrete barrier and a sump. The entire Unit measures 640 square feet. No structures and related equipment are required for demolition and debris disposal. The entire Unit will require decontamination. The height of the domes are assumed to be 11 feet for decontamination purposes.
	Width of TA-54-8 (feet)	16	
	Height of TA-54-8 (based on decontamination height) (feet)	11	
	Area of TA-54-8 (ft2)	640	
	Volume of TA-54-8 (ft3)	7,040	
	Length of the TA-54-8 concrete barrier (feet)	110	
	Width of the TA-54-8 concrete barrier (feet)	60	
	Height of TA-54-8 concrete barrier (based on decontamination of the Unit structure) (feet)	11	
Area of TA-54-8 concrete barrier (ft2)	6,600		
Volume of TA-54-8 concrete barrier (ft3)	72,600		

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	177.40	13,700.61	3	41,101.83
4-Person Labor Crew	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.61	3	6,727.84
Disposal of Liquid Hazardous Material	4,164	Drums	179.33	746,695.88	---	746,695.88
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	49.673	56,322.03	---	56,322.03
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00
Total for Removal of Waste from Unit				852,282.02		950,810.24
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	13	Hours	195.14	2,447.70	3	7,343.11
Field Engineer	13	Hours	195.14	2,447.70	3	7,343.11
<i>Structural Assessment</i>						
Field Engineer	17	Hours	195.14	3,263.60	3	9,790.81
Field Engineer	17	Hours	195.14	3,263.52	3	9,790.56
<i>Reporting</i>						
Field Engineer	19	Hours	195.14	3,671.55	3	11,014.66
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	77.93	155.87	3	467.61
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				17,929.95		53,789.85
Total for Step 2-A				870,211.97	-	1,004,600.09
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				4,825.40		14,476.20
Total for Step 2				875,037.37	-	1,019,076.30

3. DECONTAMINATION

Removal of Equipment Structures								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-A	Site Project Manager	---	Hours	177.40	---	3	---	
		---	Hours	70.96	---	3	---	
	4-Person Labor Crew		---	Hours	70.96	---	3	---
			---	Hours	70.96	---	3	---
			---	Hours	70.96	---	3	---
	Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---	
	Airfare	---	People	1,000.00	---	3	---	
	Hotel/Lodging - Bare Task includes the 8 estimated work days	---	People /Night	100.00	---	3	---	
	Vehicle Rental includes the 8 estimated work days	---	Vehicles/Day	70.00	---	3	---	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	---	---	3	---	
Total for Removal of Equipment					---	15	---	

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Total Volume of Hazardous Structures and Equipment to be Removed - converted volume (cubic feet to cubic yards)	---	Cubic yards	49.673	---	---	---
Total for Removal of Equipment					---	---	---

Decontamination								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C	Site Project Manager	30	Hours	177.40	5,407.28	3	16,221.84	
		30	Hours	70.96	2,162.90	3	6,488.71	
	4-Person Labor Crew		30	Hours	70.96	2,162.90	3	6,488.71
			30	Hours	70.96	2,162.90	3	6,488.71
			30	Hours	70.96	2,162.90	3	6,488.71
	Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	3	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 4 estimated work days	5	People /Night	100.00	2,000.00	3	6,000.00	
	Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	533.40	3	1,600.20	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	162.19	810.95	3	2,432.85	
Total for Decontamination					22,403.24	30	67,209.73	

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	3	1	195.14	146.36	3	439.08
	Field Engineer - Soil Sample from the Unit		1	195.14	146.36	3	439.08
	Field Engineer - Liquid from the Sump	1	1	195.14	97.57	3	292.72
	Field Engineer - Liquid from the Sump		1	195.14	97.57	3	292.72
	Field Engineer - Equipment Wipes	4	1	195.14	260.19	3	780.58
	Field Engineer - Equipment Wipes		1	195.14	260.19	3	780.58
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16
	Total Number of Samples	16	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					520.39	21	6,147.06

Also assumed 8 QA/QC samples will be collected.

Total for Step 3					22,923.63	51	73,356.79
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	3	---	194.15	582.45	---	582.45
Organics Soil - Unit	3	---	45.30	135.91	---	135.91
Cyanide Soil - Unit	3	---	76.85	230.55	---	230.55
Metals Liquid - Unit	1	---	380.21	380.21	---	380.21
Organics Liquid - Unit	1	---	424.71	424.71	---	424.71
Cyanide Liquid - Unit	1	---	64.72	64.72	---	64.72
Metals Equipment Wipes	4	---	194.15	776.60	---	776.60
Organics Equipment Wipes	4	---	45.30	181.22	---	181.22
Cyanide Equipment Wipes	4	---	76.85	307.40	---	307.40
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				10,040.87	---	10,040.87

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	8	Hours	212.89	1,703.08	5,109.25	
Total for Data Validation				1,703.08	5,109.25	

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	38	Hours	195.14	7,476.65	22,429.95	
Sample Documentation - Field Engineer	4	Hours	195.14	764.32	2,292.95	
Certification Report - Field Engineer	19	Hours	195.14	3,671.55	11,014.66	
Certification Report - Field Engineer	9	Hours	195.14	1,835.78	5,507.33	
Total for Sample Management				13,748.30	41,244.89	

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			25,492.25	15	56,395.01
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Building 33 (TA-54-G-33) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-33 P1), pre-closure activities (Worksheet TA-54-G-33 P2), decontamination of the unit structures (Worksheet TA-54-G-33 P3), and analysis and sample management procedures (Worksheet TA-54-G-33 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.14; Technical Area 54, Area G, Building 33 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-33

The Unit consists of a storage dome, Dome 33, which is attached to the concrete-block building. The Dome and the building (Unit), sit on a concrete pad.

Contamination: Hazardous and toxic metals and organic compounds are identified within the Unit. The High Bay contained primarily radioactive, but also mixed wastes.

Origin of Contamination: Served as a waste storage and preparatory area for the packaging and shipment of transuranic (TRU) waste to the Waste Isolation Pilot Plant (WIPP).

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-33 P2	2-A	1,006,699.83
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-54-G-33 P3	3-A	52,214.73
4	Disposal of Hazardous Material		3-B	222,740.54
5	Decontamination		3-C	44,584.97
6	Decontamination Verification Samples		3-D	19,124.20
7	Analyses	TA-54-G-33 P4	4-A	25,143.38
8	Data Validation		4-B	17,563.04
9	Sample Logbook		4-C	27,922.82
10	Sample Documentation		4-C	8,781.52
11	Subtotal of Closure Costs			1,439,251.21
12	Certification of Closure	TA-54-G-33 P4	4-C	17,441.55
13	Total Cost of Closure (Add cost of certification report to closure costs)			1,456,692.76

1. GENERAL UNIT DESCRIPTION
 TA-54-G-33 consists of a storage dome, Dome 33, and an attached concrete block building. Both structures are situated on an 8" thick concrete pad surrounded by an asphalt apron. The Unit store dTA-54-G-Pad 6 consists of Domes 153 and 326 which are constructed on an asphalt pad measuring approximately 633 feet long by 99 feet wide. Domes 153 and 283 stored both liquid and solid forms of hazardous material. Dome 153 measures 326 feet long by 60 feet wide (19,600 square feet). Dome 283 measures 260 feet long by 60 feet wide (15,600 square feet). An asphalt curb that is approximately 8 inches thick surrounds the interior floor perimeter of both domes.

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous material is permitted to be stored on the Unit. The hazardous material stored on the Unit will be drummed and properly disposed at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, all materials and equipment that comprise the dome and building structures, the asphalt pad, and all materials associated with the pad (the sump, two holding tanks, and a minimum of six inches of soil underlying the pad) will be disposed.

According to Section 5.3.2; Decontamination of Equipment of the Closure Plan the drum venting and associated equipment, electrical infrastructure, equipment and spill kit cabinets, communication equipment, and other equipment will be removed from the Unit. It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is Level 1.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-33 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.20 cubic feet) of hazardous material has been stored within the Unit.
	Known Releases?	N/A	
1-B	Length of TA-54-G-33 - Dome 33 (feet)	157	Identified Structures on the Unit: The Unit is a pad provides the base to Dome 33 and the concrete building. The area of the Unit is assumed to be the dimensions of the Dome and attached concrete building as no area was provided for the entire Unit within the Closure Plan. As a result, it is assumed that the area of the entire Unit is equivalent to the total area of the building and Dome 33 (8,570 square feet as stated within the Closure Plan). It is also assumed that only liquid hazardous wastes were stored on the Unit. Structures and Related Equipment Required for Demolition and Debris Disposal: The structures required for removal include Dome 33 and the concrete building, the asphalt pad, the sump, and
	Width of TA-54-G-33 - Dome 33 (feet)	50	
	Height of TA-54-G-33 - Dome 33 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-33 - Dome 33 (square feet)	7,850	
	Volume of TA-54-G-33 - Dome 33 (based on the decontamination height) (cubic feet)	86,350	
	Length of TA-54-G-33 - Concrete building (feet)	40	
	Width of TA-54-G-33 - Concrete building (feet)	34	
	Height of TA-54-G-33 - Concrete building (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-33 - Concrete building (square feet)	1,360	
	Volume of TA-54-G-33 -Concrete building (cubic feet)	14,960	
	Length of TA-54-G-33 - steel sump (feet)	14	
	Width of TA-54-G-33 - steel sump (feet)	6.5	
	Height of TA-54-G-33 - steel sump (feet) (based on decontamination of the Unit structure)	5	
	Area of TA-54-G-33 - steel sump (square feet)	91	
	Volume of TA-54-G-33 -steel sump (cubic feet)	455	
Length of TA-54-G-33 - concrete pad (feet)	197		

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	177.40	13,700.61	3	41,101.83
4-Person Labor Crew	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
	77	Hours	70.96	5,480.22	3	16,440.67
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.61	3	6,727.84
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	49.673	56,322.03	---	56,322.03
Disposal of Liquid Hazardous Material	4,164	Drums	179.33	746,695.40	---	746,695.40
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	4,826.76	3	14,480.29
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,351.49	3	4,054.48
Total for Removal of Waste from Unit				852,059.79		950,144.53
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	13	Hours	195.14	2,583.93	3	7,751.80
Field Engineer	13	Hours	195.14	2,583.93	3	7,751.80
<i>Structural Assessment</i>						
Field Engineer	18	Hours	195.14	3,445.24	3	10,335.73
Field Engineer	18	Hours	195.14	3,445.16	3	10,335.47
<i>Reporting</i>						
Field Engineer	20	Hours	195.14	3,875.90	3	11,627.70
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	83.64	167.27	3	501.81
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	441.37	3	1,324.11
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	308.96	3	926.88
Total for the Records Review, Inspection, and Reporting				18,851.77		56,555.30
Total for Step 2-A				870,911.56		1,006,699.83
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				4,825.40		14,476.20
Total for Step 2				875,736.96	-	1,021,176.03

3. DECONTAMINATION

Removal of Equipment Structures								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-A	Site Project Manager	22	Hours	177.40	3,841.32	3	11,523.96	
		22	Hours	70.96	1,536.52	3	4,609.57	
	4-Person Labor Crew		22	Hours	70.96	1,536.52	3	4,609.57
			22	Hours	70.96	1,536.52	3	4,609.57
			22	Hours	70.96	1,536.52	3	4,609.57
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00	
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	99.50	497.50	3	1,492.50	
Total for Removal of Equipment					17,404.91		52,214.73	

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Dome 33 and concrete building, and the asphalt pad and associated material.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	4,484.11	Cubic yards	49.673	222,740.54	---	222,740.54
	Total for Removal of Equipment					222,740.54	---

Decontamination								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C	Site Project Manager	18	Hours	177.40	3,139.32	3	9,417.97	
		18	Hours	70.96	1,255.72	3	3,767.17	
	4-Person Labor Crew		18	Hours	70.96	1,255.72	3	3,767.17
			18	Hours	70.96	1,255.72	3	3,767.17
			18	Hours	70.96	1,255.72	3	3,767.17
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	83.89	419.44	3	1,258.31	
Total for Decontamination					14,861.66		44,584.97	

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples								
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D	Field Engineer - Soil Sample from the Unit	36	9	195.14	1,756.30	3	5,268.91	
	Field Engineer - Soil Sample from the Unit		9	195.14	1,756.30	3	5,268.91	
	Field Engineer - Liquid from the Sump	6	3	195.14	585.43	3	1,756.30	
	Field Engineer - Liquid from the Sump		3	195.14	585.43	3	1,756.30	
	Field Engineer - Equipment Wipes	5	2	195.14	325.24	3	975.72	
	Field Engineer - Equipment Wipes		2	195.14	325.24	3	975.72	
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16	
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16	
	Total Number of Samples		55	---	---	---	---	---
	Total Number of Types of Samples		3	---	---	---	---	---
Total for Decontamination Verification					6,374.73		19,124.20	

Assumed 6 liquid sample collected from the holding tanks, sump, and the three drains located throughout the Unit, 5 equipment wipe samples, and 36 soil samples to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					261,381.84		338,664.43
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	36	---	194.15	6,989.38	---	6,989.38
Organics Soil - Unit	36	---	45.30	1,630.95	---	1,630.95
Cyanide Soil - Unit	36	---	76.85	2,766.59	---	2,766.59
Metals Liquid - Unit	6	---	380.21	2,281.25	---	2,281.25
Organics Liquid - Unit	6	---	424.71	2,548.26	---	2,548.26
Cyanide Liquid - Unit	6	---	64.72	388.32	---	388.32
Metals Equipment Wipes	5	---	194.15	970.75	---	970.75
Organics Equipment Wipes	5	---	45.30	226.52	---	226.52
Cyanide Equipment Wipes	5	---	76.85	384.25	---	384.25
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				25,143.38	---	25,143.38

Assumed 6 liquid sample collected from the holding tanks, sump, and the three drains located throughout the Unit, 5 equipment wipe samples, and 36 soil samples to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	28	Hours	212.89	5,854.35	3	17,563.04
Total for Data Validation				5,854.35	3	17,563.04

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	48	Hours	195.14	9,307.61	3	27,922.82
Sample Documentation - Field Engineer	15	Hours	195.14	2,927.17	3	8,781.59
Certification Report - Field Engineer	20	Hours	195.14	3,875.90	3	11,627.70
Certification Report - Field Engineer	10	Hours	195.14	1,937.95	3	5,813.85
Total for Sample Management				18,048.63	12	54,145.88

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				49,046.35	15	96,852.30
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area L (TA-54-L) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-L P1), pre-closure activities (Worksheet TA-54-L P2), decontamination of the unit structures (Worksheet TA-54-L P3), and analysis and sample management procedures (Worksheet TA-54-L P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.15; Technical Area 54, Area L Closure Plan (Closure Plan).

Unit Name: LANL TA-54-Area L

The permitted unit consists of an asphalt pad covered area within the fence line at Area L which covers approximately 110,500 square feet (ft²). The permitted unit has several structures associated with it that store hazardous and mixed waste in solid and liquid form: one dome (Dome 215); three portable waste storage buildings (Storage Sheds 68, 69, and 70); one storage shed (Shed 31); one building (Building 39 and containment pad); and five covered storage pads (Canopy 216, Pad 32, Pad 35, Pad 36, and Pad 58).

Contamination: The Unit has stored spent solvents; paints and related wastes; photographic and photocopier wastes; corrosive liquids; solid metals and metallic compounds; off-specification commercial chemical products; gas cylinders; solidified inorganic solids; leached process residues; chemical salts and cement paste; ash; dewatered aqueous sludge; chemical treatment sludge; soils; combustible debris (e.g., plastics, rubber, laboratory trash, building debris); and heterogeneous debris.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-L P2	2-A	1,560,662.80
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-54-L P3	3-A	99,553.77
4	Disposal of Hazardous Material		3-B	479,600.23
5	Decontamination		3-C	44,110.45
6	Decontamination Verification Samples		3-D	66,934.69
7	Analyses	TA-54-L P4	4-A	79,622.90
8	Data Validation		4-B	61,949.62
9	Sample Logbook		4-C	74,119.53
10	Sample Documentation		4-C	31,906.19
11	Subtotal of Closure Costs			2,512,936.38
12	Certification of Closure	TA-54-L P4	4-C	41,560.60
13	Total Cost of Closure (Add cost of certification report to closure costs)			2,554,496.97

I. GENERAL UNIT DESCRIPTION

TA-54 Area L consists of an asphalt pad covered area measuring approximately 110,500 square feet (ft²). The permitted unit has several structures associated with it that store hazardous and mixed waste in solid and liquid form: one dome (Dome 215); three portable waste storage buildings (Storage Sheds 68, 69, and 70); one storage shed (Shed 31); one building (Building 39 and containment pad); and five covered storage pads (Canopy 216, Pad 32, Pad 35, Pad 36, and Pad 58). 1) Storage Dome 215 is 60 ft wide, 266 ft long and 26 ft high with an area of approximately 15,960 ft². The dome is an arch frame-supported, stressed-membrane structure of modular construction with an aluminum framework and an ultraviolet, stabilized, plasticized polyvinyl chloride fabric covering. 2) Canopy 216 is 33 ft wide by 120 ft long with an area of approximately 3,960 ft². The canopy consists of a rigid aluminum frame anchored to a sloped asphalt pad which supports a tensioned membrane. The three portable waste storage buildings (Storage Sheds 68, 69, and 70) are steel prefabricated sheds measuring 23 ft long, nine ft wide and 8.5 ft high each with an area of approximately 128 ft². The sheds are elevated by design to prevent run-on and are constructed with liquid-tight sumps, covered by metal grates, to ensure containment of any potential leaks or spills and to prevent runoff. Storage.

According to the Part A Permit Application, 54,605 cubic feet of hazardous waste is permitted to be stored in the identified structures. The hazardous wastes stored at the unit will be drummed and proper.

According to Section 5.3.2; Decontamination of Equipment of the Closure Plan, the storage sheds (68, 69, 70, and 31); the PermaCon®; the equipment cabinets; the portable air monitors; all the electron.

It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the maximum permitted volume. It was also assumed that the level of Personal Protective Equi

1-A	Permitted Unit Volume Capacity (cubic feet)	54,605.8	According to the Part A Permit Application, the permitted capacity of the entire Technical Area 54, Area L Unit is 408,480 gallons (54,605.83 cubic feet).
	Known Releases?	N/A	
	Length of TA-54 Area L - Dome 215 (feet)	266.0	
	Width of TA-54 Area L - Dome 215 (feet)	60.0	
	Height of TA-54 Area L - Dome 215 (feet)	26.0	
	Area of TA-54 Area L - Dome 215 (square feet)	15,960.0	
	Volume of TA-54 Area L - Dome 215 (cubic feet)	414,960.0	
	Length of TA-54 Area L - Canopy 216 (feet)	120.0	
	Width of TA-54 Area L - Canopy 216 (feet)	33.0	
	Height of TA-54 Area L - Canopy 216 (feet) (assumed to be 11 feet)	11.0	
	Area of TA-54 Area L - Canopy 216 (square feet)	3,960.0	
	Volume of TA-54 Area L - Canopy 216 (based on the decontamination height) (cubic feet)	43,560.0	
	Length of TA-54 Area L - Sheds 68,69,70 (feet)	23.0	
	Width of TA-54 Area L - Sheds 68,69,70 (feet)	9.0	
	Height of TA-54 Area L - Sheds 68, 69, 70 (feet)	8.5	
	Total Area of TA-54 Area L - Sheds 68, 69, and 70 (square feet)	621.0	
	Total Volume of TA-54 Area L - Sheds 68, 69 and 70 (cubic feet)	5,278.5	
	Length of TA-54 Area L - Shed 31 (feet)	14.0	
	Width of TA-54 Area L - Shed 31 (feet)	13.0	
	Height of TA-54 Area L - Shed 31 (feet)	8.0	
	Area of TA-54 Area L - Shed 31 (square feet)	182.0	
	Volume of TA-54 Area L - Shed 31 (cubic feet)	1,456.0	
	Length of TA-54 Area L - asphalt pad (feet)	-	
	Width of TA-54 Area L - asphalt pad (feet)	-	
	Thickness of TA-54 Area L - asphalt pad (feet)	0.5	
	Area of TA-54 Area L - asphalt pad (square feet)	110,500.0	
	Volume of TA-54 Area L - asphalt (cubic feet)	55,250.0	
	Length of TA-54 Area L - soil underlying the asphalt pad (feet)	-	

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	424	Hours	177.40	75,304.53	3	225,913.59
4-Person Labor Crew	424	Hours	70.96	30,121.69	3	90,365.07
	424	Hours	70.96	30,121.69	3	90,365.07
	424	Hours	70.96	30,121.69	3	90,365.07
	424	Hours	70.96	30,121.69	3	90,365.07
Number of estimated work days (including 2 days for mobilization and demobilization)	53	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	2,572.50	12,862.50	3	38,587.50
Disposal of Liquid Hazardous Waste	3,713.5	Drums	179.33	665,933.80	---	665,933.80
Disposal of Non-liquid Hazardous Waste	1,011	Cubic yards	49.673	50,230.29	---	50,230.29
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 53 estimated work days	5	People /Night	100.00	26,500.00	3	79,500.00
Vehicle Rental includes the 53 estimated work days	2	Vehicles/Day	70.00	7,420.00	3	22,260.00
Total for Removal of Waste from Unit				963,737.88		1,458,885.46
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	32	Hours	195.14	6,157.13	3	18,471.38
Field Engineer	32	Hours	195.14	6,157.13	3	18,471.38
<i>Structural Assessment</i>						
Field Engineer	42	Hours	195.14	8,209.50	3	24,628.50
Field Engineer	42	Hours		-		-
<i>Reporting</i>						
Field Engineer	47	Hours	195.14	9,235.69	3	27,707.06
Number of estimated work days (including 2 days for mobilization and demobilization)	5	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	233.17	466.34	3	1,399.03
Hotel/Lodging - Bare Task includes the 5 estimated work days	2	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 5 estimated work days	2	Vehicles/Day	70.00	700.00	3	2,100.00
Total for the Records Review, Inspection, and Reporting				33,925.78		101,777.34
Total for Step 2-A				997,663.66	-	1,560,662.80
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				4,825.40		14,476.20
Total for Step 2				1,002,489.06	-	1,575,139.00

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	51	Hours	177.40	9,004.74	3	27,014.22
	4-Person Labor Crew	51	Hours	70.96	3,601.88	3	10,805.65
		51	Hours	70.96	3,601.88	3	10,805.65
		51	Hours	70.96	3,601.88	3	10,805.65
		51	Hours	70.96	3,601.88	3	10,805.65
		51	Hours	70.96	3,601.88	3	10,805.65
	Number of estimated work days (including 2 days for mobilization and demobilization)	6	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 6 estimated work days	5	People /Night	100.00	3,000.00	3	9,000.00
	Vehicle Rental includes the 6 estimated work days	2	Vehicles/Day	70.00	840.00	3	2,520.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	186.46	932.32	3	2,796.97	
Total for Removal of Equipment					33,184.59		99,553.77

Assumed 1500 square feet of equipment and material removed and disposed within one hour.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	9,655.09	Cubic yards	49.673	479,600.23	---	479,600.23
Total for Removal of Equipment					479,600.23		479,600.23

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	18	Hours	177.40	3,123.38	3	9,370.13
	4-Person Labor Crew	18	Hours	70.96	1,249.35	3	3,748.04
		16	Hours	70.96	1,135.38	3	3,406.15
		18	Hours	70.96	1,249.35	3	3,748.04
		18	Hours	70.96	1,249.35	3	3,748.04
		18	Hours	70.96	1,249.35	3	3,748.04
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	83.34	416.68	3	1,250.05	
Total for Decontamination					14,703.48		44,110.45

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples								
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D	Field Engineer - Soil Sample from the Unit	124	31	195.14	6,049.49	3	18,148.47	
	Field Engineer - Soil Sample from the Unit		31	195.14	6,049.49	3	18,148.47	
	Field Engineer - Liquid from the Sump	17	9	195.14	1,658.73	3	4,976.19	
	Field Engineer - Liquid from the Sump		9	195.14	1,658.73	3	4,976.19	
	Field Engineer - Equipment Wipes	37	12	195.14	2,406.79	3	7,220.36	
	Field Engineer - Equipment Wipes		12	195.14	2,406.79	3	7,220.36	
	Field Engineer - Field QA/QC Samples	16	5	195.14	1,040.77	3	3,122.32	
	Field Engineer - Field QA/QC Samples		5	195.14	1,040.77	3	3,122.32	
	Total Number of Samples		194	---	---	---	---	---
	Total Number of Types of Samples		4	---	---	---	---	---
Total for Decontamination Verification					22,311.56		66,934.69	

Assumed 16 QA/QC samples will be collected.

Total for Step 3					549,799.86	0	690,199.13
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4. Analysis and Sample Management Procedures

Analysis							Assumed 37 equipment wipes, 124 soil samples, 17 liquid samples, and a total of 16 field QA/QC samples.
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Metals Soil - Unit	124	---	194.15	24,074.53	---	24,074.53	
Organics Soil - Unit	124	---	45.30	5,617.72	---	5,617.72	
Cyanide Soil - Unit	124	---	76.85	9,529.35	---	9,529.35	
Metals Liquid - Unit	17	---	380.21	6,463.55	---	6,463.55	
Organics Liquid - Unit	17	---	424.71	7,220.07	---	7,220.07	
Cyanide Liquid - Unit	17	---	64.72	1,100.25	---	1,100.25	
Metals Equipment Wipes	37	---	194.15	7,183.53	---	7,183.53	
Organics Equipment Wipes	37	---	45.30	1,676.26	---	1,676.26	
Cyanide Equipment Wipes	37	---	76.85	2,843.44	---	2,843.44	
Metals Field QA/QC	16	---	380.21	6,083.34	---	6,083.34	
Organics Field QA/QC	16	---	424.71	6,795.36	---	6,795.36	
Cyanide Field QA/QC	16	---	64.72	1,035.52	---	1,035.52	
Total for Analysis of the Decontamination Verification Samples				79,622.90	---	79,622.90	

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	97	Hours	212.89	20,649.87	3	61,949.62
Total for Data Validation				20,649.87	3	61,949.62

Sample Management Procedures							Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)		
Logbook Documentation - Field Engineer	127	Hours	195.14	24,706.51	3	74,119.53	
Sample Documentation - Field Engineer	55	Hours	195.14	10,635.40	3	31,906.19	
Certification Report - Field Engineer	47	Hours	195.14	9,235.69	3	27,707.06	
Certification Report - Field Engineer	24	Hours	195.14	4,617.84	3	13,853.53	
Total for Sample Management				49,195.44	12	147,586.31	

Total for Step 4			149,468.21	15	289,158.84
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54 West, Building 38 (TA-54W-38) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54W-38 P1), pre-closure activities (Worksheet TA-54W-38 P2), decontamination of the unit structures (Worksheet TA-54W-38 P3), and analysis and sample management procedures (Worksheet TA-54W-38 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.16; Technical Area 54 West, Building 38 Closure Plan (Closure Plan).

Unit Name: LANL TA-54W-38

There are two individual components of the Unit - High Bay (Room 101) and the Low Bay (Room 102) areas.

Contamination: Hazardous and toxic metals and organic compounds are identified within the Unit. The High Bay contained primarily radioactive, but also mixed wastes.

Origin of Contamination: The Unit supported hazardous waste operations when testing of radioassay equipment occurred; specifically, the High Bay served as transuranic (TRU) waste payload-container assembly area as well as a shipper-container loader area. Its function was to transport the waste packages to the Waste Isolation Pilot Plant (WIPP). The Low Bay served as a staging area for hazardous solid and liquid waste while nondestructive radioassay waste characterization activities were performed.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54W-38 P2	2-A	115,234.30
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-54W-38 P3	3-A	---
4	Disposal of Hazardous Material		3-B	---
5	Decontamination		3-C	57,628.81
6	Decontamination Verification Samples		3-D	12,098.98
7	Analyses	TA-54W-38 P4	4-A	14,232.09
8	Data Validation		4-B	10,218.49
9	Sample Logbook		4-C	25,358.82
10	Sample Documentation		4-C	5,268.91
11	Subtotal of Closure Costs			254,516.61
12	Certification of Closure	TA-54W-38 P4	4-C	16,266.92
13	Total Cost of Closure (Add cost of certification report to closure costs)			270,783.53

1. GENERAL UNIT DESCRIPTION

TA-54W-38 contains Rooms 101 and 102 (High and Low Bay respectively). The rooms stored liquid and solid hazardous wastes. The Unit was constructed in 1989 and operations for hazardous storage began in 1989. The Unit measures approximately 3,294 square feet

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous material permitted on the TA-55-4-B40 unit is assumed to be 29,750 gallons. The hazardous waste stored on the Unit is classified as liquid and non-liquid. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, four metal cabinets which were used for hazardous storage will be removed prior to decontamination.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is L

1-A	Permitted Unit Volume Capacity (cubic feet)	779.35	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 54-West Unit is 11,660 gallons (1558.71 cubic feet) for 2 container storage units. It is assumed that TA-54W-38 is one of the 2 units with a permitted design capacity of 5,830 gallons (779.35 cubic feet) of hazardous material may be stored at the Unit.
	Known Releases?	Yes	
1-B	Length of TA-54W-38 High Bay (ft)	80	The High Bay area is equipped with a five-ton capacity bridge crane and a truckaxle weighing scale. The floor is comprised of concrete and is epoxy-covered. A grated drain runs down the center of the High Bay to collect surface water. The floor of the Low Bay area is comprised of concrete and is epoxy-covered. The square footage provided for the entire Unit is calculated to include the access-way as well as the High and Low Bay Areas. No equipment will be required to be removed from the Unit.
	Width of TA-54W-38 High Bay (ft)	40	
	Height of TA-54W-38 High Bay (based on the height of the decontamination) (ft)	11	
	Area of TA-54W-38 High Bay (ft2)	3,200	
	Volume of TA-54W-38 High Bay (cubic feet)	35,200	
	Length of TA-54W-38 Low Bay (ft)	40	
	Width of TA-54W-38 Low Bay (ft)	34	
	Height of TA-54W-38 Low Bay (based on the height of the decontamination) (ft)	11	
	Area of TA-54W-38 Low Bay (ft2)	1,360	
	Volume of TA-54W-38 Low Bay (cubic feet)	14,960	
	Length of TA-54W-38 Access-way (ft)	7.87	
	Width of TA-54W-38 Access-way (ft)	12.47	
	Height of TA-54W-38 Access-way (based on the height of the decontamination) (ft)	11	
	Area of TA-54W-38 Access-way (ft2)	98.12	
Volume of TA-54W-38 Access-way (cubic feet)	1,079.27		
	Area of TA-54W-38 (ft2)	4,658.12	
	Volume of TA-54W-38 (based on the height of decontamination) (cubic feet)	51,239.27	
1-C	Materials identified within TA-54W-38		Four equipment structures were identified in Section 5.3.2; Decontamination of Structures and Related Equipment. The four major equipment structures were identified as the man lift, lid stands, drum wrapper, a portion of the bridge crane, and the floor scales. However, there was no specific mention of the actual number of lid stands, the area of the bridge crane that comes into contact with waste containers, neither the specific number of floor scales. The floor surface of the entire Unit is concrete with an epoxy-coat.
1-D	Maximum volume of waste to be removed from TA-54W-38 (gallons)	5,830.00	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	D	There was no specific information providing evidence for a more conservative approach to the PPE. As a result, it is assumed that Level D will be used for the extent of the decontamination activities.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Material						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	17	Hours	177.40	2,976.73	3	8,930.18
4-Person Labor Crew	17	Hours	70.96	1,190.69	3	3,572.06
	17	Hours	70.96	1,190.69	3	3,572.06
	17	Hours	70.96	1,190.69	3	3,572.06
	17	Hours	70.96	1,190.69	3	3,572.06
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50
Disposal of Liquid Hazardous Material	106	Drums	179.33	19,008.98	---	19,008.98
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				33,395.95		62,169.89
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	195.14	2,409.91	3	7,229.74
Field Engineer	12	Hours	195.14	2,409.91	3	7,229.74
<i>Structural Assessment</i>						
Field Engineer	16	Hours	195.14	3,213.22	3	9,639.66
Field Engineer	16	Hours	195.14	3,213.22	3	9,639.66
<i>Reporting</i>						
Field Engineer	19	Hours	195.14	3,614.87	3	10,844.61
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.50	147.00	3	441.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				17,688.14		53,064.41
Total for Step 2-A				51,084.09	-	115,234.30
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				4,825.40	-	14,476.20
Total for Step 2				55,909.49	-	129,710.50

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	---	Hours	177.40	---	3	---
	4-Person Labor Crew	---	Hours	70.96	---	3	---
		---	Hours	70.96	---	3	---
		---	Hours	70.96	---	3	---
		---	Hours	70.96	---	3	---
	Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---
	Airfare	---	People	1,000.00	---	3	---
	Hotel/Lodging - Bare Task includes the 4 estimated work days	---	People /Night	100.00	---	3	---
	Vehicle Rental includes the 4 estimated work days	---	Vehicles/Day	70.00	---	3	---
	Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	125.50	---	3	---
Total for Removal of Equipment					---	---	---

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of the four metal cabinets.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Structures and Equipment to be removed from the unit - converted volume (cubic feet to cubic yards)	---	Cubic yards	49.67	---	---	---
Total for Removal of Equipment					---	---	---

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	25	Hours	177.40	4,491.21	3	13,473.62
	4-Person Labor Crew	25	Hours	70.96	1,796.47	3	5,389.42
		25	Hours	70.96	1,796.47	3	5,389.42
		25	Hours	70.96	1,796.47	3	5,389.42
		25	Hours	70.96	1,796.47	3	5,389.42
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	122.50	612.50	3	1,837.50
Total for Decontamination					19,209.60	---	57,628.81

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Drain	1	---	---	---	---	---
	Field Engineer - Equipment Wipes	23	8	195.14	1,496.11	3	4,488.33
	Field Engineer - Equipment Wipes		8	195.14	1,496.11	3	4,488.33
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16
	Total Number of Samples	32	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
	Total for Decontamination Verification					4,032.99	---

Assumed 23 equipment wipe samples, 1 liquid sample, and 8 QA/QC samples will be collected.

Total for Step 3					23,242.60	---	69,727.80
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4. Analysis and Sample Management Procedures

Analysis							Assumed 23 equipment wipes and 8 field QA/QC samples.
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Metals Soil - Unit	---	---	194.15	---	---	---	
Organics Soil - Unit	---	---	45.30	---	---	---	
Cyanide Soil - Unit	---	---	76.85	---	---	---	
Metals Liquid - Unit	1	---	380.21	---	---	---	
Organics Liquid - Unit	1	---	424.71	---	---	---	
Cyanide Liquid - Unit	1	---	64.72	---	---	---	
Metals Equipment Wipes	23	---	194.15	4,465.44	---	4,465.44	
Organics Equipment Wipes	23	---	45.30	1,042.00	---	1,042.00	
Cyanide Equipment Wipes	23	---	76.85	1,767.54	---	1,767.54	
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67	
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68	
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76	
Total for Analysis of the Decontamination Verification Samples				14,232.09	---	14,232.09	

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	16	Hours	212.89	3,406.16	3	10,218.49
Total for Data Validation				3,406.16	3	10,218.49

Sample Management Procedures							Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	43	Hours	195.14	8,452.94	3	25,358.82	
Sample Documentation - Field Engineer	9	Hours	195.14	1,756.30	3	5,268.91	
Certification Report - Field Engineer	19	Hours	195.14	3,614.87	3	10,844.61	
Certification Report - Field Engineer	9	Hours	195.14	1,807.44	3	5,422.31	
Total for Sample Management				15,631.55	12	46,894.65	

Total for Step 4				33,269.80	15	71,345.23
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Building 38 West Outdoor Storage Unit (TA-54-38W OSU) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-38W OSU P1), pre-closure activities (Worksheet TA-54-38W OSU P2), decontamination of the unit structures (Worksheet TA-54-38W OSU P3), and analysis and sample management procedures (Worksheet TA-54-38W OSU P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.17; Technical Area 54, Building 38 West Outdoor Storage Unit Closure Plan (Closure Plan).

Unit Name: LANL TA-54-38 West

The Unit is an asphalt pad and a concrete loading dock which are used for the storage of hazardous wastes. An awning covers the loading dock. There are two small sheds (1024 and 1025) located at the Unit, however these are used only for storing equipment.

Contamination: Wastes stored at the unit include hazardous and mixed waste in both solid and liquid form. The stored wastes include corrosive liquids, sludge, debris, and chemical wastes with metals, volatile and semi-volatile constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-38 West OSU	2-A	184,971.50
2	Sampling and Analysis Plan	P2	2-B	14,476.20
3	Removal of Equipment and Structures	TA-54-38 West OSU	3-A	47,676.26
4	Disposal of Hazardous Material		3-B	103,186.88
5	Decontamination		3-C	50,799.56
6	Decontamination Verification Samples		3-D	20,295.07
7	Analyses	TA-54-38 West OSU	4-A	20,088.20
8	Data Validation		4-B	20,756.32
9	Sample Logbook		4-C	29,528.38
10	Sample Documentation		4-C	9,366.95
11	Subtotal of Closure Costs			501,145.32
12	Certification of Closure	TA-54-38 West OSU P4	4-C	17,648.71
13	Total Cost of Closure (Add cost of certification report to closure costs)			518,794.03

1. GENERAL UNIT DESCRIPTION

TA-54-38 West Outdoor Storage Unit (OSU) consists of an asphalt pad and a loading dock which is covered by a metal awning. The loading dock measures approximately 38 feet 10 inches long by 16 feet wide and is constructed of six-inch cast-in place concrete. Two small storage sheds are situated at the unit, however, per Section 2.0 of the Closure Plan, these sheds are not used for the storage of hazardous wastes. The entire permitted unit covers approximately 37,900 square feet.

According to the Part A Permit Application, 11,600 gallons of hazardous waste is permitted to be stored at TA-54-38 West OSU and will be disposed of at an off-site facility during the Removal of Waste. As stated in Section 5.3.1; Removal of Structures, and Related Equipment of the Closure Plan, no equipment has been identified to be removed from the Unit. The asphalt pad, all materials associated with the pad (asphalt berm and a minimum of six inches of base course and soil underlying the pad) will be disposed and considered as hazardous waste.

According to Section 5.3.2 of the Closure Plan the loading dock and metal awning will be left in place and will require decontamination and decontamination verification. No decontamination wash water

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the maximum permitted capacity.

It was also assumed that the level of Personal Protective Equipment is Level C since decontamination activities will include steam cleaning and pressure washing.

1-A	Permitted Unit Volume Capacity (cubic feet)	1,558.71	According to the Part A Permit Application, the permitted capacity of Technical Area 54-38 West OSU is 11,660 gallons (1,558.71 cubic feet) in 2 container storage units. It is assumed that this permitted capacity applies to wastes stored on the pad and wastes stored at the loading dock.
	Known Releases?	N/A	
1-B	Length of TA-54-38 West OSU asphalt pad (feet)	-	Identified Structures on the Unit: The Unit is an asphalt pad and loading dock which are used for the storage of hazardous wastes. Although there are two small sheds (1024 and 1025) located at the Unit, the closure plan indicates that these sheds are not used for the storage of hazardous waste and will not be removed or decontaminated as part of closure activities. Therefore, the sheds are not included in the cost estimate. Wastes, Structures and Related Equipment Requiring Disposal include the hazardous waste stored on the asphalt pad and all the materials associated with the pad which includes minimum of 6 inches of the base course and soil underlying the pad. The total square footage of the permitted unit is 37,900 square feet. The loading dock is assumed to cover 610 square feet based on the measurements provided in the Closure Plan. Therefore the total area of the asphalt pad to be disposed of is assumed to be 37,290 square feet. Surfaces, Structures, and Related Equipment recommended to be decontaminated included the loading dock and the awning that covers the dock. It is assumed that the awning covers the entire loa
	Width of TA-54 West OSU asphalt pad (feet)	-	
	Height of TA-54 West OSU transportainer (feet) (based on decontamination of the transportainers)	1	
	Area of TA-54-38 West OSU asphalt pad (square feet)	37,290	
	Volume of TA-54-38 West OSU (cubic feet)	37,290	
	Length of TA-54-38 West OSU - loading dock (feet)	38	
	Width of TA-54-38 West OSU - loading dock (feet)	16	
	Thickness of TA-54-38 West OSU - loading dock (feet)	0.25	
	Area of TA-54-38 West OSU - loading dock (square feet)	610	
	Volume of TA-54-38 West OSU -loading dock (cubic feet)	152	
	Length of TA-54 West OSU - soil underlying the asphalt pad (feet)	-	
	Width of TA-54 West OSU - soil underlying the asphalt pad (feet)	-	
	Thickness of TA-54 West OSU - soil underlying the asphalt pad (feet)	0.50	
	Area of TA-54 West OSU - soil underlying the asphalt pad (square feet)	37,290	
Volume of TA-54 West OSU -soil underlying the asphalt pad (cubic feet)	18,645		
Estimated total area of the hazardous waste storage area (square feet)	37,900		
Total volume of the hazardous material storage areas (cubic feet)	56,087		
Estimated total area of the decontaminated structures (square feet)	1219.20		
1-C	Materials identified within TA-54 West OSU Outdoor Container Storage Unit		Materials identified at the Unit include hazardous wastes, loading dock, awning over the loading dock, the asphalt pad, and all materials associated with the pad.
1-D	Maximum volume of waste to be removed from TA-54 West OSU (gallons)	11,660.00	Assume the minimum volume of waste to be removed is equivalent to the maximum permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)		Based on the discussion provided within the closure plan (Section 5.3.2 Decontamination of Structures) the decontamination procedure, pressure and steam washing methods were proposed for the . As a result, the level of PPE recommended for the closure activities is Level C.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Material						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	54	Hours	177.40	9,562.09	3	28,686.26
4-Person Labor Crew	54	Hours	70.96	3,824.82	3	11,474.46
	54	Hours	70.96	3,824.82	3	11,474.46
	54	Hours	70.96	3,824.82	3	11,474.46
	54	Hours	70.96	3,824.82	3	11,474.46
Number of estimated work days (including 2 days for mobilization and demobilization)	7	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew) includes estimated 7 work days	5	People	305.64	1,528.19	3	4,584.56
Disposal of Liquid Hazardous Material	106	Drums	179.33	19,008.98	---	19,008.98
Disposal of Non-liquid Hazardous Material	29	Cubic yards	49.673	1,433.81	---	1,433.81
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 7 estimated work days	5	People /Night	100.00	3,500.00	3	10,500.00
Vehicle Rental includes the 7 estimated work days	2	Vehicles/Day	70.00	980.00	3	2,940.00
Total for Removal of Waste from Unit				24,861.36	15	128,051.44
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	13	Hours	195.14	2,614.62	3	7,843.87
Field Engineer	13	Hours	195.14	2,614.62	3	7,843.87
<i>Structural Assessment</i>						
Field Engineer	18	Hours	195.14	3,486.17	3	10,458.50
Field Engineer	18	Hours	195.14	3,486.17	3	10,458.50
<i>Reporting</i>						
Field Engineer	20	Hours	195.14	3,921.94	3	11,765.81
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers) includes estimated 3 work days	2	People	84.92	169.84	3	509.52
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				16,123.52	15	56,920.07
Total for Step 2-A				40,984.88	30	184,971.50
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				1,703.08	6	14,476.20
Total for Step 2				42,687.96	36	199,447.70

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	18	Hours	177.40	3,114.27	3	9,342.81
	4-Person Labor Crew	18	Hours	70.96	1,245.70	3	3,737.11
		18	Hours	70.96	1,245.70	3	3,737.11
		18	Hours	70.96	1,245.70	3	3,737.11
		18	Hours	70.96	1,245.70	3	3,737.11
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
	Per Diem (for Project Engineer and 4-Person Labor Crew) includes the 2 estimated work days	5	People	151.50	1,515.00	3	4,545.00
Total for Removal of Equipment					8,097.09	15	47,676.26

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the asphalt structure of the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	2,077.31	Cubic yards	49.673	103,186.88	---	103,186.88
Total for Removal of Equipment					103,186.88	---	103,186.88

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	18	Hours	177.40	3,271.05	3	9,813.15
	4-Person Labor Crew	18	Hours	70.96	1,308.41	3	3,925.24
		18	Hours	70.96	1,308.41	3	3,925.24
		18	Hours	70.96	1,308.41	3	3,925.24
		18	Hours	70.96	1,308.41	3	3,925.24
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	186.44	2,148.48	3	6,445.44	
Total for Decontamination					16,933.19	30	50,799.56

Assume 200 square feet of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	52	13	195.14	2,536.88	3	7,610.65
	Field Engineer - Soil Sample from the Unit		13	195.14	2,536.88	3	7,610.65
	Field Engineer - Sediment Sample of the Berm	0	0	195.14	-	3	-
	Field Engineer - Sediment Sample of the Berm		0	195.14	-	3	-
	Field Engineer - Equipment Wipes	5	2	195.14	325.24	3	975.72
	Field Engineer - Equipment Wipes		2	195.14	325.24	3	975.72
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16
	Total Number of Samples	65	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					520.39	21	20,295.07

Assumed 5 equipment wipe samples and 52 soil samples to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					17,453.57	51	221,957.76
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and sediment samples collected from the Unit. As discussed in Sections 2 and 3, the number of wipe samples (5) and soil samples (52) was included within the cost estimate. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazardous nature of the debris and

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	52	---	194.15	10,095.77	---	10,095.77
Organics Soil - Unit	52	---	45.30	2,355.82	---	2,355.82
Cyanide Soil - Unit	0	---	76.85	-	---	-
Metals Liquid - Unit	0	---	380.21	-	---	-
Organics Liquid - Unit	0	---	424.71	-	---	-
Cyanide Liquid - Unit	0	---	64.72	-	---	-
Metals Equipment Wipes	5	---	194.15	970.75	---	970.75
Organics Equipment Wipes	5	---	45.30	226.52	---	226.52
Cyanide Equipment Wipes	0	---	76.85	-	---	-
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	0	---	64.72	-	---	-
Total for Analysis of the Decontamination Verification Samples				20,088.20	---	20,088.20

Assumed 5 equipment wipes and 52 soil samples and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	33	Hours	212.89	6,918.77	3	20,756.32
Total for Data Validation				6,918.77	3	20,756.32

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	50	Hours	195.14	9,842.79	3	29,528.38
Sample Documentation - Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Certification Report - Field Engineer	20	Hours	195.14	3,921.94	3	11,765.81
Certification Report - Field Engineer	10	Hours	195.14	1,960.97	3	5,882.90
Total for Sample Management				18,848.02	12	56,544.05

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				45,854.99	15	97,388.57
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55 Building 4 Room B40 (TA-55-4-B40) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4-B40 P1), pre-closure activities (Worksheet TA-55-4-B40 P2), decontamination of the unit structures (Worksheet TA-55-4-B40 P3), and analysis and sample management procedures (Worksheet TA-55-4-B40 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.18; Technical Area 55 Building 4 Room B40 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-4-B40

Contamination: Hazardous and mixed waste in both solid and liquid form. Contains sludge, debris, oils, and chemical wastes with metals and volatile and semi-volatile organic constituents.

Origin of Contamination: The entire floor of the Unit served as a storage for hazardous wastes.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4-B40 P2	2-A	151,251.75
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-55-4-B40 P3	3-A	42,095.07
4	Disposal of Hazardous Material		3-B	121.20
5	Decontamination		3-C	53,723.90
6	Decontamination Verification Samples		3-D	10,537.82
7	Analyses	TA-55-4-B40 P4	4-A	12,966.87
8	Data Validation		4-B	8,621.85
9	Sample Logbook		4-C	22,200.46
10	Sample Documentation		4-C	4,488.33
11	Subtotal of Closure Costs			320,483.47
12	Certification of Closure	TA-55-4-B40 P4	4-C	16,132.16
13	Total Cost of Closure (Add cost of certification report to closure costs)			336,615.62

1. GENERAL UNIT DESCRIPTION

TA-55-4-B40 does not contain any structures. The Unit does contain a vestibule and is in an L-shaped formation. The Unit measures approximately 3,294 square feet

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous material permitted on the TA-55-4-B40 unit is assumed to be 29,750 gallons. The hazardous waste stored on the Unit is classified as liquid and non-liquid. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, four metal cabinets which were used for hazardous storage will be removed prior to decontamination.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is L

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed tht TA-55-4-B40 is one of the 6 units with permitted design capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous material has been stored on the Unit.
	Known Releases?	Yes	
1-B	Length of TA-55-4-B40 (feet)	61	Identified Structures on the Unit: There are no identified structures within the Unit. Removal of the four metal cabinets, which assumed to be 2% of the Unit's area (65.9 square feet), will be conducted. Structures and Related Equipment Required for Demolition and Debris Disposal: There are no identified structures/equipment structures requiring demolition and disposal. The entire Unit will be decontaminated. The height of the dome and building are assumed to be 11 feet for decontamination purposes.
	Width of TA-55-4-B40 (feet)	54	
	Height of TA-55-4-B40 (feet) (based on the decontamination height)	11	
	Area of TA-55-4-B40 (square feet)	3,294	
	Volume of TA-55-4-B40 (cubic feet)	36,234	
	Area of hazardous equipment/structure (assuming 2% of the total Unit's area)(square feet)	65.9	
1-C	Materials identified within TA-55-4-B40		No materials were identified within the Unit other than the hazardous material stored.
1-D	Maximum volume of waste to be removed from TA-55-4-B40 (gallons)	29,750.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Wastes						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	20	Hours	177.40	3,544.00	3	10,632.01
4-Person Labor Crew	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50
Disposal of Non-liquid Hazardous Material	74	Cubic yards	49.673	3,658.32	---	3,658.32
Disposal of Liquid Hazardous Material	270	Drums	179.33	48,500.61	---	48,500.61
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				68,020.82		99,744.59
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	195.14	2,389.95	3	7,169.85
Field Engineer	12	Hours	195.14	2,389.95	3	7,169.85
<i>Structural Assessment</i>						
Field Engineer	16	Hours	195.14	3,186.60	3	9,559.80
Field Engineer	16	Hours	195.14	3,186.60	3	9,559.80
<i>Reporting</i>						
Field Engineer	18	Hours	195.14	3,584.92	3	10,754.77
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	75.52	151.04	3	453.11
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	-	3	-
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				17,169.05		51,507.16
Total for Step 2-A				85,189.87		151,251.75
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				4,825.40		14,476.20
Total for Step 2				90,015.27	-	165,727.95

5. DECONTAMINATION

Removal of Equipment Structures							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	16	Hours	177.40	2840	3	8520	
	16	Hours	70.96	1136	3	3408	
4-Person Labor Crew	16	Hours	70.96	1136	3	3408	
	16	Hours	70.96	1136	3	3408	
	16	Hours	70.96	1136	3	3408	
3-A Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Airfare	5	People	1,000.00	5000	3	15,000.00	Removal and disposal of the four metal cabinets.
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1000	3	3,000.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	73.53	368	3	1,102.93	
Total for Removal of Equipment				14,031.69		42,095.07	

Disposal of Hazardous Material							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-B Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	2.44	Cubic yards	49.67	121.20	---	121.20	
Total for Removal of Equipment				121.20	---	121.20	

Decontamination							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C Labor							
Site Project Manager	23	Hours	177.40	4,007.21	3	12,021.62	
	23	Hours	70.96	1,602.88	3	4,808.63	
4-Person Labor Crew	23	Hours	70.96	1,602.88	3	4,808.63	
	23	Hours	70.96	1,602.88	3	4,808.63	
	23	Hours	70.96	1,602.88	3	4,808.63	
Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---	Assume 200 square meters of material decontaminated within one hour.
Airfare	5	People	1,000.00	5,000.00	3	15,000.00	Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.
Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00	
Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	113.85	569.26	3	1,707.77	
Total for Decontamination				17,907.97		53,723.90	

Collection of Decontamination Verification Samples							
Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	
Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	
Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
Field Engineer - Equipment Wipes	19	6	195.14	1,235.92	3	3,707.75	
Field Engineer - Equipment Wipes	6	6	195.14	1,235.92	3	3,707.75	
Field Engineer - Field QA/QC Samples	3	3	195.14	520.39	3	1,561.16	Assumed 19 equipment wipe samples and 8 QA/QC samples will be collected.
Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16	
Total Number of Samples	27	---	---	---	---	---	
Total Number of Types of Samples	3	---	---	---	---	---	
Total for Decontamination Verification				3,512.61		10,537.82	

Total for Step 3				35,573.47		106,478.00	
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	194.15	---	---	---
Organics Soil - Unit	---	---	45.30	---	---	---
Cyanide Soil - Unit	---	---	76.85	---	---	---
Metals Liquid - Unit	---	---	380.21	---	---	---
Organics Liquid - Unit	---	---	424.71	---	---	---
Cyanide Liquid - Unit	---	---	64.72	---	---	---
Metals Equipment Wipes	19	---	194.15	3,688.84	---	3,688.84
Organics Equipment Wipes	19	---	45.30	860.78	---	860.78
Cyanide Equipment Wipes	19	---	76.85	1,460.14	---	1,460.14
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				12,966.87	---	12,966.87

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	14	Hours	212.89	2,873.95	3	8,621.85
Total for Data Validation				2,873.95	3	8,621.85

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	38	Hours	195.14	7,400.15	3	22,200.46
Sample Documentation - Field Engineer	8	Hours	195.14	1,496.11	3	4,488.33
Certification Report - Field Engineer	18	Hours	195.14	3,584.92	3	10,754.77
Certification Report - Field Engineer	9	Hours	195.14	1,792.46	3	5,377.39
Total for Sample Management				14,273.65	12	42,820.95

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			30,114.47	15	64,409.67
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4, Room K13 (TA-55-4-K13) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4-K13 P1), pre-closure activities (Worksheet TA-55-4-K13 P2), decontamination of the unit structures (Worksheet TA-54-4-K13 P3), and analysis and sample management procedures (Worksheet TA-55-4-K13 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.19; Technical Area 55, Building 4, Room K13 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-4-K13

The Unit consists of a rectangular shaped area that is open on three sides and measures 16 feet by 13 feet. There is a pillar on one of the open sides.

Contamination: Room K13 contains hazardous and mixed waste in both liquid and solid form. The wastes stored include corrosive, reactive and ignitable liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4-K13 P2	2-A	449,504.48
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-55-4-K13 P3	3-A	-
4	Disposal of Hazardous Material		3-B	-
5	Decontamination		3-C	42,658.13
6	Decontamination Verification Samples		3-D	7,415.50
7	Analyses	TA-55-4-K13 P4	4-A	10,436.45
8	Data Validation		4-B	6,067.23
9	Sample Logbook		4-C	15,464.84
10	Sample Documentation		4-C	2,927.17
11	Subtotal of Closure Costs			548,950.01
12	Certification of Closure	TA-55-4-K13 P4	4-C	15,827.28
13	Total Cost of Closure (Add cost of certification report to closure costs)			564,777.29

I. GENERAL UNIT DESCRIPTION
 TA-55-4-K13 contains three metal cabinets. The Unit contains one pillar on one of the open sides. The Unit measures approximately 208 square feet.

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous waste permitted for the TA-55-4-K13 unit is assumed to be 29,750 gallons. All hazardous wastes will be disposed of at an off-site facility during the Removal of Hazardous Wastes. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, three metal cabinets will be removed from the unit following the structural assessment. No structures will be removed from the Unit; only decontamination will be conducted.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the maximum permitted capacity of the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed that TA-55-4-K13 is one of the 6 units with permitted capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous waste stored at the Unit.
	Known Releases?	N/A	
1-B	Length of TA-55-4-K13 (feet)	16	Identified Structures on the Unit: There are no identified structures within the Unit. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-55-4-K13 (feet)	13	
	Height of TA-55-4-K13 (feet) (based on the decontamination height)	11	Structures and Related Equipment Required for Demolition and Debris Disposal: There are no identified structures/equipment structures requiring demolition and disposal.
	Area of TA-55-4-K13 (square feet)	208	The entire Unit will be decontaminated.
	Volume of TA-55-4-K13 (cubic feet)	2,288	The height of the dome and building are assumed to be 11 feet for decontamination purposes.
1-C	Materials identified within TA-55-4-K13		No materials were identified within the Unit other than the hazardous wastes stored.
1-D	Maximum volume of hazardous waste to be removed from TA-55-4-K13 (gallons)	29,750.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

<u>Removal of Hazardous Wastes</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	20	Hours	177.40	3,544.00	3	10,632.01
4-Person Labor Crew	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50
Disposal of Liquid Hazardous Wastes	541	Drums	647.169	350,059.35	---	350,059.35
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				9,214.39	15	397,645.01
<u>Records Review, Structural Assessment, and Reporting</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	195.14	2,344.78	3	7,034.35
Field Engineer	12	Hours	195.14	2,344.78	3	7,034.35
<i>Structural Assessment</i>						
Field Engineer	16	Hours	195.14	3,126.38	3	9,379.13
Field Engineer	16	Hours	195.14	3,126.38	3	9,379.13
<i>Reporting</i>						
Field Engineer	18	Hours	195.14	3,517.17	3	10,551.52
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.50	147.00	3	441.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				14,459.49	15	51,859.48
Total for Step 2-A				23,673.88	30	449,504.48
<u>Development of the Sampling and Analysis Plan</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				1,703.08	6	14,476.20
Total for Step 2				25,376.96	36	463,980.68

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	---	Hours	177.40	---	---	---
		---	Hours	70.96	---	---	---
	4-Person Labor Crew	---	Hours	70.96	---	---	---
		---	Hours	70.96	---	---	---
		---	Hours	70.96	---	---	---
	Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---
	Airfare	---	People	1,000.00	---	---	---
	Hotel/Lodging - Bare Task includes the estimated work days	---	People /Night	100.00	---	---	---
	Vehicle Rental includes the estimated work days	---	Vehicles/Day	70.00	---	---	---
	Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	151.50	---	---	---
Total for Removal of Equipment					---	0	---

Assumed 1500 square feet of equipment and material removed and disposed within one hour.

No structures will be removed from the Unit. The entire unit will be decontaminated.

Disposal of Hazardous Wastes							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Wastes - converted volume (cubic feet to cubic yards) provided for "Total Volume of Equipment/Structures to be removed"	---	Cubic yards	49.67	---	---	---
	Total for Removal of Equipment					---	---

No structures will be removed from the Unit. The entire unit will be decontaminated.

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	16	Hours	177.40	2,912.27	3	8,736.80
		16	Hours	70.96	1,164.90	3	3,494.71
	4-Person Labor Crew	16	Hours	70.96	1,164.90	3	3,494.71
		16	Hours	70.96	1,164.90	3	3,494.71
		16	Hours	70.96	1,164.90	3	3,494.71
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew) includes 2 estimated work days	5	People/Day	73.50	367.50	3	1,102.50	
Total for Decontamination					14,219.38	30	42,658.13

Assume 200 square meters of material decontaminated within one hour.

Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Equipment Wipes	11	4	195.14	715.53	3	2,146.59
	Field Engineer - Equipment Wipes		4	195.14	715.53	3	2,146.59
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16
	Total Number of Samples	19	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					520.39	9	7,415.50
Total for Step 3					14,739.76	39	50,073.63

Assumed 11 wipe samples and 8 QA/QC samples will be collected.

4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and liquid samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of wipe samples (11) was included within the cost estimate as there were 11 wipe samples identified within the Closure Plan. There was mention of the possibility of collecting liquid samples from the sumps and pipes of the Unit. Analysis of wipe samples were estimated by the suggested analyses provided within Table G-19.1. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	194.15	---	---	---
Organics Soil - Unit	---	---	45.30	---	---	---
Cyanide Soil - Unit	---	---	76.85	---	---	---
Metals Liquid - Unit	---	---	380.21	---	---	---
Organics Liquid - Unit	---	---	424.71	---	---	---
Cyanide Liquid - Unit	---	---	64.72	---	---	---
Metals Equipment Wipes	11	---	194.15	2,135.64	---	2,135.64
Organics Equipment Wipes	11	---	45.30	498.35	---	498.35
Cyanide Equipment Wipes	11	---	76.85	845.35	---	845.35
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				10,436.45	---	10,436.45

Assumed 11 wipe samples and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	10	Hours	212.89	2,022.41	3 6,067.23	
Total for Data Validation			2,022.41	3 6,067.23		

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	26	Hours	195.14	5,154.95	3 15,464.84	
Sample Documentation - Field Engineer	5	Hours	195.14	975.72	3 2,927.17	
Certification Report - Field Engineer	18	Hours	195.14	3,517.17	3 10,551.52	
Certification Report - Field Engineer	9	Hours	195.14	1,758.59	3 5,275.76	
Total for Sample Management			11,406.43	12 34,219.30		

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			23,865.29	15	50,722.97
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4, Room B05 (TA-55-B05) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-B05 P1), pre-closure activities (Worksheet TA-55-B05 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 1 P3), and analysis and sample management procedures (Worksheet TA-55-B05 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.20; Technical Area 55, Building 4, Room B05 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-B05

The Unit consists of a room that is opened on three sides as well as a portion of the fourth side.

Contamination: Room B05 contains hazardous and mixed waste in solid form. The wastes stored include sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-B05 P2	2-A	100,438.26
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-55-B05 P3	3-A	-
4	Disposal of Hazardous Material		3-B	-
5	Decontamination		3-C	42,849.81
6	Decontamination Verification Samples		3-D	4,683.48
7	Analyses	TA-55-B05 P4	4-A	8,222.32
8	Data Validation		4-B	3,831.94
9	Sample Logbook		4-C	12,793.70
10	Sample Documentation		4-C	1,561.16
11	Subtotal of Closure Costs			188,856.87
12	Certification of Closure	TA-55-B05 P4	4-C	15,832.42
13	Total Cost of Closure (Add cost of certification report to closure costs)			204,689.29

I. GENERAL UNIT DESCRIPTION
 TA-55-B05 does not contain any structures. The Unit does contain two pillars and a chain link fence along the open sides. The Unit measures approximately 260 square feet.

According to the Part A Permit Application, 178,500 gallons of hazardous material is permitted to be stored on the entire TA-55 Unit. The hazardous material permitted on the TA-55-B05 unit is assumed to be 29,750 gallons. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, no equipment or structures will be removed from the Unit; only decontamination will be conducted.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed tht TA-55-B05 is one of the 6 units with permitted design capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous material has been stored on the Unit.
	Known Releases?	N/A	
1-B	Length of TA-55-B05 (feet)	26	Identified Structures on the Unit: There are no identified structures within the Unit. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-55-B05 (feet)	10	
	Height of TA-55-B05 (feet) (based on the decontamination height)	11	Structures and Related Equipment Required for Demolition and Debris Disposal: There are no identified structures/equipment structures requiring demolition and disposal.
	Area of TA-55-B05 (square feet)	260	The entire Unit will be decontaminated.
	Volume of TA-55-B05 (cubic feet)	2,860	The height of the dome and building are assumed to be 11 feet for decontamination purposes.
1-C	Materials identified within TA-55-B05		No materials were identified within the Unit other than the hazardous material stored.
1-D	Maximum volume of waste to be removed from TA-54-G-Pad 1 (gallons)	29,750.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

2-A	<u>Removal of Hazardous Material</u>							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Site Project Manager	20	Hours	177.40	3,544.00	3	10,632.01	
	4-Person Labor Crew	20	Hours	70.96	1,417.60	3	4,252.79	
		20	Hours	70.96	1,417.60	3	4,252.79	
		20	Hours	70.96	1,417.60	3	4,252.79	
		20	Hours	70.96	1,417.60	3	4,252.79	
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
	Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50	
	Disposal of Non-liquid Hazardous Material	20	Cubic yards	49.673	978.09	---	978.09	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
	Total for Removal of Waste from Unit				16,839.98		48,563.75	
	<u>Records Review, Structural Assessment, and Reporting</u>							
		Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
		<i>Records Review</i>						
		Field Engineer	12	Hours	195.14	2,345.54	3	7,036.63
		Field Engineer	12	Hours	195.14	2,345.54	3	7,036.63
		<i>Structural Assessment</i>						
		Field Engineer	16	Hours	195.14	3,127.39	3	9,382.17
		Field Engineer	16	Hours	195.14	3,127.39	3	9,382.17
		<i>Reporting</i>						
		Field Engineer	18	Hours	195.14	3,518.32	3	10,554.95
		Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
		Airfare	2	People	1,000.00	2,000.00	3	6,000.00
		Per Diem (for the two Field Engineers)	2	People	73.66	147.32	3	441.96
	Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00	
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
	Total for the Records Review, Inspection, and Reporting				17,291.50		51,874.51	
	Total for Step 2-A				34,131.48		100,438.26	
2-B	<u>Development of the Sampling and Analysis Plan</u>							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Quality Control	8	Hours	212.89	1,703.08	3	5,109.25	
	Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95	
	Total for Step 2-B				4,825.40		14,476.20	
Total for Step 2					38,956.88	-	114,914.46	

3. DECONTAMINATION

Removal of Equipment Structures							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	---	Hours	177.40	---	---	---	
4-Person Labor Crew	---	Hours	70.96	---	---	---	
	---	Hours	70.96	---	---	---	
	---	Hours	70.96	---	---	---	
	---	Hours	70.96	---	---	---	
Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---	Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Airfare	---	People	1,000.00	---	---	---	Removal and disposal of equipment and materials associated with the Building 412, Dome 226, and the asphalt structure of the Unit.
Hotel/Lodging - Bare Task includes the 7 estimated work days	---	People /Night	100.00	---	---	---	
Vehicle Rental includes the 7 estimated work days	---	Vehicles/Day	70.00	---	---	---	
Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	151.50	---	---	---	
Total for Removal of Equipment						0	

Disposal of Hazardous Material							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	---	Cubic yards	49.67	---	---	---	
Total for Removal of Equipment							

Decontamination							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Labor							
Site Project Manager	17	Hours	177.40	2,930.72	3	8,792.15	Assume 200 square meters of material decontaminated within one hour.
4-Person Labor Crew	17	Hours	70.96	1,172.28	3	3,516.85	
	17	Hours	70.96	1,172.28	3	3,516.85	
	17	Hours	70.96	1,172.28	3	3,516.85	
	17	Hours	70.96	1,172.28	3	3,516.85	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---	
Airfare	5	People	1,000.00	5,000.00	3	15,000.00	Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	76.69	383.43	3	1,150.28	
Total for Decontamination				14,283.27		42,849.81	

Collection of Decontamination Verification Samples							
Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	Assumed 4 equipment wipe samples and 8 QA/QC samples will be collected.
Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	
Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
Field Engineer - Equipment Wipes	4	1	195.14	260.19	3	780.58	
Field Engineer - Equipment Wipes	1	1	195.14	260.19	3	780.58	
Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16	
Field Engineer - Field QA/QC Samples	3	3	195.14	520.39	3	1,561.16	
Total Number of Samples	12	---	---	---	---	---	
Total Number of Types of Samples	3	---	---	---	---	---	
Total for Decontamination Verification				1,561.16		4,683.48	

Total for Step 3				15,844.43		47,533.29	
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4. Analysis and Sample Management Procedures

Analysis							Assumed 4 and 8 field QA/QC samples.
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Metals Soil - Unit	---	---	194.15	---	---	---	
Organics Soil - Unit	---	---	45.30	---	---	---	
Cyanide Soil - Unit	---	---	76.85	---	---	---	
Metals Liquid - Unit	---	---	380.21	---	---	---	
Organics Liquid - Unit	---	---	424.71	---	---	---	
Cyanide Liquid - Unit	---	---	64.72	---	---	---	
Metals Equipment Wipes	4	---	194.15	776.60	---	776.60	
Organics Equipment Wipes	4	---	45.30	181.22	---	181.22	
Cyanide Equipment Wipes	4	---	76.85	307.40	---	307.40	
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67	
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68	
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76	
Total for Analysis of the Decontamination Verification Samples				8,222.32	---	8,222.32	

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	6	Hours	212.89	1,277.31	3	3,831.94
Total for Data Validation				1,277.31	3	3,831.94

Sample Management Procedures							Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	22	Hours	195.14	4,264.57	3	12,793.70	
Sample Documentation - Field Engineer	3	Hours	195.14	520.39	3	1,561.16	
Certification Report - Field Engineer	18	Hours	195.14	3,518.32	3	10,554.95	
Certification Report - Field Engineer	9	Hours	195.14	1,759.16	3	5,277.47	
Total for Sample Management				10,062.43	12	30,187.28	

Total for Step 4				19,562.06	15	42,241.54
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4, Room B45 (TA-55-4-B45) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4-B45 P1), pre-closure activities (Worksheet TA-55-4-B45 P2), decontamination of the unit structures (Worksheet TA-55-4-B45 P3), and analysis and sample management procedures (Worksheet TA-55-4-B45 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.21; Technical Area 55, Building 4, Room B45 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-4-B45

Contamination: The waste stored at the Unit consists of hazardous and mixed waste in solid form.

Origin of Contamination: The Unit stored sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4-B45 P2	2-A	275,197.83
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-55-4-B45 P3	3-A	---
4	Disposal of Hazardous Material		3-B	---
5	Decontamination		3-C	44,438.38
6	Decontamination Verification Samples		3-D	4,683.48
7	Analyses	TA-55-4-B45 P4	4-A	8,222.32
8	Data Validation		4-B	3,831.94
9	Sample Logbook		4-C	13,423.94
10	Sample Documentation		4-C	1,561.16
11	Subtotal of Closure Costs			365,835.25
12	Certification of Closure	TA-55-4-B45 P4	4-C	15,885.60
13	Total Cost of Closure (Add cost of certification report to closure costs)			381,720.85

1. GENERAL UNIT DESCRIPTION
 TA-55-4-B45 does not contain any structures. The entire floor was used for storing hazardous waste. All waste is assumed to be solid form. The Unit measures approximately 765 square feet.

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous material permitted on the TA-55-4-B45 unit is assumed to be 29,750 gallons. The hazardous waste stored on the Unit is classified as liquid and non-liquid. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, four metal cabinets which were used for hazardous storage will be removed prior to decontamination.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is L

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed tht TA-55-4-B40 is one of the 6 units with permitted design capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous material has been stored on the Unit.
	Known Releases?	Yes	
1-B	Length of TA-55-4-B45 (ft)	45.1	The Unit is rectangular-shaped. No equipment or structures will require removal.
	Width of TA-55-4 B45 (ft)	17.7	
	Height of TA-55-4-B45 (based on the height of the decontamination) (ft)	11	
	Area of TA-55-4-B45 (ft ²)	798.27	
	Volume of TA-55-4-B45 (cubic feet)	8780.97	
1-C	Materials identified within TA-55-4-B45		No equipment was identified in the Closure Plan.
1-D	Maximum volume of waste to be removed from TA-55-4-B45 (gallons)	29,700.00	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	Prevention of the migration of decontamination wash water, decontamination crews are requested to have a supplied air apparatus as well as be fully enclosed in protective clothing.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

2-A	<u>Removal of Hazardous Waste</u>							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Site Project Manager	20	Hours	177.40	3,544.00	3	10,632.01	
	4-Person Labor Crew	20	Hours	70.96	1,417.60	3	4,252.79	
		20	Hours	70.96	1,417.60	3	4,252.79	
		20	Hours	70.96	1,417.60	3	4,252.79	
		20	Hours	70.96	1,417.60	3	4,252.79	
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
	Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	97.86	489.30	3	1,467.89	
	Disposal Of Liquid Hazardous Waste	270	Drums	647.17	174,735.51	---	174,735.51	
	Disposal of Non-Liquid Hazardous Material	10	Cubic yards	49.673	489.05	---	489.05	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
	Total for Removal of Waste from Unit					191,208.23		223,175.60
	<u>Records Review, Structural Assessment, and Reporting</u>							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	<i>Records Review</i>							
	Field Engineer	12	Hours	195.14	2,353.42	3	7,060.27	
	Field Engineer	12	Hours	195.14	2,353.42	3	7,060.27	
	<i>Structural Assessment</i>							
	Field Engineer	16	Hours	195.14	3,137.90	3	9,413.69	
	Field Engineer	16	Hours	195.14	3,137.90	3	9,413.69	
	<i>Reporting</i>							
	Field Engineer	18	Hours	195.14	3,530.13	3	10,590.40	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---		
Airfare	2	People	1,000.00	2,000.00	3	6,000.00		
Per Diem (for the two Field Engineers)	2	People	73.99	147.98	3	443.93		
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00		
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00		
Total for the Records Review, Inspection, and Reporting					17,340.75		52,022.24	
Total for Step 2-A					208,548.98		275,197.83	
2-B	<u>Development of the Sampling and Analysis Plan</u>							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Quality Control	8	Hours	212.89	1,703.08	3	5,109.25	
	Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95	
Total for Step 2-B					4,825.40		14,476.20	
Total for Step 2					213,374.38	-	289,674.03	

5. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	---	Hours	177.40	---	3	---
	4-Person Labor Crew	---	Hours	70.96	---	3	---
		---	Hours	70.96	---	3	---
		---	Hours	70.96	---	3	---
		---	Hours	70.96	---	3	---
	Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---
	Airfare	---	People	1,000.00	---	3	---
	Hotel/Lodging - Bare Task includes the 4 estimated work days	---	People /Night	100.00	---	3	---
	Vehicle Rental includes the 4 estimated work days	---	Vehicles/Day	70.00	---	3	---
	Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	125.50	---	3	---
Total for Removal of Equipment					-	---	---

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of the four metal cabinets.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	---	Cubic yards	49.67	---	---	---
Total for Removal of Equipment					---	---	---

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	18	Hours	177.40	3,121.70	3	9,365.10
	4-Person Labor Crew	18	Hours	70.96	1,248.67	3	3,746.02
		18	Hours	70.96	1,248.67	3	3,746.02
		18	Hours	70.96	1,248.67	3	3,746.02
		18	Hours	70.96	1,248.67	3	3,746.02
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	83.28	416.39	3	1,249.18
Total for Decontamination					14,812.79	---	44,438.38

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Equipment Wipes	4	1	195.14	260.19	3	780.58
	Field Engineer - Equipment Wipes	4	1	195.14	260.19	3	780.58
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Total Number of Samples	12	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					1,561.16	---	4,683.48

Assumed 4 equipment wipe samples and 8 QA/QC samples will be collected.

Total for Step 3					16,373.95	---	49,121.86
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4. Analysis and Sample Management Procedures

Analysis							Assumed 4 equipment wipes and 8 field QA/QC samples.
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Metals Soil - Unit	---	---	194.15	---	---	---	
Organics Soil - Unit	---	---	45.30	---	---	---	
Cyanide Soil - Unit	---	---	76.85	---	---	---	
Metals Liquid - Unit	---	---	380.21	---	---	---	
Organics Liquid - Unit	---	---	424.71	---	---	---	
Cyanide Liquid - Unit	---	---	64.72	---	---	---	
Metals Equipment Wipes	4	---	194.15	776.60	---	776.60	
Organics Equipment Wipes	4	---	45.30	181.22	---	181.22	
Cyanide Equipment Wipes	4	---	76.85	307.40	---	307.40	
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67	
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68	
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76	
Total for Analysis of the Decontamination Verification Samples				8,222.32	---	8,222.32	

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	6	Hours	212.89	1,277.31	3	3,831.94
Total for Data Validation				1,277.31	3	3,831.94

Sample Management Procedures							Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)		
Logbook Documentation - Field Engineer	23	Hours	195.14	4,474.65	3	13,423.94	
Sample Documentation - Field Engineer	3	Hours	195.14	520.39	3	1,561.16	
Certification Report - Field Engineer	18	Hours	195.14	3,530.13	3	10,590.40	
Certification Report - Field Engineer	9	Hours	195.14	1,765.07	3	5,295.20	
Total for Sample Management				10,290.23	12	30,870.70	

Total for Step 4				19,789.87	15	42,924.96
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**TA-55-4-Vault
Summary**

The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4, Vault (TA-55-4-Vault) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4-Vault P1), pre-closure activities (Worksheet TA-55-4-Vault P2), decontamination of the unit structures (Worksheet TA-55-4-Vault P3), and analysis and sample management procedures (Worksheet TA-55-4-Vault P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.22; Technical Area 55, Building 4, Vault Closure Plan (Closure Plan).

Unit Name: LANL TA-55-4-Vault

Contamination: Hazardous waste in both liquid and solid form. The wastes stored in the Unit include corrosive liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

Origin of Contamination: Hazardous wastes were contained in Rooms A and H of the Unit.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4-Vault P2	2-A	151,925.49
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-55-4-Vault P3	3-A	42,082.49
4	Disposal of Hazardous Material		3-B	18.21
5	Decontamination		3-C	42,215.29
6	Decontamination Verification Samples		3-D	10,537.82
7	Analyses	TA-55-4-Vault P4	4-A	12,966.87
8	Data Validation		4-B	8,621.85
9	Sample Logbook		4-C	18,396.31
10	Sample Documentation		4-C	4,488.33
11	Subtotal of Closure Costs			305,728.87
12	Certification of Closure	TA-55-4-Vault P4	4-C	15,811.18
13	Total Cost of Closure (Add cost of certification report to closure costs)			321,540.05

1. GENERAL UNIT DESCRIPTION
 TA-55-4-Vault does not contain any structures. The entire Unit was used for storing both liquid and non-liquid hazardous wastes. The Unit measures has no dimensions - as a result, the dimensions for the Unit were estimated to measure 45 square feet (9 feet long by 5 feet wide). Metal lockers are the only set equipment structures that will be removed from the Unit.

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous material permitted on the TA-55-4-Vault unit is assumed to be 29,750 gallons. The hazardous waste stored on the Unit is classified as liquid and non-liquid. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, four metal cabinets which were used for hazardous storage will be removed prior to decontamination.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is L

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed tht TA-55-4-Vault is one of the 6 units with permitted design capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous material has been stored on the Unit.
	Known Releases?	Yes	
1-B	Length of TA-55-4 Vault (ft)	9	The Unit is rectangular-shaped. No equipment or structures will require removal.
	Width of TA-55-4 Vault (ft)	5	
	Height of TA-55-4 Vault (based on the height of the decontamination) (ft)	11	
	Area of TA-55-4 (ft ²)	45	
	Volume of TA-55-4 (based on the height of decontamination) (cubic feet)	495	
	Estimated area of the structures and equipment to be removed (metal lockers) (ft ²)	0.9	
	Estimated volume of the metal lockers (ft ³)	9.9	
1-C	Materials identified within TA-3-29		Metal lockers were the only equipment structures identified within the Unit.
1-D	Maximum volume of waste to be removed from TA-55-4 Vault (gallons)	29,750.00	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	Prevention of the migration of decontamination wash water, decontamination crews are requested to have a supplied air apparatus as well as be fully enclosed in protective clothing.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	20	Hours	177.40	3,544.00	3	10,632.01
4-Person Labor Crew	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	97.86	489.30	3	1,467.89
Disposal of Non-Liquid Hazardous Material	74	Cubic yards	49.673	3,658.32	---	3,658.32
Disposal of Liquid Hazardous Material	270	Drums	179.33	48,500.61	---	48,500.61
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				68,142.62		100,109.98
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	195.14	2,342.40	3	7,027.19
Field Engineer	12	Hours	195.14	2,342.40	3	7,027.19
<i>Structural Assessment</i>						
Field Engineer	16	Hours	195.14	3,123.20	3	9,369.59
Field Engineer	16	Hours	195.14	3,123.20	3	9,369.59
<i>Reporting</i>						
Field Engineer	18	Hours	195.14	3,513.60	3	10,540.79
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.53	147.06	3	441.17
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				17,271.84		51,815.51
Total for Step 2-A				85,414.45	-	151,925.49
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				4,825.40	-	14,476.20
Total for Step 2				90,239.85	-	166,401.69

3. DECONTAMINATION

Removal of Equipment Structures							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	16	Hours	177.40	\$ 2,838	3	8515	
4-Person Labor Crew	16	Hours	70.96	\$ 1,135	3	3406	
	16	Hours	70.96	\$ 1,135	3	3406	
	16	Hours	70.96	\$ 1,135	3	3406	
	16	Hours	70.96	\$ 1,135	3	3406	
	16	Hours	70.96	\$ 1,135	3	3406	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	Assumed 1500 square feet of equipment and material removed and disposed within one hour. Removal and disposal of the four metal cabinets.
Airfare	5	People	1,000.00	\$ 5,000	3	15,000.00	
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	\$ 1,000	3	3,000.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	\$ 280	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	73.50	\$ 368	3	1,102.50	
Total for Removal of Equipment				7,380.00	27	42,082.49	

Disposal of Hazardous Material							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	0.37	Cubic yards	49.67	18.21	---	18.21	
Total for Removal of Equipment				18.21	---	18.21	

Decontamination							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	16	Hours	177.40	2,854.43	3	8,563.30	
4-Person Labor Crew	16	Hours	70.96	1,141.77	3	3,425.31	
	16	Hours	70.96	1,141.77	3	3,425.31	
	16	Hours	70.96	1,141.77	3	3,425.31	
	16	Hours	70.96	1,141.77	3	3,425.31	
	16	Hours	70.96	1,141.77	3	3,425.31	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---	
Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	74.05	370.26	3	1,110.77	
Total for Decontamination				14,071.76		42,215.29	

Collection of Decontamination Verification Samples							
Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	
Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	
Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
Field Engineer - Equipment Wipes	19	6	195.14	1,235.92	3	3,707.75	
Field Engineer - Equipment Wipes	6	6	195.14	1,235.92	3	3,707.75	
Field Engineer - Field QA/QC Samples	3	3	195.14	520.39	3	1,561.16	Assumed 4 equipment wipe samples and 8 QA/QC samples will be collected.
Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16	
Total Number of Samples	27	---	---	---	---	---	
Total Number of Types of Samples	3	---	---	---	---	---	
Total for Decontamination Verification				3,512.61		10,537.82	
Total for Step 3				24,982.58		94,853.82	

4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	194.15	---	---	---
Organics Soil - Unit	---	---	45.30	---	---	---
Cyanide Soil - Unit	---	---	76.85	---	---	---
Metals Liquid - Unit	---	---	380.21	---	---	---
Organics Liquid - Unit	---	---	424.71	---	---	---
Cyanide Liquid - Unit	---	---	64.72	---	---	---
Metals Equipment Wipes	19	---	194.15	3,688.84	---	3,688.84
Organics Equipment Wipes	19	---	45.30	860.78	---	860.78
Cyanide Equipment Wipes	19	---	76.85	1,460.14	---	1,460.14
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				12,966.87	---	12,966.87

Assumed 19 equipment wipes and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	14	Hours	212.89	2,873.95	3	8,621.85
Total for Data Validation				2,873.95	3	8,621.85

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	31	Hours	195.14	6,132.10	3	18,396.31
Sample Documentation - Field Engineer	8	Hours	195.14	1,496.11	3	4,488.33
Certification Report - Field Engineer	18	Hours	195.14	3,513.60	3	10,540.79
Certification Report - Field Engineer	9	Hours	195.14	1,756.80	3	5,270.39
Total for Sample Management				12,898.61	12	38,695.82

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				28,739.43	15	60,284.54
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The cost for closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4 (TA-55-4) Hazardous Waste Storage Tanks is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4 P1), pre-closure activities (Worksheet TA-55-4 P2), decontamination of the unit structures (Worksheet TA-55-4 P3), and analysis and sample management procedures (Worksheet TA-55-4 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.23; Technical Area 55, Building 4, Room 401 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-Building 4 Room 401 Indoor Storage Unit

The Unit consists of a storage tank system that has been used for storage of hazardous waste in liquid form. Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is comprised of a glovebox and six tanks which consist of two waste storage tank components (i.e., the Evaporator Glovebox Tank (one tank) and the Cementation Unit Pencil Tanks (five tanks)). This tank system shares a common piping and pumping system.

Contamination: The unit is used to store mixed transuranic evaporator bottoms solutions generated primarily from research and development activities and processing and recovery operations at TA-55 and the Chemistry and Metallurgy Research Building at TA-3. The liquid waste consists generally of concentrated nitric acid saturated with salts and metals.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55 Building 4	2-A	94,555.78
2	Sampling and Analysis Plan	Room 401 P2	2-B	14,476.20
3	Removal of Equipment and Structures	TA-55 Building 4 Room 401 P3	3-A	44,015.24
4	Disposal of Hazardous Material		3-B	91,067.70
5	Decontamination		3-C	57,283.11
6	Decontamination Verification Samples		3-D	5,073.77
7	Analyses	TA-55 Building 4 Room 401 P4	4-A	2,871.79
8	Data Validation		4-B	4,151.26
9	Sample Logbook		4-C	18,148.47
10	Sample Documentation		4-C	1,756.30
11	Subtotal of Closure Costs			333,399.62
12	Certification of Closure	TA-55 Building 4 Room 401 P4	4-C	15,808.33
13	Total Cost of Closure (Add cost of certification report to closure costs)			349,207.95

1. GENERAL UNIT DESCRIPTION

The Unit consists of a storage tank system that has been used for storage of hazardous waste in liquid form. Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is comprised of a glovebox and six tanks which consist of two waste storage tank components (i.e., the Evaporator Glovebox Tank (one tank) and the Cementation Unit Pencil Tanks (five tanks)). This tank system shares a common piping and pumping system. According to the Part A Permit Application, 137 gallons of hazardous waste is permitted to be stored in TA-55 Building 4, Room 401. As stated in Section 5.3.1; Removal of Structures, and Related Equipment of the Closure Plan, the storage tanks, piping and the glovebox and all materials associated with the permitted unit in Room 401 (tanks, ancillary equipment, glovebox, etc.) will be removed.

According to Section 5.3.2; Decontamination of Structures of the Closure Plan, there is no equipment located at the permitted unit that is expected to be left in place or require decontamination. The walls and floor of Building 401 will be decontaminated.

It was assumed that the minimum amount of hazardous waste to be removed from the Unit is equivalent to the maximum permitted capacity.
It was also assumed that the level of Personal Protective Equipment is Level C.

1-A	Permitted Unit Volume Capacity (cubic feet)	18.31	According to the Part A Application, the Unit is permitted to store a total of 137 gallons of waste.
	Known Releases?	N/A	
1-B	Length of TA-55 Building 4, Room 401 (feet)	-	Identified Structures on the Unit: Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is comprised of a glovebox and six tanks which consist of two waste storage tank components (i.e., the Evaporator Glovebox Tank (one tank) and the Cementation Unit Pencil Tanks (five tanks)). This tank system shares a common piping and pumping system. Wastes, Structures and Related Equipment Requiring Disposal include the hazardous waste stored at the Unit and the six tanks and associated piping. Surfaces, Structures, and Related Equipment recommended to be decontaminated includes the walls and floor of Room 401. A total of 4,500 square feet will require decontamination. <u>The height of the Room 401 is assumed to be 11 feet for decontamination purposes.</u>
	Width of TA-55 Building 4 Room 401(feet)	-	
	Height of TA-55 Building 4 Room 401 (feet) (based on decontamination of Room 401)	11	
	Area of TA-55 Building 4 Room 401(square feet)	4,500	
	Volume of TA-55 Building 4, Room 401(based on the decontamination height) (cubic feet)	49,500	
	Total area of equipment/structures to be removed (Tank System) (square feet)	4,500	
	Total volume of the hazardous material storage areas (Room 401) (cubic feet)	49,500	
Estimated total area of equipment/structures to be decontaminated (Room 401) (square feet)	4500		
1-C	Materials identified within TA-55 Building 4, Room 401 Unit		Materials identified in the Unit include hazardous wastes, 6 storage tanks and associated piping.
1-D	Maximum volume of waste to be removed from TA-55 Building 4, Room 401 (gallons)	137	Assume the minimum volume of waste to be removed is equivalent to the maximum permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	Based on the discussion provided within the closure plan (Section 5.3.2 Decontamination of Structures) the decontamination procedure, sweeping and then wash down were proposed for the Unit. Workers will require protection for exposure to radiation. As a result, the level of PPE recommended for the closure activities is Level C.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	16	Hours	177.40	2,862.77	3	8,588.31
4-Person Labor Crew	16	Hours	70.96	1,145.10	3	3,435.31
	16	Hours	70.96	1,145.10	3	3,435.31
	16	Hours	70.96	1,145.10	3	3,435.31
	16	Hours	70.96	1,145.10	3	3,435.31
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	74.34	371.70	3	1,115.09
Disposal of Liquid Hazardous Material	2	Drums	179.33	446.69	---	446.69
Disposal of Non-liquid Hazardous Material	0	Cubic yards	49.673	16.85	---	16.85
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				7,443.19	15	42,748.19
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	195.14	2,341.97	3	7,025.92
Field Engineer	12	Hours	195.14	2,341.97	3	7,025.92
<i>Structural Assessment</i>						
Field Engineer	16	Hours	195.14	3,122.63	3	9,367.90
Field Engineer	16	Hours	195.14	3,122.63	3	9,367.90
<i>Reporting</i>						
Field Engineer	18	Hours	195.14	3,512.96	3	10,538.89
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.51	147.02	3	441.06
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				14,442.18	15	51,807.59
Total for Step 2-A				21,885.36	30	94,555.78
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				1,703.08	6	14,476.20
Total for Step 2				23,588.45	36	109,031.98

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	17	Hours	177.40	2,944.91	3	8,834.73
	4-Person Labor Crew	17	Hours	70.96	1,177.96	3	3,533.88
		17	Hours	70.96	1,177.96	3	3,533.88
		17	Hours	70.96	1,177.96	3	3,533.88
		17	Hours	70.96	1,177.96	3	3,533.88
		17	Hours	70.96	1,177.96	3	3,533.88
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew) includes the 2 estimated work days	5	People	73.50	735.00	3	2,205.00	
Total for Removal of Equipment					7,656.75	15	44,015.24

Assumed 1500 square feet of equipment and material removed and disposed within one hour.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for "Total Volume of Equipment Structures to be Removed"	1,833.33	Cubic yards	49.673	91,067.70	---	91,067.70
Total for Removal of Equipment					91,067.70	---	91,067.70

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	25	Hours	177.40	4,435.10	3	13,305.31
	4-Person Labor Crew	25	Hours	70.96	1,774.03	3	5,322.10
		25	Hours	70.96	1,774.03	3	5,322.10
		25	Hours	70.96	1,774.03	3	5,322.10
		25	Hours	70.96	1,774.03	3	5,322.10
		25	Hours	70.96	1,774.03	3	5,322.10
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	128.63	643.13	3	1,929.38	
Total for Decontamination					19,094.37	30	57,283.11

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	0	0	195.14	-	3	-
	Field Engineer - Soil Sample from the Unit	0	0	195.14	-	3	-
	Field Engineer - Sediment Sample of the Berm	0	0	195.14	-	3	-
	Field Engineer - Sediment Sample of the Berm	0	0	195.14	-	3	-
	Field Engineer - Equipment Wipes	5	2	195.14	325.24	3	975.72
	Field Engineer - Equipment Wipes	2	2	195.14	325.24	3	975.72
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Total Number of Samples	13	---	---	---	---	---
	Total Number of Types of Samples	2	---	---	---	---	---
Total for Decontamination Verification					520.39	21	5,073.77

Assumed 5 wipe samples to be collected from walls and floor of Room 401.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					19,614.75	51	197,439.81
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe samples collected from the Unit. As discussed in Sections 2 and 3, the number of wipe samples (5) was included within the cost estimate. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazardous nature of the debris and

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	0	---	194.15	-	---	-
Organics Soil - Unit	0	---	45.30	-	---	-
Cyanide Soil - Unit	0	---	76.85	-	---	-
Metals Liquid - Unit	0	---	380.21	-	---	-
Organics Liquid - Unit	0	---	424.71	-	---	-
Cyanide Liquid - Unit	0	---	64.72	-	---	-
Metals Equipment Wipes	5	---	194.15	970.75	---	970.75
Organics Equipment Wipes	0	---	45.30	-	---	-
Cyanide Equipment Wipes	0	---	76.85	-	---	-
Metals Field QA/QC	5	---	380.21	1,901.04	---	1,901.04
Organics Field QA/QC	0	---	424.71	-	---	-
Cyanide Field QA/QC	0	---	64.72	-	---	-
Total for Analysis of the Decontamination Verification Samples				2,871.79	---	2,871.79

Assumed 5 wipes and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	7	Hours	212.89	1,383.75	3	4,151.26
Total for Data Validation				1,383.75	3	4,151.26

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	31	Hours	195.14	6,049.49	3	18,148.47
Sample Documentation - Field Engineer	3	Hours	195.14	585.43	3	1,756.30
Certification Report - Field Engineer	18	Hours	195.14	3,512.96	3	10,538.89
Certification Report - Field Engineer	9	Hours	195.14	1,756.48	3	5,269.44
Total for Sample Management				11,904.37	12	35,713.10

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				16,159.91	15	42,736.16
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The cost for closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4 (TA-55-4) Indoor Mixed Waste Stabilization Treatment Unit (IMWSTU) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4 IMWSTU P1), pre-closure activities (Worksheet TA-55-4 IMWSTU P2), decontamination of the unit structures (Worksheet TA-55-4 P3), and analysis and sample management procedures (Worksheet TA-55-4 IMWSTU P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.24; Technical Area 55, Building 4, Room 401 Indoor Mixed Waste Stabilization Treatment Unit Closure Plan (Closure Plan).

Unit Name: LANL TA-55-Building 4 Room 401 Indoor Mixed Waste Stabilization Treatment Unit (TA-55-4 IMWSTU)

The permitted unit has been used for treatment of mixed waste and is located in Room 401 at TA-55-4. Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is located in glovebox GB-454 along the west wall of Room 401. It consists of a pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox. Contamination: The unit is used to store mixed transuranic evaporator bottoms solutions generated primarily from research and development activities and processing and recovery operations at TA-55 and the Chemistry and Metallurgy Research Building at TA-3. The liquid waste consists generally of concentrated nitric acid saturated with salts and metals. The solid process wastes consist of process residue from the evaporator and filter cake. These waste streams exhibit the hazardous characteristics of toxicity (for metals) and corrosivity and are classified as mixed waste.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4 IMWSTU	2-A	94,427.16
2	Sampling and Analysis Plan	P2	2-B	14,476.20
3	Removal of Equipment and Structures	TA-55-4 IMWSTU	3-A	43,887.51
4	Disposal of Hazardous Material		3-B	1,821.35
5	Decontamination		3-C	57,283.11
6	Decontamination Verification Samples		3-D	6,244.64
7	Analyses	TA-55-4 IMWSTU	4-A	4,594.87
8	Data Validation		4-B	5,109.25
9	Sample Logbook		4-C	19,319.34
10	Sample Documentation		4-C	2,341.74
11	Subtotal of Closure Costs			249,505.16
12	Certification of Closure	TA-55-4 IMWSTU P4	4-C	15,808.32
13	Total Cost of Closure (Add cost of certification report to closure costs)			265,313.47

1. GENERAL UNIT DESCRIPTION

The Unit consists of a storage tank system that has been used for storage of hazardous waste in liquid form. Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is comprised of a glovebox and six tanks which consist of two waste storage tank components (i.e., the Evaporator Glovebox Tank (one tank) and the Cementation Unit Pencil Tanks (five tanks)). This tank system shares a common piping and pumping system. According to the Part A Permit Application, 137 gallons of hazardous waste is permitted to be stored in TA-55 Building 4, Room 401. As stated in Section 5.3.1; Removal of Structures, and Related Equipment of the Closure Plan, the storage tanks, piping and the glovebox and all materials associated with the permitted unit in Room 401 (tanks, ancillary equipment, glovebox, etc.) will be removed.

According to Section 5.3.2; Decontamination of Structures of the Closure Plan, there is no equipment located at the permitted unit that is expected to be left in place or require decontamination. The walls and floor of Building 401 will be decontaminated.

It was assumed that the minimum amount of hazardous waste to be removed from the Unit is equivalent to the maximum permitted capacity.
It was also assumed that the level of Personal Protective Equipment is Level C.

1-A	Permitted Unit Volume Capacity (cubic feet)	20.05	According to the Part A Application, the Unit is permitted to store a total of 150 gallons of waste.
	Known Releases?	N/A	
1-B	Length of TA-55 Building 4, Room 401 (feet)	-	Identified Structures on the Unit: Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is located in glovebox GB-454 along the west wall of Room 401. It consists of a pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox. Wastes, Structures and Related Equipment Requiring Disposal include the hazardous waste stored at the Unit and the pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox and all other materials in Room 401 associated with the permitted unit will be removed Surfaces, Structures, and Related Equipment recommended to be decontaminated includes the walls and floor of Room 401. A total of 4,500 square feet will require decontamination. <u>The height of the Room 401 is assumed to be 11 feet for decontamination purposes.</u>
	Width of TA-55 Building 4 Room 401(feet)	-	
	Height of TA-55 Building 4 Room 401 (feet) (based on decontamination of Room 401)	11	
	Area of TA-55 Building 4 Room 401(square feet)	4,500	
	Volume of TA-55 Building 4, Room 401(based on the decontamination height) (cubic feet)	49,500	
	Estimated total area of the hazardous waste storage area (Room 401) (square feet)	4,500	
	Total volume of equipment/structures to be removed (based on 2% of the total volume of the Unit (cubic feet)	990	
Estimated total area of structures/equipment to be decontaminated - (Tank System) (square feet)	4500		
1-C	Materials identified within TA-55 Building 4, Room 401 Unit		Materials identified in the Unit include hazardous wastes, a pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox.
1-D	Total volume of hazardous waste to be removed from TA-55-4 IMWSTU (gallons)	150	Assume the minimum volume of waste to be removed is equivalent to the maximum permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	Based on the discussion provided within the closure plan (Section 5.3.2 Decontamination of Structures) the decontamination procedure, sweeping and then wash down were proposed for the Unit. Workers will require protection for exposure to radiation. As a result, the level of PPE recommended for the closure activities is Level C.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	16	Hours	177.40	2,842.02	3	8,526.07
4-Person Labor Crew	16	Hours	70.96	1,136.81	3	3,410.42
	16	Hours	70.96	1,136.81	3	3,410.42
	16	Hours	70.96	1,136.81	3	3,410.42
	16	Hours	70.96	1,136.81	3	3,410.42
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.62	368.11	3	1,104.34
Disposal of Liquid Hazardous Material	3	Drums	179.33	489.08	---	489.08
Disposal of Non-liquid Hazardous Material	0	Cubic yards	49.673	18.45	---	18.45
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				7,389.24	15	42,619.60
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	195.14	2,341.97	3	7,025.92
Field Engineer	12	Hours	195.14	2,341.97	3	7,025.92
<i>Structural Assessment</i>						
Field Engineer	16	Hours	195.14	3,122.63	3	9,367.89
Field Engineer	16	Hours	195.14	3,122.63	3	9,367.89
<i>Reporting</i>						
Field Engineer	18	Hours	195.14	3,512.96	3	10,538.88
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.51	147.02	3	441.06
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				14,442.17	15	51,807.56
Total for Step 2-A				21,831.41	30	94,427.16
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				1,703.08	6	14,476.20
Total for Step 2				23,534.49	36	108,903.36

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	17	Hours	177.40	2,944.91	3	8,834.73
	4-Person Labor Crew	17	Hours	70.96	1,177.96	3	3,533.88
		17	Hours	70.96	1,177.96	3	3,533.88
		17	Hours	70.96	1,177.96	3	3,533.88
		16	Hours	70.96	1,135.38	3	3,406.15
		Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
	Per Diem (for Project Engineer and 4-Person Labor Crew) includes the 2 estimated work days	5	People	73.50	735.00	3	2,205.00
Total for Removal of Equipment					7,614.17	15	43,887.51

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the asphalt structure of the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	36.67	Cubic yards	49.673	1,821.35	---	1,821.35
Total for Removal of Equipment					1,821.35	---	1,821.35

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	25	Hours	177.40	4,435.10	3	13,305.31
	4-Person Labor Crew	25	Hours	70.96	1,774.03	3	5,322.10
		25	Hours	70.96	1,774.03	3	5,322.10
		25	Hours	70.96	1,774.03	3	5,322.10
		25	Hours	70.96	1,774.03	3	5,322.10
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	128.63	643.13	3	1,929.38	
Total for Decontamination					19,094.37	30	57,283.11

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	0	0	195.14	-	3	-
	Field Engineer - Soil Sample from the Unit	0	0	195.14	-	3	-
	Field Engineer - Sediment Sample of the Berm	0	0	195.14	-	3	-
	Field Engineer - Sediment Sample of the Berm	0	0	195.14	-	3	-
	Field Engineer - Equipment Wipes	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Equipment Wipes	3	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples	3	3	195.14	520.39	3	1,561.16
	Total Number of Samples	16	---	---	---	---	---
	Total Number of Types of Samples	2	---	---	---	---	---
Total for Decontamination Verification					520.39	21	6,244.64

The closure plan indicates that 8 wipe samples to be collected from walls and floor of Room 401.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					19,614.75	51	109,236.60
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe samples collected from the Unit. As discussed in Sections 2 and 3, the number of wipe samples (8) was included within the cost estimate. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazardous nature of the debris and

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	0	---	194.15	-	---	-
Organics Soil - Unit	0	---	45.30	-	---	-
Cyanide Soil - Unit	0	---	76.85	-	---	-
Metals Liquid - Unit	0	---	380.21	-	---	-
Organics Liquid - Unit	0	---	424.71	-	---	-
Cyanide Liquid - Unit	0	---	64.72	-	---	-
Metals Equipment Wipes	8	---	194.15	1,553.20	---	1,553.20
Organics Equipment Wipes	0	---	45.30	-	---	-
Cyanide Equipment Wipes	0	---	76.85	-	---	-
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	0	---	424.71	-	---	-
Cyanide Field QA/QC	0	---	64.72	-	---	-
Total for Analysis of the Decontamination Verification Samples				4,594.87	---	4,594.87

Assumed 8 wipes and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Total for Data Validation				1,703.08	3	5,109.25

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	33	Hours	195.14	6,439.78	3	19,319.34
Sample Documentation - Field Engineer	4	Hours	195.14	780.58	3	2,341.74
Certification Report - Field Engineer	18	Hours	195.14	3,512.96	3	10,538.88
Certification Report - Field Engineer	9	Hours	195.14	1,756.48	3	5,269.44
Total for Sample Management				12,489.80	12	37,469.40

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				18,787.75	15	47,173.51
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4, Building 185 (TA-55-4-B185) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4-B185 P1), pre-closure activities (Worksheet TA-55-4-B185 P2), decontamination of the unit structures (Worksheet TA-55-4-B185 P3), and analysis and sample management procedures (Worksheet TA-55-4-B185 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.25; Technical Area 55, Building 4, Building 185 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-4-B185

The Unit consists of a rectangular shaped area within a steel framed building with a concrete floor. The unit measures 60 feet by 40 feet. There is a access doorway on one way and a metal roll up door and access doorway on the opposite wall.

Contamination: Building 185 contains hazardous and mixed waste in solid form. The wastes stored include sludge, debris, and chemical wastes with metals.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4-B185 P2	2-A	452,726.00
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-55-4-B185 P3	3-A	-
4	Disposal of Hazardous Material		3-B	-
5	Decontamination		3-C	51,085.48
6	Decontamination Verification Samples		3-D	8,586.37
7	Analyses	TA-55-4-B185 P4	4-A	11,385.36
8	Data Validation		4-B	7,025.21
9	Sample Logbook		4-C	19,202.25
10	Sample Documentation		4-C	3,512.61
11	Subtotal of Closure Costs			567,999.49
12	Certification of Closure	TA-55-4-B185 P4	4-C	16,043.83
13	Total Cost of Closure (Add cost of certification report to closure costs)			584,043.32

I. GENERAL UNIT DESCRIPTION
 TA-55-4-B185 is a rectangular room within a steel framed building equipped with a concrete floor. The Unit measures approximately 2,400 square feet.

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous waste permitted for the TA-55-4-B185 unit is assumed to be 29,750 gallons. All hazardous wastes will be disposed of at an off-site facility during the Removal of Hazardous Wastes. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, no equipment or structures will be removed from the Unit; only decontamination will be conducted.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the maximum permitted capacity of the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed that TA-55-4-B185 is one of the 6 units with permitted capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous waste stored at the Unit.
	Known Releases?	N/A	
1-B	Length of TA-55-4-B185 (feet)	60	Identified Structures on the Unit: There are no identified structures within the Unit. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-55-4-B185 (feet)	40	
	Height of TA-55-4-B185 (feet) (based on the decontamination height)	11	Structures and Related Equipment Required for Demolition and Debris Disposal: There are no identified structures/equipment structures requiring demolition and disposal.
	Area of TA-55-4-B185 (square feet)	2,400	The entire Unit will be decontaminated.
	Volume of TA-55-4-B185 (cubic feet)	26,400	The height of the dome and building are assumed to be 11 feet for decontamination purposes.
1-C	Materials identified within TA-55-4-B185		No materials were identified within the Unit other than the hazardous wastes stored.
1-D	Maximum volume of waste to be removed from TA-55-4-B185 (gallons)	29,750.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

<u>Removal of Hazardous Wastes</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	20	Hours	177.40	3,544.00	3	10,632.01
4-Person Labor Crew	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
	20	Hours	70.96	1,417.60	3	4,252.79
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50
Disposal of Liquid Hazardous Wastes	541	Drums	647.169	350,059.35	---	350,059.35
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				9,214.39	15	397,645.01
<u>Records Review, Structural Assessment, and Reporting</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	195.14	2,376.86	3	7,130.59
Field Engineer	12	Hours	195.14	2,376.86	3	7,130.59
<i>Structural Assessment</i>						
Field Engineer	16	Hours	195.14	3,169.15	3	9,507.46
Field Engineer	16	Hours	195.14	3,169.15	3	9,507.46
<i>Reporting</i>						
Field Engineer	18	Hours	195.14	3,565.30	3	10,695.89
Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	171.50	343.00	3	1,029.00
Hotel/Lodging - Bare Task includes the 4 estimated work days	2	People /Night	100.00	800.00	3	2,400.00
Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00
Total for the Records Review, Inspection, and Reporting				14,657.33	15	55,080.99
Total for Step 2-A				23,871.72	30	452,726.00
<u>Development of the Sampling and Analysis Plan</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				1,703.08	6	14,476.20
Total for Step 2				25,574.80	36	467,202.20

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	---	Hours	177.40	---	---	---
	4-Person Labor Crew	---	Hours	70.96	---	---	---
		---	Hours	70.96	---	---	---
		---	Hours	70.96	---	---	---
		---	Hours	70.96	---	---	---
	Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---
	Airfare	---	People	1,000.00	---	---	---
	Hotel/Lodging - Bare Task includes the estimated work days	---	People /Night	100.00	---	---	---
	Vehicle Rental includes the estimated work days	---	Vehicles/Day	70.00	---	---	---
	Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	151.50	---	---	---
Total for Removal of Equipment					0	0	0

Assumed 1500 square feet of equipment and material removed and disposed within one hour.

Disposal of Hazardous Wastes							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Wastes - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	---	Cubic yards	49.67	---	---	---
	Total for Removal of Equipment					---	---

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	21	Hours	177.40	3,690.01	3	11,070.02
	4-Person Labor Crew	21	Hours	70.96	1,476.00	3	4,427.99
		21	Hours	70.96	1,476.00	3	4,427.99
		21	Hours	70.96	1,476.00	3	4,427.99
		21	Hours	70.96	1,476.00	3	4,427.99
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
	Per Diem (for Project Engineer and 4-Person Labor Crew) includes 3 estimated work days	5	People	102.90	514.50	3	1,543.50
Total for Decontamination					17,028.49	30	51,085.48

Assume 200 square meters of material decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Equipment Wipes	14	5	195.14	910.68	3	2,732.03
	Field Engineer - Equipment Wipes		5	195.14	910.68	3	2,732.03
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16
	Total Number of Samples	22	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					520.39	9	8,586.37

Assumed 14 wipe samples and 8 QA/QC samples will be collected.

Total for Step 3					17,548.88	39	59,671.86
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of wipe samples (14) was included within the cost estimate as there were 14 wipes samples identified within the Closure Plan. There was mention of the possibility of collecting liquid samples from the sumps and pipes of the Unit. Analysis of wipe samples were estimated by the suggested analyses provided within Table G-25.1. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	194.15	---	---	---
Organics Soil - Unit	---	---	45.30	---	---	---
Cyanide Soil - Unit	---	---	76.85	---	---	---
Metals Liquid - Unit	---	---	380.21	---	---	---
Organics Liquid - Unit	---	---	424.71	---	---	---
Cyanide Liquid - Unit	---	---	64.72	---	---	---
Metals Equipment Wipes	14	---	194.15	2,718.09	---	2,718.09
Organics Equipment Wipes	14	---	45.30	634.26	---	634.26
Cyanide Equipment Wipes	14	---	76.85	1,075.89	---	1,075.89
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				11,385.36	---	11,385.36

Assumed 14 wipe samples and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	11	Hours	212.89	2,341.74	3	7,025.21
Total for Data Validation				2,341.74	3	7,025.21

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	33	Hours	195.14	6,400.75	3	19,202.25
Sample Documentation - Field Engineer	6	Hours	195.14	1,170.87	3	3,512.61
Certification Report - Field Engineer	18	Hours	195.14	3,565.30	3	10,695.89
Certification Report - Field Engineer	9	Hours	195.14	1,782.65	3	5,347.94
Total for Sample Management				12,919.57	12	38,758.70

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				26,646.66	15	57,169.27
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Area G Outdoor Storage Unit (TA-55-OSU) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-OSU P1), pre-closure activities (Worksheet TA-55-OSU P2), decontamination of the unit structures (Worksheet TA-55-OSU P3), and analysis and sample management procedures (Worksheet TA-55-OSU P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.26; Technical Area 55, Area G Outdoor Storage Unit Closure Plan (Closure Plan).

Unit Name: LANL TA-55-OSU

The Unit consists of an asphalt pad with a variable thickness of four to six inches (in.). The permitted unit is trapezoid-shaped with dimensions of 102 feet (ft.), 86 ft., 156 ft., and 105 ft., respectively, on its four sides. The unit is sloped, elevated approximately two to four in. above ground level, and has a culvert beneath the pad running from the northwest side to the southeast side to minimize run-on of precipitation.

Contamination: The unit contains hazardous and mixed waste in both solid and liquid form. The stored wastes include characteristic and listed waste, corrosive liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-OSU P2	2-A	504,601.75
2	Sampling and Analysis Plan		2-B	14,476.20
3	Removal of Equipment and Structures	TA-55-OSU P3	3-A	50,436.70
4	Disposal of Hazardous Material		3-B	30,135.13
5	Decontamination		3-C	-
6	Decontamination Verification Samples		3-D	21,855.76
7	Analyses	TA-55-OSU P4	4-A	6,957.11
8	Data Validation		4-B	7,663.87
9	Sample Logbook		4-C	1,561.16
10	Sample Documentation		4-C	780.58
11	Subtotal of Closure Costs			638,468.26
12	Certification of Closure	TA-55-OSU P4	4-C	19,043.16
13	Total Cost of Closure (Add cost of certification report to closure costs)			657,511.42

I. GENERAL UNIT DESCRIPTION
 TA-55-OSU is trapezoid-shaped asphalt pad with dimensions of 102 feet (ft.), 86 ft., 156 ft., and 105 ft., respectively, on its four sides. For the cost estimate the maximum length and width of the pad have been used to calculate square footage.

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous waste permitted for the TA-55-OSU unit is assumed to be 29,750 gallons. All hazardous wastes will be disposed of at an off-site facility during the Removal of Hazardous Wastes. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, the entire asphalt pad (including all materials associated with it such as any underlying base course or fill) will be removed.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan there is no equipment that is expected to be reused and therefore require decontamination.

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the maximum permitted capacity of the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed that TA-55-OSU is one of the 6 units with permitted capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous waste stored at the Unit.
	Known Releases?	N/A	
1-B	Length of TA-55-OSU (feet)	156	Identified Structures on the Unit: There are no identified equipment within the Unit. The closure plan indicates that all structures(i.e., asphalt pad and underlying base course material) will be removed from the unit. Structures and Related Equipment Required for Decontamination: There are no identified structures/equipment structures requiring decontamination.
	Width of TA-55-OSU (feet)	105	
	Height of TA-55-OSU (feet) (based on maximum thickness of asphalt pad)	0.5	
	Area of TA-55-OSU (square feet)	16,380	
	Volume of TA-55-OSU (cubic feet)	8,190	
1-C	Materials identified within TA-55-OSU		No materials were identified within the Unit other than the hazardous wastes stored.
1-D	Total area of equipment/structures to be removed (asphalt pad and underlying course material) (square feet)	32,760.00	Assume that the area of base course is equal to the area of the asphalt pad.
1-D	Maximum volume of waste to be removed from TA-55-OSU (gallons)	29,750.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Wastes						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	46	Hours	177.40	8,116.24	3	24,348.72
4-Person Labor Crew	46	Hours	70.96	3,246.48	3	9,739.45
	46	Hours	70.96	3,246.48	3	9,739.45
	46	Hours	70.96	3,246.48	3	9,739.45
	46	Hours	70.96	3,246.48	3	9,739.45
Number of estimated work days (including 2 days for mobilization and demobilization)	6	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	269.50	1,347.50	3	4,042.50
Disposal of Liquid Hazardous Wastes	541	Drums	647.169	350,059.35	---	350,059.35
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 6 estimated work days	5	People /Night	100.00	3,000.00	3	9,000.00
Vehicle Rental includes the 6 estimated work days	2	Vehicles/Day	70.00	840.00	3	2,520.00
Total for Removal of Waste from Unit				21,102.18	15	443,928.38
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	14	Hours	195.14	2,821.21	3	8,463.63
Field Engineer	14	Hours	195.14	2,821.21	3	8,463.63
<i>Structural Assessment</i>						
Field Engineer	19	Hours	195.14	3,761.61	3	11,284.84
Field Engineer	19	Hours	195.14	3,761.61	3	11,284.84
<i>Reporting</i>						
Field Engineer	22	Hours	195.14	4,231.81	3	12,695.44
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.50	147.00	3	441.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				17,397.46	15	60,673.37
Total for Step 2-A				38,499.63	30	504,601.75
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	212.89	1,703.08	3	5,109.25
Field Engineer	16	Hours	195.14	3,122.32	3	9,366.95
Total for Step 2-B				1,703.08	6	14,476.20
Total for Step 2				40,202.72	36	519,077.95

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	20	Hours	177.40	\$ 3,613.37	3	10840.11
		20	Hours	70.96	\$ 1,445.34	3	4336.02
	4-Person Labor Crew	20	Hours	70.96	\$ 1,445.34	3	4336.02
		20	Hours	70.96	\$ 1,445.34	3	4336.02
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	0	---
	Airfare	5	People	1,000.00	\$ 5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	\$ 1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	\$ 420.00	3	1,260.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	99.50	\$ 497.50	3	1,492.50
	Total for Removal of Equipment					9,394.73	15

Assumed 1500 square feet of equipment and material removed and disposed within one hour.

Disposal of Equipment/Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Equipment/Structures/Hazardous Wastes - converted volume (cubic feet to cubic yards) provided for 'Total Volume of Equipment/Structure to be Removed'	2,426.67	Cubic yards	49.67	30,135.13	---	30,135.13
Total for Removal of Equipment					30,135.13	---	30,135.13

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	0	Hours	177.40	-	3	-
		0	Hours	70.96	-	3	-
	4-Person Labor Crew	0	Hours	70.96	-	3	-
		0	Hours	70.96	-	3	-
	Number of estimated work days (including 2 days for mobilization and demobilization)	0	Days	---	---	3	---
	Airfare	0	People	1,000.00	-	3	-
	Hotel/Lodging - Bare Task includes the 3 estimated work days	0	People /Night	100.00	-	3	-
	Vehicle Rental includes the 3 estimated work days	0	Vehicles/Day	70.00	-	3	-
	Per Diem (for Project Engineer and 4-Person Labor Crew) includes 3 estimated work days	0	People	(24.50)	-	3	-
Total for Decontamination					-	30	-

Assume 200 square meters of material decontaminated within one hour.
No decontamination activities were identified in the closure plan.

Collection of Decontamination Verification Samples								
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D	Field Engineer - Soil Sample from the Unit	13	---	195.14	2,536.82	3	7,610.46	
	Field Engineer - Soil Sample from the Unit		---	195.14	2,536.82	3	7,610.46	
	Field Engineer - Stormwater	3	---	195.14	585.42	3	1,756.26	
	Field Engineer - Stormwater		---	195.14	585.42	3	1,756.26	
	Field Engineer - Equipment Wipes	0	0	195.14	-	3	-	
	Field Engineer - Equipment Wipes		0	195.14	-	3	-	
	Field Engineer - Field QA/QC Samples	8	3	195.14	520.39	3	1,561.16	
	Field Engineer - Field QA/QC Samples		3	195.14	520.39	3	1,561.16	
	Total Number of Samples	24	---	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---	---
Total for Decontamination Verification					520.39	21	21,855.76	

Assumed 13 soil samples, 3 stormwater samples and 8 QA/QC samples will be collected.

Total for Step 3					520.39	51	102,427.59
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of soil samples (13) and 3 stormwater samples was included within the cost estimate as these were the required number of samples identified within the Closure Plan. There was mention of the possibility of collecting liquid samples from the sumps and pipes of the Unit. Analysis of wipe samples were estimated by the suggested analyses provided within Table G-26.1. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet. The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	13	---	194.15	---	---	---
Organics Soil - Unit	13	---	45.30	---	---	---
Cyanide Soil - Unit	13	---	76.85	---	---	---
Metals Liquid - Unit	3	---	380.21	---	---	---
Organics Liquid - Unit	3	---	424.71	---	---	---
Cyanide Liquid - Unit	3	---	64.72	---	---	---
Metals Equipment Wipes	0	---	194.15	-	---	-
Organics Equipment Wipes	0	---	45.30	-	---	-
Cyanide Equipment Wipes	0	---	76.85	-	---	-
Metals Field QA/QC	8	---	380.21	3,041.67	---	3,041.67
Organics Field QA/QC	8	---	424.71	3,397.68	---	3,397.68
Cyanide Field QA/QC	8	---	64.72	517.76	---	517.76
Total for Analysis of the Decontamination Verification Samples				6,957.11	---	6,957.11

Assumed 13 soil samples, 3 stormwater samples and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	12	Hours	212.89	2,554.62	3	7,663.87
Total for Data Validation				2,554.62	3	7,663.87

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	3	Hours	195.14	520.39	3	1,561.16
Sample Documentation - Field Engineer	1	Hours	195.14	260.19	3	780.58
Certification Report - Field Engineer	22	Hours	195.14	4,231.81	3	12,695.44
Certification Report - Field Engineer	11	Hours	195.14	2,115.91	3	6,347.72
Total for Sample Management				7,128.30	12	21,384.90

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			16,640.03		15	36,005.88
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