

LF007S.CDR - VMG 9/11/96 SAC 1

Site Characteristics

- Landfill — largely open field
- Depth to groundwater — 1 to 25 feet
- Depth to bedrock — 0 to 50 feet
- Variable soil between surface and bedrock, mostly composed of clays and silts
- Site also included in Group A for groundwater contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill

Design Assumptions

- 1,800,000 ft³ — area that contains contaminated soil (human health risk) (Areas B, D & E)
- PCBs, PAHs, and arsenic contaminated soil to a depth of 1 foot (human health risk)
- 1,300,000 ft³ — area that contains contaminated soil (ecological risk)
- Metals and PCBs contaminated soil to a depth of 1 feet (ecological risk)
- 200 cubic yards of soil within limits for Class I landfill (human health risk soil)
- 2,400 cubic yards of soil within limits for Class II landfill (ecological risk soil)
- 65,000 cubic yards of soil within limits for Class II landfill (human health risk)
- 47,000 cubic yards of soil within limits for Class II landfill (ecological risk)

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

Figure B-24.
Conceptual Design for LF007 (Group L) Soil Treatment Alternatives, Travis AFB

Cost Summary for LF007 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$113,254	\$152,600	\$265,854	\$0	\$68,116	\$68,116	\$333,969
18	\$12,920,518	\$0	\$12,920,518	\$11,882,056	\$0	\$11,882,056	\$24,802,573
19	\$18,255,191	\$91,069	\$18,346,260	\$13,926,378	\$91,069	\$14,017,447	\$32,363,706
20	\$187,328,903	\$0	\$187,328,903	\$142,669,004	\$0	\$142,669,004	\$329,997,907

Estimated Cost for LF007, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	25.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions for Details on Calculations</i>				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for LF007, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	25.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
\$0				
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)				
See Global Cost Assumptions For Details on Calculations				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				
\$0				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	
\$0	

Estimated Cost for LF007, Health-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$58,620
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$58,620
Bid Contingencies (% of Construction Subtotal)	15.0%		\$8,793
Scope Contingencies (% of Construction Subtotal)	25.0%		\$14,655
Construction Total			\$82,068
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$8,207
Permitting and Legal (% of Construction Total)	5.0%		\$4,103
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$2,462
Construction Oversight (% of Construction Total)	5.0%		\$4,103
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$12,310
Total Capital Cost			\$113,254

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$8,204	30.0	15.3725	\$126,116
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$8,204			\$126,116
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)					
<i>See Global Cost Assumptions For Details on Calculations</i>					
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$1,723	30.0	15.3725	\$26,484
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$152,600

NET PRESENT WORTH	
Capital Costs	\$113,254
Operation and Maintenance Present Worth	\$152,600
Total Alternative Cost	\$265,854

Estimated Cost for LF007, Ecological-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	25.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing	\$0	30.0	15.3725	\$0
Monitoring	\$3,662	30.0	15.3725	\$56,294
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$56,294
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions for Details on Calculations</i>				
Fencing	21%	\$0	30.0	\$0
Monitoring	21%	\$769	30.0	\$11,822
Reserved	21%	\$0	30.0	\$0
Total Operation and Maintenance Costs				\$68,116

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$68,116
Total Alternative Cost	\$68,116

Estimated Cost for LF007, Health-Based Alternative 18

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Excavation		\$156,971
Transportation, Alt 18		\$1,702,746
Landfill Disposal, Alt 18		\$4,330,015
Cleanup & Improvements		\$46,039
Reserved		\$0
Construction Subtotal		\$6,235,771
Bid Contingencies (% of Construction Subtotal)	15.0%	\$935,366
Scope Contingencies (% of Construction Subtotal)	25.0%	\$1,558,943
Construction Total		\$8,730,080
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$436,504
Permitting and Legal (% of Construction Total)	5.0%	\$436,504
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$261,902
Construction Oversight (% of Construction Total)	5.0%	\$436,504
Field and Laboratory Testing (% of Construction Total)	5.0%	\$436,504
Reporting (% of Construction Total)	10.0%	\$873,008
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$1,309,512
Total Capital Cost		\$12,920,518

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 18	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	15.3725
Excavation	16%	\$0	30.0	15.3725
Transportation, Alt 18	16%	\$0	30.0	15.3725
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725
Cleanup & Improvements	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$12,920,518
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$12,920,518

Estimated Cost for LF007, Ecological-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$119,526
Transportation, Alt 18			\$1,323,306
Landfill Disposal, Alt 18			\$4,244,561
Cleanup & Improvements			\$47,190
Reserved			\$0
Construction Subtotal			\$5,734,583
Bid Contingencies (% of Construction Subtotal)	15.0%		\$860,187
Scope Contingencies (% of Construction Subtotal)	25.0%		\$1,433,646
Construction Total			\$8,028,416
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$401,421
Permitting and Legal (% of Construction Total)	5.0%		\$401,421
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$240,852
Construction Oversight (% of Construction Total)	5.0%		\$401,421
Field and Laboratory Testing (% of Construction Total)	5.0%		\$401,421
Reporting (% of Construction Total)	10.0%		\$802,842
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$1,204,262
Total Capital Cost			\$11,882,956

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 18		\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage				
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$11,882,956
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$11,882,956

Estimated Cost for LF007, Health-Based Alternative 19

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Capping			\$8,476,459
Soil Vapor Monitoring			\$0
Cleanup & Improvements			\$46,039
Reserved			\$0
Construction Subtotal			\$8,522,498
Bid Contingencies (% of Construction Subtotal)	15.0%		\$1,278,375
Scope Contingencies (% of Construction Subtotal)	25.0%		\$2,130,625
Construction Total			\$11,931,497
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$1,193,150
Permitting and Legal (% of Construction Total)	5.0%		\$596,575
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$357,945
Construction Oversight (% of Construction Total)	5.0%		\$596,575
Field and Laboratory Testing (% of Construction Total)	5.0%		\$596,575
Reporting (% of Construction Total)	10.0%		\$1,193,150
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$1,789,725
Total Capital Cost			\$18,255,191

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Capping	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	\$4,896	30.0	15.3725	\$75,264
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O. Reserved	\$4.8%			\$75,264
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)				
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	21%	\$0	30.0	\$0
Capping	21%	\$0	30.0	\$0
Soil Vapor Monitoring	21%	\$1,028	30.0	\$15,805
Cleanup & Improvements	21%	\$0	30.0	\$0
Reserved	21%	\$0	30.0	\$0
Total Operation and Maintenance Costs				\$91,069

NET PRESENT WORTH	
Capital Costs	\$18,255,191
Operation and Maintenance Present Worth	\$91,069
Total Alternative Cost	\$18,346,260

Estimated Cost for LF007, Ecological-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$6,454,387
Soil Vapor Monitoring		\$0
Cleanup & Improvements		\$47,190
Reserved		\$0
Construction Subtotal		\$6,501,577
Bid Contingencies (% of Construction Subtotal)	15.0%	\$975,237
Scope Contingencies (% of Construction Subtotal)	25.0%	\$1,625,394
Construction Total		\$9,102,208
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$910,221
Permitting and Legal (% of Construction Total)	5.0%	\$455,110
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$273,066
Construction Oversight (% of Construction Total)	5.0%	\$455,110
Field and Laboratory Testing (% of Construction Total)	5.0%	\$455,110
Reporting (% of Construction Total)	10.0%	\$910,221
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$1,365,331
Total Capital Cost		\$13,926,378

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Capping		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$4,896	30.0	15.3725	\$75,264
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O-Reserved		\$4,896			\$75,264
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$1,028	30.0	15.3725	\$15,805
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$91,069

NET PRESENT WORTH	
Capital Costs	\$13,926,378
Operation and Maintenance Present Worth	\$91,069
Total Alternative Cost	\$14,017,447

Estimated Cost for LF007, Health-Based Alternative 20

CAPITAL COSTS		
Process Option		
Demolition & Clearing		Capital Cost \$0
Excavation		\$156,971
Transportation, Alt 20		\$3,401,048
Thermal Destruction/Landfill Disposal		\$78,485,733
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$46,039
Reserved		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$12,313,469
Scope Contingencies (% of Construction Subtotal)	25.0%	\$20,522,448
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$5,746,285
Permitting and Legal (% of Construction Total)	10.0%	\$11,492,571
Startup and Shakedown (% of Construction Total)	10.0%	\$11,492,571
Bonding and Insurance (% of Construction Total)	3.0%	\$3,447,771
Construction Oversight (% of Construction Total)	5.0%	\$5,746,285
Field and Laboratory Testing (% of Construction Total)	5.0%	\$5,746,285
Reporting (% of Construction Total)	10.0%	\$11,492,571
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$17,238,856
Total Capital Cost		
\$187,328,903		

OPERATION AND MAINTENANCE					
		Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Process Option					
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 20		\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Min: O&M Costs (% Annual O&M Unless Otherwise Specified)					
<i>See Global Cost Assumptions For Details on Calculations</i>					
	Percentage				
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					
\$0					

NET PRESENT WORTH	
Capital Costs	\$187,328,903
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$187,328,903

Estimated Cost for LF007, Ecological-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Excavation		\$119,526
Transportation, Alt 20		\$2,589,723
Thermal Destruction/Landfill Disposal		\$59,762,844
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$47,190
Reserved		\$0
Construction Subtotal		\$62,519,283
Bid Contingencies (% of Construction Subtotal)	15.0%	\$9,377,892
Scope Contingencies (% of Construction Subtotal)	25.0%	\$15,629,821
Construction Total		\$87,526,996
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$4,376,350
Permitting and Legal (% of Construction Total)	10.0%	\$8,752,700
Startup and Shakedown (% of Construction Total)	10.0%	\$8,752,700
Bonding and Insurance (% of Construction Total)	3.0%	\$2,625,810
Construction Oversight (% of Construction Total)	5.0%	\$4,376,350
Field and Laboratory Testing (% of Construction Total)	5.0%	\$4,376,350
Reporting (% of Construction Total)	10.0%	\$8,752,700
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$13,129,049
Total Capital Cost		\$142,669,044

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Final Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$142,669,044
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$142,669,044

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

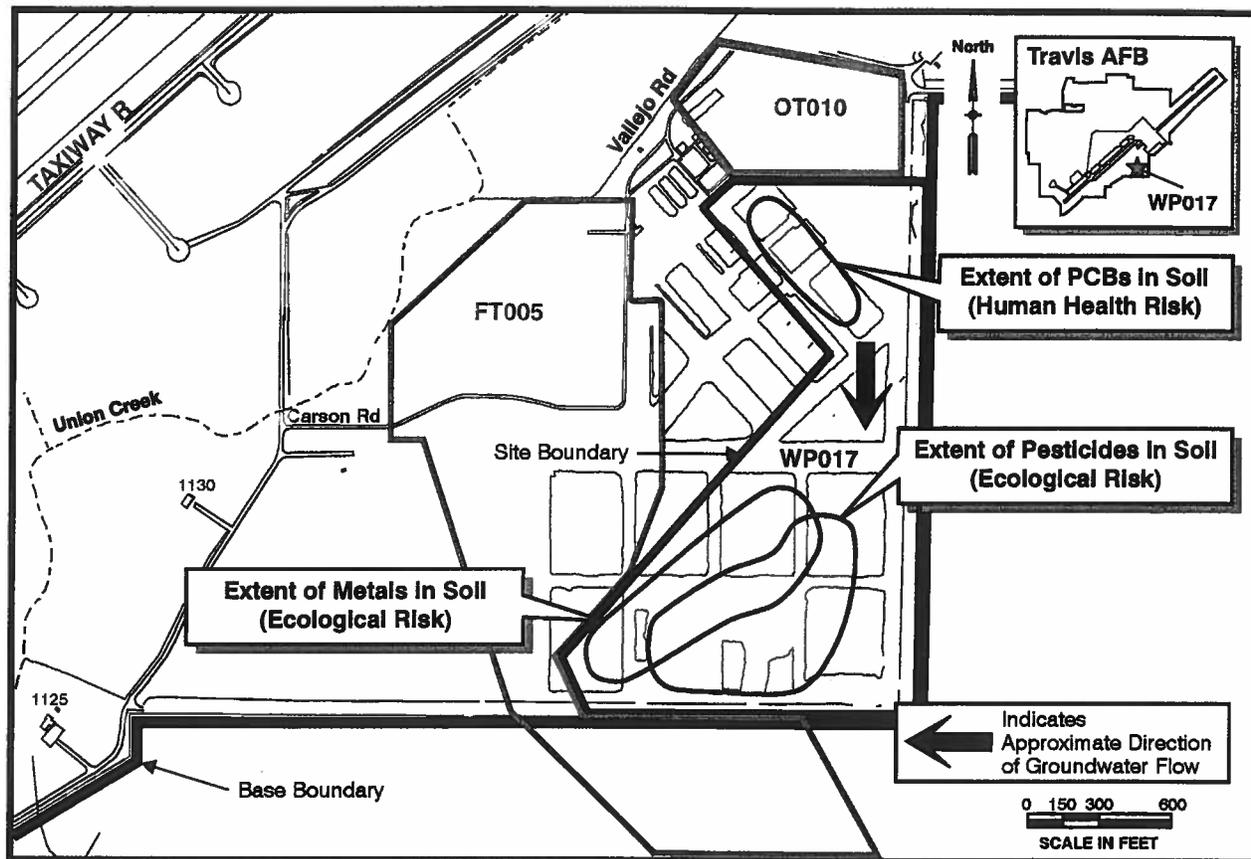
Process Option Summary for LF007

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal
- 6 Class I disposal cost of \$245/ton, Class II disposal cost of \$32.50/ton

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$0	\$0	\$0	\$0
Demolition, Curbs	\$0	\$0	\$0	\$0
Demolition, Pavements	\$0	\$0	\$0	\$0
Clear and Grub	\$0	\$0	\$0	\$0
Capping	\$8,476,459	\$0	\$6,454,387	\$0
Excavation	\$156,971	\$0	\$119,526	\$0
Transportation, Alt 18	\$1,702,746	\$0	\$1,323,306	\$0
Transportation, Alt 20	\$3,401,048	\$0	\$2,589,723	\$0
Thermal Destruction/Landfill Disposal	\$78,485,733	\$0	\$59,762,844	\$0
Class I Soils	\$222,222	\$0	\$2,844,444	\$0
Class II Soils	\$78,263,511	\$0	\$56,918,400	\$0
Landfill Disposal, Alt 18	\$4,330,015	\$0	\$4,244,561	\$0
Class I Landfill	\$90,741	\$0	\$1,161,481	\$0
Class II Landfill	\$4,239,274	\$0	\$3,083,080	\$0
Landfill Disposal, Alt 20 (Included with Incineration Costs)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvements	\$46,039	\$0	\$47,190	\$0
Cleanup and Landscaping	\$46,039	\$0	\$47,190	\$0
Improvements & Utilities	\$0	\$0	\$0	\$0
Soil Vapor Monitoring	\$0	\$4,896	\$0	\$4,896
Monitoring	\$0	\$8,204	\$0	\$3,662
Fencing	\$58,620	\$0	\$0	\$0
Reserved	\$0	\$0	\$0	\$0



WP017S.CDR - VMG 7/25/88 SAC 1

Site Characteristics

- Site is located in an inactive area of Travis AFB
- Depth to groundwater — 5 to 20 feet
- Depth to bedrock — 30 to 50 feet
- Permeable materials (sand and silt) occur through depths of 20 to 40 feet bgs
- Some low permeability soils (clay and silt) occur between 10 and 30 feet bgs

Treatment Alternatives

- Alternative #18: Backhoe, Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill

Design Assumptions

- 210,000 ft² — area that contains contaminated soil (human health risk)
- PAH contaminated soil to an average depth of 1 foot (human health risk)
- 410,000 ft² — area that contains contaminated soil (ecological risk)
- Pesticides and metals contaminated soil to a depth of 1 foot (ecological risk)
- 1,100 cubic yards of soil within limits for Class I landfill (human health risk)
- 6,800 cubic yards of soil within limits for Class II landfill (human health risk)
- 15,000 cubic yards of soil within limits for Class II landfill (ecological risk)

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

Figure B-25.
Conceptual Design for WP017 (Group M) Soil Treatment Alternatives, Travis AFB

Cost Summary for WP017 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$25,482	\$102,910	\$128,392	\$0	\$102,910	\$102,910	\$231,303
18	\$7,359,943	\$0	\$7,359,943	\$2,860,886	\$0	\$2,860,886	\$10,220,829
19	\$2,111,133	\$97,462	\$2,208,595	\$4,091,842	\$97,462	\$4,189,304	\$6,397,899
20	\$21,676,903	\$0	\$21,676,903	\$41,907,805	\$0	\$41,907,805	\$63,584,708

Estimated Cost for WP017, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
\$0				
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
No Action		21%	\$0	0.0000
Total Operation and Maintenance Costs				
\$0				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for WP017, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
\$0				
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				
\$0				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for WP017, Health-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$13,678
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$13,678
Bid Contingencies (% of Construction Subtotal)	15.0%		\$2,052
Scope Contingencies (% of Construction Subtotal)	20.0%		\$2,736
Construction Total			\$18,466
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$1,847
Permitting and Legal (% of Construction Total)	5.0%		\$923
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$554
Construction Oversight (% of Construction Total)	5.0%		\$923
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$2,770
Total Capital Cost			\$25,482

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing	\$0	30.0	27.7941	\$0
Monitoring	\$3,060	30.0	27.7941	\$85,050
Reserved	\$0	30.0	27.7941	\$0
O&M Subtotal				\$85,050
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions For Details on Calculations				
Fencing		21%		
Monitoring	\$643	21%	27.7941	\$17,860
Reserved	\$0	21%	27.7941	\$0
Total Operation and Maintenance Costs				\$102,910

NET PRESENT WORTH	
Capital Costs	\$25,482
Operation and Maintenance Present Worth	\$102,910
Total Alternative Cost	\$128,392

Estimated Cost for WP017, Ecological-Based Alternative 17

CAPITAL COSTS		
Process Option		Capital Cost
Fencing		\$0
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	0.0%	\$0
Reporting (% of Construction Total)	0.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	27.7941	\$0
Monitoring		\$3,060	30.0	27.7941	\$85,050
Reserved		\$0	30.0	27.7941	\$0
O&M Subtotal		\$3,060			\$85,050
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Fencing	21%	\$0	30.0	27.7941	\$0
Monitoring	21%	\$643	30.0	27.7941	\$17,860
Reserved	21%	\$0	30.0	27.7941	\$0
Total Operation and Maintenance Costs					\$102,910

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$102,910
Total Alternative Cost	\$102,910

Estimated Cost for WP017, Health-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$18,838
Transportation, Alt 18			\$284,969
Landfill Disposal, Alt 18			\$3,375,014
Cleanup & Improvements			\$4,834
Reserved			\$0
Construction Subtotal			\$3,683,655
Bid Contingencies (% of Construction Subtotal)	15.0%		\$552,548
Scope Contingencies (% of Construction Subtotal)	20.0%		\$736,731
Construction Total			\$4,972,934
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$248,647
Permitting and Legal (% of Construction Total)	5.0%		\$248,647
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$149,188
Construction Oversight (% of Construction Total)	5.0%		\$248,647
Field and Laboratory Testing (% of Construction Total)	5.0%		\$248,647
Reporting (% of Construction Total)	10.0%		\$497,293
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$745,940
Total Capital Cost			\$7,359,943

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	27.7941	\$0	
Excavation	\$0	30.0	27.7941	\$0	
Transportation, Alt 18	\$0	30.0	27.7941	\$0	
Landfill Disposal, Alt 18	\$0	30.0	27.7941	\$0	
Cleanup & Improvements	\$0	30.0	27.7941	\$0	
Reserved	\$0	30.0	27.7941	\$0	
Reserved	\$0	30.0	27.7941	\$0	
O&M Subtotal	\$0			\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage				
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	27.7941	\$0
Excavation	16%	\$0	30.0	27.7941	\$0
Transportation, Alt 18	16%	\$0	30.0	27.7941	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	27.7941	\$0
Cleanup & Improvements	16%	\$0	30.0	27.7941	\$0
Reserved	16%	\$0	30.0	27.7941	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$7,359,943
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$7,359,943

Estimated Cost for WP017, Ecological-Based Alternative 18

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Excavation		\$36,409
Transportation, Alt 18		\$394,430
Landfill Disposal, Alt 18		\$986,074
Cleanup & Improvements		\$14,962
Reserved		\$0
Construction Subtotal		\$1,431,875
Bid Contingencies (% of Construction Subtotal)	15.0%	\$214,781
Scope Contingencies (% of Construction Subtotal)	20.0%	\$286,375
Construction Total		\$1,932,831
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$96,652
Permitting and Legal (% of Construction Total)	5.0%	\$96,652
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$57,991
Construction Oversight (% of Construction Total)	5.0%	\$96,652
Field and Laboratory Testing (% of Construction Total)	5.0%	\$96,652
Reporting (% of Construction Total)	10.0%	\$193,303
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$289,955
Total Capital Cost		\$2,866,886

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	27.7941	\$0	
Excavation	\$0	30.0	27.7941	\$0	
Transportation, Alt 18	\$0	30.0	27.7941	\$0	
Landfill Disposal, Alt 18	\$0	30.0	27.7941	\$0	
Cleanup & Improvements	\$0	30.0	27.7941	\$0	
Reserved	\$0	30.0	27.7941	\$0	
O&M Subtotal	\$0			\$0	
Min. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage				
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	27.7941	\$0
Excavation	16%	\$0	30.0	27.7941	\$0
Transportation, Alt 18	16%	\$0	30.0	27.7941	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	27.7941	\$0
Cleanup & Improvements	16%	\$0	30.0	27.7941	\$0
Reserved	16%	\$0	30.0	27.7941	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$2,866,886
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$2,866,886

Estimated Cost for WP017, Health-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$1,017,259
Cleanup & Improvements		\$4,834
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$1,022,093
Bid Contingencies (% of Construction Subtotal)	15.0%	\$153,314
Scope Contingencies (% of Construction Subtotal)	20.0%	\$204,419
Construction Total		\$1,379,826
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$137,983
Permitting and Legal (% of Construction Total)	5.0%	\$68,991
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$41,395
Construction Oversight (% of Construction Total)	5.0%	\$68,991
Field and Laboratory Testing (% of Construction Total)	5.0%	\$68,991
Reporting (% of Construction Total)	10.0%	\$137,983
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$206,974
Total Capital Cost		\$1,586,800

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	27.7941	\$0
Capping	\$0	30.0	27.7941	\$0
Cleanup & Improvements	\$0	30.0	27.7941	\$0
Soil Vapor Monitoring	\$2,898	30.0	27.7941	\$80,547
Reserved	\$0	30.0	27.7941	\$0
O&M Subtotal				\$80,547
Mile O&M Cost (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	21%	\$0	30.0	\$0
Capping	21%	\$0	30.0	\$0
Cleanup & Improvements	21%	\$0	30.0	\$0
Soil Vapor Monitoring	21%	\$609	30.0	\$16,915
Reserved	21%	\$0	30.0	\$0
Total Operation and Maintenance Costs				\$97,462

NET PRESENT WORTH	
Capital Costs	\$2,111,133
Operation and Maintenance Present Worth	\$97,462
Total Alternative Cost	\$2,208,595

Estimated Cost for WP017, Ecological-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$1,966,080
Cleanup & Improvements		\$14,962
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$1,981,042
Bid Contingencies (% of Construction Subtotal)	15.0%	\$297,156
Scope Contingencies (% of Construction Subtotal)	20.0%	\$396,208
Construction Total		\$2,674,407
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$267,441
Permitting and Legal (% of Construction Total)	5.0%	\$133,720
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$80,232
Construction Oversight (% of Construction Total)	5.0%	\$133,720
Field and Laboratory Testing (% of Construction Total)	5.0%	\$133,720
Reporting (% of Construction Total)	10.0%	\$267,441
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$401,161
Total Capital Cost		\$4,091,842

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	27.7941	\$0
Capping	\$0	30.0	27.7941	\$0
Cleanup & Improvements	\$0	30.0	27.7941	\$0
Soil Vapor Monitoring	\$2,898	30.0	27.7941	\$80,547
Reserved	\$0	30.0	27.7941	\$0
O&M Subtotal	\$2,898			\$80,547
Misc O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
See Global Cost Assumptions For Details on Calculations				
Demolition & Clearing	21%	\$0	30.0	\$0
Capping	21%	\$0	30.0	\$0
Cleanup & Improvements	21%	\$0	30.0	\$0
Soil Vapor Monitoring	21%	\$609	30.0	\$16,915
Reserved	21%	\$0	30.0	\$0
Total Operation and Maintenance Costs				\$97,462

NET PRESENT WORTH	
Capital Costs	\$4,091,842
Operation and Maintenance Present Worth	\$97,462
Final Alternative Cost	\$4,189,304

Estimated Cost for WP017, Health-Based Alternative 20

CAPITAL COSTS		
Process Option	Capital Cost	
Demolition & Clearing		\$0
Excavation		\$18,838
Transportation, Alt 20		\$408,160
Thermal Destruction/Landfill Disposal		\$9,419,067
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$4,834
Reserved		\$0
Construction Subtotal		\$9,850,899
Bid Contingencies (% of Construction Subtotal)	15.0%	\$1,477,635
Scope Contingencies (% of Construction Subtotal)	20.0%	\$1,970,180
Construction Total		\$13,298,714
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$664,936
Permitting and Legal (% of Construction Total)	10.0%	\$1,329,871
Startup and Shakedown (% of Construction Total)	10.0%	\$1,329,871
Bonding and Insurance (% of Construction Total)	3.0%	\$398,961
Construction Oversight (% of Construction Total)	5.0%	\$664,936
Field and Laboratory Testing (% of Construction Total)	5.0%	\$664,936
Reporting (% of Construction Total)	10.0%	\$1,329,871
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$1,994,807
Total Capital Cost		\$21,676,903

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	27.7941	\$0
Excavation	\$0	30.0	27.7941	\$0
Transportation, Alt 20	\$0	30.0	27.7941	\$0
Thermal Destruction/Landfill Disposal	\$0	30.0	27.7941	\$0
Reserved	\$0	30.0	27.7941	\$0
Reserved	\$0	30.0	27.7941	\$0
Cleanup & Improvements	\$0	30.0	27.7941	\$0
Reserved	\$0	30.0	27.7941	\$0
O&M Subtotal		\$0	30.0	\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions for Details in Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	\$0
Excavation	16%	\$0	30.0	\$0
Transportation, Alt 20	16%	\$0	30.0	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	\$0
Reserved	16%	\$0	30.0	\$0
Reserved	16%	\$0	30.0	\$0
Cleanup & Improvements	16%	\$0	30.0	\$0
Reserved	16%	\$0	30.0	\$0
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$21,676,903
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	
	\$21,676,903

Estimated Cost for WP017, Ecological-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Excavation		\$36,409
Transportation, Alt 20		\$788,859
Thermal Destruction/Landfill Disposal		\$18,204,444
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$14,962
Reserved		\$0
Construction Subtotal		\$19,044,714
Bid Contingencies (% of Construction Subtotal)	15.0%	\$2,856,701
Scope Contingencies (% of Construction Subtotal)	20.0%	\$3,808,935
Construction Total		\$25,710,350
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$1,285,515
Permitting and Legal (% of Construction Total)	10.0%	\$2,571,031
Startup and Shakedown (% of Construction Total)	10.0%	\$2,571,031
Bonding and Insurance (% of Construction Total)	3.0%	\$771,309
Construction Oversight (% of Construction Total)	5.0%	\$1,285,515
Field and Laboratory Testing (% of Construction Total)	5.0%	\$1,285,515
Reporting (% of Construction Total)	10.0%	\$2,571,031
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$3,856,546
Total Capital Cost		\$41,907,805

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	27.7941	\$0
Excavation	\$0	30.0	27.7941	\$0
Transportation, Alt 20	\$0	30.0	27.7941	\$0
Thermal Destruction/Landfill Disposal	\$0	30.0	27.7941	\$0
Reserved	\$0	30.0	27.7941	\$0
Reserved	\$0	30.0	27.7941	\$0
Cleanup & Improvements	\$0	30.0	27.7941	\$0
Reserved	\$0	30.0	27.7941	\$0
O&M Subtotal	\$0			\$0
Min. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	27.7941
Excavation	16%	\$0	30.0	27.7941
Transportation, Alt 20	16%	\$0	30.0	27.7941
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	27.7941
Reserved	16%	\$0	30.0	27.7941
Reserved	16%	\$0	30.0	27.7941
Cleanup & Improvements	16%	\$0	30.0	27.7941
Reserved	16%	\$0	30.0	27.7941
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$41,907,805
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$41,907,805

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

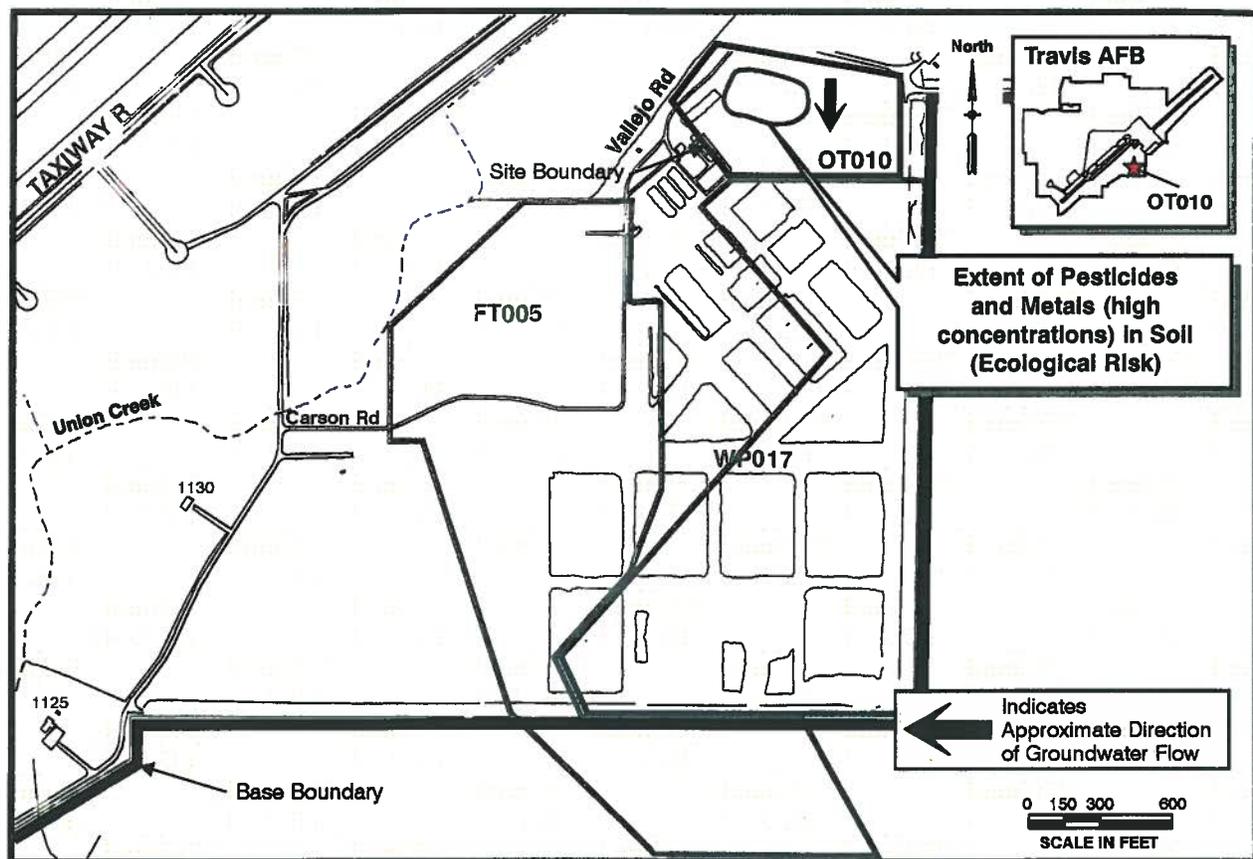
Process Option Summary for WP017

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal
- 6 Class I disposal cost of \$245/ton, Class II disposal cost of \$32.50/ton

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$0	\$0	\$0	\$0
Demolition, Curbs	\$0	\$0	\$0	\$0
Demolition, Pavements	\$0	\$0	\$0	\$0
Clear and Grub	\$0	\$0	\$0	\$0
Capping	\$1,017,259	\$0	\$1,966,080	\$0
Excavation	\$18,838	\$0	\$36,409	\$0
Transportation, Alt 18	\$284,969	\$0	\$394,430	\$0
Transportation, Alt 20	\$408,160	\$0	\$788,859	\$0
Thermal Destruction/Landfill Disposal	\$9,419,067	\$0	\$18,204,444	\$0
Class I Soils	\$8,088,889	\$0	\$0	\$0
Class II Soils	\$1,330,178	\$0	\$18,204,444	\$0
Landfill Disposal, Alt 18	\$3,375,014	\$0	\$986,074	\$0
Class I Landfill	\$3,302,963	\$0	\$0	\$0
Class II Landfill	\$72,051	\$0	\$986,074	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvments	\$4,834	\$0	\$14,962	\$0
Cleanup and Landscaping	\$4,834		\$14,962	
Improvments & Utilities	\$0		\$0	
Soil Vapor Monitoring	\$0	\$2,898	\$0	\$2,898
Monitoring	\$0	\$3,060	\$0	\$2,644
Fencing	\$13,678	\$0	\$0	\$0
Reserved	\$0	\$0	\$0	\$0



OT010S.CDR - VMG 7/25/96 SAC 1

Site Characteristics

- Site is located in an inactive area of Travis AFB
- Depth to groundwater — 5 to 20 feet
- Depth to bedrock — 30 to 50 feet
- Permeable materials (sand and silt) occur through depths of 20 to 40 feet bgs
- Some low permeability soils (clay and silt) occur between 10 and 30 feet bgs

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill

Design Assumptions

- 125,000 ft² — area which contains contaminated soil (human health risk)
- 125,000 ft² — area which contains contaminated soil (ecological risk)
- Soils contaminated with PAHs to an average depth of 1.5 feet (human health risk)
- Soils contaminated with pesticides and metals to a depth of 1 foot (ecological risk)
- Some soil poses risk to both human and ecological receptors
- 7,300 cubic yards of soil within limits for Class II landfill (human health risk)
- 4,500 cubic yards of soil within limits for Class II landfill (ecological risk)

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

Figure B-26.
Conceptual Design for OT010 (Group M) Soil Treatment Alternatives, Travis AFB

Cost Summary for OT010 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$16,381	\$61,605	\$77,987	\$0	\$61,605	\$61,605	\$139,592
18	\$1,365,773	\$0	\$1,365,773	\$862,766	\$0	\$862,766	\$2,228,539
19	\$1,306,631	\$53,905	\$1,360,536	\$1,231,154	\$53,905	\$1,285,058	\$2,645,594
20	\$20,107,537	\$0	\$20,107,537	\$12,541,343	\$0	\$12,541,343	\$32,648,880

Estimated Cost for OT010, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for OT010, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		
		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
	\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions For Details on Calculations				
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				
				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for OT010, Health-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$8,793
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$8,793
Bid Contingencies (% of Construction Subtotal)	15.0%		\$1,319
Scope Contingencies (% of Construction Subtotal)	20.0%		\$1,759
Construction Total			\$11,871
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$1,187
Permitting and Legal (% of Construction Total)	5.0%		\$594
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$356
Construction Oversight (% of Construction Total)	5.0%		\$594
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$1,781
Total Capital Cost			\$16,381

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$3,312	30.0	15.3725	\$50,914
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal					\$50,914
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Additional Cost Assumptions For Demolition Calculations					
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$696	30.0	15.3725	\$10,692
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$61,605

NET PRESENT WORTH	
Capital Costs	\$16,381
Operation and Maintenance Present Worth	\$61,605
Total Alternative Cost	\$77,987

Estimated Cost for OT010, Ecological-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing	\$0	30.0	15.3725	\$0
Monitoring	\$3,312	30.0	15.3725	\$50,914
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$50,914
Unit O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Fencing		21%		\$0
Monitoring		21%		\$10,692
Reserved		21%		\$0
Total Operation and Maintenance Costs				\$61,605

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$61,605
Total Alternative Cost	\$61,605

Estimated Cost for OT010, Health-Based Alternative 18

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Excavation		\$17,476
Transportation, Alt 18		\$189,326
Landfill Disposal, Alt 18		\$473,316
Cleanup & Improvements		\$3,452
Reserved		\$0
Construction Subtotal		\$683,570
Bid Contingencies (% of Construction Subtotal)	15.0%	\$102,536
Scope Contingencies (% of Construction Subtotal)	20.0%	\$136,714
Construction Total		\$922,820
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$46,141
Permitting and Legal (% of Construction Total)	5.0%	\$46,141
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$27,685
Construction Oversight (% of Construction Total)	5.0%	\$46,141
Field and Laboratory Testing (% of Construction Total)	5.0%	\$46,141
Reporting (% of Construction Total)	10.0%	\$92,282
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$138,423
Final Capital Cost		\$1,365,773

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Plus (%)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 18	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$0			\$0
Min. O&M Cost (i.e. Annual O&M Unless Otherwise Specified)	Percentage			
See Global Cost Assumptions for Details on Calculations				
Demolition & Clearing	16%	\$0	30.0	15.3725
Excavation	16%	\$0	30.0	15.3725
Transportation, Alt 18	16%	\$0	30.0	15.3725
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725
Cleanup & Improvements	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$1,365,773
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$1,365,773

Estimated Cost for OT010, Ecological-Based Alternative 18

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Excavation		\$10,889
Transportation, Alt 18		\$117,963
Landfill Disposal, Alt 18		\$294,907
Cleanup & Improvements		\$8,056
Reserved		\$0
Construction Subtotal		\$431,815
Bid Contingencies (% of Construction Subtotal)	15.0%	\$64,772
Scope Contingencies (% of Construction Subtotal)	20.0%	\$86,363
Construction Total		\$582,950
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$29,148
Permitting and Legal (% of Construction Total)	5.0%	\$29,148
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$17,489
Construction Oversight (% of Construction Total)	5.0%	\$29,148
Field and Laboratory Testing (% of Construction Total)	5.0%	\$29,148
Reporting (% of Construction Total)	10.0%	\$58,295
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$87,443
Total Capital Cost		\$862,766

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 18	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$0			\$0
Min. O&M Cost (or Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Post Assumptions for Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	\$0
Excavation	16%	\$0	30.0	\$0
Transportation, Alt 18	16%	\$0	30.0	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	\$0
Cleanup & Improvements	16%	\$0	30.0	\$0
Reserved	16%	\$0	30.0	\$0
Total Operation and Maintenance Cost				\$0

NET PRESENT WORTH	
Capital Costs	\$862,766
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$862,766

Estimated Cost for OT010, Health-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$629,146
Cleanup & Improvements		\$3,452
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$632,598
Bid Contingencies (% of Construction Subtotal)	15.0%	\$94,890
Scope Contingencies (% of Construction Subtotal)	20.0%	\$126,520
Construction Total		\$854,007
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$85,401
Permitting and Legal (% of Construction Total)	5.0%	\$42,700
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$25,620
Construction Oversight (% of Construction Total)	5.0%	\$42,700
Field and Laboratory Testing (% of Construction Total)	5.0%	\$42,700
Reporting (% of Construction Total)	10.0%	\$85,401
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$128,101
Total Capital Cost		\$1,306,631

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Capping	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	\$2,898	30.0	15.3725	\$44,549
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$2,898			\$44,549
Min. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions for Details on Escalations				
Demolition & Clearing		21%		\$0
Capping		21%		\$0
Cleanup & Improvements		21%		\$0
Soil Vapor Monitoring	\$609	21%		\$9,355
Reserved		21%		\$0
Total Operation and Maintenance Costs				\$53,905

NET PRESENT WORTH	
Capital Costs	\$1,306,631
Operation and Maintenance Present Worth	\$53,905
Total Alternative Cost	\$1,360,536

Estimated Cost for OT010, Ecological-Based Alternative 19

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Capping			\$588,000
Cleanup & Improvements			\$8,056
Soil Vapor Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$596,056
Bid Contingencies (% of Construction Subtotal)	15.0%		\$89,408
Scope Contingencies (% of Construction Subtotal)	20.0%		\$119,211
Construction Total			\$804,675
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$80,468
Permitting and Legal (% of Construction Total)	5.0%		\$40,234
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$24,140
Construction Oversight (% of Construction Total)	5.0%		\$40,234
Field and Laboratory Testing (% of Construction Total)	5.0%		\$40,234
Reporting (% of Construction Total)	10.0%		\$80,468
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$120,701
Total Capital Cost			\$1,231,154

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Capping		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$2,898	30.0	15.3725	\$44,549
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$2,898			\$44,549
Misc. O&M Costs (% Annual O&M unless Otherwise Specified)	Percentage				
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$609	30.0	15.3725	\$9,355
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Cost					\$53,905

NET PRESENT WORTH	
Capital Costs	\$1,231,154
Operation and Maintenance Present Worth	\$53,905
Total Alternative Cost	\$1,285,059

Estimated Cost for OT010, Health-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$17,476
Transportation, Alt 20			\$378,652
Thermal Destruction/Landfill Disposal			\$8,738,133
Reserved			\$0
Reserved			\$0
Cleanup & Improvements			\$3,452
Reserved			\$0
Construction Subtotal			\$9,137,713
Bid Contingencies (% of Construction Subtotal)	15.0%		\$1,370,657
Scope Contingencies (% of Construction Subtotal)	20.0%		\$1,827,543
Construction Total			\$12,335,913
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$616,796
Permitting and Legal (% of Construction Total)	10.0%		\$1,233,591
Startup and Shakedown (% of Construction Total)	10.0%		\$1,233,591
Bonding and Insurance (% of Construction Total)	3.0%		\$370,077
Construction Oversight (% of Construction Total)	5.0%		\$616,796
Field and Laboratory Testing (% of Construction Total)	5.0%		\$616,796
Reporting (% of Construction Total)	10.0%		\$1,233,591
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$1,850,387
Total Capital Cost			\$20,107,537

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal				\$0	
Misc. O&M Costs (If Annual O&M Rates Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$20,107,537
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$20,107,537

Estimated Cost for OT010, Ecological-Based Alternative 20

CAPITAL COSTS		
Process Option		
Demolition & Clearing		Capital Cost
Excavation		\$0
Transportation, Alt 20		\$10,889
Thermal Destruction/Landfill Disposal		\$235,926
Reserved		\$5,444,444
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$8,056
Reserved		\$0
Construction Subtotal		\$5,699,315
Bid Contingencies (% of Construction Subtotal)	15.0%	\$854,897
Scope Contingencies (% of Construction Subtotal)	20.0%	\$1,139,863
Construction Total		\$7,694,075
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$384,704
Permitting and Legal (% of Construction Total)	10.0%	\$769,408
Startup and Shakedown (% of Construction Total)	10.0%	\$769,408
Bonding and Insurance (% of Construction Total)	3.0%	\$230,822
Construction Oversight (% of Construction Total)	5.0%	\$384,704
Field and Laboratory Testing (% of Construction Total)	5.0%	\$384,704
Reporting (% of Construction Total)	10.0%	\$769,408
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$1,154,111
Total Capital Cost		\$12,541,343

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal		\$0		\$0	
Misc. O&M Costs (% Annual D&M Unless Otherwise Specified)					
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$12,541,343
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$12,541,343

OT010 Cost Summary Sheet

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

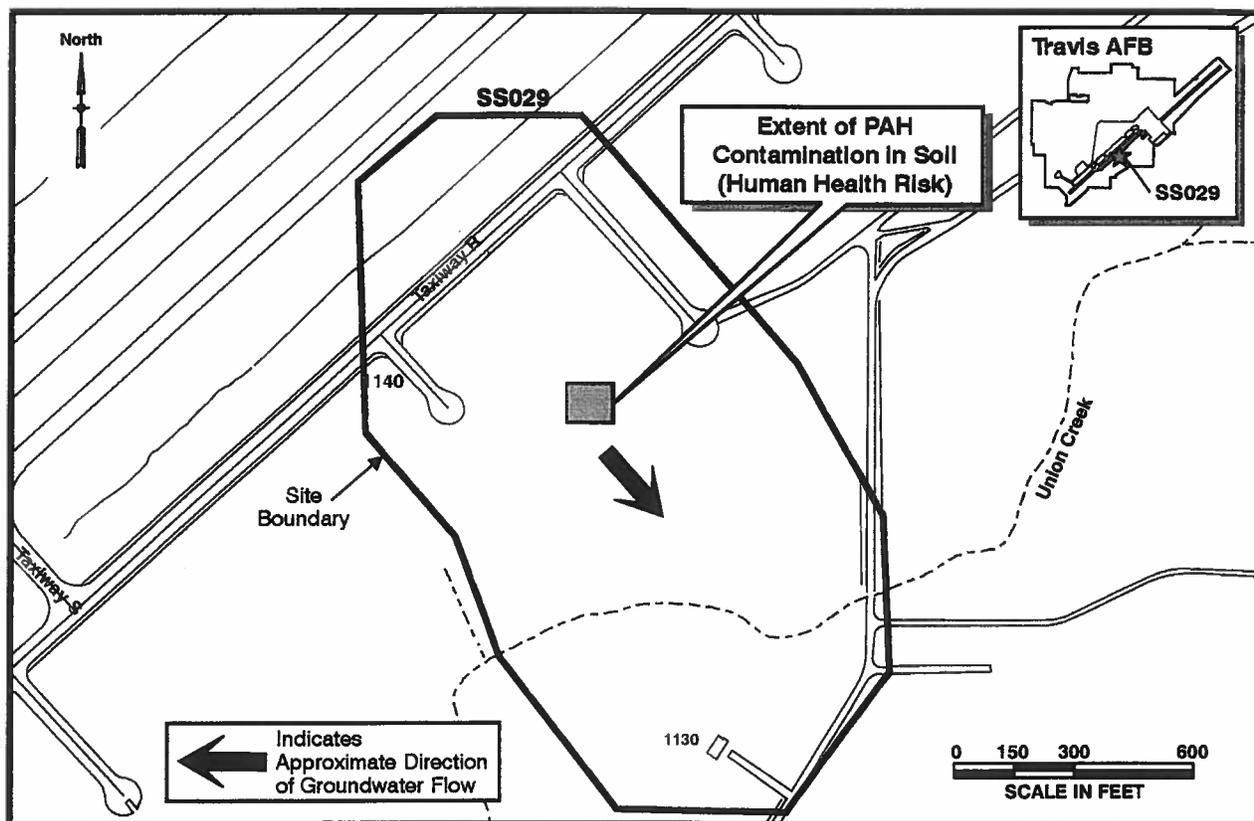
Process Option Summary for OT010

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Costs	O&M Costs	Capital Costs	O&M Costs
Demolition & Clearing	\$0	\$0	\$0	\$0
Demolition, Curbs	\$0	\$0	\$0	\$0
Demolition, Pavements	\$0	\$0	\$0	\$0
Clear and Grub	\$0	\$0	\$0	\$0
Capping	\$629,146	\$0	\$588,000	\$0
Excavation	\$17,476	\$0	\$10,889	\$0
Transportation, Alt 18	\$189,326	\$0	\$117,963	\$0
Transportation, Alt 20	\$378,652	\$0	\$235,926	\$0
Thermal Destruction/Landfill Disposal	\$8,738,133	\$0	\$5,444,444	\$0
Class I Soils	\$0	\$0	\$0	\$0
Class II Soils	\$8,738,133	\$0	\$5,444,444	\$0
Landfill Disposal, Alt 18	\$473,316	\$0	\$294,907	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$473,316	\$0	\$294,907	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvements	\$3,452	\$0	\$8,056	\$0
Cleanup and Landscaping	\$3,452	\$0	\$8,056	\$0
Improvements & Utilities	\$0	\$0	\$0	\$0
Soil Vapor Monitoring	\$0	\$2,898	\$0	\$2,898
Monitoring	\$0	\$3,312	\$0	\$932
Fencing	\$8,793	\$0	\$0	\$0
Reserved	\$0	\$0	\$0	\$0



SS029S.CDR - VMG 7/25/06 SAC 1

Site Characteristics

- Open field is located between abandoned taxiway and Union Creek
- Depth to groundwater — 10 feet
- Depth to bedrock — 30 feet
- Site also included in Group E for groundwater contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill

Design Assumptions

- 10,000 ft² — area which contains contaminated soil (human health risk)
- Soils contaminated with SVOCs (PAHs) to a depth of 7.5 feet (human health risk)
- 2,780 cubic yards of soil within limits for Class II landfill (human health risk)

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

**Figure B-27. Conceptual Design for SS029 (MW-329 Area)
(Group M) Soil Treatment Alternatives, Travis AFB**

Cost Summary for SS029 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$7,281	\$61,605	\$68,886	\$0	\$0	\$0	\$68,886
18	\$525,268	\$0	\$525,268	\$0	\$0	\$0	\$525,268
19	\$106,274	\$53,905	\$160,179	\$0	\$0	\$0	\$160,179
20	\$7,985,368	\$0	\$7,985,368	\$0	\$0	\$0	\$7,985,368

Estimated Cost for SS029, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal	\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
No Action	21%	\$0	0.0	0.0000
Total Operating and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS029, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
No Action	21%	\$0	0.0	\$0
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS029, Health-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$3,908
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$3,908
Bid Contingencies (% of Construction Subtotal)	15.0%		\$586
Scope Contingencies (% of Construction Subtotal)	20.0%		\$782
Construction Total			\$5,276
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$528
Permitting and Legal (% of Construction Total)	5.0%		\$264
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$158
Construction Oversight (% of Construction Total)	5.0%		\$264
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$791
Total Capital Cost			\$7,281

OPERATION AND MAINTENANCE						
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Fencing		\$0	30.0	15.3725	\$0	
Monitoring		\$3,312	30.0	15.3725	\$50,914	
Reserved		\$0	30.0	15.3725	\$0	
O&M Subtotal					\$50,914	
Value/Year Cost (% Annual O&M Unless Otherwise Specified)		Percentage				
<i>See Global Cost Assumptions for Details on Calculations</i>						
Fencing		21%	\$0	30.0	15.3725	\$0
Monitoring		21%	\$696	30.0	15.3725	\$10,692
Reserved		21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Cost					\$61,605	

NET PRESENT WORTH	
Capital Costs	\$7,281
Operation and Maintenance Present Worth	\$61,605
Total Alternative Cost	\$68,886

Estimated Cost for SS029, Ecological-Based Alternative 17

CAPITAL COSTS		
Process Option		Capital Cost
Fencing		\$0
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	0.0%	\$0
Reporting (% of Construction Total)	0.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (YE)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Other O&M Costs (% Annual O&M Unless Otherwise Specified)					
<i>See Global Cost Assumptions For Details on Calculations</i>		Percentage			
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS029, Health-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$6,667
Transportation, Alt 18			\$72,222
Landfill Disposal, Alt 18			\$180,556
Cleanup & Improvements			\$3,452
Reserved			\$0
Construction Subtotal			\$242,897
Bid Contingencies (% of Construction Subtotal)	15.0%		\$39,435
Scope Contingencies (% of Construction Subtotal)	20.0%		\$52,579
Construction Total			\$334,911
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$17,746
Permitting and Legal (% of Construction Total)	5.0%		\$17,746
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$10,647
Construction Oversight (% of Construction Total)	5.0%		\$17,746
Field and Laboratory Testing (% of Construction Total)	5.0%		\$17,746
Reporting (% of Construction Total)	10.0%		\$35,491
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$53,237
Total Capital Cost			\$525,268

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 18	\$0	30.0	15.3725	\$0	
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal					
Misc. O&M Costs (if Annual O&M Rates Differ, Specify)					
See Global Cost Assumptions for Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$525,268
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$525,268

Estimated Cost for SS029, Ecological-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 18			\$0
Landfill Disposal, Alt 18			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 18		\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
D&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS029, Health-Based Alternative 19

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Capping			\$48,000
Cleanup & Improvements			\$3,452
Soil Vapor Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$51,452
Bid Contingencies (% of Construction Subtotal)	15.0%		\$7,718
Scope Contingencies (% of Construction Subtotal)	20.0%		\$10,290
Construction Total			\$69,460
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$6,946
Permitting and Legal (% of Construction Total)	5.0%		\$3,473
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$2,084
Construction Oversight (% of Construction Total)	5.0%		\$3,473
Field and Laboratory Testing (% of Construction Total)	5.0%		\$3,473
Reporting (% of Construction Total)	10.0%		\$6,946
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$10,419
Total Capital Cost			\$106,274

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Capping		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$2,898	30.0	15.3725	\$44,549
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$2,898			\$44,549
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$609	30.0	15.3725	\$9,355
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$53,905

NET PRESENT WORTH	
Capital Costs	\$106,274
Operation and Maintenance Present Worth	\$53,905
Total Alternative Cost	\$160,179

Estimated Cost for SS029, Ecological-Based Alternative 19

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Capping			\$0
Cleanup & Improvements			\$0
Soil Vapor Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Capping		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
Site Global Cost Assumptions For Demolition Calculations					
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS029, Health-Based Alternative 20

CAPITAL COSTS		
Process Option		
Demolition & Clearing		Capital Cost \$0
Excavation		\$6,667
Transportation, Alt 20		\$144,444
Thermal Destruction/Landfill Disposal		\$3,333,333
Transportation, Alt 20		\$144,444
Reserved		\$0
Reserved		\$0
Reserved		\$0
Construction Subtotal		\$3,628,388
Bid Contingencies (% of Construction Subtotal)	15.0%	\$544,333
Scope Contingencies (% of Construction Subtotal)	20.0%	\$725,778
Construction Total		\$4,898,499
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$244,950
Permitting and Legal (% of Construction Total)	10.0%	\$489,900
Startup and Shakedown (% of Construction Total)	10.0%	\$489,900
Bonding and Insurance (% of Construction Total)	3.0%	\$146,970
Construction Oversight (% of Construction Total)	5.0%	\$244,950
Field and Laboratory Testing (% of Construction Total)	5.0%	\$244,950
Reporting (% of Construction Total)	10.0%	\$489,900
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$734,850
Total Capital Cost		\$7,985,368

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 20	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0
Transportation, Alt 20	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$0			\$0
Misc. O&M Costs (% Annual O&M Cost, Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	15.3725
Excavation	16%	\$0	30.0	15.3725
Transportation, Alt 20	16%	\$0	30.0	15.3725
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725
Transportation, Alt 20	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Total Operation and Maintenance Costs				\$0

DISCOUNTED PRESENT WORTH	
Capital Costs	\$7,985,368
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$7,985,368

Estimated Cost for SS029, Ecological-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 20			\$0
Thermal Destruction/Landfill Disposal			\$0
Reserved			\$0
Reserved			\$0
Cleanup & Improvments			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$0
Permitting and Legal (% of Construction Total)	10.0%		\$0
Startup and Shakedown (% of Construction Total)	10.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 20		\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Cleanup & Improvments		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Min. O&M Costs (9. Annual O&M Rates Otherwise Specified)		Percentage			
See Signal Cost Assumptions For Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvments	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

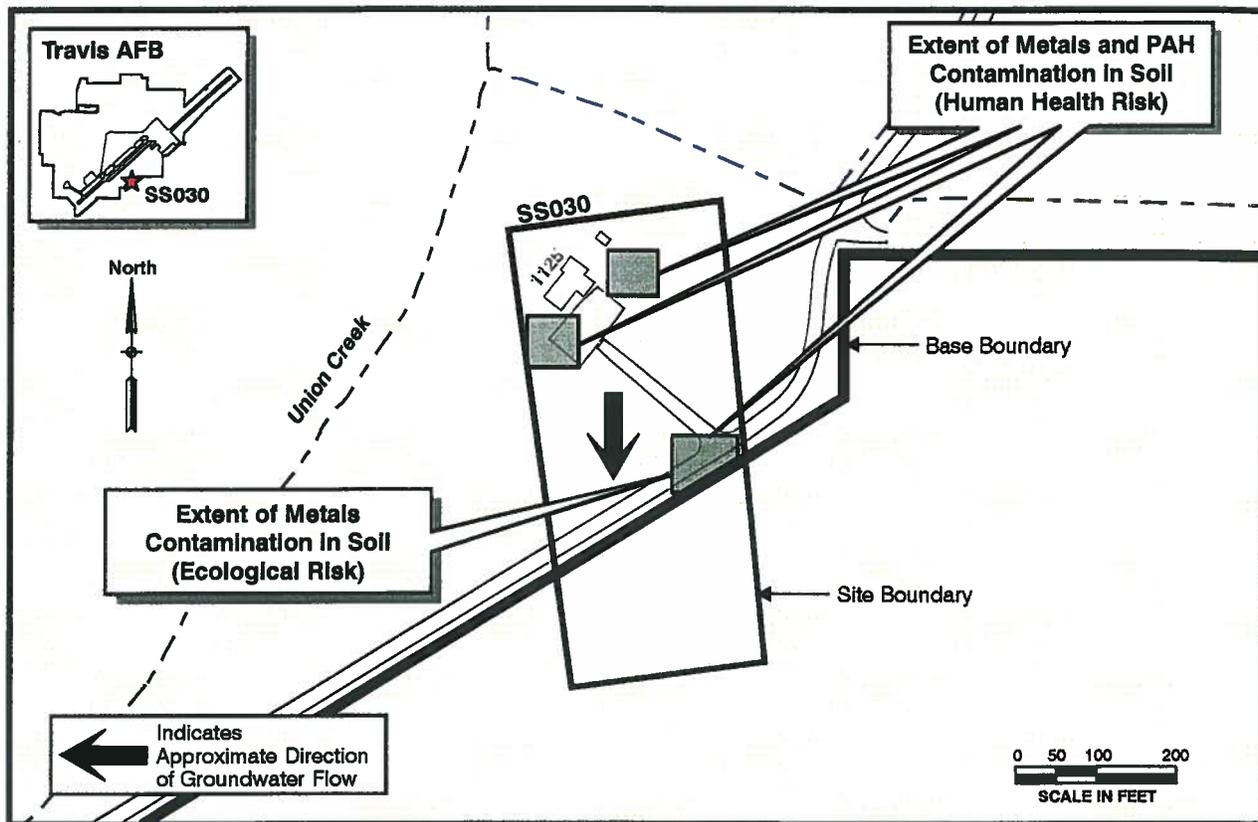
Process Option Summary for SS029

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$0	\$0	\$0	\$0
Demolition, Curbs	\$0	\$0	\$0	\$0
Demolition, Pavements	\$0	\$0	\$0	\$0
Clear and Grub	\$0	\$0	\$0	\$0
Capping	\$48,000	\$0	\$0	\$0
Excavation	\$6,667	\$0	\$0	\$0
Transportation, Alt 18	\$72,222	\$0	\$0	\$0
Transportation, Alt 20	\$144,444	\$0	\$0	\$0
Thermal Destruction/Landfill Disposal	\$3,333,333	\$0	\$0	\$0
Class I Soils	\$0	\$0	\$0	\$0
Class II Soils	\$3,333,333	\$0	\$0	\$0
Landfill Disposal, Alt 18	\$180,556	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$180,556	\$0	\$0	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvements	\$3,452	\$0	\$0	\$0
Cleanup and Landscaping	\$3,452	\$0	\$0	\$0
Improvements & Utilities	\$0	\$0	\$0	\$0
Soil Vapor Monitoring	\$0	\$2,898	\$0	\$0
Monitoring	\$0	\$3,312	\$0	\$0
Fencing	\$3,908	\$0	\$0	\$0
Reserved	\$0	\$0	\$0	\$0



SS030S.CDR - VMG 7/25/96 SAC 1

Site Characteristics

- Approximately 25% of the area is covered by pavement or buildings
- Low permeability soils (clay and silt) to a depth of between 15 and 25 feet bgs
- More permeable materials (sands and silts) below 15 to 25 feet bgs
- Depth to groundwater — 10 feet
- Depth to bedrock — 25 feet
- Site also included in Group F for groundwater contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill

Design Assumptions

- 30,000 ft² — area which contains contaminated soil (human health risk)
- 10,000 ft² (contained within human health risk soil) — area which contains contaminated soil (ecological risk)
- Soils contaminated with SVOCs (PAHs) and metals to 4.5 feet (human health risk)
- Soils contaminated with metals to 3 feet (ecological risk contained within human health risk soil)
- 3,500 cubic yards of soil within limits for Class II landfill (human health risk)
- No incremental volume of ecological risk soil

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

Figure B-28. Conceptual Design for SS030 (MW-269 Area) (Group M) Soil Treatment Alternatives, Travis AFB

Cost Summary for SS030 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$25,773	\$61,605	\$87,378	\$0	\$0	\$0	\$87,378
18	\$873,014	\$0	\$873,014	\$0	\$0	\$0	\$873,014
19	\$1,249,563	\$53,905	\$1,303,468	\$0	\$0	\$0	\$1,303,468
20	\$12,819,101	\$0	\$12,819,101	\$0	\$0	\$0	\$12,819,101

Estimated Cost for SS030, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
	\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified): See Global Cost Assumptions For Details on Calculations	Percentage			
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS030, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions for Details on Calculations</i>				
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS030, Health-Based Alternative 17

CAPITAL COSTS		
Process Option		Capital Cost
Fencing		\$13,834
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$13,834
Bid Contingencies (% of Construction Subtotal)	15.0%	\$2,075
Scope Contingencies (% of Construction Subtotal)	20.0%	\$2,767
Construction Total		\$18,676
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$1,868
Permitting and Legal (% of Construction Total)	5.0%	\$934
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$560
Construction Oversight (% of Construction Total)	5.0%	\$934
Field and Laboratory Testing (% of Construction Total)	0.0%	\$0
Reporting (% of Construction Total)	0.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$2,801
Total Capital Cost		\$25,773

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$3,312	30.0	15.3725	\$50,914
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$3,312			\$50,914
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$696	30.0	15.3725	\$10,692
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Cost					\$61,605

NET PRESENT WORTH	
Capital Costs	\$25,773
Operation and Maintenance Present Worth	\$61,605
Total Alternative Cost	\$87,378

Estimated Cost for SS030, Ecological-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			

OPERATION AND MAINTENANCE						
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth		
Fencing	\$0	30.0	15.3725	\$0		
Monitoring	\$0	30.0	15.3725	\$0		
Reserved	\$0	30.0	15.3725	\$0		
O&M Subtotal						
Misc. O&M Costs (% Annual O&M unless Otherwise Specified)						
See Global Cost Assumptions for Details on Calculations						
Fencing		21%	\$0	30.0	15.3725	\$0
Monitoring		21%	\$0	30.0	15.3725	\$0
Reserved		21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs						

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
TOTAL ALTERNATIVE COST	\$0

Estimated Cost for SS030, Health-Based Alternative 18

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Excavation		\$11,139
Transportation, Alt 18		\$120,675
Landfill Disposal, Alt 18		\$301,678
Cleanup & Improvements		\$3,452
Reserved		\$0
Construction Subtotal		\$436,944
Bid Contingencies (% of Construction Subtotal)	15.0%	\$65,542
Scope Contingencies (% of Construction Subtotal)	20.0%	\$87,389
Construction Total		\$589,874
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$29,494
Permitting and Legal (% of Construction Total)	5.0%	\$29,494
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$17,696
Construction Oversight (% of Construction Total)	5.0%	\$29,494
Field and Laboratory Testing (% of Construction Total)	5.0%	\$29,494
Reporting (% of Construction Total)	10.0%	\$58,987
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$88,481
Total Capital Cost		\$873,014

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 18	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions for Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	\$0
Excavation	16%	\$0	30.0	\$0
Transportation, Alt 18	16%	\$0	30.0	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	\$0
Cleanup & Improvements	16%	\$0	30.0	\$0
Reserved	16%	\$0	30.0	\$0
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$873,014
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$873,014

Estimated Cost for SS030, Ecological-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 18			\$0
Landfill Disposal, Alt 18			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)		15.0%	\$0
Scope Contingencies (% of Construction Subtotal)		20.0%	\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)		5.0%	\$0
Permitting and Legal (% of Construction Total)		5.0%	\$0
Startup and Shakedown (% of Construction Total)		0.0%	\$0
Bonding and Insurance (% of Construction Total)		3.0%	\$0
Construction Oversight (% of Construction Total)		5.0%	\$0
Field and Laboratory Testing (% of Construction Total)		5.0%	\$0
Reporting (% of Construction Total)		10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)		15.0%	\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 18		\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Mid- O&M Costs (% Annual O&M Unless Otherwise Specified)					
<i>See Global Cost Assumptions For Details on Calculations</i>					
	Percentage				
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS030, Health-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$601,517
Cleanup & Improvements		\$3,452
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$604,969
Bid Contingencies (% of Construction Subtotal)	15.0%	\$90,745
Scope Contingencies (% of Construction Subtotal)	20.0%	\$120,994
Construction Total		\$816,708
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$81,671
Permitting and Legal (% of Construction Total)	5.0%	\$40,835
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$24,501
Construction Oversight (% of Construction Total)	5.0%	\$40,835
Field and Laboratory Testing (% of Construction Total)	5.0%	\$40,835
Reporting (% of Construction Total)	10.0%	\$81,671
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$122,506
Total Capital Cost		\$1,149,563

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Capping	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	\$2,898	30.0	15.3725	\$44,549
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$2,898			\$44,549
Min. O&M Cost (% Annual O&M Unless Otherwise Specified)	Percentage			
See Global Data Assumptions for Details on Calculations				
Demolition & Clearing	21%	\$0	30.0	\$0
Capping	21%	\$0	30.0	\$0
Cleanup & Improvements	21%	\$0	30.0	\$0
Soil Vapor Monitoring	21%	\$609	30.0	\$9,355
Reserved	21%	\$0	30.0	\$0
Total Operation and Maintenance Costs				\$53,905

NET PRESENT WORTH	
Capital Costs	\$1,249,563
Operation and Maintenance Present Worth	\$53,905
Total Alternative Cost	\$1,303,468

Estimated Cost for SS030, Ecological-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$0
Cleanup & Improvements		\$0
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Capping		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Data (% Annual O&M Unless Otherwise Specified)	Percentage				
See Flowchart Cost Assumptions For Details on Calculations					
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NEED PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS030, Health-Based Alternative 20

CAPITAL COSTS		
Process Option	Capital Cost	
Demolition & Clearing		\$0
Excavation		\$11,139
Transportation, Alt 20		\$241,349
Thermal Destruction/Landfill Disposal		\$5,569,600
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$3,452
Reserved		\$0
Construction Subtotal		\$5,825,540
Bid Contingencies (% of Construction Subtotal)	15.0%	\$873,831
Scope Contingencies (% of Construction Subtotal)	20.0%	\$1,165,108
Construction Total		\$7,864,479
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$393,224
Permitting and Legal (% of Construction Total)	10.0%	\$786,448
Startup and Shakedown (% of Construction Total)	10.0%	\$786,448
Bonding and Insurance (% of Construction Total)	3.0%	\$235,934
Construction Oversight (% of Construction Total)	5.0%	\$393,224
Field and Laboratory Testing (% of Construction Total)	5.0%	\$393,224
Reporting (% of Construction Total)	10.0%	\$786,448
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$1,179,672
Total Capital Cost		\$12,819,101

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 20	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (If Annual O&M Entries Otherwise Specified)		Percentage		
See Global Cost Assumptions For Details on Calculations				
Demolition & Clearing	16%	\$0	30.0	\$0
Excavation	16%	\$0	30.0	\$0
Transportation, Alt 20	16%	\$0	30.0	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	\$0
Reserved	16%	\$0	30.0	\$0
Reserved	16%	\$0	30.0	\$0
Cleanup & Improvements	16%	\$0	30.0	\$0
Reserved	16%	\$0	30.0	\$0
Total Operation and Maintenance Cost				\$0

NET PRESENT WORTH	
Capital Costs	\$12,819,101
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	
	\$12,819,101

Estimated Cost for SS030, Ecological-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Excavation		\$0
Transportation, Alt 20		\$0
Thermal Destruction/Landfill Disposal		\$0
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$0
Permitting and Legal (% of Construction Total)	10.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal		\$0		\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions for Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

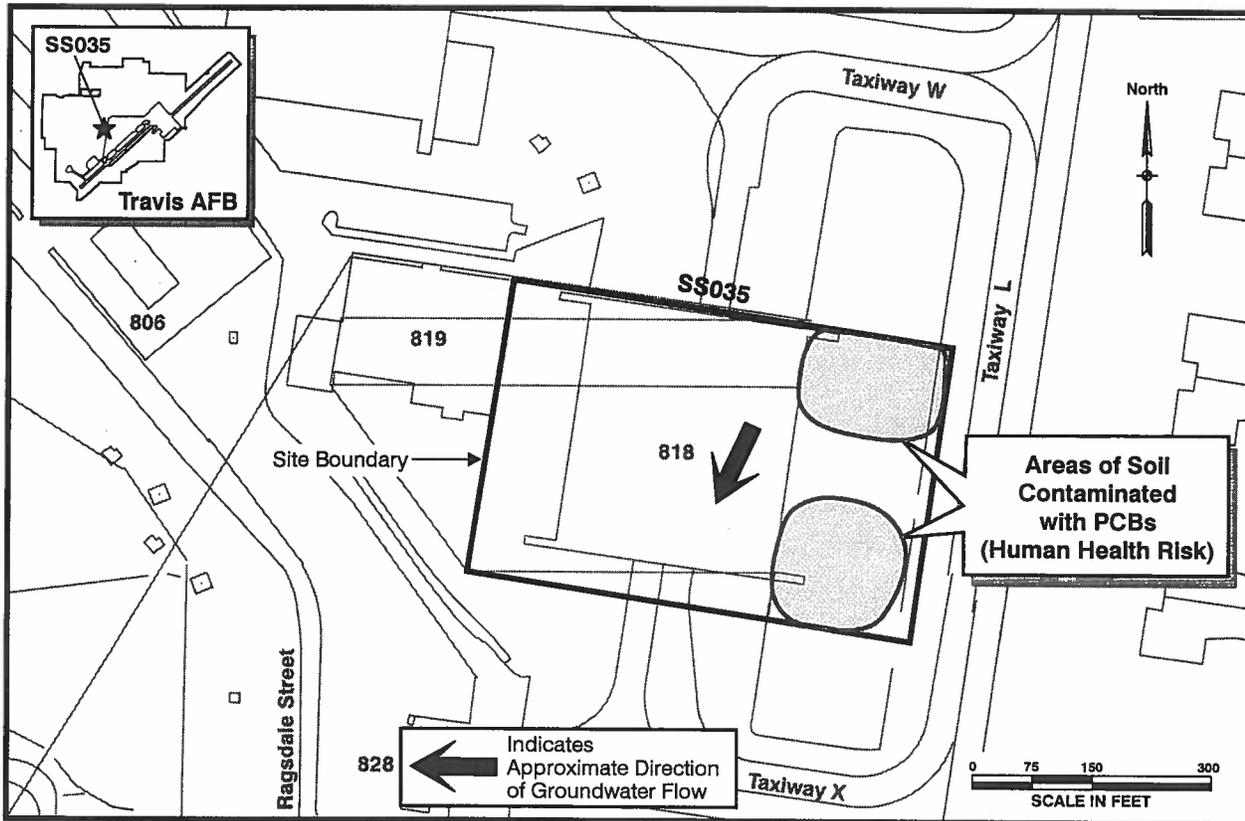
Process Option Summary for SS030

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$0	\$0	\$0	\$0
Demolition, Curbs	\$0	\$0	\$0	\$0
Demolition, Pavements	\$0	\$0	\$0	\$0
Clear and Grub	\$0	\$0	\$0	\$0
Capping	\$601,517	\$0	\$0	\$0
Excavation	\$11,139	\$0	\$0	\$0
Transportation, Alt 18	\$120,675	\$0	\$0	\$0
Transportation, Alt 20	\$241,349	\$0	\$0	\$0
Thermal Destruction/Landfill Disposal	\$5,569,600	\$0	\$0	\$0
Class I Soils	\$0	\$0	\$0	\$0
Class II Soils	\$5,569,600	\$0	\$0	\$0
Landfill Disposal, Alt 18	\$301,678	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$301,678	\$0	\$0	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvements	\$3,452	\$0	\$0	\$0
Cleanup and Landscaping	\$3,452	\$0	\$0	\$0
Improvements & Utilities	\$0	\$0	\$0	\$0
Soil Vapor Monitoring	\$0	\$2,898	\$0	\$0
Monitoring	\$0	\$3,312	\$0	\$0
Fencing	\$13,834	\$0	\$0	\$0
Reserved	\$0	\$0	\$0	\$0



SS035S.CDR - VMG 7/25/96 SAC 1

Site Characteristics

- Site is covered with grass
- Facility 818/819 includes a wash area, oil/water separator and sump, hydraulic lift storage area, and hazardous material accumulation area
- TCE in soil gas detected @ 1,100 ppbv
- Depth to groundwater — 15 feet
- Depth to bedrock — 14 feet
- Low permeability soils (clay and silt) to about 15 feet bgs
- Site also included in Group H for groundwater contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill

Design Assumptions

- 50,000 ft² — area which contains contaminated soil (human health risk)
- PCB-contaminated soil to a depth of 1 foot (human health risk)
- Contaminated soil posing ecological risk lies within area where contaminated soil poses human health risk
- 1,800 cubic yards of soil within limits for Class II landfill (human health risk)

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

Figure B-29.
Conceptual Design for SS035 (Group N) Soil Treatment Alternatives, Travis AFB

Cost Summary for SS035 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$0	\$56,918	\$56,918	\$0	\$0	\$0	\$56,918
18	\$379,316	\$0	\$379,316	\$0	\$0	\$0	\$379,316
19	\$529,088	\$53,905	\$582,993	\$0	\$0	\$0	\$582,993
20	\$5,097,269	\$0	\$5,097,269	\$0	\$0	\$0	\$5,097,269

Estimated Cost for SS035, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
\$0				
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
See Global Cost Assumptions For Details on Calculations				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				
\$0				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	
\$0	

Estimated Cost for SS035, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
\$0				
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
See Global Cost Assumptions for Details on Calculations				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				
\$0				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	
\$0	

Estimated Cost for SS035, Health-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$3,060	30.0	15.3725	\$47,040
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal					\$47,040
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See General Cost Assumptions For Details on Calculations</i>					
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$643	30.0	15.3725	\$9,878
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$9,878

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$9,878
Total Alternative Cost	\$9,878

Estimated Cost for SS035, Ecological-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing	\$0	30.0	15.3725	\$0
Monitoring	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Fencing		21%		\$0
Monitoring		21%		\$0
Reserved		21%		\$0
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS035, Health-Based Alternative 18

CAPITAL COSTS		
<i>Process Option</i>		<i>Capital Cost</i>
Demolition & Clearing		\$18,441
Excavation		\$4,396
Transportation, Alt 18		\$47,623
Landfill Disposal, Alt 18		\$119,058
Cleanup & Improvements		\$330
Reserved		\$0
Construction Subtotal		\$189,848
Bid Contingencies (% of Construction Subtotal)	15.0%	\$28,477
Scope Contingencies (% of Construction Subtotal)	20.0%	\$37,970
Construction Total		\$256,295
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$12,815
Permitting and Legal (% of Construction Total)	5.0%	\$12,815
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$7,689
Construction Oversight (% of Construction Total)	5.0%	\$12,815
Field and Laboratory Testing (% of Construction Total)	5.0%	\$12,815
Reporting (% of Construction Total)	10.0%	\$25,629
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$38,444
Total Capital Cost		\$379,316

OPERATION AND MAINTENANCE					
<i>Process Option</i>	<i>Annual O&M Cost</i>	<i>Process Option Service Time (yr)</i>	<i>Present Worth Factor</i>	<i>Process Option Present Worth</i>	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 18	\$0	30.0	15.3725	\$0	
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage				
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$379,316
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$379,316

Estimated Cost for SS035, Ecological-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 18			\$0
Landfill Disposal, Alt 18			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 18		\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS035, Health-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$18,441
Capping		\$237,384
Cleanup & Improvements		\$330
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$256,155
Bid Contingencies (% of Construction Subtotal)	15.0%	\$38,423
Scope Contingencies (% of Construction Subtotal)	20.0%	\$51,231
Construction Total		\$345,809
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$34,581
Permitting and Legal (% of Construction Total)	5.0%	\$17,290
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$10,374
Construction Oversight (% of Construction Total)	5.0%	\$17,290
Field and Laboratory Testing (% of Construction Total)	5.0%	\$17,290
Reporting (% of Construction Total)	10.0%	\$34,581
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$51,871
Total Capital Cost		\$522,088

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Capping	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	\$2,898	30.0	15.3725	\$44,549
Reserved	\$0	30.0	15.3725	\$0
Q Reserved				\$44,549
Misc. O&M Costs (vs Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	21%	\$0	30.0	\$0
Capping	21%	\$0	30.0	\$0
Cleanup & Improvements	21%	\$0	30.0	\$0
Soil Vapor Monitoring	21%	\$609	30.0	\$9,355
Reserved	21%	\$0	30.0	\$0
Total Operation and Maintenance Cost				\$53,905

NET PRESENT WORTH	
Capital Costs	\$522,088
Operation and Maintenance Present Worth	\$53,905
Total Alternative Cost	\$575,993

Estimated Cost for SS035, Ecological-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$0
Cleanup & Improvements		\$0
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Capping	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O. Reserved				\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions For Detail on Calculations				
Demolition & Clearing	21%	\$0	30.0	15.3725
Capping	21%	\$0	30.0	15.3725
Cleanup & Improvements	21%	\$0	30.0	15.3725
Soil Vapor Monitoring	21%	\$0	30.0	15.3725
Reserved	21%	\$0	30.0	15.3725
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS035, Health-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$18,441
Excavation		\$4,396
Transportation, Alt 20		\$95,247
Thermal Destruction/Landfill Disposal		\$2,198,000
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$330
Reserved		\$0
Construction Subtotal		\$2,316,414
Bid Contingencies (% of Construction Subtotal)	15.0%	\$347,462
Scope Contingencies (% of Construction Subtotal)	20.0%	\$463,283
Construction Total		\$3,127,159
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$156,358
Permitting and Legal (% of Construction Total)	10.0%	\$312,716
Startup and Shakedown (% of Construction Total)	10.0%	\$312,716
Bonding and Insurance (% of Construction Total)	3.0%	\$93,815
Construction Oversight (% of Construction Total)	5.0%	\$156,358
Field and Laboratory Testing (% of Construction Total)	5.0%	\$156,358
Reporting (% of Construction Total)	10.0%	\$312,716
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$469,074
Total Capital Cost		\$5,097,269

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 20		\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Original Cost Assumptions For Details on Calculations.</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$5,097,269
Operation and Maintenance Present Worth	\$0
Final Alternative Cost	\$5,097,269

Estimated Cost for SS035, Ecological-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 20			\$0
Thermal Destruction/Landfill Disposal			\$0
Transportation, Alt 20			\$0
Reserved			\$0
Reserved			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$0
Permitting and Legal (% of Construction Total)	10.0%		\$0
Startup and Shakedown (% of Construction Total)	10.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 20		\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal		\$0	30.0	15.3725	\$0
Transportation, Alt 20		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

SS035 Cost Summary Sheet

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

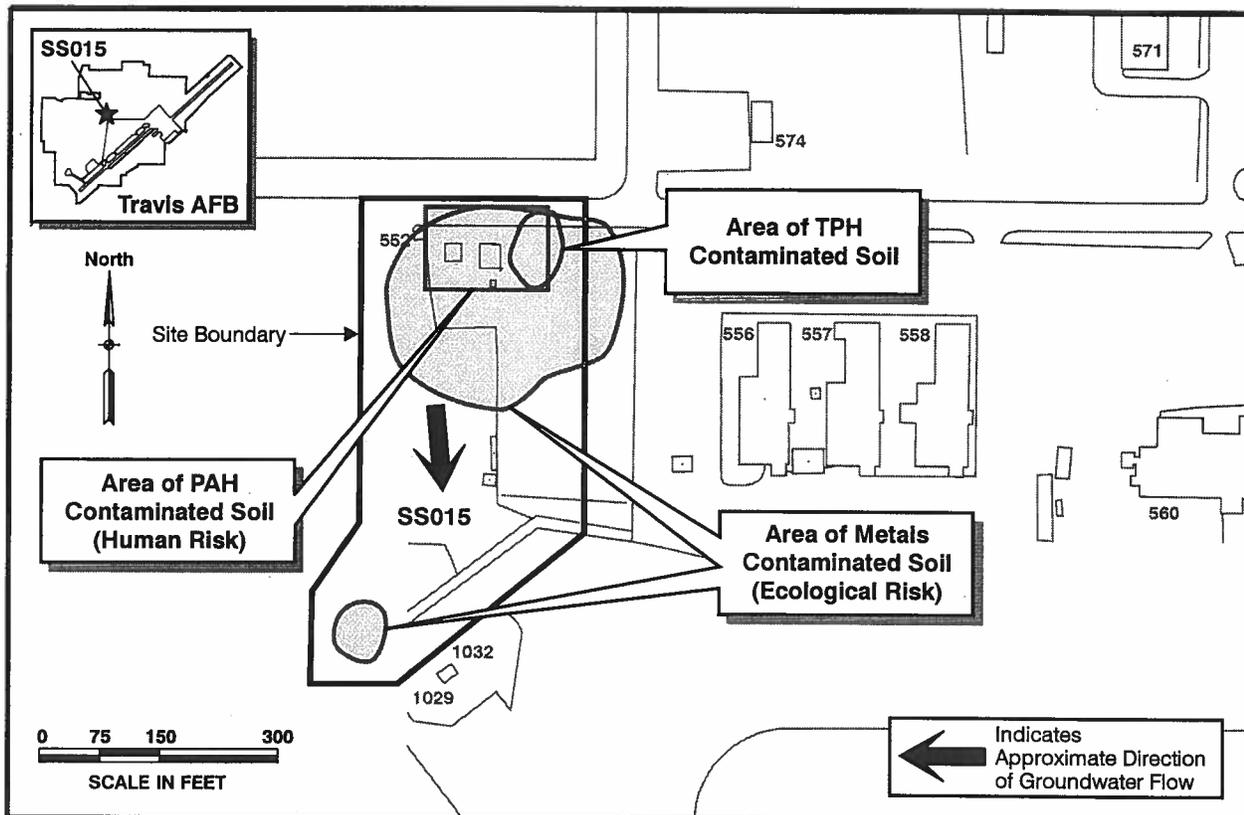
Process Option Summary for SS035

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal
- 6 Class I disposal cost of \$245/ton, Class II disposal cost of \$32.50/ton

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$18,441	\$0	\$0	\$0
Demolition, Curbs	\$325	\$0	\$0	\$0
Demolition, Pavements	\$17,827	\$0	\$0	\$0
Clear and Grub	\$289	\$0	\$0	\$0
Capping	\$237,384	\$0	\$0	\$0
Excavation	\$4,396	\$0	\$0	\$0
Transportation, Alt 18	\$47,623	\$0	\$0	\$0
Transportation, Alt 20	\$95,247	\$0	\$0	\$0
Thermal Destruction/Landfill Disposal	\$2,198,000	\$0	\$0	\$0
Landfill Disposal, Alt 18	\$119,058	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$119,058	\$0	\$0	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvements	\$330	\$0	\$0	\$0
Cleanup and Landscaping	\$330	\$0	\$0	\$0
Improvements & Utilities	\$0	\$0	\$0	\$0
Soil Vapor Monitoring	\$0	\$2,898	\$0	\$0
Monitoring	\$0	\$3,060	\$0	\$0
Fencing	\$0	\$0	\$0	\$0
Reserved	\$0	\$0	\$0	\$0



SS015.CDR - VMG 7/25/96 SAC 1

Site Characteristics

- Approximately 50% of the area is covered by pavement and buildings
- Site located in an active area of Travis AFB
- Depth to groundwater — 5 to 15 feet
- Depth to bedrock — 15 to 25 feet
- Low permeability soils (clay and silt) occur up to a depth of between 15 and 25 feet bgs
- More permeable materials (sand and silt) occur at various intervals, mostly between 10 and 15 feet bgs
- Site also included in Group B for groundwater contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill

Design Assumptions

- 6,300 ft² — area which contains contaminated soil (human health risk)
- PAH-contaminated soil to a depth of 1 foot (human health risk)
- TPH-contaminated soil in portions of area to a depth of 6.5 feet (human health risk)
- 14,000 ft² — area which contains contaminated soil (ecological risk)
- Soils contaminated with metals to a depth of 1 foot (ecological risk)
- 140 cubic yards of soil within limits for Class I landfill (human health risk)
- 460 cubic yards of soil within limits for Class II landfill (human health risk)
- 25 cubic yards of soil within limits for Class I landfill (ecological risk)
- 500 cubic yards of soil within limits for Class II landfill (ecological risk)

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

**Figure B-30.
Conceptual Design for SS015 (Group N) Soil Treatment Alternatives, Travis AFB**

Cost Summary for SS015 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$0	\$52,193	\$52,193	\$0	\$7,887	\$7,887	\$60,080
18	\$416,425	\$0	\$416,425	\$222,106	\$0	\$222,106	\$638,531
19	\$250,985	\$53,905	\$304,890	\$247,069	\$53,905	\$300,974	\$605,863
20	\$1,862,668	\$0	\$1,862,668	\$1,532,864	\$0	\$1,532,864	\$3,395,532

Estimated Cost for SS015, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
\$0				
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions for Details on Calculations</i>				
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				
\$0				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	
\$0	

Estimated Cost for SS015, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		
		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions for Details on Calculations				
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				
				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	
\$0	

Estimated Cost for SS015, Health-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$2,806	30.0	15.3725	\$43,135
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal					
Note: O&M Cost (% Annual O&M Unless Otherwise Specified)					
See Global Cost Assumptions For Details on Calculations		Percentage			
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$589	30.0	15.3725	\$9,058
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$9,058

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$52,193
Total Alternative Cost	\$52,193

Estimated Cost for SS015, Ecological-Based Alternative 17

CAPITAL COSTS		
Process Option		Capital Cost
Fencing		\$0
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	0.0%	\$0
Reporting (% of Construction Total)	0.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$424	30.0	15.3725	\$6,518
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$424			\$6,518
Other O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$89	30.0	15.3725	\$1,369
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$7,887

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$7,887
Total Alternative Cost	\$7,887

Estimated Cost for SS015, Health-Based Alternative 18

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$18,124
Excavation		\$1,444
Transportation, Alt 18		\$17,315
Landfill Disposal, Alt 18		\$98,149
Cleanup & Improvements		\$73,389
Reserved		\$0
Construction Subtotal		\$208,421
Bid Contingencies (% of Construction Subtotal)	15.0%	\$31,263
Scope Contingencies (% of Construction Subtotal)	20.0%	\$41,684
Construction Total		\$281,368
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$14,068
Permitting and Legal (% of Construction Total)	5.0%	\$14,068
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$8,441
Construction Oversight (% of Construction Total)	5.0%	\$14,068
Field and Laboratory Testing (% of Construction Total)	5.0%	\$14,068
Reporting (% of Construction Total)	10.0%	\$28,137
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$42,205
Total Capital Cost		\$416,425

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 18		\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)					
See Global Cost Assumptions For Details on Calculations					
	Percentage				
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs		\$0			\$0

NET PRESENT WORTH	
Capital Costs	\$416,425
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$416,425

Estimated Cost for SS015, Ecological-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$21,559
Excavation			\$1,231
Transportation, Alt 18			\$13,615
Landfill Disposal, Alt 18			\$43,181
Cleanup & Improvements			\$31,578
Reserved			\$0
Construction Subtotal			\$111,164
Bid Contingencies (% of Construction Subtotal)	15.0%		\$16,675
Scope Contingencies (% of Construction Subtotal)	20.0%		\$22,233
Construction Total			\$150,072
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$7,504
Permitting and Legal (% of Construction Total)	5.0%		\$7,504
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$4,502
Construction Oversight (% of Construction Total)	5.0%		\$7,504
Field and Laboratory Testing (% of Construction Total)	5.0%		\$7,504
Reporting (% of Construction Total)	10.0%		\$15,007
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$22,511
Total Capital Cost			\$222,106

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (YE)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 18		\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Min. O&M Costs (% Annual O&M Minus Overwrite Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Cost					\$0

NET PRESENT WORTH COSTS	
Capital Costs	\$222,106
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$222,106

Estimated Cost for SS015, Health-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$18,124
Capping		\$30,000
Cleanup & Improvements		\$73,389
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$121,513
Bid Contingencies (% of Construction Subtotal)	15.0%	\$18,227
Scope Contingencies (% of Construction Subtotal)	20.0%	\$24,303
Construction Total		\$164,043
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$16,404
Permitting and Legal (% of Construction Total)	5.0%	\$8,202
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$4,921
Construction Oversight (% of Construction Total)	5.0%	\$8,202
Field and Laboratory Testing (% of Construction Total)	5.0%	\$8,202
Reporting (% of Construction Total)	10.0%	\$16,404
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$24,606
Total Capital Cost		\$250,985

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Capping	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	\$2,898	30.0	15.3725	\$44,549
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$2,898			\$44,549
Unit O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions for Details on Calculations</i>				
Demolition & Clearing		21%		
Capping		21%		
Cleanup & Improvements		21%		
Soil Vapor Monitoring		21%		
Reserved		21%		
Total Operation and Maintenance Costs				\$53,905

NET PRESENT WORTH	
Capital Costs	\$250,985
Operation and Maintenance Present Worth	\$53,905
Total Alternative Cost	\$304,890

Estimated Cost for SS015, Ecological-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$21,559
Capping		\$66,480
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$119,617
Bid Contingencies (% of Construction Subtotal)	15.0%	\$17,943
Scope Contingencies (% of Construction Subtotal)	20.0%	\$23,923
Construction Total		\$161,483
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$16,148
Permitting and Legal (% of Construction Total)	5.0%	\$8,074
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$4,844
Construction Oversight (% of Construction Total)	5.0%	\$8,074
Field and Laboratory Testing (% of Construction Total)	5.0%	\$8,074
Reporting (% of Construction Total)	10.0%	\$16,148
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$24,222
Total Capital Cost		\$247,069

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Capping	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Soil Vapor Monitoring	\$2,898	30.0	15.3725	\$44,549	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$2,898			\$44,549	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage				
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$609	30.0	15.3725	\$9,355
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$53,905	

NET PRESENT WORTH	
Capital Costs	\$247,069
Operation and Maintenance Present Worth	\$53,905
Total Alternative Cost	\$300,974

Estimated Cost for SS015, Health-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$18,124
Excavation			\$1,444
Transportation, Alt 20			\$31,296
Thermal Destruction/Landfill Disposal			\$722,222
Reserved			\$0
Reserved			\$0
Cleanup & Improvements			\$73,389
Reserved			\$0
Construction Subtotal			\$946,475
Bid Contingencies (% of Construction Subtotal)	15.0%		\$126,971
Scope Contingencies (% of Construction Subtotal)	20.0%		\$169,295
Construction Total			\$1,242,741
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$114,274
Permitting and Legal (% of Construction Total)	5.0%		\$57,137
Startup and Shakedown (% of Construction Total)	10.0%		\$114,274
Bonding and Insurance (% of Construction Total)	3.0%		\$34,282
Construction Oversight (% of Construction Total)	5.0%		\$57,137
Field and Laboratory Testing (% of Construction Total)	5.0%		\$57,137
Reporting (% of Construction Total)	10.0%		\$114,274
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$171,411
Total Capital Cost			\$1,668,668

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 20	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$0
Misc. O&M Costs (% Annual O&M Rates Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	15.3725
Excavation	16%	\$0	30.0	15.3725
Transportation, Alt 20	16%	\$0	30.0	15.3725
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Cleanup & Improvements	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Total Operation and Maintenance Cost				\$0

NET PRESENT WORTH	
Capital Costs	\$1,862,668
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$1,862,668

Estimated Cost for SS015, Ecological-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$21,559
Excavation			\$1,231
Transportation, Alt 20			\$26,674
Thermal Destruction/Landfill Disposal			\$615,556
Reserved			\$0
Reserved			\$0
Cleanup & Improvements			\$31,578
Reserved			\$0
Construction Subtotal			\$696,598
Bid Contingencies (% of Construction Subtotal)	15.0%		\$104,490
Scope Contingencies (% of Construction Subtotal)	20.0%		\$139,320
Construction Total			\$940,407
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$47,020
Permitting and Legal (% of Construction Total)	10.0%		\$94,041
Startup and Shakedown (% of Construction Total)	10.0%		\$94,041
Bonding and Insurance (% of Construction Total)	3.0%		\$28,212
Construction Oversight (% of Construction Total)	5.0%		\$47,020
Field and Laboratory Testing (% of Construction Total)	5.0%		\$47,020
Reporting (% of Construction Total)	10.0%		\$94,041
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$141,061
Total Capital Cost			\$1,532,864

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$1,532,864
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$1,532,864

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

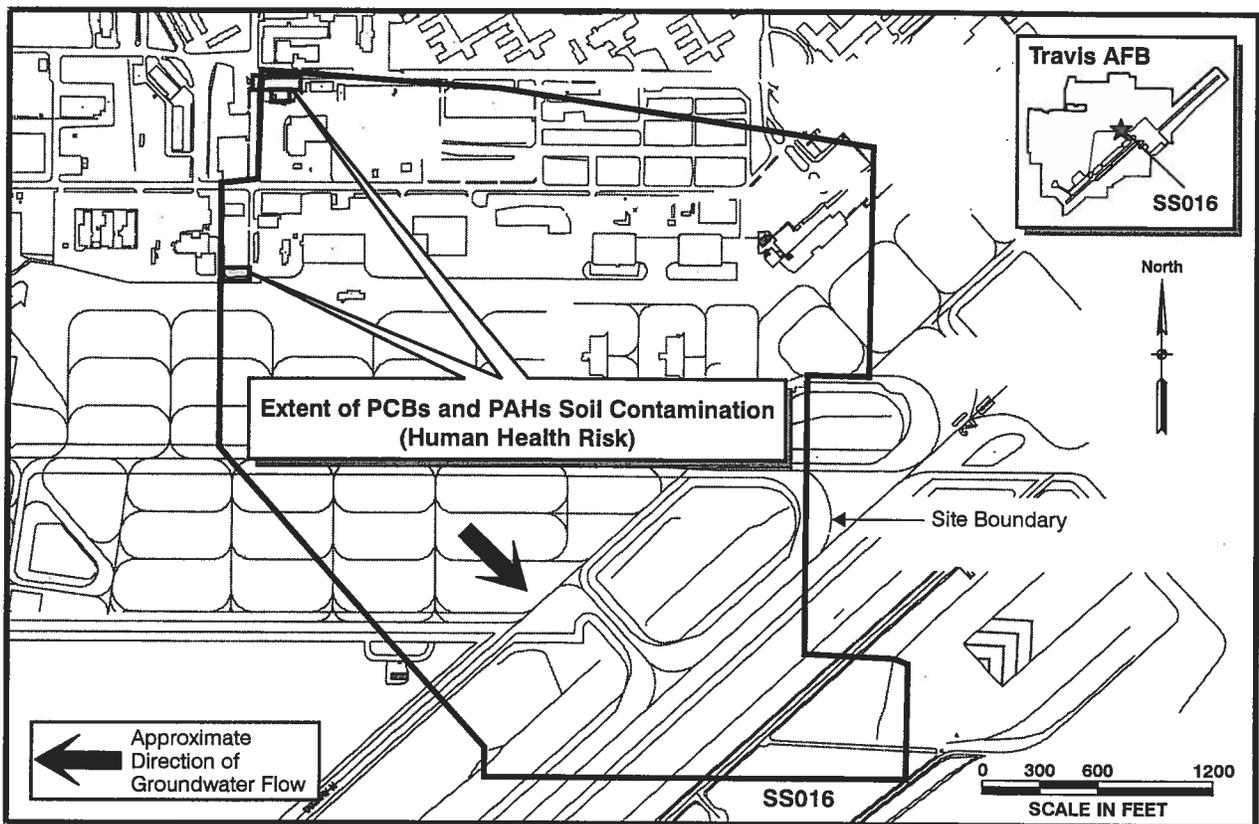
Process Option Summary for SS015

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal
- 6 Class I disposal cost of \$245/ton, and Class II disposal cost of \$32.50/ton

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$18,124	\$0	\$21,559	\$0
Demolition, Curbs	\$325	\$0	\$325	\$0
Demolition, Pavements	\$17,799	\$0	\$21,234	\$0
Clear and Grub	\$0	\$0	\$0	\$0
Capping	\$30,000	\$0	\$66,480	\$0
Excavation	\$1,444	\$0	\$1,231	\$0
Transportation, Alt 18	\$17,315	\$0	\$13,615	\$0
Transportation, Alt 20	\$31,296	\$0	\$26,674	\$0
Thermal Destruction/Landfill Disposal	\$722,222	\$0	\$615,556	\$0
Landfill Disposal, Alt 18	\$98,149	\$0	\$43,181	\$0
Class I Landfill	\$68,056		\$11,343	\$0
Class II Landfill	\$30,093		\$31,838	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvments	\$73,389	\$0	\$31,578	\$0
Cleanup and Landscaping	\$1,150	\$0	\$220	\$0
Improvments & Utilities	\$72,239	\$0	\$31,358	\$0
Soil Vapor Monitoring	\$0	\$2,898	\$0	\$2,898
Monitoring	\$0	\$2,806	\$0	\$424
Fencing	\$0	\$0	\$0	\$0
Reserved				



SS016S.CDR - VMG 7/25/96 SAC 1

Site Characteristics

- Approximately 100% of the area is covered by pavement and buildings
- Site located in an active area of Travis AFB (maintenance facilities and aircraft parking apron)
- Depth to groundwater — 10 feet
- Depth to bedrock — 30 feet
- Low permeability soils (clay and silt) to a depth of between 15 and 25 feet bgs
- More permeable material (sands and silts) below 15 to 25 feet bgs
- Site also included in Group D for groundwater contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill

Design Assumptions

- 75,000 ft² — area which contains contaminated soil (human health risk)
- Contaminated soil to a depth of 1 foot in 2 locations (human health risk)
- Contaminated soil to a depth of 4 feet in one location (human health risk)
- Soils contaminated with PAHs and PCBs (human health risk)
- 415 cubic yards of soil exceed limits for Class I landfill (human health risk)
- 1,100 cubic yards of soil exceed limits for Class II landfill (human health risk)

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

Figure B-31.
Conceptual Design for SS016 (Group N) Soil Treatment Alternatives, Travis AFB

Cost Summary for SS016 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$0	\$71,055	\$71,055	\$0	\$0	\$0	\$71,055
18	\$2,804,485	\$0	\$2,804,485	\$0	\$0	\$0	\$2,804,485
19	\$669,639	\$53,905	\$723,544	\$0	\$0	\$0	\$723,544
20	\$36,950,651	\$0	\$36,950,651	\$0	\$0	\$0	\$36,950,651

Estimated Cost for SS016, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs		\$0		\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS016, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions For Details on Calculations				
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS016, Health-Based Alternative 17

CAPITAL COSTS		
Process Option		Capital Cost
Fencing		\$0
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	0.0%	\$0
Reporting (% of Construction Total)	0.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing	\$0	30.0	15.3725	\$0
Monitoring	\$3,820	30.0	15.3725	\$58,723
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$58,723
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Fencing		21%		
Monitoring		21%		
Reserved		21%		
Total Operation and Maintenance Costs				\$71,055

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$71,055
Total Alternative Cost	\$71,055

Estimated Cost for SS016, Ecological-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS016, Health-Based Alternative 18

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$11,867
Excavation		\$31,998
Transportation, Alt 18		\$349,131
Landfill Disposal, Alt 18		\$954,755
Cleanup & Improvements		\$55,895
Reserved		\$0
Construction Subtotal		\$1,403,646
Bid Contingencies (% of Construction Subtotal)	15.0%	\$210,547
Scope Contingencies (% of Construction Subtotal)	20.0%	\$280,729
Construction Total		\$1,894,922
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$94,746
Permitting and Legal (% of Construction Total)	5.0%	\$94,746
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$56,848
Construction Oversight (% of Construction Total)	5.0%	\$94,746
Field and Laboratory Testing (% of Construction Total)	5.0%	\$94,746
Reporting (% of Construction Total)	10.0%	\$189,492
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$284,238
Total Capital Cost		\$2,804,485

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 18	\$0	30.0	15.3725	\$0	
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Min. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage				
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$2,804,485
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$2,804,485

Estimated Cost for SS016, Ecological-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 18			\$0
Landfill Disposal, Alt 18			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 18		\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal					\$0
Misc O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS016, Health-Based Alternative 19

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$11,867
Capping			\$256,440
Cleanup & Improvements			\$55,895
Soil Vapor Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$324,202
Bid Contingencies (% of Construction Subtotal)	15.0%		\$48,630
Scope Contingencies (% of Construction Subtotal)	20.0%		\$64,840
Construction Total			\$437,673
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$43,767
Permitting and Legal (% of Construction Total)	5.0%		\$21,884
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$13,130
Construction Oversight (% of Construction Total)	5.0%		\$21,884
Field and Laboratory Testing (% of Construction Total)	5.0%		\$21,884
Reporting (% of Construction Total)	10.0%		\$43,767
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$65,651
Total Capital Cost			\$669,639

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Capping		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$2,898	30.0	15.3725	\$44,549
Reserved		\$0	30.0	15.3725	\$0
O: Reserved		\$2,898			\$44,549
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)					
See Global Cost Assumptions For Details on Calculations					
	Percentages				
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$609	30.0	15.3725	\$9,355
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$53,905

NET PRESENT WORTH	
Capital Costs	\$669,639
Operation and Maintenance Present Worth	\$53,905
Total Alternative Cost	\$723,544

Estimated Cost for SS016, Ecological-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$0
Cleanup & Improvements		\$0
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Capping		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O-Reserved		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage				
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SS016, Health-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$11,867
Excavation		\$31,998
Transportation, Alt 20		\$693,285
Thermal Destruction/Landfill Disposal		\$15,998,889
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$55,895
Reserved		\$0
Construction Subtotal		\$16,791,934
Bid Contingencies (% of Construction Subtotal)	15.0%	\$2,518,790
Scope Contingencies (% of Construction Subtotal)	20.0%	\$3,358,387
Construction Total		\$22,669,111
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$1,133,456
Permitting and Legal (% of Construction Total)	10.0%	\$2,266,911
Startup and Shakedown (% of Construction Total)	10.0%	\$2,266,911
Bonding and Insurance (% of Construction Total)	3.0%	\$680,073
Construction Oversight (% of Construction Total)	5.0%	\$1,133,456
Field and Laboratory Testing (% of Construction Total)	5.0%	\$1,133,456
Reporting (% of Construction Total)	10.0%	\$2,266,911
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$3,400,367
Total Capital Cost		\$36,950,651

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$36,950,651
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$36,950,651

Estimated Cost for SS016, Ecological-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 20			\$0
Thermal Destruction/Landfill Disposal			\$0
Reserved			\$0
Reserved			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$0
Permitting and Legal (% of Construction Total)	10.0%		\$0
Startup and Shakedown (% of Construction Total)	10.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Misc. O&M Costs (Of Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

SS016 Cost Summary Sheet

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

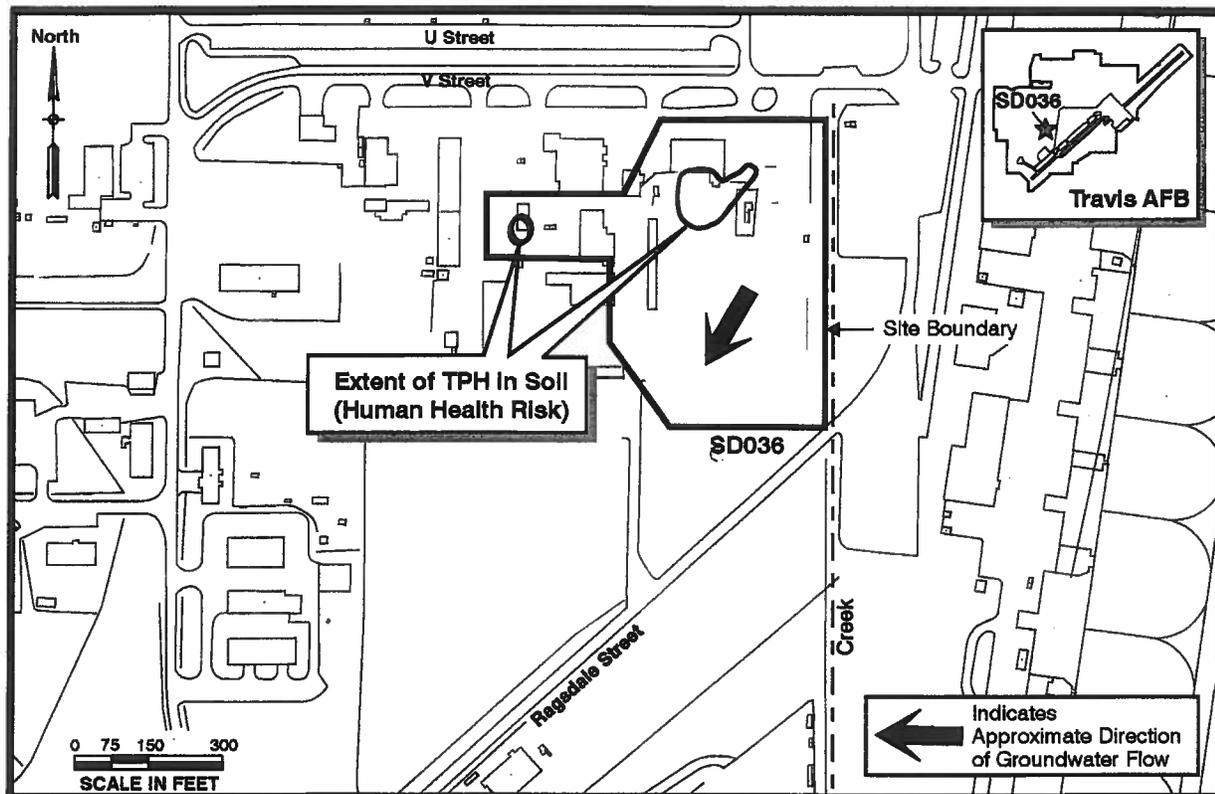
Process Option Summary for SS016

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$11,867	\$0	\$0	\$0
Demolition, Curbs	\$0	\$0	\$0	\$0
Demolition, Pavements	\$11,867	\$0	\$0	\$0
Clear and Grub	\$0	\$0	\$0	\$0
Capping	\$256,440	\$0	\$0	\$0
Excavation	\$31,998	\$0	\$0	\$0
Transportation, Alt 18	\$349,131	\$0	\$0	\$0
Transportation, Alt 20	\$693,285	\$0	\$0	\$0
Thermal Destruction/Landfill Disposal	\$15,998,889	\$0	\$0	\$0
Landfill Disposal, Alt 18	\$954,755	\$0	\$0	\$0
Class I Landfill	\$101,630	\$0	\$0	\$0
Class II Landfill	\$853,125	\$0	\$0	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvements	\$55,895	\$0	\$0	\$0
Cleanup and Landscaping	\$220	\$0	\$0	\$0
Improvements & Utilities	\$55,675	\$0	\$0	\$0
Soil Vapor Monitoring	\$0	\$2,898	\$0	\$0
Monitoring	\$0	\$3,820	\$0	\$0
Fencing	\$0	\$0	\$0	\$0
Reserved				



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Site Characteristics

- The site is paved and is surrounded by buildings
- The site is active
- Site is adjacent to SD037 — groundwater plumes overlap
- Depth to groundwater — 10 feet
- Depth to bedrock — >30 feet
- Two to four feet of asphalt and road base material
- Thick, discontinuous sand units
- Site also included in Group B for groundwater contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-Site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-Site Landfill
- Alternative #21: Soil Vapor Extraction, Offgas Catalytic Oxidation
- Alternative #22: In-situ Bioventing

Design Assumptions

- 10,800 ft² — area which contains contaminated soil (exceeds LUFT manual)
- Contaminated subsurface soil between 5 and 11 feet (exceeds LUFT manual)
- Subsurface soils contaminated with TPH-extractable and TPH-volatile (exceeds LUFT manual)
- 2,300 cubic yards of soil within limits for Class II landfill (human health risk)
- Soil gas contaminants include TPH-gasoline, TCE, DCE and vinyl chloride
- Soil gas is associated with TPH-contaminated soil and contaminated groundwater

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

**Figure B-32. Conceptual Design for SD036
(Group O) Soil Treatment Alternatives, Travis AFB**

Cost Summary for SD036 Alternatives

Alternatives	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$0	\$64,284	\$64,284	\$0	\$0	\$0	\$64,284
18	\$495,916	\$0	\$495,916	\$0	\$0	\$0	\$495,916
19	\$168,464	\$59,485	\$227,949	\$0	\$0	\$0	\$227,949
20	\$6,439,913	\$0	\$6,439,913	\$0	\$0	\$0	\$6,439,913
21	\$189,643	\$70,417	\$260,060	\$0	\$0	\$0	\$260,060
22	\$94,505	\$85,207	\$179,712	\$0	\$0	\$0	\$179,712

Estimated Cost for SD036, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions for Details on Calculations</i>				
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD036, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs		\$0		\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD036, Health-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			

OPERATION AND MAINTENANCE				
Process Option	Annual G&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing	\$0	30.0	15.3725	\$0
Monitoring	\$3,456	30.0	15.3725	\$53,127
Reserved	\$0	30.0	15.3725	\$0
G&M Subtotal				\$53,127
Misc. G&M Costs (% Annual G&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions For Demileon Calculations				
Fencing		21%		
Monitoring	\$726	21%	15.3725	\$11,157
Reserved	\$0	21%	15.3725	\$0
Total Operation and Maintenance Costs				\$64,284

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$64,284
Total Alternative Cost	\$64,284

Estimated Cost for SD036, Ecological-Based Alternative 17

CAPITAL COSTS		
Process Option		Capital Cost
Fencing		\$0
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	0.0%	\$0
Reporting (% of Construction Total)	0.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD036, Health-Based Alternative 18

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$4,512
Excavation		\$11,073
Transportation, Alt 18		\$59,981
Landfill Disposal, Alt 18		\$149,951
Cleanup & Improvements		\$22,689
Reserved		\$0
Construction Subtotal		\$248,206
Bid Contingencies (% of Construction Subtotal)	15.0%	\$37,231
Scope Contingencies (% of Construction Subtotal)	20.0%	\$49,641
Construction Total		\$335,078
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$16,754
Permitting and Legal (% of Construction Total)	5.0%	\$16,754
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$10,052
Construction Oversight (% of Construction Total)	5.0%	\$16,754
Field and Laboratory Testing (% of Construction Total)	5.0%	\$16,754
Reporting (% of Construction Total)	10.0%	\$33,508
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$50,262
Total Capital Cost		\$495,916

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 18	\$0	30.0	15.3725	\$0	
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Capital Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$495,916
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$495,916

Estimated Cost for SD036, Ecological-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 18			\$0
Landfill Disposal, Alt 18			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 18	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions for Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	15.3725
Excavation	16%	\$0	30.0	15.3725
Transportation, Alt 18	16%	\$0	30.0	15.3725
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725
Cleanup & Improvements	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD036, Health-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$4,512
Capping		\$54,360
Cleanup & Improvements		\$22,689
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$81,561
Bid Contingencies (% of Construction Subtotal)	15.0%	\$12,234
Scope Contingencies (% of Construction Subtotal)	20.0%	\$16,312
Construction Total		\$110,107
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$11,011
Permitting and Legal (% of Construction Total)	5.0%	\$5,505
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$3,303
Construction Oversight (% of Construction Total)	5.0%	\$5,505
Field and Laboratory Testing (% of Construction Total)	5.0%	\$5,505
Reporting (% of Construction Total)	10.0%	\$11,011
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$16,516
Total Capital Cost		\$168,464

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Capping	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	\$3,198	30.0	15.3725	\$49,161
Reserved	\$0	30.0	15.3725	\$0
O₂ Reserved	\$3,198			\$49,161
Min. O&M Cost (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	21%	\$0	30.0	\$0
Capping	21%	\$0	30.0	\$0
Cleanup & Improvements	21%	\$0	30.0	\$0
Soil Vapor Monitoring	21%	\$672	30.0	\$10,324
Reserved	21%	\$0	30.0	\$0
Total Operation and Maintenance Costs				\$59,485

NET PRESENT WORTH	
Capital Costs	\$168,464
Operation and Maintenance Present Worth	\$59,485
Total Alternative Cost	\$227,949

Estimated Cost for SD036, Ecological-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$0
Cleanup & Improvements		\$0
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Capping	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O-Reserved				
Miss. O&M Costs (% Annual O&M Unless Otherwise Specified)				
<i>See Global Cost Assumptions For Details on Calculations</i>				
	Percentage			
Demolition & Clearing	21%	\$0	30.0	15.3725
Capping	21%	\$0	30.0	15.3725
Cleanup & Improvements	21%	\$0	30.0	15.3725
Soil Vapor Monitoring	21%	\$0	30.0	15.3725
Reserved	21%	\$0	30.0	15.3725
Total Operation and Maintenance Costs				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD036, Health-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$4,512
Excavation			\$11,073
Transportation, Alt 20			\$119,961
Thermal Destruction/Landfill Disposal			\$2,768,333
Reserved			\$0
Reserved			\$0
Cleanup & Improvements			\$22,689
Reserved			\$0
Construction Subtotal			\$2,926,568
Bid Contingencies (% of Construction Subtotal)	15.0%		\$438,985
Scope Contingencies (% of Construction Subtotal)	20.0%		\$585,314
Construction Total			\$3,950,867
Other Project Costs			
Engineering Design (% of Construction Total)	5.0%		\$197,543
Permitting and Legal (% of Construction Total)	10.0%		\$395,087
Startup and Shakedown (% of Construction Total)	10.0%		\$395,087
Bonding and Insurance (% of Construction Total)	3.0%		\$118,526
Construction Oversight (% of Construction Total)	5.0%		\$197,543
Field and Laboratory Testing (% of Construction Total)	5.0%		\$197,543
Reporting (% of Construction Total)	10.0%		\$395,087
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$592,630
Total Capital Cost			\$6,439,913

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions for Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$6,439,913
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$6,439,913

Estimated Cost for SD036, Ecological-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Excavation		\$0
Transportation, Alt 20		\$0
Thermal Destruction/Landfill Disposal		\$0
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$0
Permitting and Legal (% of Construction Total)	10.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal		\$0	\$0	\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs		\$0	\$0	\$0	

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD036, Health-Based Alternative 21

CAPITAL COSTS					
Process Option				Capital Cost	
Soil Vapor Extraction				\$60,928	
Cleanup & Improvements				\$22,689	
Monitoring				\$0	
Construction Subtotal				\$83,617	
Bid Contingencies (% of Construction Subtotal)		15.0%		\$12,543	
Scope Contingencies (% of Construction Subtotal)		20.0%		\$16,723	
Construction Total				\$112,883	
Other Direct Costs					
Engineering Design (% of Construction Total)		10.0%		\$11,288	
Permitting and Legal (% of Construction Total)		10.0%		\$11,288	
Startup and Shakedown (% of Construction Total)		10.0%		\$11,288	
Bonding and Insurance (% of Construction Total)		3.0%		\$3,386	
Construction Oversight (% of Construction Total)		5.0%		\$5,644	
Field and Laboratory Testing (% of Construction Total)		5.0%		\$5,644	
Reporting (% of Construction Total)		10.0%		\$11,288	
Escalation (% of Construction Total, Based on Mid 1998 Start)		15.0%		\$16,932	
Total Capital Cost				\$189,643	
OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Soil Vapor Extraction		\$27,842	2.0	1.8594	\$51,770
Cleanup & Improvements		\$0	2.0	1.8594	\$0
Monitoring		\$3,456	2.0	1.8594	\$6,426
O&M Subtotal		\$31,298			\$58,196
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Soil Vapor Extraction	21%	\$5,847	2.0	1.8594	\$10,872
Cleanup & Improvements	21%	\$0	2.0	1.8594	\$0
Monitoring	21%	\$726	2.0	1.8594	\$1,349
Total Operation and Maintenance Costs					\$70,417
NET PRESENT WORTH					
Capital Costs					\$189,643
Operation and Maintenance Present Worth					\$70,417
Total Alternative Cost					\$260,060

Estimated Cost for SD036, Ecological-Based Alternative 21

CAPITAL COSTS			
Process Option			Capital Cost
Soil Vapor Extraction			\$0
Cleanup & Improvements			\$0
Monitoring			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)		15.0%	\$0
Scope Contingencies (% of Construction Subtotal)		20.0%	\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)		10.0%	\$0
Permitting and Legal (% of Construction Total)		10.0%	\$0
Startup and Shakedown (% of Construction Total)		10.0%	\$0
Bonding and Insurance (% of Construction Total)		3.0%	\$0
Construction Oversight (% of Construction Total)		5.0%	\$0
Field and Laboratory Testing (% of Construction Total)		5.0%	\$0
Reporting (% of Construction Total)		10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)		15.0%	\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&N Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Soil Vapor Extraction		\$0	2.0	1.8594	\$0
Cleanup & Improvements		\$0	2.0	1.8594	\$0
Monitoring		\$0	2.0	1.8594	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Soil Vapor Extraction	21%	\$0	2.0	1.8594	\$0
Cleanup & Improvements	21%	\$0	2.0	1.8594	\$0
Monitoring	21%	\$0	2.0	1.8594	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD036, Health-Based Alternative 22

CAPITAL COSTS		
Process Option		Capital Cost
Bioventing		\$32,672
Utilities		\$10,275
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$42,947
Bid Contingencies (% of Construction Subtotal)	15.0%	\$6,442
Scope Contingencies (% of Construction Subtotal)	20.0%	\$8,589
Construction Total		\$57,978
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$5,798
Permitting and Legal (% of Construction Total)	5.0%	\$2,899
Startup and Shakedown (% of Construction Total)	10.0%	\$5,798
Bonding and Insurance (% of Construction Total)	3.0%	\$1,739
Construction Oversight (% of Construction Total)	5.0%	\$2,899
Field and Laboratory Testing (% of Construction Total)	5.0%	\$2,899
Reporting (% of Construction Total)	10.0%	\$5,798
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$8,697
Total Capital Cost		\$94,505

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Bioventing		\$13,067	5.0	4.3295	\$56,573
Utilities		\$0	5.0	4.3295	\$0
Soil Vapor Monitoring		\$3,198	5.0	4.3295	\$13,846
Reserved		\$0	5.0	4.3295	\$0
O&M Subtotal		\$16,265			\$70,419
Misc. O&M Costs (vs Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Bioventing	21%	\$2,744	5.0	4.3295	\$11,880
Utilities	21%	\$0	5.0	4.3295	\$0
Soil Vapor Monitoring	21%	\$672	5.0	4.3295	\$2,908
Reserved	21%	\$0	5.0	4.3295	\$0
Total Operation and Maintenance Costs					\$85,207

NET PRESENT WORTH	
Capital Costs	\$94,505
Operation and Maintenance Present Worth	\$85,207
Total Alternative Cost	\$179,712

Estimated Cost for SD036, Ecological-Based Alternative 22

CAPITAL COSTS			
Process Option			Capital Cost
Bioventing			\$0
Utilities			\$0
Soil Vapor Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	10.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Bioventing		\$0	30.0	15.3725	\$0
Utilities		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (By Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Bioventing	21%	\$0	30.0	15.3725	\$0
Utilities	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

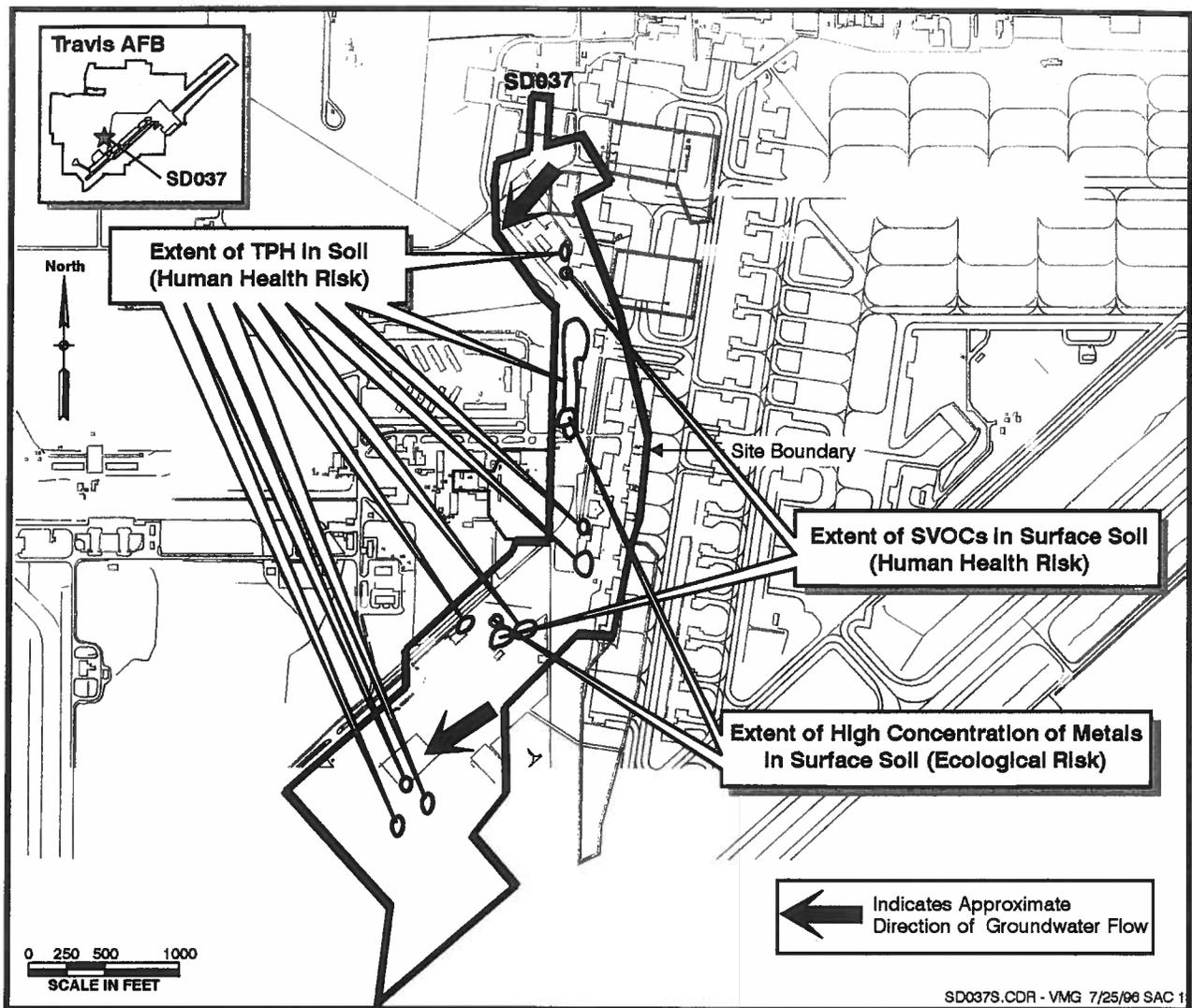
Process Option Summary for SD036

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal
- 6 Class I disposal cost of \$245/ton, Class II disposal cost of \$32.50/ton

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$4,512	\$0	\$0	\$0
Demolition, Curbs	\$325	\$0	\$0	\$0
Demolition, Pavements	\$3,898	\$0	\$0	\$0
Clear and Grub	\$289	\$0	\$0	\$0
Capping	\$54,360	\$0	\$0	\$0
Excavation	\$11,073	\$0	\$0	\$0
Transportation, Alt 18	\$59,981	\$0	\$0	\$0
Transportation, Alt 20	\$119,961	\$0	\$0	\$0
Thermal Destruction/Landfill Disposal	\$2,768,333	\$0	\$0	\$0
Class I Soils	\$0		\$0	
Class II Soils	\$2,768,333		\$0	
Landfill Disposal, Alt 18	\$149,951	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$149,951	\$0	\$0	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Utilities	\$10,275	\$0	\$0	\$0
Bioventing	\$32,672	\$13,067	\$0	\$0
Soil Vapor Extraction	\$60,928	\$27,842	\$0	\$0
SVE Equipment	\$25,930	\$12,762	\$0	\$0
Gas Distribution	\$2,382	\$0	\$0	\$0
Catalytic Oxidation	\$32,616	\$15,080	\$0	\$0
Cleanup & Improvements	\$22,689	\$0	\$0	\$0
Cleanup and Landscaping	\$220	\$0	\$0	\$0
Improvements & Utilities	\$22,469	\$0	\$0	\$0
Soil Vapor Monitoring	\$0	\$3,198	\$0	\$0
Monitoring	\$0	\$3,456	\$0	\$0
Fencing	\$0	\$0	\$0	\$0
Reserved	\$0	\$0	\$0	\$0



Site Characteristics

- The sanitary sewer system includes approximately 67,700 feet of piping, as well as associated oil water separators, sumps, and wash racks
- Depth to groundwater — 10 feet
- Depth to bedrock — 30 feet
- Subsurface geology beneath the sanitary sewer system varies
- In general, low permeability alluvium underlies the area with discontinuous permeable layers
- Weathered sandstone and shale interbed to form bedrock layer beneath the alluvium
- Site also included in Group I for groundwater contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill
- Alternative #21: Soil Vapor Extraction, Offgas Catalytic Oxidation
- Alternative #22: In-situ Bioventing

Design Assumptions

- 200,000 ft² — area which contains contaminated soil (human health risk)
- 20,000 ft² — area which contains contaminated soil (ecological risk)
- SVOC-contaminated surface soil to a depth of about 1 foot (human health risk)
- TPH-extractable and TPH-volatile-contaminated subsurface soil from about 5 feet to water table (exceeds LUFT manual)
- Metals-contaminated surface soil to a depth of 1 foot (ecological risk)
- 20,000 cubic yards of soil within limits for Class II landfill (exceeds LUFT manual)
- 740 cubic yards of soil within limits for Class II landfill (ecological risk)
- Soil gas contaminants include TPH-gasoline, benzene and TCE
- Soil gas contamination is associated with TPH-contaminated soil and contaminated groundwater

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

**Figure B-33. Conceptual Design for SD037
(Group P) Soil Treatment Alternatives, Travis AFB**

Cost Summary for SD037 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$9,101	\$135,766	\$144,867	\$0	\$89,767	\$89,767	\$234,634
18	\$4,037,117	\$0	\$4,037,117	\$95,926	\$100,038	\$195,964	\$4,233,081
19	\$1,480,840	\$102,229	\$1,583,069	\$318,546	\$206,579	\$525,125	\$2,108,193
20	\$54,878,005	\$0	\$54,878,005	\$578,162	\$100,038	\$678,199	\$55,556,205
21	\$532,594	\$99,033	\$631,628	\$0	\$0	\$0	\$631,628
22	\$452,953	\$131,674	\$584,627	\$0	\$0	\$0	\$584,627

Estimated Cost for SD037, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual G&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
G&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions For Details on Calculations				
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD037, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD037, Health-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$4,885
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$4,885
Bid Contingencies (% of Construction Subtotal)	15.0%		\$733
Scope Contingencies (% of Construction Subtotal)	20.0%		\$977
Construction Total			\$6,595
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$659
Permitting and Legal (% of Construction Total)	5.0%		\$330
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$198
Construction Oversight (% of Construction Total)	5.0%		\$330
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$989
Total Capital Cost			\$9,101

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$7,299	30.0	15.3725	\$112,204
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$7,299			\$112,204
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details in Calculations</i>					
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$1,533	30.0	15.3725	\$23,563
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$135,766

NET PRESENT WORTH	
Capital Costs	\$9,101
Operation and Maintenance Present Worth	\$135,766
Total Alternative Cost	\$144,867

Estimated Cost for SD037, Ecological-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)		15.0%	\$0
Scope Contingencies (% of Construction Subtotal)		20.0%	\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)		10.0%	\$0
Permitting and Legal (% of Construction Total)		5.0%	\$0
Startup and Shakedown (% of Construction Total)		0.0%	\$0
Bonding and Insurance (% of Construction Total)		3.0%	\$0
Construction Oversight (% of Construction Total)		5.0%	\$0
Field and Laboratory Testing (% of Construction Total)		0.0%	\$0
Reporting (% of Construction Total)		0.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)		15.0%	\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$4,826	30.0	15.3725	\$74,187
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$4,826			\$74,187
Misc. O&M Cost (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions for Details on Calculations					
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$1,013	30.0	15.3725	\$15,579
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$89,767

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$89,767
Total Alternative Cost	\$89,767

Estimated Cost for SD037, Health-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$5,610
Excavation			\$189,505
Transportation, Alt 18			\$513,244
Landfill Disposal, Alt 18			\$1,283,109
Cleanup & Improvements			\$29,111
Reserved			\$0
Construction Subtotal			\$2,020,579
Bid Contingencies (% of Construction Subtotal)	15.0%		\$303,087
Scope Contingencies (% of Construction Subtotal)	20.0%		\$404,116
Construction Total			\$2,727,782
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$136,389
Permitting and Legal (% of Construction Total)	5.0%		\$136,389
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$81,833
Construction Oversight (% of Construction Total)	5.0%		\$136,389
Field and Laboratory Testing (% of Construction Total)	5.0%		\$136,389
Reporting (% of Construction Total)	10.0%		\$272,778
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$409,167
Total Capital Cost			\$4,037,117

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 18		\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Other O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$4,037,117
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$4,037,117

Estimated Cost for SD037, Ecological-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$1,778
Transportation, Alt 18			\$4,815
Landfill Disposal, Alt 18			\$12,307
Cleanup & Improvements			\$29,111
Reserved			\$0
Construction Subtotal			\$48,011
Bid Contingencies (% of Construction Subtotal)	15.0%		\$7,202
Scope Contingencies (% of Construction Subtotal)	20.0%		\$9,602
Construction Total			\$64,815
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$3,241
Permitting and Legal (% of Construction Total)	5.0%		\$3,241
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$1,944
Construction Oversight (% of Construction Total)	5.0%		\$3,241
Field and Laboratory Testing (% of Construction Total)	5.0%		\$3,241
Reporting (% of Construction Total)	10.0%		\$6,481
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$9,722
Total Capital Cost			\$95,926

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$5,610	30.0	15.3725	\$86,239	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 18	\$0	30.0	15.3725	\$0	
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal		\$5,610		\$86,239	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$898	30.0	15.3725	\$13,798
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$100,038	

NET PRESENT WORTH	
Capital Costs	\$95,926
Operation and Maintenance Present Worth	\$100,038
Total Alternative Cost	\$195,964

Estimated Cost for SD037, Health-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$5,610
Capping		\$682,219
Cleanup & Improvements		\$29,111
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$716,940
Bid Contingencies (% of Construction Subtotal)	15.0%	\$107,541
Scope Contingencies (% of Construction Subtotal)	20.0%	\$143,388
Construction Total		\$967,869
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$96,787
Permitting and Legal (% of Construction Total)	5.0%	\$48,393
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$29,036
Construction Oversight (% of Construction Total)	5.0%	\$48,393
Field and Laboratory Testing (% of Construction Total)	5.0%	\$48,393
Reporting (% of Construction Total)	10.0%	\$96,787
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$145,180
Total Capital Cost		\$1,480,840

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Capping	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	\$5,496	30.0	15.3725	\$84,487
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$5,496			\$84,487
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
See Below Cost Assumptions for Detailed Calculations				
Demolition & Clearing	21%	\$0	30.0	\$0
Capping	21%	\$0	30.0	\$0
Cleanup & Improvements	21%	\$0	30.0	\$0
Soil Vapor Monitoring	21%	\$1,154	30.0	\$17,742
Reserved	21%	\$0	30.0	\$0
Total Operation and Maintenance Cost				\$102,229

NET PRESENT WORTH	
Capital Costs	\$1,480,840
Operation and Maintenance Present Worth	\$102,229
Total Alternative Cost	\$1,583,069

Estimated Cost for SD037, Ecological-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$96,000
Cleanup & Improvements		\$29,111
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$125,111
Bid Contingencies (% of Construction Subtotal)	15.0%	\$23,133
Scope Contingencies (% of Construction Subtotal)	20.0%	\$30,844
Construction Total		\$179,088
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$20,820
Permitting and Legal (% of Construction Total)	5.0%	\$10,410
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$6,246
Construction Oversight (% of Construction Total)	5.0%	\$10,410
Field and Laboratory Testing (% of Construction Total)	5.0%	\$10,410
Reporting (% of Construction Total)	10.0%	\$20,820
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$31,230
Total Capital Cost		\$318,546

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$5,610	30.0	15.3725	\$86,239
Capping		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$5,496	30.0	15.3725	\$84,487
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$11,106			\$170,726
Misc. O&M Costs (See Annual O&M Data unless Otherwise Specified)		Percentage			
See Global Cost Assumptions for Details on Calculations					
Demolition & Clearing	21%	\$1,178	30.0	15.3725	\$18,110
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$1,154	30.0	15.3725	\$17,742
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$206,579

NET PRESENT WORTH	
Capital Costs	\$318,546
Operation and Maintenance Present Worth	\$206,579
Total Alternative Cost	\$525,125

Estimated Cost for SD037, Health-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$5,610
Excavation		\$189,505
Transportation, Alt 20		\$1,026,487
Thermal Destruction/Landfill Disposal		\$23,688,167
Reserved		\$0
Reserved		\$0
Cleanup & Improvments		\$29,111
Reserved		\$0
Construction Subtotal		\$24,938,880
Bid Contingencies (% of Construction Subtotal)	15.0%	\$3,740,832
Scope Contingencies (% of Construction Subtotal)	20.0%	\$4,987,776
Construction Total		\$33,667,488
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$1,683,374
Permitting and Legal (% of Construction Total)	10.0%	\$3,366,749
Startup and Shakedown (% of Construction Total)	10.0%	\$3,366,749
Bonding and Insurance (% of Construction Total)	3.0%	\$1,010,025
Construction Oversight (% of Construction Total)	5.0%	\$1,683,374
Field and Laboratory Testing (% of Construction Total)	5.0%	\$1,683,374
Reporting (% of Construction Total)	10.0%	\$3,366,749
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$5,050,123
Total Capital Cost		\$54,878,005

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvments	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Misc. O&M Costs (if Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvments	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$54,878,005
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$54,878,005

Estimated Cost for SD037, Ecological-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$1,778
Transportation, Alt 20			\$9,630
Thermal Destruction/Landfill Disposal			\$222,222
Reserved			\$0
Reserved			\$0
Cleanup & Improvements			\$29,111
Reserved			\$0
Construction Subtotal			\$162,741
Bid Contingencies (% of Construction Subtotal)	15.0%		\$39,411
Scope Contingencies (% of Construction Subtotal)	20.0%		\$52,548
Construction Total			\$354,700
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$17,735
Permitting and Legal (% of Construction Total)	10.0%		\$35,470
Startup and Shakedown (% of Construction Total)	10.0%		\$35,470
Bonding and Insurance (% of Construction Total)	3.0%		\$10,641
Construction Oversight (% of Construction Total)	5.0%		\$17,735
Field and Laboratory Testing (% of Construction Total)	5.0%		\$17,735
Reporting (% of Construction Total)	10.0%		\$35,470
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$53,205
Total Capital Cost			\$578,162

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$5,610	30.0	15.3725	\$86,239
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 20	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$86,239
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
See Global Cost Assumptions For Details on Calculations				
Demolition & Clearing	16%	\$898	30.0	\$13,798
Excavation	16%	\$0	30.0	\$0
Transportation, Alt 20	16%	\$0	30.0	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	\$0
Reserved	16%	\$0	30.0	\$0
Reserved	16%	\$0	30.0	\$0
Cleanup & Improvements	16%	\$0	30.0	\$0
Reserved	16%	\$0	30.0	\$0
Total Operation and Maintenance Costs				\$100,038

NET PRESENT WORTH	
Capital Costs	\$578,162
Operation and Maintenance Present Worth	\$100,038
Total Alternative Cost	\$678,199

Estimated Cost for SD037, Health-Based Alternative 21

CAPITAL COSTS		
Process Option		Capital Cost
Soil Vapor Extraction		\$224,555
Utilities		\$10,275
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$234,830
Bid Contingencies (% of Construction Subtotal)	15.0%	\$35,225
Scope Contingencies (% of Construction Subtotal)	20.0%	\$46,966
Construction Total		\$317,021
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$31,702
Permitting and Legal (% of Construction Total)	10.0%	\$31,702
Startup and Shakedown (% of Construction Total)	10.0%	\$31,702
Bonding and Insurance (% of Construction Total)	3.0%	\$9,511
Construction Oversight (% of Construction Total)	5.0%	\$15,851
Field and Laboratory Testing (% of Construction Total)	5.0%	\$15,851
Reporting (% of Construction Total)	10.0%	\$31,702
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$47,553
Total Capital Cost		\$532,594

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Soil Vapor Extraction	\$36,718	2.0	1.8594	\$68,274
Utilities	\$0	2.0	1.8594	\$0
Monitoring	\$7,299	2.0	1.8594	\$13,572
Reserved	\$0	2.0	1.8594	\$0
Reserved	\$0	2.0	1.8594	\$0
Reserved	\$0	2.0	1.8594	\$0
O&M Subtotal	\$44,017			\$81,846
Minor O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
Soil Vapor Extraction	21%	\$7,711	2.0	\$14,338
Utilities	21%	\$0	2.0	\$0
Monitoring	21%	\$1,533	2.0	\$2,850
Reserved	21%	\$0	2.0	\$0
Reserved	21%	\$0	2.0	\$0
Reserved	21%	\$0	2.0	\$0
Total Operation and Maintenance Costs				\$99,033

BY CATEGORY TOTALS	
Capital Costs	\$532,594
Operation and Maintenance Present Worth	\$99,033
Total Alternative Cost	\$631,627

Estimated Cost for SD037, Ecological-Based Alternative 21

CAPITAL COSTS		
Process Option		Capital Cost
Soil Vapor Extraction		\$0
Utilities		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	10.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE						
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Soil Vapor Extraction		\$0	30.0	15.3725	\$0	
Utilities		\$0	30.0	15.3725	\$0	
Reserved		\$0	30.0	15.3725	\$0	
O&M Subtotal		\$0			\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage				
See Global Cost Assumptions For Details on Calculations						
Soil Vapor Extraction		21%	\$0	30.0	15.3725	\$0
Utilities		21%	\$0	30.0	15.3725	\$0
Reserved		21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0	

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD037, Health-Based Alternative 22

CAPITAL COSTS			
Process Option			Capital Cost
Bioventing			\$195,566
Utilities			\$10,275
Soil Vapor Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$205,841
Bid Contingencies (% of Construction Subtotal)	15.0%		\$30,876
Scope Contingencies (% of Construction Subtotal)	20.0%		\$41,168
Construction Total			\$277,885
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$27,789
Permitting and Legal (% of Construction Total)	5.0%		\$13,894
Startup and Shakedown (% of Construction Total)	10.0%		\$27,789
Bonding and Insurance (% of Construction Total)	3.0%		\$8,337
Construction Oversight (% of Construction Total)	5.0%		\$13,894
Field and Laboratory Testing (% of Construction Total)	5.0%		\$13,894
Reporting (% of Construction Total)	10.0%		\$27,789
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$41,683
Total Capital Cost			\$452,953

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Bioventing	\$19,639	5.0	4.3295	\$85,027	
Utilities	\$0	5.0	4.3295	\$0	
Soil Vapor Monitoring	\$5,496	5.0	4.3295	\$23,795	
Reserved	\$0	5.0	4.3295	\$0	
Subtotal				\$108,821	
Note: O&M Cost (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions for Detailed Calculations					
Bioventing	21%	\$4,124	5.0	4.3295	\$17,856
Utilities	21%	\$0	5.0	4.3295	\$0
Soil Vapor Monitoring	21%	\$1,154	5.0	4.3295	\$4,997
Reserved	21%	\$0	5.0	4.3295	\$0
Total Operation and Maintenance Cost				\$131,674	

NET PRESENT WORTH	
Capital Costs	\$452,953
Operation and Maintenance Present Worth	\$131,674
Total Alternative Cost	\$584,627

Estimated Cost for SD037, Ecological-Based Alternative 22

CAPITAL COSTS			
Process Option			Capital Cost
Bioventing			\$0
Utilities			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)		15.0%	\$0
Scope Contingencies (% of Construction Subtotal)		20.0%	\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)		10.0%	\$0
Permitting and Legal (% of Construction Total)		5.0%	\$0
Startup and Shakedown (% of Construction Total)		10.0%	\$0
Bonding and Insurance (% of Construction Total)		3.0%	\$0
Construction Oversight (% of Construction Total)		5.0%	\$0
Field and Laboratory Testing (% of Construction Total)		5.0%	\$0
Reporting (% of Construction Total)		10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)		15.0%	\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE						
Process Option		Annual G&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Bioventing		\$0	30.0	15.3725	\$0	
Utilities		\$0	30.0	15.3725	\$0	
Reserved		\$0	30.0	15.3725	\$0	
G&M Subtotal		\$0			\$0	
Minor O&M Costs (% Annual G&M Unless Otherwise Specified)		Percentage				
<i>See Global Cost Assumptions for Details on Calculations</i>						
Bioventing		21%	\$0	30.0	15.3725	\$0
Utilities		21%	\$0	30.0	15.3725	\$0
Reserved		21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0	

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

Process Option Summary for SD037

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$5,610	\$0	\$0	\$5,610
Demolition, Curbs	\$325	\$0	\$0	\$325
Demolition, Pavements	\$4,996	\$0	\$0	\$4,996
Clear and Grub	\$289	\$0	\$0	\$289
Capping	\$682,219	\$0	\$96,000	\$0
Excavation	\$189,505	\$0	\$1,778	\$0
Transportation, Alt 18	\$513,244	\$0	\$4,815	\$0
Transportation, Alt 20	\$1,026,487	\$0	\$9,630	\$0
Thermal Destruction/Landfill Disposal	\$23,688,167	\$0	\$222,222	\$0
Class I Soils	\$0	\$0	\$0	\$0
Class II Soils	\$23,688,167	\$0	\$222,222	\$0
Landfill Disposal, Alt 18	\$1,283,109	\$0	\$12,307	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$1,283,109	\$0	\$12,307	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvements	\$29,111	\$0	\$29,111	\$0
Cleanup and Landscaping	\$3,452	\$0	\$3,452	\$0
Improvements	\$25,659	\$0	\$25,659	\$0
Utilities	\$10,275	\$0	\$0	\$0
Bioventing	\$195,566	\$19,639	\$0	\$0
Soil Vapor Extraction	\$224,555	\$36,718	\$0	\$0
SVE System	\$174,120	\$16,204	\$0	\$0
Catalytic Oxidation	\$50,435	\$20,514	\$0	\$0
Soil Vapor Monitoring	\$0	\$5,496	\$0	\$5,496
Monitoring	\$0	\$7,299	\$0	\$4,826
Fencing	\$4,885	\$0	\$0	\$0
Reserved	\$0	\$0	\$0	\$0

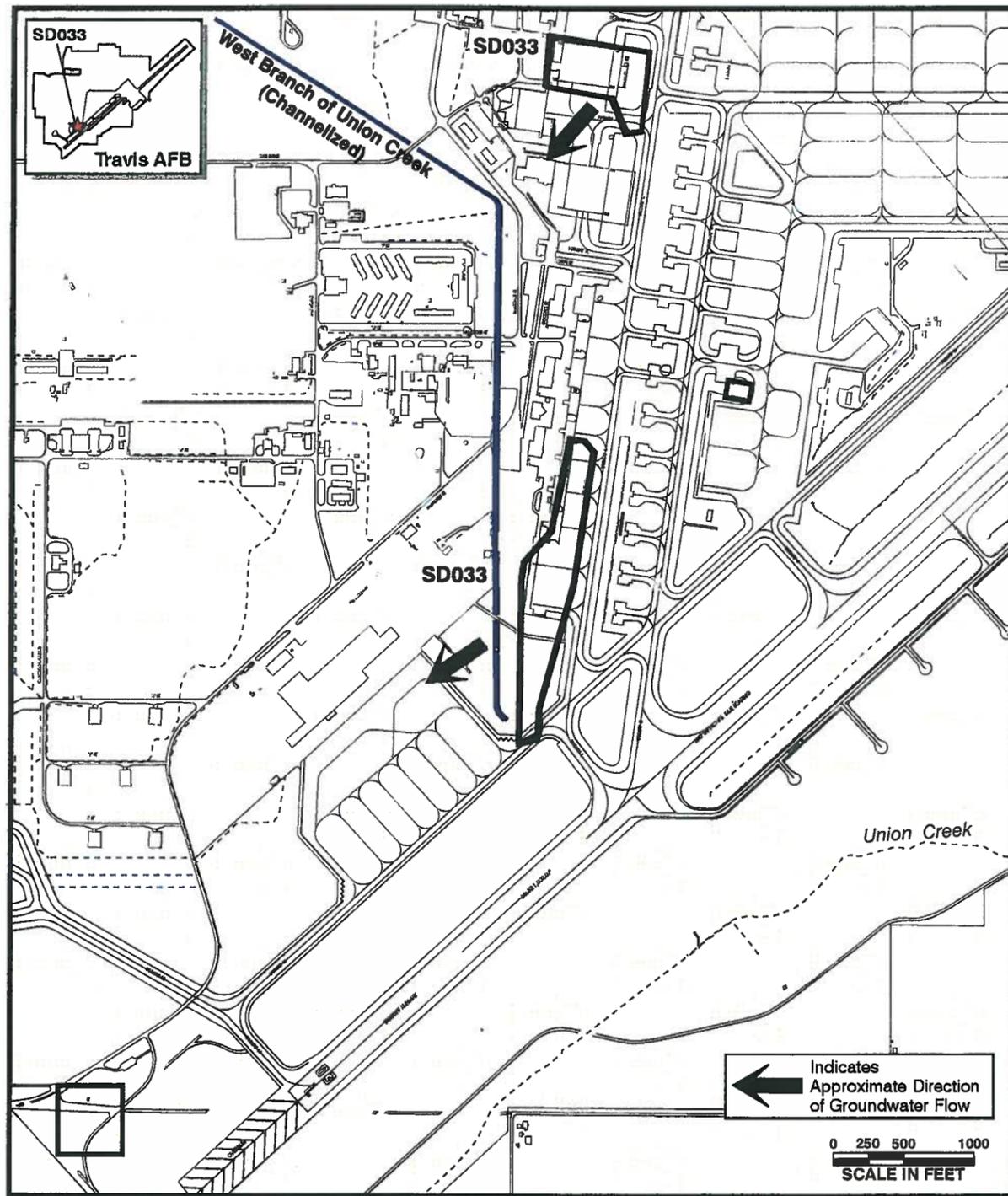


Figure B-34.
Conceptual Design for SD033 (Group P) Soil Treatment Alternatives, Travis AFB

Site Characteristics

- Storm sewer system/Facility 810 are both facilities in use
- Contamination in sediment, surface soil, groundwater, and surface water
- Subsurface geology beneath storm sewer system varies
- Depth to groundwater — 13 to 18 feet
- Depth to bedrock — varies
- Site also included in Group J for surface water contamination, Group B for groundwater contamination, and Group R for sediment contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill
- Alternative #21: Soil Vapor Extraction, Off-gas Catalytic Oxidation
- Alternative #22: In-situ Bioventing

Design Assumptions

- 160,000 ft² — area that contains contaminated soil and soil gas (human health risk)
- 10,000 ft² — area that contains contaminated soil and soil gas (ecological risk)
- Soil gas contaminated with TPH-gasoline to a depth of 10 feet (exceeds LUFT manual)
- About half of area where TPH soil gas is contaminated will have soil exceeding cleanup levels
- Surface contaminated with high concentrations of lead, mercury, and zinc to a depth of 1 foot (ecological risk)
- TPH-gasoline soil gas contamination coincides with other VOC soil gas contamination
- 10,500 cubic yards of soil are within limits for Class II landfill (exceeds LUFT manual))
- 370 cubic yards of soil are within limits for Class II landfill (ecological risk)

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

Cost Summary for SD033 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$0	\$91,069	\$91,069	\$0	\$79,853	\$79,853	\$170,922
18	\$2,213,059	\$0	\$2,213,059	\$73,409	\$0	\$73,409	\$2,286,467
19	\$1,465,929	\$102,229	\$1,568,158	\$219,402	\$102,229	\$321,631	\$1,889,789
20	\$29,049,654	\$0	\$29,049,654	\$1,086,393	\$0	\$1,086,393	\$30,136,048
21	\$1,226,956	\$402,424	\$1,629,380	\$0	\$0	\$0	\$1,629,380
22	\$753,605	\$387,127	\$1,140,732	\$0	\$0	\$0	\$1,140,732

Estimated Cost for SD033, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
See Global Cost Assumptions For Details on Calculations				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD033, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
\$0				
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
See Global Cost Assumptions For Details on Calculations				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	

Estimated Cost for SD033, Health-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing	\$0	30.0	15.3725	\$0
Monitoring	\$4,896	30.0	15.3725	\$75,264
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$75,264
Misc O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Fencing		21%		
Monitoring	\$1,028		15.3725	\$15,805
Reserved		21%		
Total Operation and Maintenance Costs				\$91,069

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$91,069
Total Alternative Cost	\$91,069

Estimated Cost for SD033, Ecological-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$4,293	30.0	15.3725	\$65,994
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal					\$65,994
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)					
See Original Cost Assumptions For Details on Calculations		Percentage			
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$902	30.0	15.3725	\$13,859
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$79,853

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$79,853
Total Alternative Cost	\$79,853

Estimated Cost for SD033, Health-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$5,610
Excavation			\$125,000
Transportation, Alt 18			\$270,833
Landfill Disposal, Alt 18			\$677,083
Cleanup & Improvements			\$29,111
Reserved			\$0
Construction Subtotal			\$1,107,637
Bid Contingencies (% of Construction Subtotal)	15.0%		\$166,146
Scope Contingencies (% of Construction Subtotal)	20.0%		\$221,527
Construction Total			\$1,495,310
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$74,765
Permitting and Legal (% of Construction Total)	5.0%		\$74,765
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$44,859
Construction Oversight (% of Construction Total)	5.0%		\$74,765
Field and Laboratory Testing (% of Construction Total)	5.0%		\$74,765
Reporting (% of Construction Total)	10.0%		\$149,531
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$224,296
Total Capital Cost			\$2,213,859

OPERATION AND MAINTENANCE					
	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Process Option					
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 18	\$0	30.0	15.3725	\$0	
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal				\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)					
		Percentage			
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$2,213,859
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$2,213,859

Estimated Cost for SD033, Ecological-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$889
Transportation, Alt 18			\$1,926
Landfill Disposal, Alt 18			\$4,815
Cleanup & Improvements			\$29,111
Reserved			\$0
Construction Subtotal			\$36,741
Bid Contingencies (% of Construction Subtotal)	15.0%		\$5,511
Scope Contingencies (% of Construction Subtotal)	20.0%		\$7,348
Construction Total			\$49,600
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$2,480
Permitting and Legal (% of Construction Total)	5.0%		\$2,480
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$1,488
Construction Oversight (% of Construction Total)	5.0%		\$2,480
Field and Laboratory Testing (% of Construction Total)	5.0%		\$2,480
Reporting (% of Construction Total)	10.0%		\$4,960
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$7,440
Total Capital Cost			\$73,409

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 18	\$0	30.0	15.3725	\$0	
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal				\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$73,409
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$73,409

Estimated Cost for SD033, Health-Based Alternative 19

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$5,610
Capping			\$675,000
Cleanup & Improvements			\$29,111
Soil Vapor Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$709,721
Bid Contingencies (% of Construction Subtotal)	15.0%		\$106,458
Scope Contingencies (% of Construction Subtotal)	20.0%		\$141,944
Construction Total			\$958,123
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$95,812
Permitting and Legal (% of Construction Total)	5.0%		\$47,906
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$28,744
Construction Oversight (% of Construction Total)	5.0%		\$47,906
Field and Laboratory Testing (% of Construction Total)	5.0%		\$47,906
Reporting (% of Construction Total)	10.0%		\$95,812
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$143,719
Total Capital Cost			\$1,465,929

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Capping		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$5,496	30.0	15.3725	\$84,487
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$5,496			\$84,487
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$1,154	30.0	15.3725	\$17,742
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$102,229

NET PRESENT WORTH	
Capital Costs	\$1,465,929
Operation and Maintenance Present Worth	\$102,229
Total Alternative Cost	\$1,568,158

Estimated Cost for SD033, Ecological-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$48,000
Cleanup & Improvements		\$29,111
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$106,222
Bid Contingencies (% of Construction Subtotal)	15.0%	\$15,933
Scope Contingencies (% of Construction Subtotal)	20.0%	\$21,244
Construction Total		\$143,400
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$14,340
Permitting and Legal (% of Construction Total)	5.0%	\$7,170
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$4,302
Construction Oversight (% of Construction Total)	5.0%	\$7,170
Field and Laboratory Testing (% of Construction Total)	5.0%	\$7,170
Reporting (% of Construction Total)	10.0%	\$14,340
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$21,510
Total Capital Cost		\$219,402

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Capping	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	\$5,496	30.0	15.3725	\$84,487
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$5,496			\$84,487
Misc. O&M Costs (% Annual O&M unless otherwise specified)				
See Global Cost Assumptions For Details on Calculations		Percentage		
Demolition & Clearing	21%	\$0	30.0	\$0
Capping	21%	\$0	30.0	\$0
Cleanup & Improvements	21%	\$0	30.0	\$0
Soil Vapor Monitoring	21%	\$1,154	30.0	\$17,742
Reserved	21%	\$0	30.0	\$0
Total Operation and Maintenance Costs				\$102,229

NET PRESENT WORTH	
Capital Costs	\$219,402
Operation and Maintenance Present Worth	\$102,229
Total Alternative Cost	\$321,631

Estimated Cost for SD033, Health-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$5,610
Excavation		\$125,000
Transportation, Alt 20		\$541,667
Thermal Destruction/Landfill Disposal		\$12,500,000
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$29,111
Reserved		\$0
Construction Subtotal		\$13,201,488
Bid Contingencies (% of Construction Subtotal)	15.0%	\$1,980,208
Scope Contingencies (% of Construction Subtotal)	20.0%	\$2,640,278
Construction Total		\$17,821,974
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$891,094
Permitting and Legal (% of Construction Total)	10.0%	\$1,782,187
Startup and Shakedown (% of Construction Total)	10.0%	\$1,782,187
Bonding and Insurance (% of Construction Total)	3.0%	\$534,656
Construction Oversight (% of Construction Total)	5.0%	\$891,094
Field and Laboratory Testing (% of Construction Total)	5.0%	\$891,094
Reporting (% of Construction Total)	10.0%	\$1,782,187
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$2,673,281
Total Capital Cost		\$20,049,654

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

DISPENSES THROUGH	
Capital Costs	\$29,049,654
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$29,049,654

Estimated Cost for SD033, Ecological-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$889
Transportation, Alt 20			\$19,259
Thermal Destruction/Landfill Disposal			\$444,444
Reserved			\$0
Reserved			\$0
Cleanup & Improvements			\$29,111
Reserved			\$0
Construction Subtotal			\$493,703
Bid Contingencies (% of Construction Subtotal)	15.0%		\$74,055
Scope Contingencies (% of Construction Subtotal)	20.0%		\$98,741
Construction Total			\$666,500
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$33,325
Permitting and Legal (% of Construction Total)	10.0%		\$66,650
Startup and Shakedown (% of Construction Total)	10.0%		\$66,650
Bonding and Insurance (% of Construction Total)	3.0%		\$19,995
Construction Oversight (% of Construction Total)	5.0%		\$33,325
Field and Laboratory Testing (% of Construction Total)	5.0%		\$33,325
Reporting (% of Construction Total)	10.0%		\$66,650
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$99,975
Total Capital Cost			\$1,086,393

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Other O&M Costs (5% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$1,086,393
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$1,086,393

Estimated Cost for SD033, Health-Based Alternative 21

CAPITAL COSTS		
Process Option		
Soil Vapor Extraction		Capital Cost \$530,711
Utilities		\$10,275
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$540,986
Bid Contingencies (% of Construction Subtotal)	15.0%	\$81,148
Scope Contingencies (% of Construction Subtotal)	20.0%	\$108,197
Construction Total		\$726,331
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$73,033
Permitting and Legal (% of Construction Total)	10.0%	\$73,033
Startup and Shakedown (% of Construction Total)	10.0%	\$73,033
Bonding and Insurance (% of Construction Total)	3.0%	\$21,910
Construction Oversight (% of Construction Total)	5.0%	\$36,517
Field and Laboratory Testing (% of Construction Total)	5.0%	\$36,517
Reporting (% of Construction Total)	10.0%	\$73,033
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$109,550
Total Capital Cost		\$1,226,956

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Soil Vapor Extraction	\$173,968	2.0	1.8594	\$323,478
Utilities	\$0	2.0	1.8594	\$0
Monitoring	\$4,896	2.0	1.8594	\$9,104
Reserved	\$0	2.0	1.8594	\$0
Reserved	\$0	2.0	1.8594	\$0
Reserved	\$0	2.0	1.8594	\$0
O&M Subtotal	\$178,864			\$332,582
Other O&M Costs (7% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Soil Vapor Extraction		21%		\$36,533
Utilities		21%		\$0
Monitoring		21%		\$1,028
Reserved		21%		\$0
Reserved		21%		\$0
Reserved		21%		\$0
Total Operation and Maintenance Costs				\$402,424

NET PRESENT WORTH	
Capital Costs	\$1,226,956
Operation and Maintenance Present Worth	\$402,424
Total Alternative Cost	\$1,629,380

Estimated Cost for SD033, Ecological-Based Alternative 21

CAPITAL COSTS			
Process Option			Capital Cost
Soil Vapor Extraction			\$0
Utilities			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	10.0%		\$0
Startup and Shakedown (% of Construction Total)	10.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Soil Vapor Extraction		\$0	30.0	15.3725	\$0
Utilities		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Soil Vapor Extraction	21%	\$0	30.0	15.3725	\$0
Utilities	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD033, Health-Based Alternative 22

CAPITAL COSTS		
Process Option		Capital Cost
Bioventing		\$332,195
Utilities		\$10,275
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$342,470
Bid Contingencies (% of Construction Subtotal)	15.0%	\$51,371
Scope Contingencies (% of Construction Subtotal)	20.0%	\$68,494
Construction Total		\$462,333
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$46,233
Permitting and Legal (% of Construction Total)	5.0%	\$23,117
Startup and Shakedown (% of Construction Total)	10.0%	\$46,233
Bonding and Insurance (% of Construction Total)	3.0%	\$13,870
Construction Oversight (% of Construction Total)	5.0%	\$23,117
Field and Laboratory Testing (% of Construction Total)	5.0%	\$23,117
Reporting (% of Construction Total)	10.0%	\$46,233
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$69,350
Total Capital Cost		\$753,605

OPERATION AND MAINTENANCE				
Process Option	Annual GHG Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Bioventing	\$68,402	5.0	4.3295	\$296,145
Utilities	\$0	5.0	4.3295	\$0
Soil Vapor Monitoring	\$5,496	5.0	4.3295	\$23,795
Reserved	\$0	5.0	4.3295	\$0
O&M Subtotal		\$73,898		\$319,940
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Bioventing	21%	\$14,364	5.0	\$62,190
Utilities	21%	\$0	5.0	\$0
Soil Vapor Monitoring	21%	\$1,154	5.0	\$4,997
Reserved	21%	\$0	5.0	\$0
Total Operation and Maintenance Costs				\$387,127

NET PRESENT WORTH	
Capital Costs	\$753,605
Operation and Maintenance Present Worth	\$387,127
Total Alternative Cost	\$1,140,732

Estimated Cost for SD033, Ecological-Based Alternative 22

CAPITAL COSTS		
Process Option		Capital Cost
Bioventing		\$0
Utilities		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Bioventing		\$0	30.0	15.3725	\$0
Utilities		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Min. O&M Cost (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Bioventing	21%	\$0	30.0	15.3725	\$0
Utilities	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

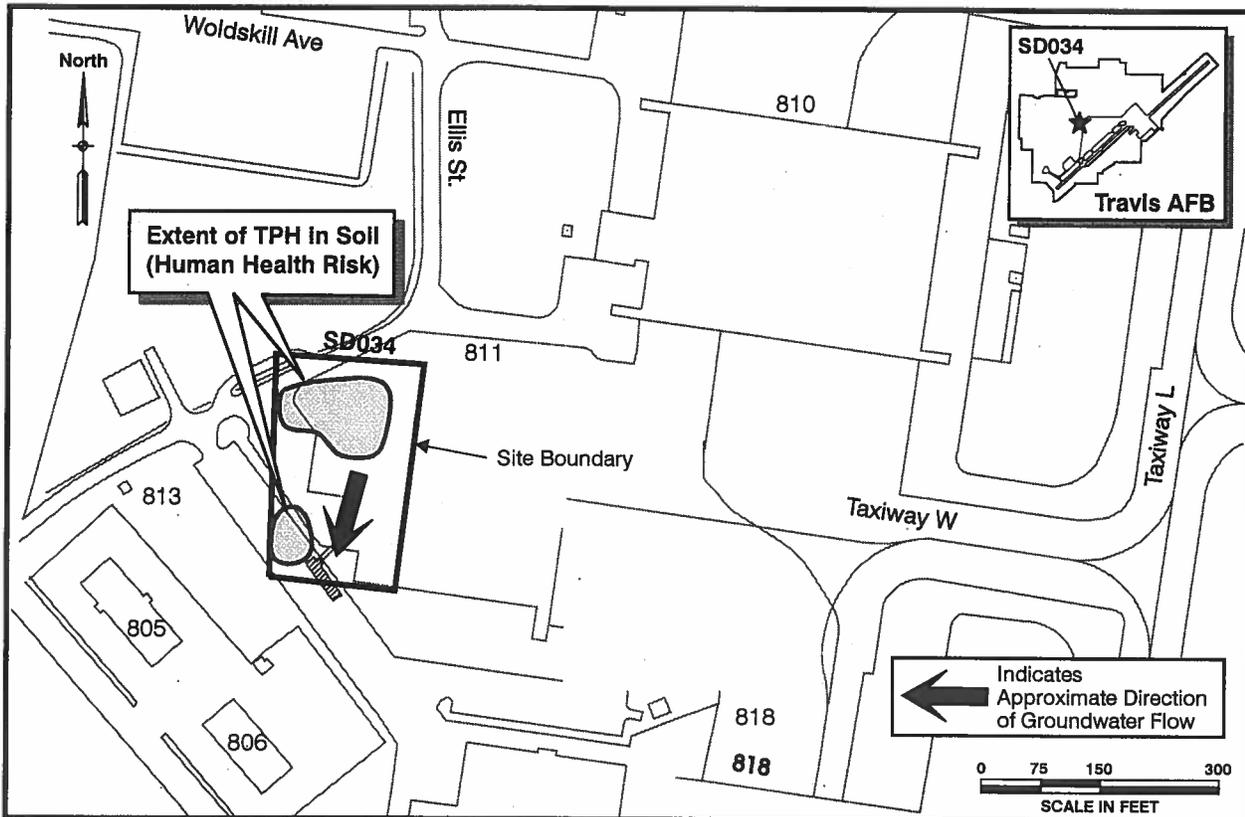
Process Option Summary for SD033

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$5,610	\$0	\$0	\$0
Demolition, Curbs	\$325	\$0	\$0	\$0
Demolition, Pavements	\$4,996	\$0	\$0	\$0
Clear and Grub	\$289	\$0	\$0	\$0
Capping	\$675,000	\$0	\$48,000	\$0
Excavation	\$125,000	\$0	\$889	\$0
Transportation, Alt 18	\$270,833	\$0	\$1,926	\$0
Transportation, Alt 20	\$541,667	\$0	\$19,259	\$0
Thermal Destruction/Landfill Disposal	\$12,500,000	\$0	\$444,444	\$0
Class I Soils	\$0	\$0	\$0	\$0
Class II Soils	\$12,500,000	\$0	\$444,444	\$0
Landfill Disposal, Alt 18	\$677,083	\$0	\$4,815	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$677,083	\$0	\$4,815	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvements	\$29,111	\$0	\$29,111	\$0
Cleanup and Landscaping	\$3,452	\$0	\$3,452	\$0
Improvements	\$25,659	\$0	\$25,659	\$0
Utilities	\$10,275	\$0	\$0	\$0
Bioventing	\$332,195	\$68,402	\$0	\$0
Soil Vapor Extraction	\$530,711	\$173,968	\$0	\$0
SVE System	\$295,424	\$64,816	\$0	\$0
Catalytic Oxidation	\$235,287	\$109,152	\$0	\$0
Soil Vapor Monitoring	\$0	\$5,496	\$0	\$5,496
Monitoring	\$0	\$4,896	\$0	\$4,293
Fencing	\$0	\$0	\$0	\$0
Reserved	\$0	\$0	\$0	\$0



SD034S.CDR - VMG 7/25/96 SAC 1

Site Characteristics

- Includes an indoor washrack, an oil/water separator, and a concrete-lined overflow pond
- Approximately 75% of the area is covered with roadbase and asphalt
- Depth to groundwater — 10 feet
- Depth to bedrock — 16 feet
- Site also included in Group G for groundwater contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill
- Alternative #21: Soil Vapor Extraction, Offgas Catalytic Oxidation
- Alternative #22: In-situ Bioventing

Design Assumptions

- 17,600 ft² — area which contains contaminated soil (human health risk)
- Contaminated subsurface soil between 5 and 10 feet (human health risk)
- Subsurface soils contaminated with TPH (exceeds LUFT manual)
- 3,300 cubic yards of soil within limits for Class II landfill (human health risk)
- Soil gas contaminants include TPH-gasoline and TCE

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

Figure B-35.
Conceptual Design for SD034 (Group Q) Soil Treatment Alternatives, Travis AFB

Cost Summary for SD034 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$2,731	\$69,864	\$72,595	\$0	\$0	\$0	\$72,595
18	\$708,469	\$0	\$708,469	\$0	\$0	\$0	\$708,469
19	\$259,592	\$53,905	\$313,497	\$0	\$0	\$0	\$313,497
20	\$9,149,074	\$0	\$9,149,074	\$0	\$0	\$0	\$9,149,074
21	\$165,854	\$68,705	\$234,559	\$0	\$0	\$0	\$234,559
22	\$98,741	\$87,470	\$186,211	\$0	\$0	\$0	\$186,211

Estimated Cost for SD034, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)				
See Global Cost Assumptions For Details on Calculations		Percentage		
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD034, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
\$0				
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
See Global Cost Assumptions For Details on Calculations				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				
\$0				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	
\$0	

Estimated Cost for SD034, Health-Based Alternative 17

CAPITAL COSTS		
Process Option		Capital Cost
Fencing		\$1,466
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$1,466
Bid Contingencies (% of Construction Subtotal)	15.0%	\$220
Scope Contingencies (% of Construction Subtotal)	20.0%	\$293
Construction Total		\$1,979
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$198
Permitting and Legal (% of Construction Total)	5.0%	\$99
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$59
Construction Oversight (% of Construction Total)	5.0%	\$99
Field and Laboratory Testing (% of Construction Total)	0.0%	\$0
Reporting (% of Construction Total)	0.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$297
Total Capital Cost		\$2,731

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$3,756	30.0	15.3725	\$57,739
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$3,756			\$57,739
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage				
<i>See Global Cost Assumptions For Details on Calculations</i>					
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$789	30.0	15.3725	\$12,125
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$69,864

NET PRESENT WORTH	
Capital Costs	\$2,731
Operation and Maintenance Present Worth	\$69,864
Total Alternative Cost	\$72,595

Estimated Cost for SD034, Ecological-Based Alternative 17

CAPITAL COSTS		
Process Option		Capital Cost
Fencing		\$0
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	0.0%	\$0
Reporting (% of Construction Total)	0.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
		Annual O&M Cost	Process Option Service Time (yrs)	Present Worth Factor	Process Option Present Worth
Process Option					
Fencing		\$0	30.0	15.3725	\$0
Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Fencing	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD034, Health-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$7,300
Excavation			\$15,724
Transportation, Alt 18			\$85,169
Landfill Disposal, Alt 18			\$212,923
Cleanup & Improvements			\$33,473
Reserved			\$0
Construction Subtotal			\$354,589
Bid Contingencies (% of Construction Subtotal)	15.0%		\$53,188
Scope Contingencies (% of Construction Subtotal)	20.0%		\$70,918
Construction Total			\$478,695
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$23,935
Permitting and Legal (% of Construction Total)	5.0%		\$23,935
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$14,361
Construction Oversight (% of Construction Total)	5.0%		\$23,935
Field and Laboratory Testing (% of Construction Total)	5.0%		\$23,935
Reporting (% of Construction Total)	10.0%		\$47,870
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$71,804
Total Capital Cost			\$708,469

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 18	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions for Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	15.3725
Excavation	16%	\$0	30.0	15.3725
Transportation, Alt 18	16%	\$0	30.0	15.3725
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725
Cleanup & Improvements	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$708,469
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$708,469

Estimated Cost for SD034, Ecological-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 18			\$0
Landfill Disposal, Alt 18			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)		15.0%	\$0
Scope Contingencies (% of Construction Subtotal)		20.0%	\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)		5.0%	\$0
Permitting and Legal (% of Construction Total)		5.0%	\$0
Startup and Shakedown (% of Construction Total)		0.0%	\$0
Bonding and Insurance (% of Construction Total)		3.0%	\$0
Construction Oversight (% of Construction Total)		5.0%	\$0
Field and Laboratory Testing (% of Construction Total)		5.0%	\$0
Reporting (% of Construction Total)		10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)		15.0%	\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 18		\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal					\$0
Min. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing		16%	\$0	30.0	15.3725
Excavation		16%	\$0	30.0	15.3725
Transportation, Alt 18		16%	\$0	30.0	15.3725
Landfill Disposal, Alt 18		16%	\$0	30.0	15.3725
Cleanup & Improvements		16%	\$0	30.0	15.3725
Reserved		16%	\$0	30.0	15.3725
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD034, Health-Based Alternative 19

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$7,300
Capping			\$84,907
Cleanup & Improvements			\$33,473
Soil Vapor Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$125,680
Bid Contingencies (% of Construction Subtotal)	15.0%		\$18,852
Scope Contingencies (% of Construction Subtotal)	20.0%		\$25,136
Construction Total			\$169,668
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$16,967
Permitting and Legal (% of Construction Total)	5.0%		\$8,483
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$5,090
Construction Oversight (% of Construction Total)	5.0%		\$8,483
Field and Laboratory Testing (% of Construction Total)	5.0%		\$8,483
Reporting (% of Construction Total)	10.0%		\$16,967
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$25,450
Total Capital Cost			\$259,592

OPERATION AND MAINTENANCE						
Process Option	Annual O&M Cost	Process Option Service Time (yrs)	Present Worth Factor	Process Option Present Worth		
Demolition & Clearing	\$0	30.0	15.3725	\$0		
Capping	\$0	30.0	15.3725	\$0		
Cleanup & Improvements	\$0	30.0	15.3725	\$0		
Soil Vapor Monitoring	\$2,898	30.0	15.3725	\$44,549		
Reserved	\$0	30.0	15.3725	\$0		
O&M Subtotal				\$44,549		
Min. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage				
<i>See Global Cost Assumptions For Details on Calculations</i>						
Demolition & Clearing		21%	\$0	30.0	15.3725	\$0
Capping		21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements		21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		21%	\$609	30.0	15.3725	\$9,355
Reserved		21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$44,549		

NET PRESENT WORTH	
Capital Costs	\$259,592
Operation and Maintenance Present Worth	\$53,905
Total Alternative Cost	\$313,497

Estimated Cost for SD034, Ecological-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$0
Cleanup & Improvements		\$0
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Capping		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage				
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD034, Health-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$7,300
Excavation		\$15,724
Transportation, Alt 20		\$170,339
Thermal Destruction/Landfill Disposal		\$3,930,889
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$33,473
Reserved		\$0
Construction Subtotal		\$4,157,725
Bid Contingencies (% of Construction Subtotal)	15.0%	\$623,659
Scope Contingencies (% of Construction Subtotal)	20.0%	\$831,545
Construction Total		\$5,612,929
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$280,646
Permitting and Legal (% of Construction Total)	10.0%	\$561,293
Startup and Shakedown (% of Construction Total)	10.0%	\$561,293
Bonding and Insurance (% of Construction Total)	3.0%	\$168,388
Construction Oversight (% of Construction Total)	5.0%	\$280,646
Field and Laboratory Testing (% of Construction Total)	5.0%	\$280,646
Reporting (% of Construction Total)	10.0%	\$561,293
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$841,939
Total Capital Cost		\$9,149,074

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Misc O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$9,149,074
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$9,149,074

Estimated Cost for SD034, Ecological-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 20			\$0
Thermal Destruction/Landfill Disposal			\$0
Reserved			\$0
Reserved			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$0
Permitting and Legal (% of Construction Total)	10.0%		\$0
Startup and Shakedown (% of Construction Total)	10.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal		\$0	15.3725	\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions for Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD034, Health-Based Alternative 21

CAPITAL COSTS		
Process Option		Capital Cost
Soil Vapor Extraction		\$62,853
Utilities		\$10,275
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$73,128
Bid Contingencies (% of Construction Subtotal)	15.0%	\$10,969
Scope Contingencies (% of Construction Subtotal)	20.0%	\$14,626
Construction Total		\$98,723
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$9,872
Permitting and Legal (% of Construction Total)	10.0%	\$9,872
Startup and Shakedown (% of Construction Total)	10.0%	\$9,872
Bonding and Insurance (% of Construction Total)	3.0%	\$2,962
Construction Oversight (% of Construction Total)	5.0%	\$4,936
Field and Laboratory Testing (% of Construction Total)	5.0%	\$4,936
Reporting (% of Construction Total)	10.0%	\$9,872
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$14,808
Total Capital Cost		\$145,854

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Soil Vapor Extraction		\$27,639	2.0	1.8594	\$51,392
Utilities		\$0	2.0	1.8594	\$0
Soil Vapor Monitoring		\$2,898	2.0	1.8594	\$5,389
Reserved		\$0	2.0	1.8594	\$0
O&M Subtotal		\$28,537			\$56,781
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions for Detail on Calculations					
Soil Vapor Extraction	21%	\$5,804	2.0	1.8594	\$10,792
Utilities	21%	\$0	2.0	1.8594	\$0
Soil Vapor Monitoring	21%	\$609	2.0	1.8594	\$1,132
Reserved	21%	\$0	2.0	1.8594	\$0
Total Operation and Maintenance Costs					\$68,705

NET PRESENT WORTH	
Capital Costs	\$165,854
Operation and Maintenance Present Worth	\$68,705
Total Alternative Cost	\$234,559

Estimated Cost for SD034, Ecological-Based Alternative 21

CAPITAL COSTS			
Process Option			Capital Cost
Soil Vapor Extraction			\$0
Soil Vapor Monitoring			\$0
Utilities			\$0
Reserved			\$0
Construction Subtotal			
Bid Contingencies (% of Construction Subtotal)		15.0%	\$0
Scope Contingencies (% of Construction Subtotal)		20.0%	\$0
Construction Total			
Other Direct Costs			
Engineering Design (% of Construction Total)		10.0%	\$0
Permitting and Legal (% of Construction Total)		10.0%	\$0
Startup and Shakedown (% of Construction Total)		10.0%	\$0
Bonding and Insurance (% of Construction Total)		3.0%	\$0
Construction Oversight (% of Construction Total)		5.0%	\$0
Field and Laboratory Testing (% of Construction Total)		5.0%	\$0
Reporting (% of Construction Total)		10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)		15.0%	\$0
Total Capital Cost			

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Soil Vapor Extraction		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$0	30.0	15.3725	\$0
Utilities		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal					\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions for Details on Calculations</i>					
Soil Vapor Extraction	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$0	30.0	15.3725	\$0
Utilities	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Annual Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD034, Health-Based Alternative 22

CAPITAL COSTS		
Process Option		Capital Cost
Bioventing		\$34,597
Utilities		\$10,275
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$44,872
Bid Contingencies (% of Construction Subtotal)	15.0%	\$6,731
Scope Contingencies (% of Construction Subtotal)	20.0%	\$8,974
Construction Total		\$60,577
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$6,058
Permitting and Legal (% of Construction Total)	5.0%	\$3,029
Startup and Shakedown (% of Construction Total)	10.0%	\$6,058
Bonding and Insurance (% of Construction Total)	3.0%	\$1,817
Construction Oversight (% of Construction Total)	5.0%	\$3,029
Field and Laboratory Testing (% of Construction Total)	5.0%	\$3,029
Reporting (% of Construction Total)	10.0%	\$6,058
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$9,087
Total Capital Cost		\$98,741

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Bioventing		\$12,941	5.0	4.3295	\$56,028
Utilities		\$0	5.0	4.3295	\$0
Monitoring		\$3,756	5.0	4.3295	\$16,262
Reserved		\$0	5.0	4.3295	\$0
O&M Subtotal		\$16,697			\$72,290
Min. O&M Costs (% Annual O&M Unless Otherwise Specified)					
<small>See Global Cost Assumptions For Details on Calculations</small>					
	Percentage				
Bioventing	21%	\$2,718	5.0	4.3295	\$11,766
Utilities	21%	\$0	5.0	4.3295	\$0
Monitoring	21%	\$789	5.0	4.3295	\$3,415
Reserved	21%	\$0	5.0	4.3295	\$0
Total Operation and Maintenance Costs					\$87,470

NET PRESENT WORTH	
Capital Costs	\$98,741
Operation and Maintenance Present Worth	\$87,470
Total Alternative Cost	\$186,211

Estimated Cost for SD034, Ecological-Based Alternative 22

CAPITAL COSTS		
Process Option		Capital Cost
Bioventing		\$0
Utilities		\$0
Monitoring		\$0
Reserved		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Bioventing		\$0	30.0	15.3725	\$0
Utilities		\$0	30.0	15.3725	\$0
Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details in Calculations</i>					
Bioventing	21%	\$0	30.0	15.3725	\$0
Utilities	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

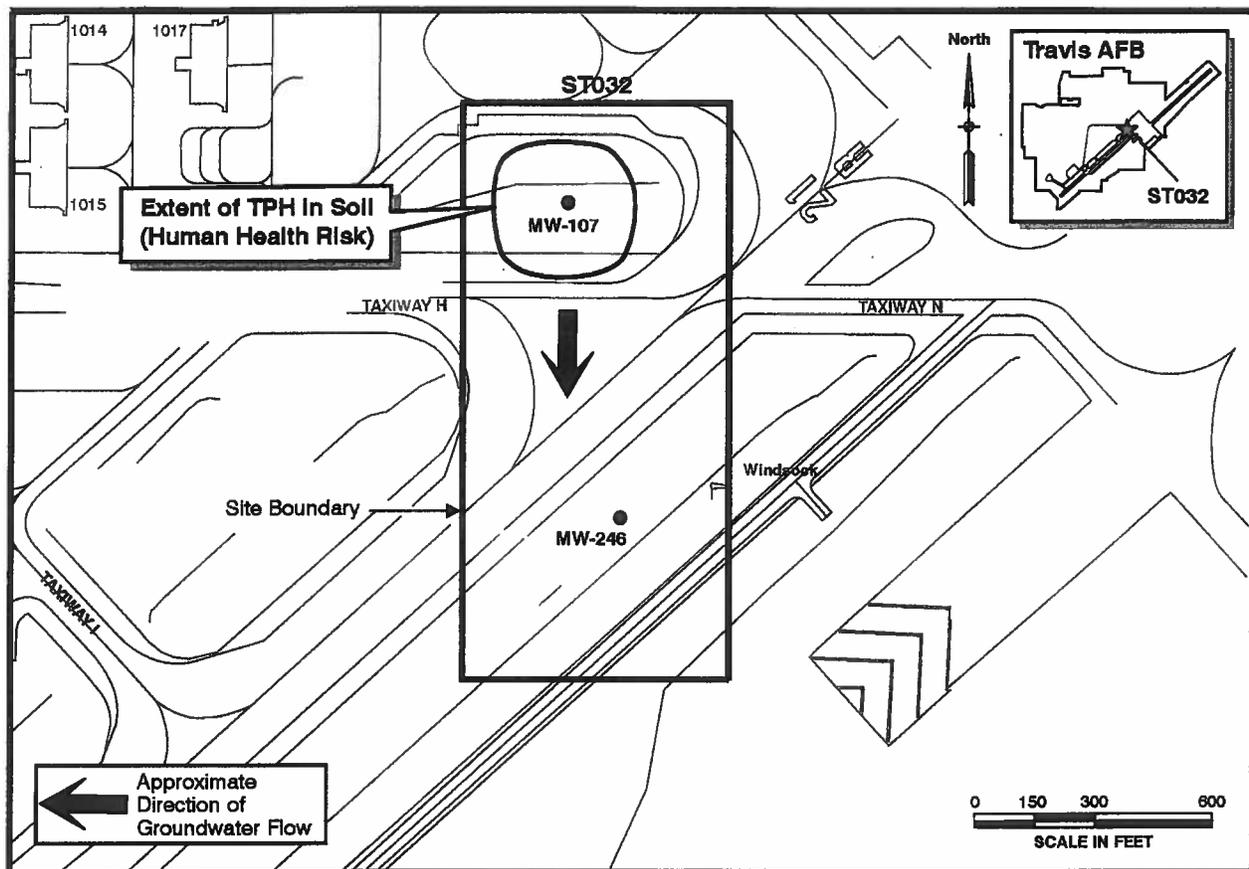
Process Option Summary for SD034

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$7,300	\$0	\$0	\$0
Demolition, Curbs	\$211	\$0	\$0	\$0
Demolition, Pavements	\$6,877	\$0	\$0	\$0
Clear and Grub	\$212	\$0	\$0	\$0
Capping	\$84,907	\$0	\$0	\$0
Excavation	\$15,724	\$0	\$0	\$0
Transportation, Alt 18	\$85,169	\$0	\$0	\$0
Transportation, Alt 20	\$170,339	\$0	\$0	\$0
Thermal Destruction/Landfill Disposal	\$3,930,889	\$0	\$0	\$0
Class I Soils	\$0	\$0	\$0	\$0
Class II Soils	\$3,930,889	\$0	\$0	\$0
Landfill Disposal, Alt 18	\$212,923	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$212,923	\$0	\$0	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvements	\$33,473	\$0	\$0	\$0
Cleanup and Landscaping	\$220	\$0	\$0	\$0
Improvements	\$33,253	\$0	\$0	\$0
Utilities	\$10,275	\$0	\$0	\$0
Bioventing	\$34,597	\$12,941	\$0	\$0
Soil Vapor Extraction	\$62,853	\$27,639	\$0	\$0
SVE System	\$27,855	\$12,559	\$0	\$0
Catalytic Oxidation	\$32,616	\$15,080	\$0	\$0
Gas Supply	\$2,382	\$0	\$0	\$0
Soil Vapor Monitoring	\$0	\$2,898	\$0	\$0
Monitoring	\$0	\$3,756	\$0	\$0
Fencing	\$1,466	\$0	\$0	\$0
Reserved	\$0	\$0	\$0	\$0



ST032S.CDR - VMG 7/25/86 SAC 1

Site Characteristics

- Grassy, open area between a runway and an abandoned taxiway
- Proximities to runway severely restrict land use (and potential remedial actions)
- 20% of MW-107 area covered by runway and taxiway
- 10% of MW-246 area covered by runway and taxiway
- Depth to groundwater — 7 feet
- Depth to bedrock — 30 feet
- Site also included in Group G for groundwater contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #19: Soil and Bentonite Cap
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill
- Alternative #21: Soil Vapor Extraction, Offgas Catalytic Oxidation
- Alternative #22: In-situ Bioventing

Design Assumptions

- 71,000 ft² — area which contains contaminated soil (human health risk)
- Contaminated soil to an average depth of 10 feet (human health risk)
- Soils contaminated with TPH (human health risk)
- Approximately a third of excavated volume is contaminated above cleanup levels
- 8,100 cubic yards of soil exceed limits for Class II landfill (human health risk)
- Likely soil gas contaminants include TPH-gasoline and TCE
- Additional soil volume pending

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

Figure B-36.
Conceptual Design for ST032 (Group Q) Soil Treatment Alternatives, Travis AFB

Cost Summary for ST032 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$0	\$59,485	\$59,485	\$0	\$0	\$0	\$59,485
18	\$2,358,717	\$0	\$2,358,717	\$0	\$0	\$0	\$2,358,717
19	\$1,531,607	\$59,485	\$1,591,092	\$0	\$0	\$0	\$1,591,092
20	\$23,291,498	\$0	\$23,291,498	\$0	\$0	\$0	\$23,291,498
21	\$544,601	\$169,558	\$714,159	\$0	\$0	\$0	\$714,159
22	\$332,577	\$120,646	\$453,223	\$0	\$0	\$0	\$453,223

Estimated Cost for ST032, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
\$0				
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions For Details on Calculations				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				
\$0				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	
\$0	

Estimated Cost for ST032, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
\$0				
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions For Details on Calculations				
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				
\$0				

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	
\$0	

Estimated Cost for ST032, Health-Based Alternative 17

CAPITAL COSTS		
Process Option		Capital Cost
Fencing		\$0
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	0.0%	\$0
Reporting (% of Construction Total)	0.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	\$3,198	30.0	15.3725	\$49,161
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$49,161
Misc O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Fencing		21%	15.3725	\$0
Soil Vapor Monitoring	\$672	21%	15.3725	\$10,324
Reserved	\$0	21%	15.3725	\$0
Total Operation and Maintenance Costs				\$59,485

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$59,485
Total Alternative Cost	\$59,485

Estimated Cost for ST032, Ecological-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Fencing			\$0
Soil Vapor Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Fencing		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified) See Global Cost Assumptions For Details on Calculations		Percentage			
Fencing	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for ST032, Health-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$182,812
Excavation			\$51,840
Transportation, Alt 18			\$210,600
Landfill Disposal, Alt 18			\$526,500
Cleanup & Improvements			\$208,787
Reserved			\$0
Construction Subtotal			\$1,180,539
Bid Contingencies (% of Construction Subtotal)	15.0%		\$177,081
Scope Contingencies (% of Construction Subtotal)	20.0%		\$236,108
Construction Total			\$1,593,728
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$79,686
Permitting and Legal (% of Construction Total)	5.0%		\$79,686
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$47,812
Construction Oversight (% of Construction Total)	5.0%		\$79,686
Field and Laboratory Testing (% of Construction Total)	5.0%		\$79,686
Reporting (% of Construction Total)	10.0%		\$159,373
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$239,059
Total Capital Cost			\$2,358,717

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 18	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$0
Other O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	15.3725
Excavation	16%	\$0	30.0	15.3725
Transportation, Alt 18	16%	\$0	30.0	15.3725
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725
Cleanup & Improvements	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$2,358,717
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$2,358,717

Estimated Cost for ST032, Ecological-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 18			\$0
Landfill Disposal, Alt 18			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)		15.0%	\$0
Scope Contingencies (% of Construction Subtotal)		20.0%	\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)		5.0%	\$0
Permitting and Legal (% of Construction Total)		5.0%	\$0
Startup and Shakedown (% of Construction Total)		0.0%	\$0
Bonding and Insurance (% of Construction Total)		3.0%	\$0
Construction Oversight (% of Construction Total)		5.0%	\$0
Field and Laboratory Testing (% of Construction Total)		5.0%	\$0
Reporting (% of Construction Total)		10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)		15.0%	\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 18		\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for ST032, Health-Based Alternative 19

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$182,812
Capping			\$349,920
Cleanup & Improvements			\$208,787
Soil Vapor Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$741,519
Bid Contingencies (% of Construction Subtotal)	15.0%		\$111,228
Scope Contingencies (% of Construction Subtotal)	20.0%		\$148,304
Construction Total			\$1,001,051
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$100,105
Permitting and Legal (% of Construction Total)	5.0%		\$50,053
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$30,032
Construction Oversight (% of Construction Total)	5.0%		\$50,053
Field and Laboratory Testing (% of Construction Total)	5.0%		\$50,053
Reporting (% of Construction Total)	10.0%		\$100,105
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$150,158
Total Capital Cost			\$1,531,607

OPERATION AND MAINTENANCE					
		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Process Option					
Demolition & Clearing		\$0	30.0	15.3725	\$0
Capping		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$3,198	30.0	15.3725	\$49,161
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$3,198			\$49,161
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See General Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$672	30.0	15.3725	\$10,324
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$59,485

NET PRESENT WORTH	
Capital Costs	\$1,531,607
Operation and Maintenance Present Worth	\$59,485
Total Alternative Cost	\$1,591,092

Estimated Cost for ST032, Ecological-Based Alternative 19

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Capping		\$0
Cleanup & Improvements		\$0
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Capping		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Soil Vapor Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	21%	\$0	30.0	15.3725	\$0
Capping	21%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	21%	\$0	30.0	15.3725	\$0
Soil Vapor Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for ST032, Health-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$182,812
Excavation		\$51,840
Transportation, Alt 20		\$421,200
Thermal Destruction/Landfill Disposal		\$9,720,000
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$208,787
Reserved		\$0
Construction Subtotal		\$10,584,639
Bid Contingencies (% of Construction Subtotal)	15.0%	\$1,587,696
Scope Contingencies (% of Construction Subtotal)	20.0%	\$2,116,928
Construction Total		\$14,289,263
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$714,463
Permitting and Legal (% of Construction Total)	10.0%	\$1,428,926
Startup and Shakedown (% of Construction Total)	10.0%	\$1,428,926
Bonding and Insurance (% of Construction Total)	3.0%	\$428,678
Construction Oversight (% of Construction Total)	5.0%	\$714,463
Field and Laboratory Testing (% of Construction Total)	5.0%	\$714,463
Reporting (% of Construction Total)	10.0%	\$1,428,926
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$2,143,389
Total Capital Cost		\$23,291,498

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yrs)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Misc O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage				
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$23,291,498
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$23,291,498

Estimated Cost for ST032, Ecological-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$0
Excavation		\$0
Transportation, Alt 20		\$0
Thermal Destruction/Landfill Disposal		\$0
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$0
Permitting and Legal (% of Construction Total)	10.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal				\$0	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified) See Global Cost Assumptions For Details on Calculations		Percentage			
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for ST032, Health-Based Alternative 21

CAPITAL COSTS		
Process Option		Capital Cost
Soil Vapor Extraction		\$215,875
Utilities		\$24,249
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$240,124
Bid Contingencies (% of Construction Subtotal)	15.0%	\$36,019
Scope Contingencies (% of Construction Subtotal)	20.0%	\$48,025
Construction Total		\$324,169
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$32,417
Permitting and Legal (% of Construction Total)	10.0%	\$32,417
Startup and Shakedown (% of Construction Total)	10.0%	\$32,417
Bonding and Insurance (% of Construction Total)	3.0%	\$9,725
Construction Oversight (% of Construction Total)	5.0%	\$16,208
Field and Laboratory Testing (% of Construction Total)	5.0%	\$16,208
Reporting (% of Construction Total)	10.0%	\$32,417
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$48,625
Total Capital Cost		\$544,601

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (Yrs)	Present Worth Factor	Process Option Present Worth	
Soil Vapor Extraction	\$72,165	2.0	1.8594	\$134,184	
Utilities	\$0	2.0	1.8594	\$0	
Soil Vapor Monitoring	\$3,198	2.0	1.8594	\$5,946	
Reserved	\$0	2.0	1.8594	\$0	
O&M Subtotal	\$75,363			\$140,130	
Other O&M Costs (by Annual O&M Unless Otherwise Specified)	Percentage				
<i>See Exhibit C for Assumptions for Details on Calculations</i>					
Soil Vapor Extraction	21%	\$15,155	2.0	1.8594	\$28,179
Utilities	21%	\$0	2.0	1.8594	\$0
Soil Vapor Monitoring	21%	\$672	2.0	1.8594	\$1,249
Reserved	21%	\$0	2.0	1.8594	\$0
Total Operation and Maintenance Costs				\$169,558	

NET PRESENT WORTH	
Capital Costs	\$544,601
Operation and Maintenance Present Worth	\$169,558
Total Alternative Cost	\$714,159

Estimated Cost for ST032, Ecological-Based Alternative 21

CAPITAL COSTS			
Process Option			Capital Cost
Soil Vapor Extraction			\$0
Utilities			\$0
Soil Vapor Monitoring			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	10.0%		\$0
Startup and Shakedown (% of Construction Total)	10.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Soil Vapor Extraction		\$0	2.0	1.8594	\$0
Utilities		\$0	2.0	1.8594	\$0
Soil Vapor Monitoring		\$0	2.0	1.8594	\$0
Cleanup & Improvements		\$0	2.0	1.8594	\$0
Reserved		\$0	2.0	1.8594	\$0
O&M Subtotal		\$0			\$0
Note: O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Soil Vapor Extraction	21%	\$0	2.0	1.8594	\$0
Utilities	21%	\$0	2.0	1.8594	\$0
Soil Vapor Monitoring	21%	\$0	2.0	1.8594	\$0
Cleanup & Improvements	21%	\$0	2.0	1.8594	\$0
Reserved	21%	\$0	2.0	1.8594	\$0
Total Operation and Maintenance Costs					\$0

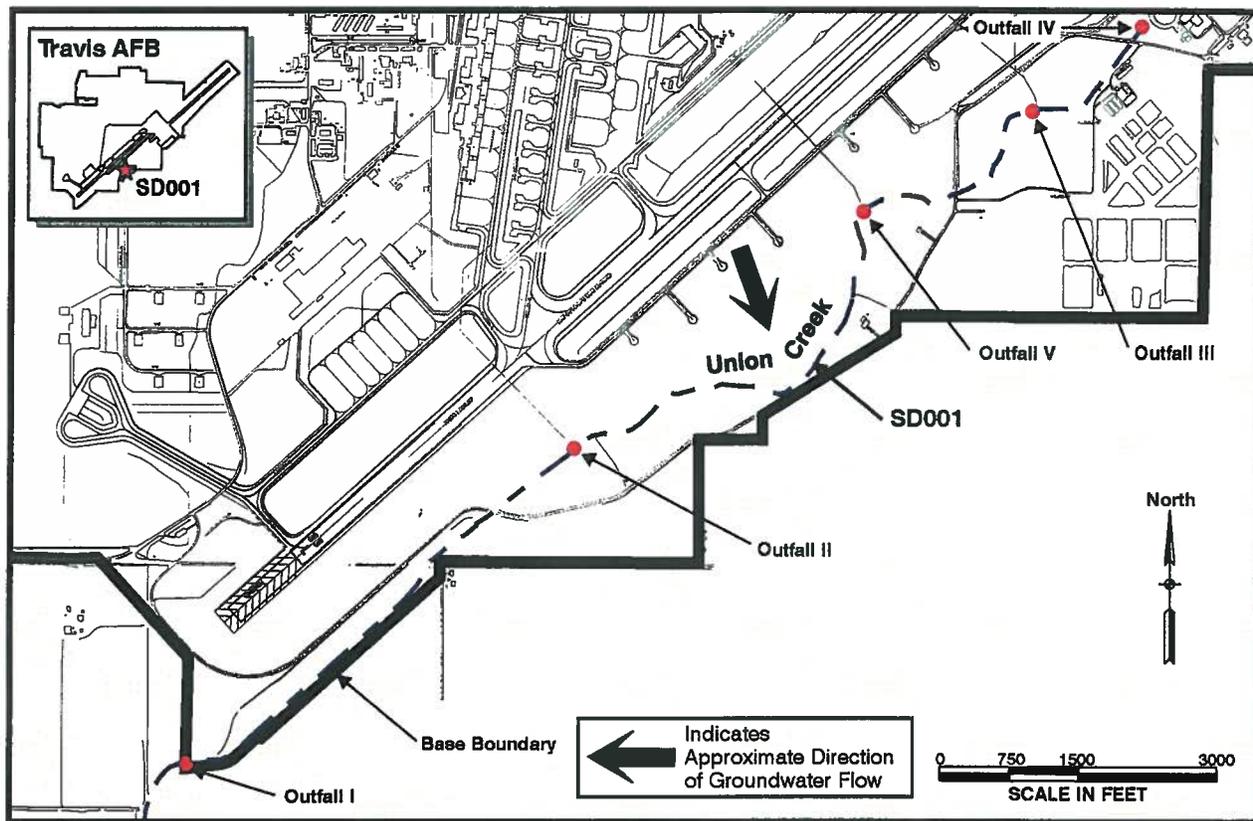
NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for ST032, Health-Based Alternative 22

CAPITAL COSTS		
Process Option		Capital Cost
Bioventing		\$126,888
Utilities		\$24,249
Soil Vapor Monitoring		\$0
Reserved		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$22,671
Scope Contingencies (% of Construction Subtotal)	20.0%	\$30,227
Construction Total		
\$204,035		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$20,403
Permitting and Legal (% of Construction Total)	5.0%	\$10,202
Startup and Shakedown (% of Construction Total)	10.0%	\$20,403
Bonding and Insurance (% of Construction Total)	3.0%	\$6,121
Construction Oversight (% of Construction Total)	5.0%	\$10,202
Field and Laboratory Testing (% of Construction Total)	5.0%	\$10,202
Reporting (% of Construction Total)	10.0%	\$20,403
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$30,605
Total Capital Costs		
\$332,577		

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Bioventing	\$19,832	5.0	4.3295	\$85,862	
Utilities	\$0	5.0	4.3295	\$0	
Soil Vapor Monitoring	\$3,198	5.0	4.3295	\$13,846	
Reserved	\$0	5.0	4.3295	\$0	
O&M Subtotal				\$99,708	
Note: O&M Costs (% Annual O&M Dollars (Otherwise Specified))					
Per Contingency Assumptions For Detail on Calculations:		Percentage			
Bioventing	21%	\$4,165	5.0	4.3295	\$18,031
Utilities	21%	\$0	5.0	4.3295	\$0
Soil Vapor Monitoring	21%	\$672	5.0	4.3295	\$2,908
Reserved	21%	\$0	5.0	4.3295	\$0
Total Operation and Maintenance Costs				\$120,646	

NET PRESENT WORTH	
Capital Costs	\$332,577
Operation and Maintenance Present Worth	\$120,646
Total Alternative Cost	\$453,223



SD001S.CDR - VMG 7/25/96 SAC 1

Site Characteristics

- Site includes open drainages/creek in the southern portion of EIOU
- Aluminum in sediment — 46,700 mg/kg maximum (1988)
- Copper in sediment — 237 mg/kg maximum (1988)
- Chromium in sediment — 496 mg/kg maximum (1988)
- PAH (Benzo(a)pyrene) in sediment — 25 mg/kg (1988)
- Storm sewer systems discharge into Union Creek at Outfalls II, III and IV
- Union Creek exits Travis AFB at the southwest tip and flows south to Hill Slough, which discharges into Suisun Marsh, and ultimately to Suisun Bay
- Treatment plant at Outfall III treats surface water runoff from Storm Sewer III for VOCs
- Metals concentrations in treated water from Outfall III treatment plant sometimes exceed effluent limitations set by RWQCB
- Site also included in Group J for surface water contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill

Design Assumptions

- Length of Union Creek with sediment contaminant concentrations above screening criteria — 13,900 feet
- Depth of sediment — 0.5 feet
- All excavated sediment within limits for Class II landfill

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

Figure B-37.
Conceptual Design for SD001 (Group R) Soil/Sediment Treatment Alternatives, Travis AFB

Cost Summary for SD001 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$0	\$0	\$0	\$0	\$100,183	\$100,183	\$100,183
18	\$0	\$0	\$0	\$299,582	\$0	\$299,582	\$299,582
20	\$0	\$0	\$0	\$3,618,042	\$0	\$3,618,042	\$3,618,042

Estimated Cost for SD001, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal	\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD001, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
No Action	21%	\$0	0.0	0.0000
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD001, Health-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Institutional Controls			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost:			\$0

OPERATION AND MAINTENANCE					
		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Process Option					
Institutional Controls		\$0	30.0	15.3725	\$0
Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Institutional Controls	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD001, Ecological-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Institutional Controls			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Institutional Controls		\$5,386	30.0	15.3725	\$82,796
Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$5,386			\$82,796
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Institutional Controls	21%	\$1,131	30.0	15.3725	\$17,387
Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$100,183

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$100,183
Total Alternative Cost	\$100,183

Estimated Cost for SD001, Health-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 18			\$0
Landfill Disposal, Alt 18			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 18	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal				\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	15.3725
Excavation	16%	\$0	30.0	15.3725
Transportation, Alt 18	16%	\$0	30.0	15.3725
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725
Cleanup & Improvements	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD001, Ecological-Based Alternative 18

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$25,129
Excavation		\$3,089
Transportation, Alt 18		\$33,463
Landfill Disposal, Alt 18		\$83,657
Cleanup & Improvements		\$4,603
Reserved		\$0
Construction Subtotal		\$149,341
Bid Contingencies (% of Construction Subtotal)	15.0%	\$22,491
Scope Contingencies (% of Construction Subtotal)	20.0%	\$29,988
Construction Total		\$102,418
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$10,121
Permitting and Legal (% of Construction Total)	5.0%	\$10,121
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$6,073
Construction Oversight (% of Construction Total)	5.0%	\$10,121
Field and Laboratory Testing (% of Construction Total)	5.0%	\$10,121
Reporting (% of Construction Total)	10.0%	\$20,242
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$30,363
Total Capital Cost		\$299,582

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 18	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$0			\$0
Min. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	15.3725
Excavation	16%	\$0	30.0	15.3725
Transportation, Alt 18	16%	\$0	30.0	15.3725
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725
Cleanup & Improvements	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$299,582
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$299,582

Estimated Cost for SD001, Health-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 20			\$0
Thermal Destruction/Landfill Disposal			\$0
Reserved			\$0
Reserved			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)		15.0%	\$0
Scope Contingencies (% of Construction Subtotal)		20.0%	\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)		5.0%	\$0
Permitting and Legal (% of Construction Total)		10.0%	\$0
Startup and Shakedown (% of Construction Total)		10.0%	\$0
Bonding and Insurance (% of Construction Total)		3.0%	\$0
Construction Oversight (% of Construction Total)		5.0%	\$0
Field and Laboratory Testing (% of Construction Total)		5.0%	\$0
Reporting (% of Construction Total)		10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)		15.0%	\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 20		\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Min. O&M Cost (% Annual O&M Unless Otherwise Specified)			Percentage		
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD001, Ecological-Based Alternative 20

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$25,129
Excavation		\$3,089
Transportation, Alt 20		\$66,926
Thermal Destruction/Landfill Disposal		\$1,544,444
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$4,603
Reserved		\$0
Construction Subtotal		\$1,644,192
Bid Contingencies (% of Construction Subtotal)	15.0%	\$246,629
Scope Contingencies (% of Construction Subtotal)	20.0%	\$328,838
Construction Total		\$1,709,659
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$110,983
Permitting and Legal (% of Construction Total)	10.0%	\$221,966
Startup and Shakedown (% of Construction Total)	10.0%	\$221,966
Bonding and Insurance (% of Construction Total)	3.0%	\$66,590
Construction Oversight (% of Construction Total)	5.0%	\$110,983
Field and Laboratory Testing (% of Construction Total)	5.0%	\$110,983
Reporting (% of Construction Total)	10.0%	\$221,966
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$332,949
Total Capital Cost		\$3,618,042

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (Yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 20		\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Min O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$3,618,042
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$3,618,042

SD001 Cost Summary Sheet

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

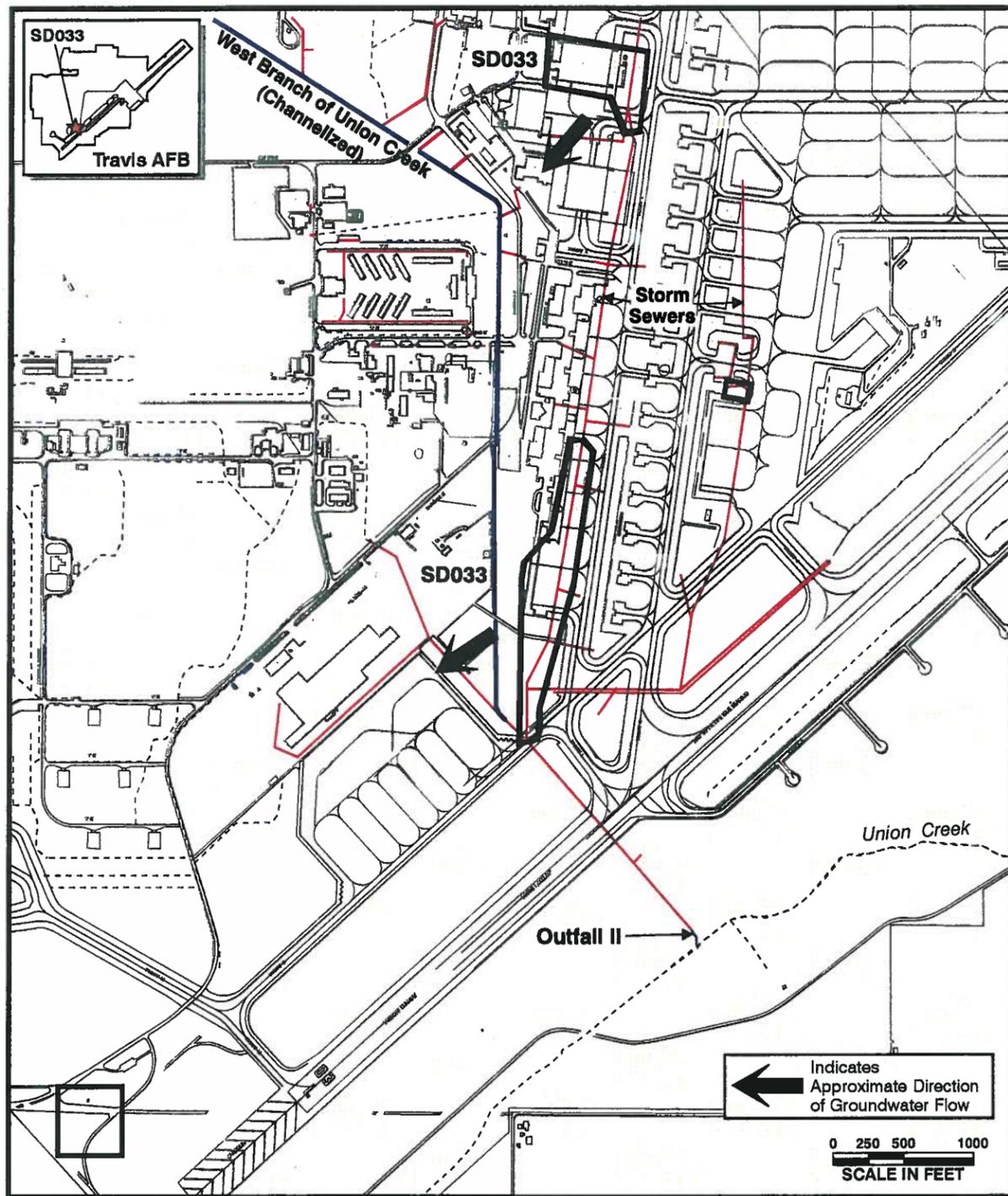
Process Option Summary for SD001

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$0	\$0	\$25,129	\$0
Demolition, Curbs	\$0	\$0	\$0	\$0
Demolition, Pavements	\$0	\$0	\$0	\$0
Clear and Grub	\$0	\$0	\$25,129	\$0
Capping	\$0	\$0	\$0	\$0
Excavation	\$0	\$0	\$3,089	\$0
Transportation, Alt 18	\$0	\$0	\$33,463	\$0
Transportation, Alt 20	\$0	\$0	\$66,926	\$0
Thermal Destruction/Landfill Disposal	\$0	\$0	\$1,544,444	\$0
Landfill Disposal, Alt 18	\$0	\$0	\$83,657	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$83,657	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvements	\$0	\$0	\$4,603	\$0
Cleanup and Landscaping	\$0	\$0	\$4,603	\$0
Improvements & Utilities	\$0	\$0	\$0	\$0
Monitoring	\$0	\$0	\$0	\$0
Institutional Controls	\$0	\$0	\$0	\$5,386
Reserved				



Site Characteristics

- Storm sewer system/Facility 810 active
- Contamination in sediment, surface soil, groundwater and surface water
- Surface water contaminated with TPH, TCE and lead (ecological risk)
- Flow in Union Creek is derived from surface runoff, and at times from groundwater
- Subsurface geology beneath storm sewer system varies
- Depth to groundwater — 13 to 18 feet
- Depth to bedrock — varies
- Site also included in Group J for surface water contamination, Group P for soil contamination, and Group B for groundwater contamination

Treatment Alternatives

- Alternative #18: Backhoe, Disposal at Existing Off-site Landfill
- Alternative #20: Backhoe, Ex-situ High Temperature Thermal Treatment, Disposal at Existing Off-site Landfill

Design Assumptions

- Length of West Branch of Union Creek with contaminated sediment — 6,600 ft
- Depth of sediment — 0.5 ft
- Volume of contaminated sediment — 1,200 cubic yards

NOTE: The figure conceptually displays components for comparative purposes only. Actual layout may vary significantly from that shown and will be determined during the remedial design phase.

Figure B-38.
Conceptual Design for SD033 (Group R) Sediment Treatment Alternatives, Travis AFB

Cost Summary for SD033 Alternatives

Alternative	Health-Based Cleanup			Incremental Ecological-Based Cleanup			Grand Total
	Capital Costs	Operation and Maintenance Present Worth	Subtotal	Capital Costs	Operation and Maintenance Present Worth	Subtotal	
16	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	\$0	\$0	\$0	\$0	\$100,183	\$100,183	\$100,183
18	\$0	\$0	\$0	\$286,423	\$0	\$286,423	\$286,423
20	\$0	\$0	\$0	\$3,434,021	\$0	\$3,434,021	\$3,434,021

Estimated Cost for SD033, Health-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		
		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal				
	\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions For Details on Calculations				
No Action		21%		
	\$0		0.0	0.0000
Total Operation and Maintenance Costs				
				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	
	\$0

Estimated Cost for SD033, Ecological-Based Alternative 16

CAPITAL COSTS		
Process Option	Percentage	Capital Cost
No Action		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	10.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	5.0%	\$0
Reporting (% of Construction Total)	10.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
No Action	\$0	0.0	0.0000	\$0
O&M Subtotal		\$0		\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
See Global Cost Assumptions For Details on Calculations				
No Action		21%	\$0	0.0
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD033, Health-Based Alternative 17

CAPITAL COSTS			
Process Option			Capital Cost
Institutional Controls			\$0
Monitoring			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	10.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	0.0%		\$0
Reporting (% of Construction Total)	0.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Institutional Controls		\$0	30.0	15.3725	\$0
Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal					\$0
Other O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Institutional Controls	21%	\$0	30.0	15.3725	\$0
Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD033, Ecological-Based Alternative 17

CAPITAL COSTS		
Process Option		Capital Cost
Institutional Controls		\$0
Monitoring		\$0
Reserved		\$0
Construction Subtotal		\$0
Bid Contingencies (% of Construction Subtotal)	15.0%	\$0
Scope Contingencies (% of Construction Subtotal)	20.0%	\$0
Construction Total		\$0
Other Direct Costs		
Engineering Design (% of Construction Total)	10.0%	\$0
Permitting and Legal (% of Construction Total)	5.0%	\$0
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$0
Construction Oversight (% of Construction Total)	5.0%	\$0
Field and Laboratory Testing (% of Construction Total)	0.0%	\$0
Reporting (% of Construction Total)	0.0%	\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$0
Total Capital Cost		\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Institutional Controls		\$5,386	30.0	15.3725	\$82,796
Monitoring		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$5,386			\$82,796
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Institutional Controls	21%	\$1,131	30.0	15.3725	\$17,387
Monitoring	21%	\$0	30.0	15.3725	\$0
Reserved	21%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$100,183

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$100,183
Total Alternative Cost	\$100,183

Estimated Cost for SD033, Health-Based Alternative 18

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 18			\$0
Landfill Disposal, Alt 18			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$0
Permitting and Legal (% of Construction Total)	5.0%		\$0
Startup and Shakedown (% of Construction Total)	0.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Cost			\$0

OPERATION AND MAINTENANCE					
Process Option		Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing		\$0	30.0	15.3725	\$0
Excavation		\$0	30.0	15.3725	\$0
Transportation, Alt 18		\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18		\$0	30.0	15.3725	\$0
Cleanup & Improvements		\$0	30.0	15.3725	\$0
Reserved		\$0	30.0	15.3725	\$0
O&M Subtotal		\$0			\$0
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
<i>See Global Cost Assumptions For Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 18	16%	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs					\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD033, Ecological-Based Alternative 18

CAPITAL COSTS		
Process Option		Capital Cost
Demolition & Clearing		\$25,129
Excavation		\$2,929
Transportation, Alt 18		\$31,370
Landfill Disposal, Alt 18		\$79,324
Cleanup & Improvements		\$4,603
Reserved		\$0
Construction Subtotal		\$143,355
Bid Contingencies (% of Construction Subtotal)	15.0%	\$21,503
Scope Contingencies (% of Construction Subtotal)	20.0%	\$28,671
Construction Total		\$193,529
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$9,676
Permitting and Legal (% of Construction Total)	5.0%	\$9,676
Startup and Shakedown (% of Construction Total)	0.0%	\$0
Bonding and Insurance (% of Construction Total)	3.0%	\$5,806
Construction Oversight (% of Construction Total)	5.0%	\$9,676
Field and Laboratory Testing (% of Construction Total)	5.0%	\$9,676
Reporting (% of Construction Total)	10.0%	\$19,353
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$29,029
Total Capital Cost		\$286,423

OPERATION AND MAINTENANCE				
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth
Demolition & Clearing	\$0	30.0	15.3725	\$0
Excavation	\$0	30.0	15.3725	\$0
Transportation, Alt 18	\$0	30.0	15.3725	\$0
Landfill Disposal, Alt 18	\$0	30.0	15.3725	\$0
Cleanup & Improvements	\$0	30.0	15.3725	\$0
Reserved	\$0	30.0	15.3725	\$0
O&M Subtotal	\$0			\$0
Miss. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage		
<i>See Global Cost Assumptions For Details on Calculations</i>				
Demolition & Clearing	16%	\$0	30.0	15.3725
Excavation	16%	\$0	30.0	15.3725
Transportation, Alt 18	16%	\$0	30.0	15.3725
Landfill Disposal, Alt 18	16%	\$0	30.0	15.3725
Cleanup & Improvements	16%	\$0	30.0	15.3725
Reserved	16%	\$0	30.0	15.3725
Total Operation and Maintenance Costs				\$0

NET PRESENT WORTH	
Capital Costs	\$286,423
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$286,423

Estimated Cost for SD033, Health-Based Alternative 20

CAPITAL COSTS			
Process Option			Capital Cost
Demolition & Clearing			\$0
Excavation			\$0
Transportation, Alt 20			\$0
Thermal Destruction/Landfill Disposal			\$0
Reserved			\$0
Reserved			\$0
Cleanup & Improvements			\$0
Reserved			\$0
Construction Subtotal			\$0
Bid Contingencies (% of Construction Subtotal)	15.0%		\$0
Scope Contingencies (% of Construction Subtotal)	20.0%		\$0
Construction Total			\$0
Other Direct Costs			
Engineering Design (% of Construction Total)	5.0%		\$0
Permitting and Legal (% of Construction Total)	10.0%		\$0
Startup and Shakedown (% of Construction Total)	10.0%		\$0
Bonding and Insurance (% of Construction Total)	3.0%		\$0
Construction Oversight (% of Construction Total)	5.0%		\$0
Field and Laboratory Testing (% of Construction Total)	5.0%		\$0
Reporting (% of Construction Total)	10.0%		\$0
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%		\$0
Total Capital Costs			\$0

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Present Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal				\$0	\$0
Min. O&M Cost (or Annual O&M Unless Otherwise Specified)	Percentage				
<i>See Table 2.1 for Assumptions for Details on Calculations</i>					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	\$0

NET PRESENT WORTH	
Capital Costs	\$0
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$0

Estimated Cost for SD033, Ecological-Based Alternative 20

CAPITAL COSTS		
Process/Option		Capital Cost
Demolition & Clearing		\$25,129
Excavation		\$2,929
Transportation, Alt 20		\$63,459
Thermal Destruction/Landfill Disposal		\$1,464,444
Reserved		\$0
Reserved		\$0
Cleanup & Improvements		\$4,603
Reserved		\$0
Construction Subtotal		\$1,560,564
Bid Contingencies (% of Construction Subtotal)	15.0%	\$234,085
Scope Contingencies (% of Construction Subtotal)	20.0%	\$312,113
Construction Total		\$2,106,761
Other Direct Costs		
Engineering Design (% of Construction Total)	5.0%	\$105,338
Permitting and Legal (% of Construction Total)	10.0%	\$210,676
Startup and Shakedown (% of Construction Total)	10.0%	\$210,676
Bonding and Insurance (% of Construction Total)	3.0%	\$63,203
Construction Oversight (% of Construction Total)	5.0%	\$105,338
Field and Laboratory Testing (% of Construction Total)	5.0%	\$105,338
Reporting (% of Construction Total)	10.0%	\$210,676
Escalation (% of Construction Total, Based on Mid 1998 Start)	15.0%	\$316,014
Total Capital Cost		\$3,434,021

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Demolition & Clearing	\$0	30.0	15.3725	\$0	
Excavation	\$0	30.0	15.3725	\$0	
Transportation, Alt 20	\$0	30.0	15.3725	\$0	
Thermal Destruction/Landfill Disposal	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
Cleanup & Improvements	\$0	30.0	15.3725	\$0	
Reserved	\$0	30.0	15.3725	\$0	
O&M Subtotal	\$0			\$0	
Min. O&M Costs (% Annual O&M Unless Otherwise Specified)	Percentage				
See Global Cost Assumptions for Details on Calculations					
Demolition & Clearing	16%	\$0	30.0	15.3725	\$0
Excavation	16%	\$0	30.0	15.3725	\$0
Transportation, Alt 20	16%	\$0	30.0	15.3725	\$0
Thermal Destruction/Landfill Disposal	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Cleanup & Improvements	16%	\$0	30.0	15.3725	\$0
Reserved	16%	\$0	30.0	15.3725	\$0
Total Operation and Maintenance Costs				\$0	

NET PRESENT WORTH	
Capital Costs	\$3,434,021
Operation and Maintenance Present Worth	\$0
Total Alternative Cost	\$3,434,021

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

Process Option Summary for SD033

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Soil disposal costs do not include transportation from TAFB or treatment facility to landfill
- 4 Capping costs include vents, etc.
- 5 Thermal treatment cost is \$600/ton and includes subsequent disposal

Cost Summary:

Item	Health-Based		Ecological-Based	
	Capital Cost	O&M Cost	Capital Cost	O&M Cost
Demolition & Clearing	\$0	\$0	\$25,129	\$0
Demolition, Curbs	\$0	\$0	\$0	\$0
Demolition, Pavements	\$0	\$0	\$0	\$0
Clear and Grub	\$0	\$0	\$25,129	\$0
Capping	\$0	\$0	\$0	\$0
Excavation	\$0	\$0	\$2,929	\$0
Transportation, Alt 18	\$0	\$0	\$31,370	\$0
Transportation, Alt 20	\$0	\$0	\$63,459	\$0
Thermal Destruction/Landfill Disposal	\$0	\$0	\$1,464,444	\$0
Landfill Disposal, Alt 18	\$0	\$0	\$79,324	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$79,324	\$0
Landfill Disposal, Alt 20 (Included with Incineration)	\$0	\$0	\$0	\$0
Class I Landfill	\$0	\$0	\$0	\$0
Class II Landfill	\$0	\$0	\$0	\$0
Cleanup & Improvments	\$0	\$0	\$4,603	\$0
Cleanup and Landscaping	\$0	\$0	\$4,603	\$0
Improvments & Utilities	\$0	\$0	\$0	\$0
Monitoring	\$0	\$0	\$0	\$0
Institutional Controls	\$0	\$0	\$0	\$5,386
Reserved				

Summary of Costs for the Centralized Treatment Facility

Location	Capital Costs	Operation and Maintenance Present Worth	Total
FT005	\$1,367,131	\$277,864	\$1,644,995
SS029	\$1,500,510	\$576,526	\$2,077,036
SS030	\$685,878	\$427,222	\$1,113,100
Main Facility	\$1,425,273	\$6,551,212	\$7,976,485
Total	\$4,978,792	\$7,832,824	\$12,811,616

FT005.CTF

Alternative	Capital Costs	Operation and Maintenance Present Worth	Total
FT005	\$1,367,131	\$277,864	\$1,644,995

Estimated Cost for FT005 GW Extraction

CAPITAL COSTS				
Process Option	Quantity	Unit Cost	Percentage	Capital Cost
Horizontal Extraction Wells	6	\$50,000	NA	\$300,000
Influent Piping	1	\$18,175	NA	\$18,175
Filtration	4	\$12,827	NA	\$51,308
Well Pump	6	\$4,397	NA	\$26,384
Storage Tank	2	\$1,890	NA	\$3,779
Transfer Pump	2	\$2,498	NA	\$4,996
Control Panel	1	\$2,418	NA	\$2,418
Utilities and Improvements	1	\$172,264	NA	\$172,264
Effluent Monitoring	1	\$0	NA	\$0
Effluent Piping	1	\$41,958	NA	\$41,958
Reserved	1	\$0	NA	\$0
Reserved	1	\$0	NA	\$0
Plume Monitoring	1	\$0	NA	\$0
Construction Subtotal				\$671,282
Bid Contingencies (% of Construction Subtotal)			15.0%	\$93,192
Scope Contingencies (% of Construction Subtotal)			20.0%	\$124,256
Construction Total				\$888,731
Other Direct Costs				
Engineering Design (% of Construction Total)			10.0%	\$88,873
Permitting and Legal (% of Construction Total)			5.0%	\$44,437
Startup and Shakedown (% of Construction Total)			10.0%	\$88,873
Bonding and Insurance (% of Construction Total)			3.0%	\$26,662
Construction Oversight (% of Construction Total)			5.0%	\$44,437
Field and Laboratory Testing (% of Construction Total)			5.0%	\$44,437
Reporting (% of Construction Total)			10.0%	\$88,873
Escalation (% of Construction Total, Based on Mid 1998 Start)			15.0%	\$133,310
Total Capital Cost				\$1,267,331

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Horizontal Extraction Wells	\$0	15.0	10.3797	\$0	
Influent Piping	\$0	15.0	10.3797	\$0	
Filtration	\$1,620	15.0	10.3797	\$16,815	
Well Pump	\$3,756	15.0	10.3797	\$38,986	
Storage Tank	\$0	15.0	10.3797	\$0	
Transfer Pump	\$2,945	15.0	10.3797	\$30,568	
Control Panel	\$0	15.0	10.3797	\$0	
Utilities and Improvements	\$500	15.0	10.3797	\$5,190	
Effluent Monitoring	\$0	15.0	10.3797	\$0	
Effluent Piping	\$0	15.0	10.3797	\$0	
Reserved	\$0	15.0	10.3797	\$0	
Reserved	\$0	15.0	10.3797	\$0	
Plume Monitoring	\$0	15.0	10.3797	\$0	
O&M Subtotal	\$13,303	15.0	10.3797	\$138,081	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)	\$14,174			\$179,248	
<i>See Global Cost Assumptions For Details on Calculations</i>					
Horizontal Extraction Wells	21%	\$0	15.0	10.3797	\$0
Influent Piping	21%	\$0	15.0	10.3797	\$0
Filtration	21%	\$340	15.0	10.3797	\$3,531
Well Pump	21%	\$789	15.0	10.3797	\$8,187
Storage Tank	21%	\$0	15.0	10.3797	\$0
Transfer Pump	21%	\$618	15.0	10.3797	\$6,419
Control Panel	21%	\$0	15.0	10.3797	\$0
Utilities and Improvements	21%	\$105	15.0	10.3797	\$1,090
Effluent Monitoring	21%	\$0	15.0	10.3797	\$0
Effluent Piping	21%	\$0	15.0	10.3797	\$0
Reserved	21%	\$0	15.0	10.3797	\$0
Reserved	21%	\$0	15.0	10.3797	\$0
Plume Monitoring	21%	\$2,794	15.0	10.3797	\$28,997
Total Operation and Maintenance Costs					\$277,864

NET PRESENT WORTH	
Capital Costs	\$1,367,131
Operation and Maintenance Present Worth	\$277,864
Total Alternative Cost	\$1,644,995

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

Process Option Summary for FT005

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Horizontal extraction wells are 300 feet in length.

Cost Summary:

Item	Capital Costs	O&M Costs
Horizontal Extraction Wells	\$50,000	\$0
Influent Piping	\$18,175	\$0
Filtration	\$12,827	\$405
Well Pump	\$4,397	\$626
Storage Tank	\$1,890	\$0
Transfer Pump	\$2,498	\$1,473
Control Panel	\$2,418	\$0
Activated Carbon	\$0	\$0
Activated Carbon Alt 7	\$0	\$0
Effluent Piping	\$41,958	\$0
Utilities and Improvments	\$172,264	\$500
Clear and Grub	\$5,702	\$0
Electrical	\$75,967	\$500
Access Road	\$7,534	\$0
Communication Lines	\$81,113	\$0
Gas Service	\$0	\$0
Cleanup and Landscaping	\$1,153	\$0
Fencing	\$795	\$0
Parking Lot	\$0	\$0
Institutional Controls	\$0	\$0
Plume Monitoring	\$0	\$13,303
Effluent Monitoring	\$0	\$0
Institutional Monitoring	\$0	\$0
Reserved	\$0	\$0

SS029.CTF

Alternative	Capital Costs	Operation and Maintenance Present Worth	Total
SS029	\$1,500,510	\$576,526	\$2,077,036

Estimated Cost for SS029 GW Extraction

CAPITAL COSTS				
Process Option	Quantity	Unit Cost	Percentage	Capital Cost
Horizontal Extraction Wells	8	\$50,000	NA	\$400,000
Influent Piping	1	\$12,652	NA	\$12,652
Filtration	4	\$13,751	NA	\$55,002
Well Pump	8	\$4,397	NA	\$35,177
Storage Tank	2	\$1,890	NA	\$3,779
Transfer Pump	2	\$1,914	NA	\$3,828
Control Panel	1	\$2,418	NA	\$2,418
Utilities and Improvements	1	\$132,605	NA	\$132,605
Effluent Monitoring	1	\$0	NA	\$0
Effluent Piping	1	\$36,434	NA	\$36,434
Reserved	1	\$0	NA	\$0
Reserved	1	\$0	NA	\$0
Plume Monitoring	1	\$0	NA	\$0
Construction Subtotal				\$681,895
Bid Contingencies (% of Construction Subtotal)			15.0%	\$102,284
Scope Contingencies (% of Construction Subtotal)			20.0%	\$136,379
Construction Total				\$920,558
Other Direct Costs				
Engineering Design (% of Construction Total)			10.0%	\$92,056
Permitting and Legal (% of Construction Total)			5.0%	\$46,028
Startup and Shakedown (% of Construction Total)			10.0%	\$92,056
Bonding and Insurance (% of Construction Total)			3.0%	\$27,617
Construction Oversight (% of Construction Total)			5.0%	\$46,028
Field and Laboratory Testing (% of Construction Total)			5.0%	\$46,028
Reporting (% of Construction Total)			10.0%	\$92,056
Escalation (% of Construction Total, Based on Mid 1998 Start)			15.0%	\$138,084
Total Capital Cost				\$1,500,510

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Horizontal Extraction Wells	\$0	149.0	19.9861	\$0	
Influent Piping	\$0	149.0	19.9861	\$0	
Filtration	\$1,620	149.0	19.9861	\$32,377	
Well Pump	\$4,468	149.0	19.9861	\$89,298	
Storage Tank	\$0	149.0	19.9861	\$0	
Transfer Pump	\$3,949	149.0	19.9861	\$78,925	
Control Panel	\$0	149.0	19.9861	\$0	
Utilities and Improvements	\$500	149.0	19.9861	\$9,993	
Effluent Monitoring	\$0	149.0	19.9861	\$0	
Effluent Piping	\$0	149.0	19.9861	\$0	
Reserved	\$0	149.0	19.9861	\$0	
Reserved	\$0	149.0	19.9861	\$0	
Plume Monitoring	\$13,303	149.0	19.9861	\$265,875	
O&M Subtotal				\$476,468	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Horizontal Extraction Wells	21%	\$0	149.0	19.9861	\$0
Influent Piping	21%	\$0	149.0	19.9861	\$0
Filtration	21%	\$340	149.0	19.9861	\$6,799
Well Pump	21%	\$938	149.0	19.9861	\$18,753
Storage Tank	21%	\$0	149.0	19.9861	\$0
Transfer Pump	21%	\$829	149.0	19.9861	\$16,574
Control Panel	21%	\$0	149.0	19.9861	\$0
Utilities and Improvements	21%	\$105	149.0	19.9861	\$2,099
Effluent Monitoring	21%	\$0	149.0	19.9861	\$0
Effluent Piping	21%	\$0	149.0	19.9861	\$0
Reserved	21%	\$0	149.0	19.9861	\$0
Reserved	21%	\$0	149.0	19.9861	\$0
Plume Monitoring	21%	\$2,794	149.0	19.9861	\$55,834
Total Operation and Maintenance Costs				\$576,468	

NET PRESENT WORTH	
Capital Costs	\$1,500,510
Operation and Maintenance Present Worth	\$576,526
Total Alternative Cost	\$2,077,036

SS029 Cost Summary

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

Process Option Summary for SS029

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Horizontal extraction wells are 300 feet in length.

Cost Summary:

Item	Capital Costs	O&M Costs
Horizontal Extraction Wells	\$50,000	\$0
Influent Piping	\$12,652	\$0
Filtration	\$13,751	\$405
Well Pump	\$4,397	\$559
Storage Tank	\$1,890	\$0
Transfer Pump	\$1,914	\$1,975
Control Panel	\$2,418	\$0
Activated Carbon	\$0	\$0
Activated Carbon Alt 7	\$0	\$0
Effluent Piping	\$36,434	\$0
Utilities and Improvements	\$132,605	\$500
Clear and Grub	\$5,702	\$0
Electrical	\$54,187	\$500
Access Road	\$7,535	\$0
Communication Lines	\$63,233	\$0
Gas Service	\$0	\$0
Cleanup and Landscaping	\$1,153	\$0
Fencing	\$795	\$0
Parking Lot	\$0	\$0
Institutional Controls	\$0	\$0
Plume Monitoring	\$0	\$13,303
Effluent Monitoring	\$0	\$0
Institutional Monitoring	\$0	\$0
Reserved	\$0	\$0

SS030.CTF

Alternative	Capital Costs	Operation and Maintenance Present Worth	Total
SS030	\$685,878	\$427,222	\$1,113,100

Estimated Cost for SS030 GW Extraction

CAPITAL COSTS				
Process Option	Quantity	Unit Cost	Percentage	Capital Cost
Horizontal Extraction Wells	2	\$50,000	NA	\$100,000
Influent Piping	1	\$2,673	NA	\$2,673
Filtration	4	\$6,762	NA	\$27,048
Well Pump	2	\$4,398	NA	\$8,795
Storage Tank	2	\$1,890	NA	\$3,779
Transfer Pump	2	\$1,790	NA	\$3,579
Control Panel	1	\$2,418	NA	\$2,418
Utilities and Improvements	1	\$108,550	NA	\$108,550
Effluent Monitoring	1	\$0	NA	\$0
Effluent Piping	1	\$54,850	NA	\$54,850
Reserved	1	\$0	NA	\$0
Reserved	1	\$0	NA	\$0
Plume Monitoring	1	\$0	NA	\$0
Construction Subtotal				\$311,699
Bid Contingencies (% of Construction Subtotal)			15.0%	\$46,754
Scope Contingencies (% of Construction Subtotal)			20.0%	\$62,338
Construction Total				\$420,784
Other Direct Costs				
Engineering Design (% of Construction Total)			10.0%	\$42,078
Permitting and Legal (% of Construction Total)			5.0%	\$21,039
Startup and Shakedown (% of Construction Total)			10.0%	\$42,078
Bonding and Insurance (% of Construction Total)			3.0%	\$12,624
Construction Oversight (% of Construction Total)			5.0%	\$21,039
Field and Laboratory Testing (% of Construction Total)			5.0%	\$21,039
Reporting (% of Construction Total)			10.0%	\$42,078
Escalation (% of Construction Total, Based on Mid 1998 Start)			15.0%	\$63,118
Total Capital Cost				\$685,878

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Process Option Present Worth	
Horizontal Extraction Wells	\$0	77.0	19.5329	\$0	
Influent Piping	\$0	77.0	19.5329	\$0	
Filtration	\$1,620	77.0	19.5329	\$31,643	
Well Pump	\$1,215	77.0	19.5329	\$23,732	
Storage Tank	\$0	77.0	19.5329	\$0	
Transfer Pump	\$1,438	77.0	19.5329	\$28,088	
Control Panel	\$0	77.0	19.5329	\$0	
Utilities and Improvements	\$500	77.0	19.5329	\$9,766	
Effluent Monitoring	\$0	77.0	19.5329	\$0	
Effluent Piping	\$0	77.0	19.5329	\$0	
Reserved	\$0	77.0	19.5329	\$0	
Reserved	\$0	77.0	19.5329	\$0	
Plume Monitoring	\$13,303	77.0	19.5329	\$259,846	
O&M Subtotal				\$353,976	
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)					
See Global Cost Assumptions For Details on Calculations					
Horizontal Extraction Wells	21%	\$0	77.0	19.5329	\$0
Influent Piping	21%	\$0	77.0	19.5329	\$0
Filtration	21%	\$340	77.0	19.5329	\$6,645
Well Pump	21%	\$255	77.0	19.5329	\$4,984
Storage Tank	21%	\$0	77.0	19.5329	\$0
Transfer Pump	21%	\$302	77.0	19.5329	\$5,899
Control Panel	21%	\$0	77.0	19.5329	\$0
Utilities and Improvements	21%	\$105	77.0	19.5329	\$2,051
Effluent Monitoring	21%	\$0	77.0	19.5329	\$0
Effluent Piping	21%	\$0	77.0	19.5329	\$0
Reserved	21%	\$0	77.0	19.5329	\$0
Reserved	21%	\$0	77.0	19.5329	\$0
Plume Monitoring	21%	\$2,794	77.0	19.5329	\$54,568
Total Operation and Maintenance Costs				\$472,222	

NET PRESENT WORTH	
Capital Costs	\$685,878
Operation and Maintenance Present Worth	\$427,222
Total Alternative Cost	\$1,113,100

SS030 Cost Summary Sheet

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

Process Option Summary for SS030

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Horizontal extraction wells are 300 feet in length.

Cost Summary:

Item	Capital Costs	O&M Costs
Horizontal Extraction Wells	\$50,000	\$0
Influent Piping	\$2,673	\$0
Filtration	\$6,762	\$405
Well Pump	\$4,398	\$608
Storage Tank	\$1,890	\$0
Transfer Pump	\$1,790	\$719
Control Panel	\$2,418	\$0
Activated Carbon	\$0	\$0
Activated Carbon Alt 7	\$0	\$0
Effluent Piping	\$54,850	\$0
Utilities and Improvements	\$108,550	\$500
Clear and Grub	\$5,702	\$0
Electrical	\$21,674	\$500
Access Road	\$3,456	\$0
Communication Lines	\$75,770	\$0
Gas Service	\$0	\$0
Cleanup and Landscaping	\$1,153	\$0
Fencing	\$795	\$0
Parking Lot	\$0	\$0
Institutional Controls	\$0	\$0
Plume Monitoring	\$0	\$13,303
Effluent Monitoring	\$0	\$0
Institutional Monitoring	\$0	\$0
Reserved	\$0	\$0

MAIN.CTF

Alternative	Capital Costs	Operation and Maintenance Present Worth	Total
Facility	\$1,425,273	\$6,551,212	\$7,976,485

Estimated Cost for Centralized Treatment Facility

CAPITAL COSTS				
Process Option	Quantity	Unit Cost	Percentage	Capital Cost
Water Storage Tanks	2	\$48,138	NA	\$96,276
Control Panel	1	\$11,495	NA	\$11,495
Filtration	0	\$0	NA	\$0
Ion Exchange	1	\$201,500	NA	\$201,500
Reserved	1	\$0	NA	\$0
Ultraviolet Oxidation	1	\$237,509	NA	\$237,509
Activated Carbon	1	\$53,917	NA	\$53,917
Effluent Piping	1	\$1,939	NA	\$1,939
Utilities and Improvements	1	\$45,068	NA	\$45,068
Effluent Monitoring	1	\$0	NA	\$0
Reserved	1	\$0	NA	\$0
Reserved	1	\$0	NA	\$0
Plume Monitoring	1	\$0	NA	\$0
Construction Subtotal				\$647,004
Bid Contingencies (% of Construction Subtotal)			15.0%	\$97,156
Scope Contingencies (% of Construction Subtotal)			20.0%	\$129,541
Construction Total				\$873,701
Other Project Costs				
Engineering Design (% of Construction Total)			10.0%	\$87,440
Permitting and Legal (% of Construction Total)			5.0%	\$43,720
Startup and Shakedown (% of Construction Total)			10.0%	\$87,440
Bonding and Insurance (% of Construction Total)			3.0%	\$26,232
Construction Oversight (% of Construction Total)			5.0%	\$43,720
Field and Laboratory Testing (% of Construction Total)			5.0%	\$43,720
Reporting (% of Construction Total)			10.0%	\$87,440
Escalation (% of Construction Total, Based on Mid 1998 Start)			15.0%	\$131,160
Total Capital Cost				\$1,425,273

OPERATION AND MAINTENANCE					
Process Option	Annual O&M Cost	Process Option Service Time (yr)	Present Worth Factor	Subtotal	Process Option Present Worth
Water Storage Tanks	\$0	149.0	19.9861		\$0
Control Panel	\$0	149.0	19.9861		\$0
Filtration	\$0	149.0	19.9861		\$0
Ion Exchange	\$102,639	149.0	19.9861		\$2,051,345
Reserved	\$0	149.0	19.9861		\$0
Ultraviolet Oxidation	\$99,581	149.0	19.9861		\$1,990,241
Activated Carbon	\$40,985	149.0	19.9861		\$819,125
Effluent Piping	\$0	149.0	19.9861		\$0
Utilities and Improvements	\$500	149.0	19.9861		\$9,993
Effluent Monitoring	\$27,195	149.0	19.9861		\$543,521
Reserved	\$0	149.0	19.9861		\$0
Reserved	\$0	149.0	19.9861		\$0
Plume Monitoring	\$0	149.0	19.9861		\$0
O&M Subtotal				\$278,980	\$5,614,215
Misc. O&M Costs (% Annual O&M Unless Otherwise Specified)		Percentage			
See Global Cost Assumptions For Details on Calculations					
Water Storage Tanks	21%	\$0	149.0	19.9861	\$0
Control Panel	21%	\$0	149.0	19.9861	\$0
Filtration	21%	\$0	149.0	19.9861	\$0
Ion Exchange	21%	\$21,554	149.0	19.9861	\$430,782
Reserved	21%	\$0	149.0	19.9861	\$0
Ultraviolet Oxidation	21%	\$20,912	149.0	19.9861	\$417,951
Activated Carbon	21%	\$8,607	149.0	19.9861	\$172,016
Effluent Piping	21%	\$0	149.0	19.9861	\$0
Utilities and Improvements	21%	\$105	149.0	19.9861	\$2,099
Effluent Monitoring	21%	\$5,711	149.0	19.9861	\$114,139
Reserved	21%	\$0	149.0	19.9861	\$0
Reserved	21%	\$0	149.0	19.9861	\$0
Plume Monitoring	21%	\$0	149.0	19.9861	\$0
Total Operation and Maintenance Costs					\$5,614,215

NET PRESENT WORTH	
Capital Costs	\$1,425,273
Operation and Maintenance Present Worth	\$6,551,212
Total Alternative Cost	\$7,976,485

Centralized Treatment Facility Cost Summary Sheet

Cost Estimate Summary Sheet

NEWIOU Feasibility Study, Travis AFB

Process Option Summary for Central Treatment Facility

Assumptions:

- 1 Use RACER/ENVEST cost estimating model, Version 3.1 when practical
- 2 Compute monitoring and O&M for one year only; add costs for subsequent years using Alternative Cost Summary Sheets.
- 3 Horizontal extraction wells are 300 feet in length.
- 4 rate 5%

Cost Summary:

Item	Capital Costs	O&M Costs
Water Storage Tanks	\$48,138	\$0
Ion Exchange	\$201,500	\$102,639
Ultraviolet Oxidation	\$237,509	\$99,581
Activated Carbon	\$53,917	\$40,985
Control Panel	\$11,495	\$0
Effluent Piping	\$1,939	\$0
Utilities and Improvments	\$45,068	\$500
Clear and Grub	\$5,702	\$0
Electrical	\$15,687	\$0
Access Road	\$7,535	\$0
Communication Lines	\$0	\$0
Cleanup and Landscaping	\$5,171	\$0
Fencing	\$795	\$0
Parking Lot	\$10,178	\$0
Effluent Monitoring	\$0	\$27,195
Reserved	\$0	\$0