Appendix A

Summary of Federal and State Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered Information (TBCs)

Flat Creek IMM Superfund Site

OU1 Feasibility Study Report

September 9, 2011

Summary of Potential Federal and State Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered Information (TBCs) Flat Creek IMM Site OU1

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical-Specific	Location-Specific	Action-Specific
Federal ARARs and TBCs							
National Historic Preservation Act (NHPA) National Register of Historic Places Determinations of eligibility for inclusion in the National Register of Historic Places Protection of historic properties Requirements for environmental information documents and third-party agreements for U.S. Environmental Protection (EPA) actions subject to National Environmental Policy Act (NEPA) Historic Sites Act of 1935	16 United States Code (U.S.C.). 470 36 Code of Federal Regulations (CFR) 60 36 CFR 63 36 CFR 800 40 CFR 6.301(b) 16 U.S.C. 461, et seq. 40 CFR 6.310(a)	Applicable	This statute and implementing regulations require federal agencies to take into account the effect of this response action upon any district, site, building, structure, or object that is included in or eligible for the National Register of Historic Places (generally, 50 years old or older).	It is not anticipated that properties that are eligible for the National Register of Historic Places exist within the areas for remediation operable unit (OU)1. If cultural resources on or eligible for the national register are identified, it will be necessary to determine if there will be an adverse effect and, if so, how the effect may be minimized or mitigated, in consultation with the appropriate State Historic Preservation Office.		✓	
Archaeological and Historic Preservation Act Requirements for environmental information documents and third-party agreements for EPA actions subject to NEPA Protection of archaeological resources	16 U.S.C. 469 40 CFR 6.301(c) 43 CFR 7	Applicable	This statute and implementing regulations establish requirements for the evaluation and preservation of historical and archaeological data, which may be destroyed through alteration of terrain as a result of a federal construction project or a federally licensed activity or program.	The unauthorized removal of archaeological resources from public or Indian lands is prohibited without a permit and any archaeological investigations at a site must be conducted by a professional archaeologist.		✓	

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical-Specific	Location-Specific	Action-Specific
Federal ARARs and TBCs							
Fish and Wildlife Coordination Act Responsible official requirements Rules implementing the Fish and Wildlife Conservation Act of 1980	16 U.S.C. 661 et seq., 40 CFR 6.302(g) 50 CFR 83	Applicable	This statute and implementing regulations require coordination with federal and state agencies for federally funded projects to ensure that any modification of any stream or other water body affected by any action authorized or funded by the federal agency provides for adequate protection of fish and wildlife resources.	Several properties to be remediated under OU1 are located adjacent to the Clark Fork River and appear to be within the special flood hazard area delineated by Zone A. If the remedial action involves activities that affect wildlife and/or non-game fish, federal agencies must first consult with the USFWS and the relevant state agency with jurisdiction over wildlife resources.		✓	
Floodplain Management Regulations	40 CFR 6.302(b) Executive Order No. 11988	Applicable	These require that actions be taken to avoid, to the extent possible, adverse effects associated with direct or indirect development of a floodplain, or to minimize adverse impacts if no practicable alternative exists.	Several properties to be remediated under OU1 are located adjacent to the Clark Fork River and appear to be within the special flood hazard area delineated by Zone A. These standards are applicable to all actions within these floodplain areas.		✓	
Protection of Wetlands Regulations	40 CFR 6, Appendix A Executive Order No. 11990	Applicable	This ARAR requires federal agencies and the potentially responsible party (PRPs) to avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands if a practicable alternative exists.	It is not anticipated that jurisdictional wetlands exist within the areas for remediation at OU1. However if jurisdictional wetlands are delineated within areas for designated for remediation, these standards would be applicable.		✓	✓
Endangered Species Act (ESA) Responsible official requirements Endangered and threatened wildlife and plants Interagency cooperation-ESA of 1973, as amended	16 U.S.C. 1531 40 CFR 6.302(h) 50 CFR 17 50 CFR 402	Applicable	This statute and implementing regulations provide that federal activities not jeopardize the continued existence of any threatened or endangered species. ESA Section 7 requires consultation with the United States Fish and Wildlife Service (USFWS) to identify the possible presence of protected species and mitigate potential impacts on such species.	Four endangered, threatened, or candidate species have been identified in Mineral County. If threatened or endangered species are identified within the areas identified for remediation, activities must be designed to conserve the species and their habitat.		✓	

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical-Specific	Location-Specific	Action-Specific
Federal ARARs and TBCs							
Migratory Bird Treaty Act List of Migratory Birds	16 U.S.C. 703, et seq. 50 CFR 10.13	Relevant and Appropriate	Makes it unlawful to "hunt, take, capture, kill," or take other various actions adversely affected a broad range of migratory birds, without the prior approval of the Department of the Interior.	The selected remedial actions will be carried out in a manner to avoid adversely affecting migratory bird species, including individual birds or their nests.		✓	
Bald Eagle Protection Act	16 U.S.C. 668, et seq.	Applicable	This requirement establishes a federal responsibility for protection of bald and golden eagles, and requires continued consultation with the USFWS during remedial design and remedial construction to ensure that any cleanup of the site does not unnecessarily adversely affect the bald and golden eagles.	If bald or golden eagles are identified within the areas identified for remediation, activities must be designed to conserve the species and their habitat.		✓	
Native American Graves Protection and Repatriation Act	25 U.S.C. 3001, et seq.	Applicable	The Act prioritizes ownership or control over Native American cultural items, including human remains, funerary objects and sacred objects, excavated or discovered on federal or tribal lands. Federal agencies and museums that have possession or control over Native American human remains and associated funerary objects are required under the Act to compile an inventory of such items and, to the extent possible, identify their geographical and cultural affiliation. Once the cultural affiliation of such objects is established, the federal agency or museum must expeditiously return such items, upon request by a lineal descendent of the individual Native American or tribe identified.	No known cultural items, including human remains, funerary objects and sacred objects are located on the site. If such items are discovered during excavation activities then the provisions of this regulation will be applicable.		✓	✓

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical-Specific	Location-Specific	Action-Specific
Federal ARARs and TBCs							
American Indian Religious Freedom Act	42 U.S.C. 1996 et seq.	Applicable	This Act establishes a federal responsibility to protect and preserve the inherent right of American Indians to believe, express and exercise the traditional religions of American Indians. This right includes, but is not limited to, access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.	The Act requires Federal agencies to protect Indian religious freedom by refraining from interfering with access, possession and use of religious objects, and by consulting with Indian organizations regarding proposed actions affecting their religious freedom.		✓	
Clean Water Act	33 U.S.C. 1251 et seq. 33 CFR 330	Relevant and Appropriate	Regulates discharge of dredged or fill materials into waters of the United States.	Several properties to be remediated under OU1 are located adjacent to the Clark Fork River and appear to be within the special flood hazard area delineated by Zone A. No discharges are planned during remedial actions into waters of the United States, but measures must be taken to prevent any discharges. As provided under Section 303 of the Clean Water Act, 33 U.S.C. 1313, the State of Montana has promulgated water quality standards. See the discussion concerning State surface water quality requirements.		✓	

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical-Specific	Location-Specific	Action-Specific
Federal ARARs and TBCs							
National Ambient Air Quality Standards	40 CFR 50.6 (PM-10) 40 CFR 50.12 (lead)	Applicable	These provisions establish standards for PM-10 and lead emissions to air. (Corresponding state standards are found at Administrative Rules of Montana (ARM) 17.8.222 [lead] and ARM 17.8.223 [PM-10].) The PM-10 standard is 150 micrograms per cubic meter ($\mu g/m^3$), 24-hour average concentration, and the lead standard is 1.5 $\mu g/m^3$, maximum arithmetic mean averaged over a calendar quarter.	The selected remedial actions will be carried out in a manner that will comply with all the National Ambient Air Quality Standards.	✓		
Protection and Enhancement of the Cultural Environment	16 U.S.C. 470 Executive Order No. 11593	Applicable	Directs federal agencies to institute procedures to ensure programs contribute to the preservation and enhancement of non-federally owned historic resources.	Consultation with the Advisory Council on Historic Preservation is required if remedial activities should threaten cultural resources.		✓	
The Archaeological Resources Protection Act of 1979	16 U.S.C. 470aa-47011	Relevant and Appropriate	Requires a permit for any excavation or removal of archeological resources from public lands or Indian lands.	Substantive portions of this act may be relevant and appropriate if archeological resources are encountered during onsite remedial action activity involving public lands or Indian lands.		✓	
Federal and State Resource Conservation and Recovery Act (RCRA) Subtitle D and Solid Waste Management Requirements	40 CFR 257	Applicable	Establishes criteria under Subtitle D of the Resource Conservation and Recovery Act for use in determining which solid waste disposal facilities and practices pose a reasonable probability of adverse effects on health or the environment.	Solid waste requirements are listed herein because contaminated soil to be addressed in the remedial action are considered solid waste.			✓

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical-Specific	Location-Specific	Action-Specific
Federal ARARs and TBCs							
Federal RCRA Subtitle C Requirements	42 U.S.C. Section 9621, et seq. 40 CFR 261-268	Relevant and Appropriate	RCRA Subtitle C and implementing regulations are designated as applicable for any hazardous wastes that are actively "generated" or that were "placed" or "disposed" after 1980.	RCRA Subtitle C requirements will generally not be relevant and appropriate for those wastes for which EPA has specifically determined that Subtitle C regulation is not warranted (i.e., wastes covered by the Bevill exclusion). Thus contaminated soil is assumed to not be classified as hazardous waste. However these regulations may be relevant and appropriate to any unknown ,potentially hazardous wastes encountered during excavation of contaminated soils (e.g. buried drums, etc.).			✓
Occupational Safety and Health Act	29 CFR 1910	To Be Considered	Provides standards and guidance for worker protection during conduct of construction activities.	Occupational Safety and Health Administration (OSHA) regulations are construction standards and not environmental standards. The substantive portion of these regulations would be considered for onsite remedial activities.	✓		✓
Federal Aviation Administration (FAA) Regulations	14 CFR 77.13, et seq. 14 CFR 139.341 14 CFR 157	To Be Considered	Describes the standards used for determining obstructions to air navigation, navigational aids, or navigational facilities. Provides procedures for identifying, marking, and lighting construction and other unserviceable areas. Includes procedures for providing notice of construction, alteration, activation, and deactivation of airports.	FAA regulations are construction standards and not environmental standards. The substantive portion of these regulations would be considered for onsite remedial activities at the existing repository at the Mineral County Airport.		✓	✓

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical-Specific	Location-Specific	Action-Specific
Federal ARARs and TBCs							
Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map	Map ID 3001280005A, (01/05/2001)	To Be Considered	The FEMA flood insurance rate map (FIRM) indicates the special flood hazard area delineated by Zone A and areas outside delineated by Zone X.	Several properties to be remediated under OU1 are located adjacent to the Clark Fork River and appear to be within the special flood hazard area delineated by Zone A. This map contains TBC information to be used when remediating properties within these floodplain areas.		✓	

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical -Specific	Location -Specific	Action-Specific
State of Montana ARARs and TBCs							
Groundwater Protection	ARM 17.30.1005 ARM 17.30.1006 ARM 17.30.1011	Applicable	Explains the applicability and basis for the groundwater standards in ARM 17.30.1006, which establish the maximum allowable changes in groundwater quality and may limit discharges to groundwater. Provides that groundwater is classified I through IV based on its present and future most beneficial uses and also sets the standards for the different classes of groundwater listed in department Circular WQB-7.[1] This section provides that any groundwater whose existing quality is higher than the standard for its classification must be maintained at that high quality in accordance with Montana Code Annotated (MCA) 75-5-303 and ARM 17.30.7.	The OU addressed in this feasibility study does not address contaminated groundwater. However, measures will be taken to prevent contamination of groundwater.		✓	✓
Montana Water Quality Act	MCA 75-5-101, et seq. ARM 17.30.607	Applicable	The Montana Water Quality Act establishes requirements for restoring and maintaining the quality of surface and groundwater. Montana's regulations classify State waters according to quality, place restrictions on the discharge of pollutants to State waters, and prohibit degradation of State waters. Tributaries to the Clark Fork River have been classified B-1. Flat Creek and its tributaries are part of the Clark Fork River drainage.	The OU addressed in this feasibility study does not address contaminated groundwater or surface water. However, several properties to be remediated under OU1 are located adjacent to the Clark Fork River and appear to be within the special flood hazard area delineated by Zone A. Due to the proximity of remedial actions to surface waters, measures will be taken to prevent contamination of surface waters.		✓	✓

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical -Specific	Location -Specific	Action-Specific
State of Montana ARARs and TBCs							
Montana Water Quality Act (Continued)	ARM 17.30.623	Applicable	Waters classified B-1 are, after conventional treatment for removal of naturally present impurities, suitable for drinking, culinary and food processing purposes. These waters are also suitable for bathing, swimming and recreation, growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers, and use for agricultural and industrial purposes.				
	ARM 17.30.637		Provides that surface waters must be free of substances attributable to industrial practices or other discharges that will: (a) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines; (b) create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials; (c) produce odors, colors or other conditions which create a nuisance or render undesirable tastes to fish flesh or make fish inedible; (d) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; (e) create conditions which produce undesirable aquatic life.				
	ARM 17.30.705		Existing and anticipated uses of surface water and water quality necessary to support those uses must be maintained and protected.				

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical -Specific	Location -Specific	Action-Specific
State of Montana ARARs and TBCs							
Montana Ambient Air Quality Regulations	ARM 17.8.206	Applicable	This provision establishes sampling, data collection, and analytical requirements to ensure compliance with ambient air quality standards.	No Comments.			
	ARM 17.8.220		Settled particulate matter shall not exceed a 30 day average of 10 grams per square meter.				
	ARM 17.8.222		Lead emissions to ambient air shall not exceed a 90 day average of 1.5 micrograms per cubic liter of air.				
	ARM 17.8.223		PM-10 concentrations in ambient air shall not exceed a 24 hour average of 150 $\mu g/m^3$ of air and an annual average of 50 $\mu g/m^3$ of air.		✓		✓
	ARM 17.8.304(2)		Emissions into the outdoor atmosphere shall not exhibit an opacity of 20 percent or greater averaged over 6 consecutive minutes.	No Comments.			
	ARM 17.8.308		There shall be no production, handling, transportation, or storage of any material, use of any street, road, or parking lot, or operation of a construction site or demolition project unless reasonable precautions are taken to control emissions of airborne particles.				
	ARM 17.8.604(2)		Lists material that may not be disposed of by open burning except as approved by the department.	Open burning may be applicable if actions addressed clearing and grubbing debris through open burning.			

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical -Specific	Location -Specific	Action-Specific
State of Montana ARARs and TBCs							
Montana Antiquities Act	MCA 22-3-421, et seq	Relevant and Appropriate	Addresses the responsibilities of State agencies regarding historic and prehistoric sites including buildings, structures, paleontological sites, archaeological sites on state owned lands	If historic or prehistoric sites are discovered during excavation activities on any state-owned lands then the provisions of this regulation may apply. These regulations may be relevant and appropriate for lands with other types of ownership.		✓	
Montana Human Skeletal Remains and Burial Site Protection Act	MCA 22-3-801	Applicable	Provides that all graves within the State of Montana are adequately protected.	If human skeletal remains or burial site are encountered during remedial activities at the site, then requirements will be applicable.		✓	✓
Montana Floodplain and Floodway Management Act and Regulations	MCA 76-5-401, et seq. ARM 36.15.601, et seq.	Applicable	Specifies types of uses and structures that are allowed or prohibited in the designated 100-year floodway and floodplain.	Several properties to be remediated under OU1 are located adjacent to the Clark Fork River and appear to be within the special flood hazard area delineated by Zone A. These standards are applicable to all actions within these floodplain areas.		✓	
Montana Natural Streambed and Land Preservation Act and Regulations	MCA 75-7-101, et.seq. ARM 36.2.401, et.seq.	Applicable	Establishes minimum standards which would be applicable if a response action alters or affects a streambed, including any channel change, new diversion, riprap or other streambank protection project, jetty, new dam or reservoir or other commercial, industrial or residential development. Projects must be designed and constructed using methods that minimize adverse impacts to the stream (both upstream and downstream) and future disturbances to the stream.	Several properties to be remediated under OU1 are located adjacent to the Clark Fork River and appear to be within the special flood hazard area delineated by Zone A. If the remedial actions will alter or affect a streambed or its banks, the adverse effects of any such action must be minimized.		✓	✓

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical -Specific	Location -Specific	Action-Specific
State of Montana ARARs and TBCs							
Montana Natural Streambed and Land Preservation Act and Regulations (continued)	MCA 87-5-502 and 504	Applicable	Provides that a state agency or subdivision shall not construct, modify, operate, maintain or fail to maintain any construction project or hydraulic project which may or will obstruct, damage, diminish, destroy, change, modify, or vary the natural existing shape and form of any stream or its banks or tributaries in a manner that will adversely affect any fish or game habitat.				
Substantive MPDES Permit Requirements	ARM 17.30.1342-1344	Applicable	These set forth the substantive requirements applicable to all MPDES and National Pollutant Discharge Elimination System (NPDES) permits.	Several properties to be remediated under OU1 are located adjacent to the Clark Fork River and appear to be within the special flood hazard area delineated by Zone A. No discharges are planned during remedial actions into waters of the State of Montana, but measures must be taken to prevent any discharges.[2]			✓
Water Quality Statutes and Regulations	MCA 75-5-605	Applicable	This section of the Montana Water Quality Act prohibits the causing of pollution of any state waters. Pollution is defined as contamination or other alteration of physical, chemical, or biological properties of state waters which exceeds that permitted by the water quality standards. Also, it is unlawful to place or caused to be placed any wastes where they will cause pollution of any state waters.	The OU addressed in this feasibility study does not address contaminated groundwater or surface water. However, several properties to be remediated under OU1 are located adjacent to the Clark Fork River and appear to be within the special flood hazard area delineated by Zone A. Due to the proximity of remedial actions to surface waters, measures will be taken to prevent contamination of surface waters.		✓	✓

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical -Specific	Location -Specific	Action-Specific
State of Montana ARARs and TBCs							
Water Quality Statutes and Regulations (continued)	MCA 75-5-303 ARM 17.30.705	Applicable	This provision states that existing uses of state waters and the level of water quality necessary to protect the uses must be maintained and protected. This provides that for any surface water, existing and anticipated uses and the water quality necessary to protect these uses must be maintained and protected unless degradation is allowed under the nondegradation rules at ARM 17.30.708.				
Stormwater Runoff Control Requirements	ARM 17.24.633	Applicable	All surface drainage from a disturbed area must be treated by the best technology currently available	These requirements would be applicable to disturbed remedial areas.			✓
State of Montana Solid Waste Requirements	MCA 75-10-212 ARM 17.50.503 ARM 17.50.523	Applicable	Prohibits dumping or leaving any debris or refuse upon or within 200 yards of any highway, road, street, or alley of the State or other public property, or on privately owned property where hunting, fishing, or other recreation is permitted. Solid wastes are grouped based on physical and chemical characteristics which determine the degree of care required in handling and disposal and the potential of the wastes for causing environmental degradation or public health hazards. Specifies that solid waste must be transported in such a manner as to prevent its discharge, dumping, spilling or leaking from the transport vehicle.	The listed requirements apply to the offsite transportation of solid wastes to disposal facilities.			✓

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical -Specific	Location -Specific	Action-Specific
State of Montana ARARs and TBCs							
Noxious Weeds	MCA 7-22-2101 (8)(a) ARM 4.5.201, et seq.	Applicable	Defines "noxious weeds" as any exotic plant species established or that may be introduced in the state which may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses or that may harm native plant communities and that is designated: (I) as a statewide noxious weed by rule of the department; or (ii) as a district noxious weed by a board, following public notice of intent and a public hearing.	Applicable requirements for the alternatives which include establishment of seed during restoration.			✓
Occupational Health Act	MCA 50-70-101, et seq ARM 17.74.101 ARM 17.74.102	To Be Considered	Addresses occupational noise. In accordance with this section, no worker shall be exposed to noise levels in excess of the levels specified in this regulation. Addresses occupational air contaminants. The purpose of this rule is to establish maximum threshold limit values for air contaminants under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects.	OSHA regulations are construction standards and not environmental standards. The substantive portion of these regulations would be considered for onsite remedial activities. This regulation addresses only to limited categories of workers and for most workers the similar federal standard in 29 CFR 1910.95 applies. In accordance with this rule, no worker shall be exposed to air contaminant levels in excess of the threshold limit values listed in the regulation. This regulation addresses only to limited categories of workers and for most workers the similar federal standard in 29 CFR 1910.1000 applies	✓		✓

Statues, Regulations, Standards, or Requirements	Citations or References	ARAR Determination	Description	Comment	Chemical -Specific	Location -Specific	Action-Specific
State of Montana ARARs and TBCs							
Montana Safety Act	MCA 50-71-201 through 203	To Be Considered	States that every employer must provide and maintain a safe place of employment, provide and require use of safety devices and safeguards, and ensure that operations and processes are reasonably adequate to render the place of employment safe.	The employer must also do everything reasonably necessary to protect the life and safety of its employees during remedial activities.			✓
Employee and Community Hazardous Chemical Information Act	MCA 50-78-201, 202, and 204	To Be Considered	States that each employer must post notice of employee rights, maintain at the work place a list of chemical names of each chemical in the work place, and indicate the work area where the chemical is stored or used.	Employees must be informed of the chemicals at the work place and trained in the proper handling of the chemicals during remedial activities.			✓

[1]Montana Department of Environmental Quality, Water Quality Division, Circular DEQ-7, Montana Numeric Water Quality Standards (August 2010).

[2]Montana's MPDES regulations are more stringent than the Federal NPDES regulations

Acronyms

ARAR	Applicable or Relevant and Appropriate Requirements
ARM	Administrative Rules of Montana
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
$\mu g/m^3$	micrograms per cubic meter
FIRM	flood insurance rate map
MCA	Montana Code Annotated
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
OSHA	Occupational Safety and Health Administration
OU	operable unit
PRP	potentially responsible party
RCRA	Federal and State Resource Conservation and Recovery Act
TBCs	to be considered information
U.S.C	United States Code
USFWS	United States Fish and Wildlife Services

Appendix B

Alternative Quantity Calculations

Flat Creek IMM Superfund Site

OU1 Feasibility Study Report

September 9, 2011

Table B-1 Areas of Contaminated Soil for Remediation for Alternative 2

Property ID	Quadrant	Classification	Description	Area	Cover Volume		
					Common Backfill[1]	Topsoil[2]	Gravel[3]
				SF	LCY	LCY	LCY
HHRA Identified Properties							
RY036	D	Residential	Driveway	581	38		13
RY086	A	Residential	Front Yard	3,573	229	77	
	D	Residential	South Driveway	1,853	119		40
RY101	D	Residential	Driveway	791	51		17
RY257	C	Residential	Side Yard	3,850	246	82	
RY422	D	Residential	Driveway	234	15		5
RY523	C	Residential	Along Alley	749	48		16
RY600	A	Residential	Front and Side Yard	2,260	145	49	
Residential Properties							
RY007	A	Residential	Front Yard	2,818	181	61	
RY008	A	Residential	Front Yard	2,312	148	50	
RY021	D	Residential	Front Driveway	451	29		10
	E	Residential	Back Driveway	769	50		17
RY023	A	Residential	SW Yard	1,972	126	42	
	B	Residential	NW Yard	2,616	168	56	
RY026	C	Residential	Along Alley	221	15		5
RY043	E	Residential	South Driveway	449	29		10
RY061	E	Residential	West Side Yard	1,756	113	38	
RY089	I	Residential	South Barn Entrance	1,989	128	43	
RY091	D	Residential	North Driveway	5,066	324		108
	E	Residential	South Driveway	2,918	187		63
RY092	C	Residential	North Yard	5,510	353	118	
	D	Residential	Driveway	2,315	148		50
RY095	B	Residential	Backyard and East Yard	2,990	192	64	
	C	Residential	Yard Areas	4,389	281	94	
RY102	B	Residential	Back Yard	1,790	115	39	
RY108	E	Residential	South Perimeter	502	33	11	
RY130	B	Residential	Back Yard	1,077	69	23	
RY144	D	Residential	East Driveway	1,535	99		33
RY148	C	Residential	Garden	1,190	77	26	
RY160	B	Residential	West Side Yard	6,103	390	130	
RY176	E	Residential	Outer Perimeter	1,104	71	24	
RY193	C	Residential	Side Yard	162	11	4	
	D	Residential	Driveway	419	27		9
RY234	D	Residential	Driveway	990	64		22
RY271	D	Residential	West Driveway	954	61		21
RY277	D	Residential	Driveway	242	16		6
RY284	A	Residential	Front Yard	1,454	93	31	
RY352	C	Residential	East of Garage	1,445	93	31	
RY483	B	Residential	Back Yard	939	60	20	
	D	Residential	Driveway/Alley	119	8		3
RY485	F	Residential	Back Driveway	1,141	73		25
RY597	D	Residential	West Driveway	360	23		8
RY616	A	Residential	Front Yard	1,683	108	36	

Table B-1 Areas of Contaminated Soil for Remediation for Alternative 2 (Continued)

Property ID	Quadrant	Classification	Description	Area	Cover Volume		
					Common Backfill[1]	Topsoil[2]	Gravel[2]
				SF	LCY	LCY	LCY
Non-Residential Properties							
RY097	C	Non-Residential	West Slope	4,311	276	92	
RY098	A	Non-Residential	South Driveway	1,777	114		38
	B	Non-Residential	Yard Areas	1,803	116	39	
	C	Non-Residential	North Driveway	1,101	71		24
RY099	B	Non-Residential	Back Lot	5,393	345	115	
RY100	A	Non-Residential	North Slope	1,439	92	31	
	B	Non-Residential	Back Area	1,305	84	28	
RY111	B	Non-Residential	Back Yard	2,837	182	61	
RY115	A	Non-Residential	Livestock Pens	11,369	727	243	
	E	Non-Residential	Northwest Entrance	7,646	489	163	
RY136	B	Non-Residential	Northeast Yard	15,020	960	320	
RY146	B	Non-Residential	Upper Driveway	4,586	293		98
RY213	B	Non-Residential	Raised Gravel Area	1,531	98		33
	C	Non-Residential	Side Yard East	1,575	101	34	
RY289	F	Non-Residential	Upper Parking Lot	17,936	1,146		382
	G	Non-Residential	Lunch Area	3,281	210	70	
RY332	A	Non-Residential	West Lot	18,518	1,184	395	
	B	Non-Residential	West Central	15,737	1,006	336	
	D	Non-Residential	East Lot	11,786	753	251	
RY366	A	Non-Residential	Front and East Yard	3,153	202	68	
	D	Non-Residential	Parking Lot	5,434	348		116
RY369	B	Non-Residential	Back and North Yard	1,556	100	34	
RY386	A	Non-Residential	Driveway	1,037	67		23
	B	Non-Residential	Concrete Forms Area	1,226	79	27	
	D	Non-Residential	West of Shed	2,159	138	46	
RY398	A	Non-Residential	SE Yard	1,591	102	34	
	B	Non-Residential	Yard Areas	3,441	220	74	
RY402	A	Non-Residential	NE Corner	91	6	2	
RY627	B	Non-Residential	E. Gated Area	2,499	160	54	
	C	Non-Residential	W. Gated Area	1,435	92	31	
	D	Non-Residential	N. Roadside	523	34		12
Mineral County Airport Repository							
Existing Repository		Repository	Mineral County Airport	40,000	2,222	741	0

Total Areas by Classification

Property Classification	Area	Cover Volume		
		Common Backfill[1]	Topsoil[2]	Gravel[3]
	AC	LCY	LCY	LCY
Residential	1.77	4,854	1,149	481
Non-Residential	3.53	9,795	2,548	726
Repository	0.92	2,223	741	0
TOTALS:	**6.22**	**16,872**	**4,438**	**1,207**

Total Areas by Land Use

Land Use	Area	Cover Volume		
		Common Backfill[1]	Topsoil[2]	Gravel[3]
	AC	LCY	LCY	LCY
Driveways & Alleys	1.31	3,595	0	1,207
Yards, Gardens, & Bare Areas	3.99	11,054	3,697	0
Repository	0.92	2,223	741	0
TOTALS:	**6.22**	**16,872**	**4,438**	**1,207**

Notes:

1. Common Backfill depth assumed to be (FT):	1.5
2. Topsoil depth assumed to be (FT):	0.5
3. Top Gravel layer depth assumed to be (FT):	0.5
4. Gravel Density (Tons/LCY):	1.39
5. Soil Density (Tons/LCY):	1.1
6. Expansion Factor:	1.15

Table B-2 Areas of Contaminated Soil for Remediation for Alternatives 3, 4, & 5

Property ID	Quadrant	Classification	Description	Area	Contaminated Soils			Excavation Backfill			Treatment of Soils (Alternative 5 only)	
					Excavation Volume[1]	Excavation Volume[1]	Excavation Volume[1]	Common Backfill[2]	Topsoil[3]	Gravel[4]	Portland Cement[5]	
				SF	BCF	BCY	LCY	LCY	LCY	LCY	Ton	LCY
HHRA Identified Properties												
RY036	D	Residential	Driveway	581	872	33	38	25		13	3.7	3.0
RY086	A	Residential	Front Yard	3,573	5,360	199	229	153	77		17.7	14.0
	D	Residential	South Driveway	1,853	2,780	103	119	79		40	11.6	9.2
RY101	D	Residential	Driveway	791	1,187	44	51	34		17	5.0	4.0
RY257	C	Residential	Side Yard	3,850	5,775	214	246	164	82		19.0	15.0
RY422	D	Residential	Driveway	234	351	13	15	10		5	1.5	1.2
RY523	C	Residential	Along Alley	749	1,124	42	48	32		16	4.7	3.8
RY600	A	Residential	Front and Side Yard	2,260	3,390	126	145	97	49		11.2	8.9
Residential Properties												
RY007	A	Residential	Front Yard	2,818	4,227	157	181	121	61		14.0	11.1
RY008	A	Residential	Front Yard	2,312	3,468	129	148	99	50		11.4	9.0
RY021	D	Residential	Front Driveway	451	677	26	29	20		10	2.9	2.3
	E	Residential	Back Driveway	769	1,154	43	50	33		17	4.9	3.9
RY023	A	Residential	SW Yard	1,972	2,958	110	126	84	42		9.8	7.8
	B	Residential	NW Yard	2,616	3,924	146	168	112	56		13.0	10.3
RY026	C	Residential	Along Alley	221	332	13	15	10		5	1.5	1.2
RY043	E	Residential	South Driveway	449	674	25	29	20		10	2.9	2.3
RY061	E	Residential	West Side Yard	1,756	2,634	98	113	75	38		8.8	7.0
RY089	I	Residential	South Barn Entrance	1,989	2,984	111	128	85	43		9.9	7.9
RY091	D	Residential	North Driveway	5,066	7,599	282	324	216		108	31.6	25.0
	E	Residential	South Driveway	2,918	4,377	163	187	125		63	18.2	14.4
RY092	C	Residential	North Yard	5,510	8,265	307	353	235	118		27.2	21.5
	D	Residential	Driveway	2,315	3,473	129	148	99		50	14.5	11.5
RY095	B	Residential	Backyard and East Yard	2,990	4,485	167	192	128	64		14.8	11.7
	C	Residential	Yard Areas	4,389	6,584	244	281	187	94		21.7	17.2
RY102	B	Residential	Back Yard	1,790	2,685	100	115	77	39		8.9	7.1
RY108	E	Residential	South Perimeter	502	753	28	33	22	11		2.6	2.1
RY130	B	Residential	Back Yard	1,077	1,616	60	69	46	23		5.4	4.3
RY144	D	Residential	East Driveway	1,535	2,303	86	99	66		33	9.7	7.7
RY148	C	Residential	Garden	1,190	1,785	67	77	51	26		6.0	4.8
RY160	B	Residential	West Side Yard	6,103	9,155	340	390	260	130		30.1	23.8
RY176	E	Residential	Outer Perimeter	1,104	1,656	62	71	48	24		5.5	4.4
RY193	C	Residential	Side Yard	162	243	9	11	7	4		0.9	0.8
	D	Residential	Driveway	419	629	24	27	18		9	2.7	2.2
RY234	D	Residential	Driveway	990	1,485	55	64	43		22	6.3	5.0
RY271	D	Residential	West Driveway	954	1,431	53	61	41		21	6.0	4.8
RY277	D	Residential	Driveway	242	363	14	16	11		6	1.6	1.3
RY284	A	Residential	Front Yard	1,454	2,181	81	93	62	31		7.2	5.7
RY352	C	Residential	East of Garage	1,445	2,168	81	93	62	31		7.2	5.7
RY483	B	Residential	Back Yard	939	1,409	53	60	40	20		4.7	3.8
	D	Residential	Driveway/Alley	119	179	7	8	6		3	0.8	0.7
RY485	F	Residential	Back Driveway	1,141	1,712	64	73	49		25	7.2	5.7
RY597	D	Residential	West Driveway	360	540	20	23	16		8	2.3	1.9
RY616	A	Residential	Front Yard	1,683	2,525	94	108	72	36		8.4	6.7

Table B-2 Areas of Contaminated Soil for Remediation for Alternatives 3, 4, & 5 (Continued)

Property ID	Quadrant	Classification	Description	Area	Contaminated Soils			Excavation Backfill			Treatment of Soils (Alternative 5 only)	
					Excavation Volume[1]	Excavation Volume[1]	Excavation Volume[1]	Common Backfill[2]	Topsoil[3]	Gravel[4]	Portland Cement[5]	
				SF	BCF	BCY	LCY	LCY	LCY	LCY	Ton	LCY
Non-Residential Properties												
RY097	C	Non-Residential	West Slope	4,311	6,467	240	276	184	92		21.3	16.8
RY098	A	Non-Residential	South Driveway	1,777	2,666	99	114	76		38	11.1	8.8
	B	Non-Residential	Yard Areas	1,803	2,705	101	116	77	39		9.0	7.1
	C	Non-Residential	North Driveway	1,101	1,652	62	71	47		24	7.0	5.6
RY099	B	Non-Residential	Back Lot	5,393	8,090	300	345	230	115		26.6	21.0
RY100	A	Non-Residential	North Slope	1,439	2,159	80	92	62	31		7.1	5.6
	B	Non-Residential	Back Area	1,305	1,958	73	84	56	28		6.5	5.2
RY111	B	Non-Residential	Back Yard	2,837	4,256	158	182	121	61		14.1	11.2
RY115	A	Non-Residential	Livestock Pens	11,369	17,054	632	727	485	243		56.0	44.2
	E	Non-Residential	Northwest Entrance	7,646	11,469	425	489	326	163		37.7	29.8
RY136	B	Non-Residential	Northeast Yard	15,020	22,530	835	960	640	320		74.0	58.4
RY146	B	Non-Residential	Upper Driveway	4,586	6,879	255	293	196		98	28.6	22.6
RY213	B	Non-Residential	Raised Gravel Area	1,531	2,297	86	98	66		33	9.6	7.6
	C	Non-Residential	Side Yard East	1,575	2,363	88	101	68	34		7.8	6.2
RY289	F	Non-Residential	Upper Parking Lot	17,936	26,904	997	1,146	764		382	111.6	88.0
	G	Non-Residential	Lunch Area	3,281	4,922	183	210	140	70		16.2	12.8
RY332	A	Non-Residential	West Lot	18,518	27,777	1,029	1,184	789	395		91.2	71.9
	B	Non-Residential	West Central	15,737	23,606	875	1,006	671	336		77.5	61.1
	D	Non-Residential	East Lot	11,786	17,679	655	753	502	251		58.0	45.8
RY366	A	Non-Residential	Front and East Yard	3,153	4,730	176	202	135	68		15.6	12.3
	D	Non-Residential	Parking Lot	5,434	8,151	302	348	232		116	33.9	26.8
RY369	B	Non-Residential	Back and North Yard	1,556	2,334	87	100	67	34		7.7	6.1
RY386	A	Non-Residential	Driveway	1,037	1,556	58	67	45		23	6.6	5.3
	B	Non-Residential	Concrete Forms Area	1,226	1,839	69	79	53	27		6.1	4.9
	D	Non-Residential	West of Shed	2,159	3,239	120	138	92	46		10.7	8.5
RY398	A	Non-Residential	SE Yard	1,591	2,387	89	102	68	34		7.9	6.3
	B	Non-Residential	Yard Areas	3,441	5,162	192	220	147	74		17.0	13.4
RY402	A	Non-Residential	NE Corner	91	137	6	6	4	2		0.5	0.4
RY627	B	Non-Residential	E. Gated Area	2,499	3,749	139	160	107	54		12.4	9.8
	C	Non-Residential	W. Gated Area	1,435	2,153	80	92	62	31		7.1	5.6
	D	Non-Residential	N. Roadside	523	785	30	34	23		12	3.4	2.7
Mineral County Airport Repository												
Existing Repository		Repository	Mineral County Airport	40,000	358,155	13,265	15,255	1,481	741	0	0	0

Total Areas by Classification

Property Classification	Area	Contaminated Soils		Excavation Backfill			Treatment of Soils (Alternative 5 only)	
		Excavation Volume[1]	Excavation Volume[1]	Common Backfill[2]	Topsoil[3]	Gravel[4]	Portland Cement[5]	
	AC	BCY	LCY	LCY	LCY	LCY	Ton	LCY
Residential	1.77	4,222	4,854	3,240	1,149	481	405	322
Non-Residential	3.53	8,521	9,795	6,535	2,548	726	800	632
Repository	0.92	13,265	15,255	1,482	741	0	0	0
TOTALS:	**6.22**	**26,008**	**29,904**	**11,257**	**4,438**	**1,207**	**1,205**	**954**

Total Areas by Land Use

Land Use	Area	Contaminated Soils		Excavation Backfill			Treatment of Soils (Alternative 5 only)	
		Excavation Volume[1]	Excavation Volume[1]	Common Backfill[2]	Topsoil[3]	Gravel[4]	Portland Cement[5]	
	AC	BCY	LCY	LCY	LCY	LCY	Ton	LCY
Driveways & Alleys	1.31	3,128	3,595	2,402	0	1,207	352	279
Yards, Gardens, & Bare Areas	3.99	9,615	11,054	7,373	3,697	0	853	675
Repository	0.92	13,265	15,255	1,482	741	0	0	0
TOTALS:	**6.22**	**26,008**	**29,904**	**11,257**	**4,438**	**1,207**	**1,205**	**954**

Notes:

1. Excavation depth assumed to be (FT):	1.5
2. Common Backfill depth assumed to be (FT):	1
3. Topsoil depth assumed to be (FT):	0.5
4. Top Gravel layer depth assumed to be (FT):	0.5
5. Percentage of cement to mix with soil (%):	7
6. Gravel Density (Tons/LCY):	1.39
7. Soil Density (Tons/LCY):	1.1
8. Portland Cement Density (Tons/LCY):	1.27
9. Expansion Factor:	1.15

Appendix C

Screening of Alternatives

The evaluations of each alternative using the three screening criteria are presented in the following Appendix C. The justifications common to more than one alternative have been indicated using gray text to allow the reader to focus on the differences between alternatives.

Flat Creek IMM Superfund Site

OU1 Feasibility Study Report

September 9, 2011

Alternative 1
No Further Action

Table C-1. Effectiveness Screening - Alternative 1

Effectiveness Criteria	Evaluation Summary
Overall protection of human health and the environment	■ Areas of newly-identified contaminated soils would be left unaddressed. ■ The repository at the Mineral County Airport would be left in its current condition. ■ Direct human exposure to metals in contaminated soils through inhalation and ingestion would not be reduced.
Compliance with ARARs	■ No further remedial action would be taken to address contaminated soil; thus this criterion is not met.
Short-term effectiveness (during the remedial construction and implementation period)	■ No further remedial action would be undertaken to address contaminated soils; thus, none of these criteria are met.
Long-term effectiveness and permanence (following remedial construction)	
Reduction of toxicity, mobility, or volume through treatment	
Overall Rating	⓿

Table C-2. Implementability Screening - Alternative 1

Implementability Criteria	Evaluation Summary
Ability to construct, reliably operate, and meet technology-specific regulations for process options until a remedial action is complete	■ Areas of newly-identified contaminated soils would be left unaddressed. The repository at the Mineral County Airport would be left in its current condition. No new remedial actions would be undertaken to address contaminated soils; thus, these criteria are not applicable.
Ability to operate, maintain, replace, and monitor technical components after the remedial action is complete	
Ability to obtain approvals from other agencies	
Availability and capacity of treatment, storage, and disposal services	
Availability of property, specific materials and equipment, and technical specialists required for a remedial action	
Overall Rating	⓿

Table C-3. Cost Screening – Alternative 1

Evaluation Factors for Cost	Overall Rating	Approximate Cost (Present Value Dollars)
Present value cost	$	$120,000

Alternative 2
In-Place Capping of Contaminated Soils

Table C-4. Effectiveness Screening - Alternative 2

Effectiveness Criteria	Evaluation Summary
Overall protection of human health and the environment	■ Contaminated soils would be addressed through in-place capping (covers) coupled with institutional and access controls to protect the covers. ■ With proper construction and maintenance, the covers would eliminate exposure of people to contaminated soils. Migration of contamination to air and surface water would be eliminated and migration to groundwater would be reduced. ■ Land use controls would be used to restrict access and use of the existing repository at the Mineral County Airport and the properties with contamination left in place. ■ Monitoring would be performed during and after construction to ensure protectiveness of the remedy.
Compliance with ARARs	■ Contaminated soils capped in-place would physically address exposure to contaminants and discharges to air, thus meeting chemical-specific ARARs. ■ Location- and action-specific ARARs for the remedy would be addressed during implementation.
Short-term effectiveness (during the remedial construction and implementation period)	■ Surface disturbance of contaminated soils could pose short-term risks to workers installing covers. ■ Safety measures such as dust suppression, use of PPE, and establishment of work zones would protect workers and the community during implementation. ■ There would be impacts to the community under this alternative, as truck traffic would be required for transport of clean borrow materials for construction of covers. ■ There could also be some impacts to the environment during implementation of the remedial action due to use of heavy construction and hauling equipment and use of offsite borrow. Use of fuel efficient and low emission equipment and careful selection and reclamation of borrow areas after use could mitigate these impacts.
Long-term effectiveness and permanence (following remedial construction)	■ Long-term effectiveness and permanence for capped areas is dependent on continued integrity of the covers and adherence to institutional and access controls. ■ Land use controls such as institutional controls and access controls would require maintenance and monitoring in perpetuity. Even with maintenance and monitoring, long-term effectiveness cannot be ensured since people could ignore them, especially at residential properties. ■ O&M activities would be periodically required to repair damage or erosion to the covers and access controls. ■ Monitoring would be performed to determine long-term effectiveness and permanence of the remedy.
Reduction of toxicity, mobility, or volume through treatment	■ This alternative would not treat contaminated soils. Thus there would be no reduction of toxicity, mobility, or volume of contamination through treatment.
Overall Rating	❸

Table C-5. Implementability Screening - Alternative 2

Implementability Criteria	Evaluation Summary
Ability to construct, reliably operate, and meet technology-specific regulations for process options until a remedial action is complete	■ Construction of covers and access controls and implementation of monitoring is relatively straightforward. ■ Cover construction around homes or structures, trees, subsurface utilities, and roads may be challenging at specific locations. ■ Monitoring would be performed during construction to ensure protectiveness of the remedy. ■ Institutional controls may be more difficult to implement and reliably operate, especially for residential properties due to various types of ownership, types of land use, and levels of occupancy.
Ability to operate, maintain, replace, and monitor technical components after the remedial action is complete	■ Inspection, maintenance, and replacement of the cover systems on the existing repository at the Mineral County Airport would be relatively easy to implement. ■ Inspection, maintenance, and replacement of the cover systems on newly-capped properties may be more difficult to implement and reliably operate due to various types of ownership, types of land use, and levels of occupancy. ■ Inspection, maintenance, and replacement of access controls and implementation of monitoring would be easy to implement. ■ Maintenance of institutional controls may be more difficult, especially for residential properties due to various types of ownership, types of land use, and levels of occupancy.
Ability to obtain approvals from other agencies	■ Regulatory approval for in-place capping of contaminated soils using covers should be obtainable. ■ Development of offsite borrow sources for cover materials would require coordination and approval from the affected agency. ■ Regulatory approvals for monitoring and maintenance should be obtainable. ■ Regulatory approvals for institutional and access controls should be obtainable. However some difficulties may be encountered with regard to types of restrictions.
Availability and capacity of treatment, storage, and disposal services	■ This alternative does not call for any treatment, storage, and disposal services. Thus this criterion is not applicable.
Availability of property, specific materials and equipment, and technical specialists required for a remedial action	■ Access permission at residential and commercial properties for implementing the remedial action may not be currently available, but could be obtained. ■ Labor, equipment, and materials for cover construction are available. ■ Suitable cover construction materials would be required from offsite sources. ■ Materials, equipment, and labor resources used for land use controls and monitoring are easily obtainable. ■ Technical equipment and specialists are available for implementation of institutional controls and monitoring.
Overall Rating	❸

Table C-6. Cost Screening – Alternative 2

Evaluation Factors for Cost	Overall Rating	Approximate Cost (Present Value Dollars)
Present value cost	$$	$1,260,000

Alternative 3

Excavation and Disposal of Contaminated Soils at Licensed Solid Waste Facilities

Table C-7. Effectiveness Screening - Alternative 3

Effectiveness Criteria	Evaluation Summary
Overall protection of human health and the environment	■ The majority of contaminated soils would be addressed through excavation and disposal at licensed solid waste disposal facilities. ■ Excavation and disposal of contaminated soils at licensed solid waste disposal facilities would eliminate exposure of people to contaminated soils. Migration of contamination to air, surface water, and groundwater would be eliminated. ■ Land use controls (a combination of institutional controls, community awareness activities, and access controls) would be used at a limited number of properties to restrict access to and use of contaminated soil left in place under or adjacent to structures or obstructions. ■ Monitoring would be performed during and after construction to ensure protectiveness of the remedy.
Compliance with ARARs	■ Contaminated soils excavated and disposed of at licensed solid waste disposal facilities would physically address exposure to contaminants, thus meeting chemical-specific ARARs. ■ Location- and action-specific ARARs for the remedy would be addressed during implementation.
Short-term effectiveness (during the remedial construction and imple-mentation period)	■ Excavation and disposal of contaminated soils and backfilling of excavations could pose short-term risks to workers. ■ Safety measures such as dust suppression, use of PPE, and establishment of work zones would protect workers and the community during implementation. ■ There would be additional impacts to the community under this alternative, as truck traffic would be required for disposal of contaminated soils at licensed solid waste disposal facilities as well as transport of backfill soils. ■ There could also be some impacts to the environment during implementation of the remedial action due to use of heavy construction and hauling equipment and use of offsite borrow. Use of fuel efficient and low emission equipment and careful selection and reclamation of borrow areas after use could mitigate these impacts.
Long-term effectiveness and permanence (following remedial construction)	■ Long-term effectiveness and permanence for properties containing contaminated soils is addressed through excavation of contaminated soils with disposal and backfilling with clean soil. ■ Land use controls at a limited number of properties leaving contaminated soil in place after excavation would require maintenance and monitoring in perpetuity. Even with maintenance and monitoring, long-term effectiveness cannot be ensured since people could ignore them, especially at residential properties. ■ Disposal of contaminated soils at licensed solid waste disposal facilities would provide long-term effectiveness and permanence, assuming the facilities receive adequate O&M.
Reduction of toxicity, mobility, or volume through treatment	■ Generally, Bevill exempt mining waste could be accepted at licensed solid waste disposal facilities without prior treatment. However, final acceptance of the contaminated soils is determined by the individual facilities and thus some of the soils may require treatment prior to disposal. ■ It is assumed for the purpose of this FS that this alternative will not require treatment prior to disposal. Thus there would be no reduction of toxicity, mobility, or volume of contamination through treatment.
Overall Rating	❹

Table C-8. Implementability Screening - Alternative 3

Implementability Criteria	Evaluation Summary
Ability to construct, reliably operate, and meet technology-specific regulations for process options until a remedial action is complete	■ Excavation and offsite disposal of all contaminated soils at licensed solid waste disposal facilities and backfilling excavations with clean soil is relatively straightforward. ■ Excavated contaminated materials require transportation to offsite disposal facilities in specialized enclosed trucks. ■ Special management procedures may be required for disposal at the licensed solid waste disposal facilities. ■ Excavation and backfilling around homes or structures, trees, subsurface utilities, and roads may be challenging at specific locations. ■ Implementation of monitoring during construction is relatively straightforward. ■ Institutional controls may be more difficult to implement and reliably operate, especially for residential properties due to various types of ownership, types of land use, and levels of occupancy.
Ability to operate, maintain, replace, and monitor technical components after the remedial action is complete	■ Maintenance of institutional controls may be difficult, especially for residential properties due to various types of ownership, types of land use, and levels of occupancy.
Ability to obtain approvals from other agencies	■ Regulatory approval needed to excavate and transport contaminated soils should be obtainable. ■ Regulatory and facility approval for offsite disposal at licensed disposal facilities should be obtainable. ■ Development of offsite borrow sources for backfill would require coordination and approval from the affected agency. ■ Regulatory approvals for institutional controls should be obtainable. However some difficulties may be encountered with regard to types of restrictions.
Availability and capacity of treatment, storage, and disposal services	■ Licensed solid waste disposal facilities (Class II facilities) authorized for Group II solid wastes are available within the State of Montana. The two closest Class II facilities are located 60 miles and 170 miles from the site. ■ Generally, Bevill exempt mine waste could be accepted at licensed solid waste facilities without prior treatment. However, final acceptance of the contaminated soils is determined by the individual facilities and thus some of the soils may require treatment prior to disposal. ■ The licensed solid waste disposal facilities should have sufficient capacity to accept contaminated soils for disposal.
Availability of property, specific materials and equipment, and technical specialists required for a remedial action	■ Access permission at residential and commercial properties for implementing the remedial action may not be currently available, but could be obtained. ■ Labor, equipment, and materials for contaminated soils excavation and clean soil backfilling are available. ■ Suitable backfill materials would be required from offsite sources. ■ Materials, equipment, and labor resources used for monitoring during construction are easily obtainable. ■ Technical equipment and specialists are available for implementation of institutional controls and monitoring.
Overall Rating	❹

Table C-9. Cost Screening - Alternative 3

Evaluation Factors for Cost	Overall Rating	Approximate Cost (Present Value Dollars)
Present value cost	$$$$	$2,930,000

Alternative 4

Excavation and Disposal of Contaminated Soils at the Mine Waste Joint Repository

Table C-10. Effectiveness Screening - Alternative 4

Effectiveness Criteria	Evaluation Summary
Overall protection of human health and the environment	■ The majority of contaminated soils would be addressed through excavation and disposal at the mine waste joint repository (Wood Gulch Repository) constructed under OU3. ■ Excavation and disposal of contaminated soils at the mine waste joint repository would eliminate exposure of people to contaminated soils. Migration of contamination to air, surface water, and groundwater would be reduced or eliminated. ■ Land use controls (a combination of institutional controls, community awareness activities, and access controls) would be used at a limited number of properties to restrict access to and use of contaminated soil left in place under or adjacent to structures or obstructions. ■ Monitoring would be performed during and after construction to ensure protectiveness of the remedy.
Compliance with ARARs	■ Contaminated soils excavated and disposed of at the mine waste joint repository would physically address exposure to contaminants, thus meeting chemical-specific ARARs. ■ Location- and action-specific ARARs for the remedy would be addressed during implementation.
Short-term effectiveness (during the remedial construction and imple-mentation period)	■ Excavation and disposal of contaminated soils and backfilling of excavations could pose short-term risks to workers. ■ Safety measures such as dust suppression, use of PPE, and establishment of work zones would protect workers and the community during implementation. ■ There would be additional impacts to the community under this alternative, as truck traffic would be required for disposal of contaminated soils at the mine waste joint repository as well as transport of backfill soils. ■ There could also be some impacts to the environment during implementation of the remedial action due to use of heavy construction and hauling equipment and use of offsite borrow. Use of fuel efficient and low emission equipment and careful selection and reclamation of borrow areas after use could mitigate these impacts.
Long-term effectiveness and permanence (following remedial construction)	■ Long-term effectiveness and permanence for properties containing contaminated soils is addressed through excavation of contaminated soils with disposal and backfilling with clean soil. ■ Land use controls at a limited number of properties leaving contaminated soil in place after excavation would require maintenance and monitoring in perpetuity. Even with maintenance and monitoring, long-term effectiveness cannot be ensured since people could ignore them, especially at residential properties. ■ Disposal of contaminated soils at the mine waste joint repository would provide long-term effectiveness and permanence, assuming the repository receives adequate O&M.
Reduction of toxicity, mobility, or volume through treatment	■ Generally, Bevill exempt mining waste could be accepted at the mine waste joint repository without prior treatment. However, final acceptance of the contaminated soils at the mine waste joint repository would be determined by EPA and DEQ. ■ It is assumed for the purpose of this FS that this alternative will not require treatment prior to disposal. Thus there would be no reduction of toxicity, mobility, or volume of contamination through treatment.
Overall Rating	❹

Table C-11. Implementability Screening - Alternative 4

Implementability Criteria	Evaluation Summary
Ability to construct, reliably operate, and meet technology-specific regulations for process options until a remedial action is complete	■ Excavation and disposal of contaminated soils at the mine waste joint repository and backfilling excavations with clean soil is relatively straightforward. ■ Excavated contaminated materials require transportation to the mine waste joint repository in specialized enclosed trucks. ■ Special management procedures may be required for disposal at the mine waste joint repository. ■ Excavation and backfilling around homes or structures, trees, subsurface utilities, and roads may be challenging at specific locations. ■ Implementation of monitoring during construction is relatively straightforward. ■ Institutional controls may be more difficult to implement and reliably operate, especially for residential properties due to various types of ownership, types of land use, and levels of occupancy.
Ability to operate, maintain, replace, and monitor technical components after the remedial action is complete	■ Maintenance of institutional controls may be difficult, especially for residential properties due to various types of ownership, types of land use, and levels of occupancy.
Ability to obtain approvals from other agencies	■ Regulatory approval needed to excavate and transport contaminated soils should be obtainable. ■ Regulatory approval for disposal at the mine waste joint repository should be obtainable. ■ Development of offsite borrow sources for backfill would require coordination and approval from the affected agency. ■ Regulatory approvals for institutional controls should be obtainable. However some difficulties may be encountered with regard to types of restrictions.
Availability and capacity of treatment, storage, and disposal services	■ The proposed mine waste joint repository (Wood Gulch Repository), located just north of Superior, will be constructed under OU3 and should have sufficient capacity to accept contaminated soils for disposal.
Availability of property, specific materials and equipment, and technical specialists required for a remedial action	■ Access permission at residential and commercial properties for implementing the remedial action may not be currently available, but could be obtained. ■ Labor, equipment, and materials for contaminated soils excavation and clean soil backfilling are available. ■ Suitable backfill materials would be required from offsite sources. ■ Materials, equipment, and labor resources used for monitoring during construction are easily obtainable. ■ Technical equipment and specialists are available for implementation of institutional controls and monitoring.
Overall Rating	❹

Table C-12. Cost Screening – Alternative 4

Evaluation Factors for Cost	Overall Rating	Approximate Cost (Present Value Dollars)
Present value cost	$$$	$1,740,000

Alternative 5

Excavation of Contaminated Soils, Treatment, and Disposal of Treated Soils at the Mine Waste Joint Repository

Table C-13. Effectiveness Screening - Alternative 5

Effectiveness Criteria	Evaluation Summary
Overall protection of human health and the environment	■ The majority of contaminated soils would be addressed through excavation, treatment, and disposal at the mine waste joint repository (Wood Gulch Repository) constructed under OU3. ■ Excavation and disposal of contaminated soils at the mine waste joint repository would eliminate exposure of people to contaminated soils. Migration of contamination to air, surface water, and groundwater would be reduced or eliminated. ■ Treatment of contaminated soils by solidification/stabilization would provide an extra level of protection of human health and the environment over Alternative 3. Stabilization/solidification would prevent leaching of contamination to surrounding soils and groundwater when treated soils are disposed of at the mine waste joint repository. ■ Land use controls (a combination of institutional controls, community awareness activities, and access controls) would be used at a limited number of properties to restrict access to and use of contaminated soil left in place under or adjacent to structures or obstructions. ■ Monitoring would be performed during and after construction to ensure protectiveness of the remedy.
Compliance with ARARs	■ Contaminated soils excavated, treated, and disposed of at the mine waste joint repository would physically address exposure to contaminants, thus meeting chemical-specific ARARs. ■ Location- and action-specific ARARs for the remedy would be addressed during implementation.
Short-term effectiveness (during the remedial construction and imple-mentation period)	■ Excavation and disposal of contaminated soils and backfilling of excavations could pose short-term risks to workers. ■ Safety measures such as dust suppression, use of PPE, and establishment of work zones would protect workers and the community during implementation. ■ There would be additional impacts to the community under this alternative, as truck traffic would be required for disposal of contaminated soils at the mine waste joint repository as well as transport of backfill soils and chemical treatment additives. ■ There could also be some impacts to the environment during implementation of the remedial action due to use of heavy construction and hauling equipment and use of offsite borrow. Use of fuel efficient and low emission equipment and careful selection and reclamation of borrow areas after use could mitigate these impacts.
Long-term effectiveness and permanence (following remedial construction)	■ Long-term effectiveness and permanence for properties containing contaminated soils is addressed through excavation of contaminated soils with consolidation and disposal and backfilling with clean soil. ■ Land use controls at a limited number of properties leaving contaminated soil in place after excavation would require maintenance and monitoring in perpetuity. Even with maintenance and monitoring, long-term effectiveness cannot be ensured since people could ignore them, especially at residential properties. ■ Disposal of contaminated soils at the mine waste joint repository would provide long-term effectiveness and permanence, assuming the repository receives adequate O&M. ■ Treatment of contaminated soils would provide greater protection against contaminant leaching, thus providing greater long-term effectiveness and permanence in case the repository does not receive adequate O&M.
Reduction of toxicity, mobility, or volume through treatment	■ Generally, Bevill exempt mining waste could be accepted at the mine waste joint repository without prior treatment. However, final acceptance of the contaminated soils at the mine waste joint repository would be determined by EPA and DEQ. ■ The contaminated soils would be treated by solidification/stabilization prior to disposal. The treatment of contaminated soils prior to disposal in the mine waste joint repository would provide extra protection from leaching of contamination to surrounding soils and groundwater.
Overall Rating	❺

Table C-14. Implementability Screening - Alternative 5

Implementability Criteria	Evaluation Summary
Ability to construct, reliably operate, and meet technology-specific regulations for process options until a remedial action is complete	■ Excavation and disposal of contaminated soils at the mine waste joint repository and backfilling excavations with clean soil is relatively straightforward. ■ Excavated contaminated materials require transportation to the mine waste joint repository in specialized enclosed trucks. ■ Special management procedures may be required for disposal at the mine waste joint repository. ■ Excavation and backfilling around homes or structures, trees, subsurface utilities, and roads may be challenging at specific locations. ■ Implementation of monitoring is relatively straightforward. ■ Treatment of contaminated soils using stabilization/solidification is relatively straightforward but will require logistical coordination with delivery of contaminated soil at the mine waste joint repository. ■ Implementation of monitoring during construction is relatively straightforward. ■ Institutional controls may be more difficult to implement and reliably operate, especially for residential properties due to various types of ownership, types of land use, and levels of occupancy.
Ability to operate, maintain, replace, and monitor technical components after the remedial action is complete	■ Maintenance of institutional controls may be difficult, especially for residential properties due to various types of ownership, types of land use, and levels of occupancy.
Ability to obtain approvals from other agencies	■ Regulatory approval needed to excavate and transport contaminated soils should be obtainable. ■ Regulatory approval for disposal at the mine waste joint repository should be obtainable. ■ Regulatory approval for treatment of contaminated soils should be obtainable. ■ Development of offsite borrow sources for backfill would require coordination and approval from the affected agency. ■ Regulatory approvals for institutional controls should be obtainable. However some difficulties may be encountered with regard to types of restrictions.
Availability and capacity of treatment, storage, and disposal services	■ The proposed mine waste joint repository (Wood Gulch Repository), located just north of Superior, will be constructed under OU3 and should have sufficient capacity to accept contaminated soils for disposal. ■ Availability of treatment services is limited locally but should be available regionally.
Availability of property, specific materials and equipment, and technical specialists required for a remedial action	■ Access permission at residential and commercial properties for implementing the remedial action may not be currently available, but could be obtained. ■ Labor, equipment, and materials for contaminated soils excavation and clean soil backfilling are available. ■ Suitable cover and backfill materials would be required from offsite sources. ■ Labor, equipment, and materials for treatment of contaminated soils using stabilization/solidification is limited locally but should be available regionally. ■ Materials, equipment, and labor resources used for monitoring during construction are easily obtainable. ■ Technical equipment and specialists are available for implementation of institutional controls and monitoring.
Overall Rating	❸

Table C-15. Cost Screening - Alternative 5

Evaluation Factors for Cost	Overall Rating	Approximate Cost (Present Value Dollars)
Present value cost	$$$$	$2,420,000

Appendix D

Alternative Screening Cost Information

Flat Creek IMM Superfund Site

OU1 Feasibility Study Report

September 9, 2011

The cost spreadsheets included in this appendix were developed in accordance with EPA 540-R-00-002 (OSWER 9355.0-75) July 2000.

These costs should be used to compare alternative relative costs. Costs for project management, remedial design, and construction management were determined as percentages of capital cost per the guidance. Costs for these work items may not reflect costs for implementation. These costs are determined based on specific client requirements during implementation.

Present Value Analyses

TABLE SPV-ADRFT

PRESENT VALUE ANALYSIS

Annual Discount Rate Factors Table

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011

Discount Rate (Percent): 7.0

Year	Discount Factor[1,2]	Year	Discount Factor[1,2]
0	1.0000	26	0.1722
1	0.9346	27	0.1609
2	0.8734	28	0.1504
3	0.8163	29	0.1406
4	0.7629	30	0.1314
5	0.7130	31	0.1228
6	0.6663	32	0.1147
7	0.6227	33	0.1072
8	0.5820	34	0.1002
9	0.5439	35	0.0937
10	0.5083	36	0.0875
11	0.4751	37	0.0818
12	0.4440	38	0.0765
13	0.4150	39	0.0715
14	0.3878	40	0.0668
15	0.3624	41	0.0624
16	0.3387	42	0.0583
17	0.3166	43	0.0545
18	0.2959	44	0.0509
19	0.2765	45	0.0476
20	0.2584	46	0.0445
21	0.2415	47	0.0416
22	0.2257	48	0.0389
23	0.2109	49	0.0363
24	0.1971		
25	0.1842		

Notes:

[1] Annual discount factors were calculated using the formulas and guidance presented in Section 4.0 "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.

[2] The real discount rate of 7.0% was obtained from "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000, Page 4-5.

TABLE SPV-1

PRESENT VALUE ANALYSIS

Alternative 1
No Further Action

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011

Year[1]	Capital Costs (Institutional Controls)[2]	Capital Costs (Earthwork)[2]	Annual O&M Costs	Periodic Costs (Five-Year Site Reviews)	Total Annual Expenditure[3]	Discount Factor (7.0%)	Present Value[4]
0	$0	$0	$0	$0	$0	1.0000	$0
1	$0	$0	$0	$0	$0	0.9346	$0
2	$0	$0	$0	$0	$0	0.8734	$0
3	$0	$0	$0	$0	$0	0.8163	$0
4	$0	$0	$0	$45,000	$45,000	0.7629	$34,331
5	$0	$0	$0	$0	$0	0.7130	$0
6	$0	$0	$0	$0	$0	0.6663	$0
7	$0	$0	$0	$0	$0	0.6227	$0
8	$0	$0	$0	$0	$0	0.5820	$0
9	$0	$0	$0	$45,000	$45,000	0.5439	$24,476
10	$0	$0	$0	$0	$0	0.5083	$0
11	$0	$0	$0	$0	$0	0.4751	$0
12	$0	$0	$0	$0	$0	0.4440	$0
13	$0	$0	$0	$0	$0	0.4150	$0
14	$0	$0	$0	$45,000	$45,000	0.3878	$17,451
15	$0	$0	$0	$0	$0	0.3624	$0
16	$0	$0	$0	$0	$0	0.3387	$0
17	$0	$0	$0	$0	$0	0.3166	$0
18	$0	$0	$0	$0	$0	0.2959	$0
19	$0	$0	$0	$45,000	$45,000	0.2765	$12,443
20	$0	$0	$0	$0	$0	0.2584	$0
21	$0	$0	$0	$0	$0	0.2415	$0
22	$0	$0	$0	$0	$0	0.2257	$0
23	$0	$0	$0	$0	$0	0.2109	$0
24	$0	$0	$0	$45,000	$45,000	0.1971	$8,870
25	$0	$0	$0	$0	$0	0.1842	$0
26	$0	$0	$0	$0	$0	0.1722	$0
27	$0	$0	$0	$0	$0	0.1609	$0
28	$0	$0	$0	$0	$0	0.1504	$0
29	$0	$0	$0	$45,000	$45,000	0.1406	$6,327
30	$0	$0	$0	$0	$0	0.1314	$0
31	$0	$0	$0	$0	$0	0.1228	$0
32	$0	$0	$0	$0	$0	0.1147	$0
33	$0	$0	$0	$0	$0	0.1072	$0
34	$0	$0	$0	$45,000	$45,000	0.1002	$4,509
35	$0	$0	$0	$0	$0	0.0937	$0
36	$0	$0	$0	$0	$0	0.0875	$0
37	$0	$0	$0	$0	$0	0.0818	$0
38	$0	$0	$0	$0	$0	0.0765	$0
39	$0	$0	$0	$45,000	$45,000	0.0715	$3,218
40	$0	$0	$0	$0	$0	0.0668	$0
41	$0	$0	$0	$0	$0	0.0624	$0
42	$0	$0	$0	$0	$0	0.0583	$0
43	$0	$0	$0	$0	$0	0.0545	$0
44	$0	$0	$0	$45,000	$45,000	0.0509	$2,291
45	$0	$0	$0	$0	$0	0.0476	$0
46	$0	$0	$0	$0	$0	0.0445	$0
47	$0	$0	$0	$0	$0	0.0416	$0
48	$0	$0	$0	$0	$0	0.0389	$0
49	$0	$0	$0	$45,000	$45,000	0.0363	$1,634
TOTALS:	$0	$0	$0	$450,000	$450,000		$115,550
TOTAL PRESENT VALUE OF ALTERNATIVE 1 [5]							**$120,000**

Notes:

[1] The alternative is expected to require cost expenditures for perpituity since soils would have contaminant concentrations above RGs that would allow for unlimi use and unrestricted exposure under the current and potential future land uses. However the period of analysis was assumed to be 50 years (Years 0 through 49) because the increase of present value cost after Year 49 due to small periodic expenditures is minimal relative to the accuracy range of the estimate.

[2] Capital costs, for purposes of this analysis, are assumed to be distributed as indicated on Table SCS-1.

[3] Total annual expenditure is the total cost per year with no discounting.

[4] Present value is the total cost per year including a 7.0% discount factor for that year. See Table SPV-ADRFT for details.

[5] Total present value is rounded to the nearest $10,000. Inflation and depreciation are excluded from the present value cost.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented.

They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

TABLE SPV-2

PRESENT VALUE ANALYSIS

Alternative 2
In-Place Capping of Contaminated Soils

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011

Year[1]	Capital Costs (Institutional Controls)[2]	Capital Costs (Earthwork)[2]	Annual O&M Costs (Site Maintenance and Inspection)	Periodic Costs (Five-Year Site Reviews)	Total Annual Expenditure[3]	Discount Factor (7.0%)	Present Value[4]
0	$59,000	$816,000	$0	$0	$875,000	1.0000	$875,000
1	$0	$0	$15,000	$0	$15,000	0.9346	$14,019
2	$0	$0	$15,000	$0	$15,000	0.8734	$13,101
3	$0	$0	$15,000	$0	$15,000	0.8163	$12,245
4	$0	$0	$15,000	$68,000	$83,000	0.7629	$63,321
5	$0	$0	$15,000	$0	$15,000	0.7130	$10,695
6	$0	$0	$15,000	$0	$15,000	0.6663	$9,995
7	$0	$0	$15,000	$0	$15,000	0.6227	$9,341
8	$0	$0	$15,000	$0	$15,000	0.5820	$8,730
9	$0	$0	$15,000	$68,000	$83,000	0.5439	$45,144
10	$0	$0	$15,000	$0	$15,000	0.5083	$7,625
11	$0	$0	$15,000	$0	$15,000	0.4751	$7,127
12	$0	$0	$15,000	$0	$15,000	0.4440	$6,660
13	$0	$0	$15,000	$0	$15,000	0.4150	$6,225
14	$0	$0	$15,000	$68,000	$83,000	0.3878	$32,187
15	$0	$0	$15,000	$0	$15,000	0.3624	$5,436
16	$0	$0	$15,000	$0	$15,000	0.3387	$5,081
17	$0	$0	$15,000	$0	$15,000	0.3166	$4,749
18	$0	$0	$15,000	$0	$15,000	0.2959	$4,439
19	$0	$0	$15,000	$68,000	$83,000	0.2765	$22,950
20	$0	$0	$15,000	$0	$15,000	0.2584	$3,876
21	$0	$0	$15,000	$0	$15,000	0.2415	$3,623
22	$0	$0	$15,000	$0	$15,000	0.2257	$3,386
23	$0	$0	$15,000	$0	$15,000	0.2109	$3,164
24	$0	$0	$15,000	$68,000	$83,000	0.1971	$16,359
25	$0	$0	$15,000	$0	$15,000	0.1842	$2,763
26	$0	$0	$15,000	$0	$15,000	0.1722	$2,583
27	$0	$0	$15,000	$0	$15,000	0.1609	$2,414
28	$0	$0	$15,000	$0	$15,000	0.1504	$2,256
29	$0	$0	$15,000	$68,000	$83,000	0.1406	$11,670
30	$0	$0	$15,000	$0	$15,000	0.1314	$1,971
31	$0	$0	$15,000	$0	$15,000	0.1228	$1,842
32	$0	$0	$15,000	$0	$15,000	0.1147	$1,721
33	$0	$0	$15,000	$0	$15,000	0.1072	$1,608
34	$0	$0	$15,000	$68,000	$83,000	0.1002	$8,317
35	$0	$0	$15,000	$0	$15,000	0.0937	$1,406
36	$0	$0	$15,000	$0	$15,000	0.0875	$1,313
37	$0	$0	$15,000	$0	$15,000	0.0818	$1,227
38	$0	$0	$15,000	$0	$15,000	0.0765	$1,148
39	$0	$0	$15,000	$68,000	$83,000	0.0715	$5,935
40	$0	$0	$15,000	$0	$15,000	0.0668	$1,002
41	$0	$0	$15,000	$0	$15,000	0.0624	$936
42	$0	$0	$15,000	$0	$15,000	0.0583	$875
43	$0	$0	$15,000	$0	$15,000	0.0545	$818
44	$0	$0	$15,000	$68,000	$83,000	0.0509	$4,225
45	$0	$0	$15,000	$0	$15,000	0.0476	$714
46	$0	$0	$15,000	$0	$15,000	0.0445	$668
47	$0	$0	$15,000	$0	$15,000	0.0416	$624
48	$0	$0	$15,000	$0	$15,000	0.0389	$584
49	$0	$0	$15,000	$68,000	$83,000	0.0363	$3,013
TOTALS:	$59,000	$816,000	$735,000	$680,000	$2,290,000		$1,256,111
TOTAL PRESENT VALUE OF ALTERNATIVE 2 [5]							**$1,260,000**

Notes:

[1] The alternative is expected to require cost expenditures for perpituity since soils under covers and structures would have contaminant concentrations above RGs that would allow for unlimited use and unrestricted exposure under the current and potential future land uses. However the period of analysis was assumed to be 50 years (Years 0 through 49) because the increase of present value cost after Year 49 due to small annual and periodic expenditures is minimal relative to the accuracy range of the estimate.

[2] Capital costs, for purposes of this analysis, are assumed to be distributed as indicated on Table SCS-2.

[3] Total annual expenditure is the total cost per year with no discounting.

[4] Present value is the total cost per year including a 7.0% discount factor for that year. See Table SPV-ADRFT for details.

[5] Total present value is rounded to the nearest $10,000. Inflation and depreciation are excluded from the present value cost.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented.
They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

TABLE SPV-3

PRESENT VALUE ANALYSIS

Alternative 3
Excavation and Disposal of Contaminated Soils at Licensed Solid Waste Facilities

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011

Year[1]	Capital Costs (Institutional Controls)[2]	Capital Costs (Earthwork)[2]	Annual O&M Costs	Periodic Costs (Five-Year Site Reviews)	Total Annual Expenditure[3]	Discount Factor (7.0%)	Present Value[4]
0	$13,000	$2,785,000	$0	$0	$2,798,000	1.0000	$2,798,000
1	$0	$0	$0	$0	$0	0.9346	$0
2	$0	$0	$0	$0	$0	0.8734	$0
3	$0	$0	$0	$0	$0	0.8163	$0
4	$0	$0	$0	$53,000	$53,000	0.7629	$40,434
5	$0	$0	$0	$0	$0	0.7130	$0
6	$0	$0	$0	$0	$0	0.6663	$0
7	$0	$0	$0	$0	$0	0.6227	$0
8	$0	$0	$0	$0	$0	0.5820	$0
9	$0	$0	$0	$53,000	$53,000	0.5439	$28,827
10	$0	$0	$0	$0	$0	0.5083	$0
11	$0	$0	$0	$0	$0	0.4751	$0
12	$0	$0	$0	$0	$0	0.4440	$0
13	$0	$0	$0	$0	$0	0.4150	$0
14	$0	$0	$0	$53,000	$53,000	0.3878	$20,553
15	$0	$0	$0	$0	$0	0.3624	$0
16	$0	$0	$0	$0	$0	0.3387	$0
17	$0	$0	$0	$0	$0	0.3166	$0
18	$0	$0	$0	$0	$0	0.2959	$0
19	$0	$0	$0	$53,000	$53,000	0.2765	$14,655
20	$0	$0	$0	$0	$0	0.2584	$0
21	$0	$0	$0	$0	$0	0.2415	$0
22	$0	$0	$0	$0	$0	0.2257	$0
23	$0	$0	$0	$0	$0	0.2109	$0
24	$0	$0	$0	$53,000	$53,000	0.1971	$10,446
25	$0	$0	$0	$0	$0	0.1842	$0
26	$0	$0	$0	$0	$0	0.1722	$0
27	$0	$0	$0	$0	$0	0.1609	$0
28	$0	$0	$0	$0	$0	0.1504	$0
29	$0	$0	$0	$53,000	$53,000	0.1406	$7,452
30	$0	$0	$0	$0	$0	0.1314	$0
31	$0	$0	$0	$0	$0	0.1228	$0
32	$0	$0	$0	$0	$0	0.1147	$0
33	$0	$0	$0	$0	$0	0.1072	$0
34	$0	$0	$0	$53,000	$53,000	0.1002	$5,311
35	$0	$0	$0	$0	$0	0.0937	$0
36	$0	$0	$0	$0	$0	0.0875	$0
37	$0	$0	$0	$0	$0	0.0818	$0
38	$0	$0	$0	$0	$0	0.0765	$0
39	$0	$0	$0	$53,000	$53,000	0.0715	$3,790
40	$0	$0	$0	$0	$0	0.0668	$0
41	$0	$0	$0	$0	$0	0.0624	$0
42	$0	$0	$0	$0	$0	0.0583	$0
43	$0	$0	$0	$0	$0	0.0545	$0
44	$0	$0	$0	$53,000	$53,000	0.0509	$2,698
45	$0	$0	$0	$0	$0	0.0476	$0
46	$0	$0	$0	$0	$0	0.0445	$0
47	$0	$0	$0	$0	$0	0.0416	$0
48	$0	$0	$0	$0	$0	0.0389	$0
49	$0	$0	$0	$53,000	$53,000	0.0363	$1,924
TOTALS:	$13,000	$2,785,000	$0	$530,000	$3,328,000		$2,934,090
TOTAL PRESENT VALUE OF ALTERNATIVE 3 [5]							**$2,930,000**

Notes:

[1] The alternative is expected to require cost expenditures for perpituity since soils left beneath structures could have contaminant concentrations above RGs that would not allow for unlimited use and unrestricted exposure under the current and potential future land uses. However the period of analysis was assumed to be 50 years (Years 0 through 49) because the increase of present value cost after Year 49 due to small periodic expenditures is minimal relative to the accuracy range of the estimate.

[2] Capital costs, for purposes of this analysis, are assumed to be distributed as indicated on Table SCS-3.

[3] Total annual expenditure is the total cost per year with no discounting.

[4] Present value is the total cost per year including a 7.0% discount factor for that year. See Table SPV-ADRFT for details.

[5] Total present value is rounded to the nearest $10,000. Inflation and depreciation are excluded from the present value cost.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented.
They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

TABLE SPV-4

PRESENT VALUE ANALYSIS

Alternative 4
Excavation and Disposal of Contaminated Soils at the Mine Waste Joint Repository

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011

Year[1]	Capital Costs (Institutional Controls)[2]	Capital Costs (Earthwork)[2]	Annual O&M Costs	Periodic Costs (Five-Year Site Reviews)	Total Annual Expenditure[3]	Discount Factor (7.0%)	Present Value[4]
0	$13,000	$1,588,000	$0	$0	$1,601,000	1.0000	$1,601,000
1	$0	$0	$0	$0	$0	0.9346	$0
2	$0	$0	$0	$0	$0	0.8734	$0
3	$0	$0	$0	$0	$0	0.8163	$0
4	$0	$0	$0	$53,000	$53,000	0.7629	$40,434
5	$0	$0	$0	$0	$0	0.7130	$0
6	$0	$0	$0	$0	$0	0.6663	$0
7	$0	$0	$0	$0	$0	0.6227	$0
8	$0	$0	$0	$0	$0	0.5820	$0
9	$0	$0	$0	$53,000	$53,000	0.5439	$28,827
10	$0	$0	$0	$0	$0	0.5083	$0
11	$0	$0	$0	$0	$0	0.4751	$0
12	$0	$0	$0	$0	$0	0.4440	$0
13	$0	$0	$0	$0	$0	0.4150	$0
14	$0	$0	$0	$53,000	$53,000	0.3878	$20,553
15	$0	$0	$0	$0	$0	0.3624	$0
16	$0	$0	$0	$0	$0	0.3387	$0
17	$0	$0	$0	$0	$0	0.3166	$0
18	$0	$0	$0	$0	$0	0.2959	$0
19	$0	$0	$0	$53,000	$53,000	0.2765	$14,655
20	$0	$0	$0	$0	$0	0.2584	$0
21	$0	$0	$0	$0	$0	0.2415	$0
22	$0	$0	$0	$0	$0	0.2257	$0
23	$0	$0	$0	$0	$0	0.2109	$0
24	$0	$0	$0	$53,000	$53,000	0.1971	$10,446
25	$0	$0	$0	$0	$0	0.1842	$0
26	$0	$0	$0	$0	$0	0.1722	$0
27	$0	$0	$0	$0	$0	0.1609	$0
28	$0	$0	$0	$0	$0	0.1504	$0
29	$0	$0	$0	$53,000	$53,000	0.1406	$7,452
30	$0	$0	$0	$0	$0	0.1314	$0
31	$0	$0	$0	$0	$0	0.1228	$0
32	$0	$0	$0	$0	$0	0.1147	$0
33	$0	$0	$0	$0	$0	0.1072	$0
34	$0	$0	$0	$53,000	$53,000	0.1002	$5,311
35	$0	$0	$0	$0	$0	0.0937	$0
36	$0	$0	$0	$0	$0	0.0875	$0
37	$0	$0	$0	$0	$0	0.0818	$0
38	$0	$0	$0	$0	$0	0.0765	$0
39	$0	$0	$0	$53,000	$53,000	0.0715	$3,790
40	$0	$0	$0	$0	$0	0.0668	$0
41	$0	$0	$0	$0	$0	0.0624	$0
42	$0	$0	$0	$0	$0	0.0583	$0
43	$0	$0	$0	$0	$0	0.0545	$0
44	$0	$0	$0	$53,000	$53,000	0.0509	$2,698
45	$0	$0	$0	$0	$0	0.0476	$0
46	$0	$0	$0	$0	$0	0.0445	$0
47	$0	$0	$0	$0	$0	0.0416	$0
48	$0	$0	$0	$0	$0	0.0389	$0
49	$0	$0	$0	$53,000	$53,000	0.0363	$1,924
TOTALS:	$13,000	$1,588,000	$0	$530,000	$2,131,000		$1,737,090
TOTAL PRESENT VALUE OF ALTERNATIVE 4 [5]							**$1,740,000**

Notes:

[1] The alternative is expected to require cost expenditures for perpituity since soils left beneath structures could have contaminant concentrations above RGs that would not allow for unlimited use and unrestricted exposure under the current and potential future land uses. However the period of analysis was assumed to be 50 years (Years 0 through 49) because the increase of present value cost after Year 49 due to small periodic expenditures is minimal relative to the accuracy range of the estimate.

[2] Capital costs, for purposes of this analysis, are assumed to be distributed as indicated on Table SCS-4.

[3] Total annual expenditure is the total cost per year with no discounting.

[4] Present value is the total cost per year including a 7.0% discount factor for that year. See Table SPV-ADRFT for details.

[5] Total present value is rounded to the nearest $10,000. Inflation and depreciation are excluded from the present value cost.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented.
They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

TABLE SPV-5

PRESENT VALUE ANALYSIS

Alternative 5

Excavation of Contaminated Soils, Treatment, and Disposal of Treated Soils at the Mine Waste Joint Repository

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011

Year[1]	Capital Costs (Institutional Controls)[2]	Capital Costs (Earthwork)[2]	Annual O&M Costs	Periodic Costs (Five-Year Site Reviews)	Total Annual Expenditure[3]	Discount Factor (7.0%)	Present Value[4]
0	$13,000	$2,268,000	$0	$0	$2,281,000	1.0000	$2,281,000
1	$0	$0	$0	$0	$0	0.9346	$0
2	$0	$0	$0	$0	$0	0.8734	$0
3	$0	$0	$0	$0	$0	0.8163	$0
4	$0	$0	$0	$53,000	$53,000	0.7629	$40,434
5	$0	$0	$0	$0	$0	0.7130	$0
6	$0	$0	$0	$0	$0	0.6663	$0
7	$0	$0	$0	$0	$0	0.6227	$0
8	$0	$0	$0	$0	$0	0.5820	$0
9	$0	$0	$0	$53,000	$53,000	0.5439	$28,827
10	$0	$0	$0	$0	$0	0.5083	$0
11	$0	$0	$0	$0	$0	0.4751	$0
12	$0	$0	$0	$0	$0	0.4440	$0
13	$0	$0	$0	$0	$0	0.4150	$0
14	$0	$0	$0	$53,000	$53,000	0.3878	$20,553
15	$0	$0	$0	$0	$0	0.3624	$0
16	$0	$0	$0	$0	$0	0.3387	$0
17	$0	$0	$0	$0	$0	0.3166	$0
18	$0	$0	$0	$0	$0	0.2959	$0
19	$0	$0	$0	$53,000	$53,000	0.2765	$14,655
20	$0	$0	$0	$0	$0	0.2584	$0
21	$0	$0	$0	$0	$0	0.2415	$0
22	$0	$0	$0	$0	$0	0.2257	$0
23	$0	$0	$0	$0	$0	0.2109	$0
24	$0	$0	$0	$53,000	$53,000	0.1971	$10,446
25	$0	$0	$0	$0	$0	0.1842	$0
26	$0	$0	$0	$0	$0	0.1722	$0
27	$0	$0	$0	$0	$0	0.1609	$0
28	$0	$0	$0	$0	$0	0.1504	$0
29	$0	$0	$0	$53,000	$53,000	0.1406	$7,452
30	$0	$0	$0	$0	$0	0.1314	$0
31	$0	$0	$0	$0	$0	0.1228	$0
32	$0	$0	$0	$0	$0	0.1147	$0
33	$0	$0	$0	$0	$0	0.1072	$0
34	$0	$0	$0	$53,000	$53,000	0.1002	$5,311
35	$0	$0	$0	$0	$0	0.0937	$0
36	$0	$0	$0	$0	$0	0.0875	$0
37	$0	$0	$0	$0	$0	0.0818	$0
38	$0	$0	$0	$0	$0	0.0765	$0
39	$0	$0	$0	$53,000	$53,000	0.0715	$3,790
40	$0	$0	$0	$0	$0	0.0668	$0
41	$0	$0	$0	$0	$0	0.0624	$0
42	$0	$0	$0	$0	$0	0.0583	$0
43	$0	$0	$0	$0	$0	0.0545	$0
44	$0	$0	$0	$53,000	$53,000	0.0509	$2,698
45	$0	$0	$0	$0	$0	0.0476	$0
46	$0	$0	$0	$0	$0	0.0445	$0
47	$0	$0	$0	$0	$0	0.0416	$0
48	$0	$0	$0	$0	$0	0.0389	$0
49	$0	$0	$0	$53,000	$53,000	0.0363	$1,924
TOTALS:	$13,000	$2,268,000	$0	$530,000	$2,811,000		$2,417,090
TOTAL PRESENT VALUE OF ALTERNATIVE 5 [5]							**$2,420,000**

Notes:

[1] The alternative is expected to require cost expenditures for perpituity since soils left beneath structures could have contaminant concentrations above RGs that would not allow for unlimited use and unrestricted exposure under the current and potential future land uses. However the period of analysis was assumed to be 50 years (Years 0 through 49) because the increase of present value cost after Year 49 due to small periodic expenditures is minimal relative to the accuracy range of the estimate.

[2] Capital costs, for purposes of this analysis, are assumed to be distributed as indicated on Table SCS-5.

[3] Total annual expenditure is the total cost per year with no discounting.

[4] Present value is the total cost per year including a 7.0% discount factor for that year. See Table SPV-ADRFT for details.

[5] Total present value is rounded to the nearest $10,000. Inflation and depreciation are excluded from the present value cost.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented.
They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

Screening Cost Estimate Summaries

TABLE SCS-1

Alternative 1
No Further Action

SCREENING COST ESTIMATE SUMMARY

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: No new remedial action activities would be initiated at the site to address remaining contaminated soils or otherwise mitigate the associated risks to human health and the environment. A "no action"/"no further action" alternative is required by the NCP to provide an environmental baseline against which impacts of the various remedial alternatives can be compared. Five-year site reviews would be performed as required by the NCP to evaluate whether adequate protection of human health and the environment is provided since contaminated soils would remain at the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses. Community awareness activities would be performed concurrent with five-year site reviews to inform the public about hazards associated with contamination at OU1. Monitoring (consisting primarily of non-intrusive visual inspections) would be performed as necessary to complete the five-year site reviews.

5-YEAR SITE REVIEW PERIODIC COSTS (Years 4, 9, 14, 19, 24, 29, 34, 39, 44, and 49)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
5-Year Site Review, Community Awareness Activities, & ICs Maintenanc	1	LS	$30,000	$30,000	Includes site inspection and 5-year review report
SUBTOTAL				$30,000	
Contingency (Scope and Bid)	20%			$6,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$36,000	
Project Management	10%			$3,600	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support	15%			$5,400	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$45,000	
TOTAL PERIODIC COST				**$45,000**	Total capital cost is rounded to the nearest $1,000.

Notes:
Refer to Table SCS-Notes for cost sources and explanation for various unit costs.
Percentages used for indirect costs are based on guidance from Section 5.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.
Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

Abbreviations:
LS Lump Sum
QTY Quantity

TABLE SCS-2

Alternative **2**
In-Place Capping of Contaminated Soils

SCREENING COST ESTIMATE SUMMARY

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 2 includes in-place capping (covering) of contaminated soils on residential properties. The contaminated soils within the repository at the Mineral County Airport would also receive a permanent cover. Covers used to contain contaminated soils are assumed to be constructed from clean soil or rock that is transported from offsite borrow areas tested to ensure that contamination is not present. Land use controls would be implemented to protect and restrict use of covered areas, and provide awareness of risks from potential exposure to contaminated soils. Monitoring would consist of visual inspections to ensure that covers and land use controls are protective of human health and the environment. Maintenance of covers would be performed as necessary to maintain protectiveness. Five-year site reviews would be performed since contaminated soils under covers as well as under or adjacent to structures and obstructions would remain at properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Institutional Controls for Containment Alternative	1	LS	$45,000	$45,000	
SUBTOTAL				$45,000	
Contingency (Scope and Bid)	20%			$9,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$54,000	
Project Management	10%			$5,400	The high end of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$59,400	
TOTAL CAPITAL COST				**$59,000**	Total capital cost is rounded to the nearest $1,000.

EARTHWORK CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
In-Place Capping of Contaminated Soils	6	ACR	$90,000	$540,000	
SUBTOTAL				$540,000	
Contingency (Scope and Bid)	20%			$108,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$648,000	
Project Management	6%			$38,880	Middle value of the recommended range in EPA 540-R-00-002 was used.
Remedial Design	12%			$77,760	Middle value of the recommended range in EPA 540-R-00-002 was used.
Construction Management	8%			$51,840	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$816,480	
TOTAL CAPITAL COST				**$816,000**	Total capital cost is rounded to the nearest $1,000.

SITE MAINTENANCE AND INSPECTION ANNUAL OPERATIONS AND MAINTENANCE (O&M) COSTS (Years 1 through 49)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Annual Inspection and Maintenance of Covers	1	YR	$10,000	$10,000	Includes inspection and maintenance of the remedy put in place
SUBTOTAL				$10,000	
Contingency (Scope and Bid)	20%			$2,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$12,000	
Project Management	10%			$1,200	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support	15%			$1,800	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$15,000	
TOTAL ANNUAL O&M COST				**$15,000**	Total capital cost is rounded to the nearest $1,000.

TABLE SCS-2

Alternative **2**
In-Place Capping of Contaminated Soils

SCREENING COST ESTIMATE SUMMARY

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 2 includes in-place capping (covering) of contaminated soils on residential properties. The contaminated soils within the repository at the Mineral County Airport would also receive a permanent cover. Covers used to contain contaminated soils are assumed to be constructed from clean soil or rock that is transported from offsite borrow areas tested to ensure that contamination is not present. Land use controls would be implemented to protect and restrict use of covered areas, and provide awareness of risks from potential exposure to contaminated soils. Monitoring would consist of visual inspections to ensure that covers and land use controls are protective of human health and the environment. Maintenance of covers would be performed as necessary to maintain protectiveness. Five-year site reviews would be performed since contaminated soils under covers as well as under or adjacent to structures and obstructions would remain at properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

5-YEAR SITE REVIEW PERIODIC COSTS (Years 4, 9, 14, 19, 24, 29, 34, 39, 44, and 49)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
5-Year Site Review, Community Awareness Activities, & ICs Maintenanc	1	LS	$45,000	$45,000	Includes site inspection and 5-year review report
SUBTOTAL				$45,000	
Contingency (Scope and Bid)	20%			$9,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$54,000	
Project Management	10%			$5,400	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support	15%			$8,100	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$67,500	
TOTAL PERIODIC COST				**$68,000**	Total capital cost is rounded to the nearest $1,000.

Notes:
Percentages used for indirect costs are based on guidance from Section 5.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.
Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

Abbreviations:
ACR Acre
LS Lump Sum
QTY Quantity
YR Year

TABLE SCS-3

Alternative **3**

Excavation and Disposal of Contaminated Soils at Licensed Solid Waste Facilities

SCREENING COST ESTIMATE SUMMARY

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 3 includes excavation of contaminated soils on residential and commercial properties and within the repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Clean soil or rock would be used to backfill excavation areas to match the surface conditions that previously existed. Clean soil or rock is assumed to be transported from offsite borrow areas tested to ensure that contamination is not present. The backfill placed in yards would be covered with topsoil and revegetated. Excavated contaminated soils would be transported offsite for disposal at one or more existing licensed solid waste facilities. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Institutional Controls for Containment Alternative	1	LS	$10,000	$10,000	
SUBTOTAL				$10,000	
Contingency (Scope and Bid)	20%			$2,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$12,000	
Project Management	10%			$1,200	The high end of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$13,200	
TOTAL CAPITAL COST				**$13,000**	Total capital cost is rounded to the nearest $1,000.

EARTHWORK CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Contaminated Soils Excavation, Transport and Disposal (Existing Licensed Disposal Facility)	30,000	CY	$50	$1,500,000	Includes site clearing, mob/demob, removal and waste transportation to landfill facility
Backfilling and Restoration of Excavated Areas	30,000	CY	$15	$450,000	
SUBTOTAL				$1,950,000	
Contingency (Scope and Bid)	20%			$390,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$2,340,000	
Project Management	5%			$117,000	The low end of the recommended range in EPA 540-R-00-002 was used.
Remedial Design	8%			$187,200	Middle value of the recommended range in EPA 540-R-00-002 was used.
Construction Management	6%			$140,400	The low end of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$2,784,600	
TOTAL CAPITAL COST				**$2,785,000**	Total capital cost is rounded to the nearest $1,000.

ANNUAL OPERATION AND MAINTENANCE (O&M) COSTS

TOTAL ANNUAL O&M COST				**$0**	No O&M costs are included; contaminated soil left in place is assumed to exist under structures.

TABLE SCS-3

Alternative **3**

Excavation and Disposal of Contaminated Soils at Licensed Solid Waste Facilities

SCREENING COST ESTIMATE SUMMARY

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 3 includes excavation of contaminated soils on residential and commercial properties and within the repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Clean soil or rock would be used to backfill excavation areas to match the surface conditions that previously existed. Clean soil or rock is assumed to be transported from offsite borrow areas tested to ensure that contamination is not present. The backfill placed in yards would be covered with topsoil and revegetated. Excavated contaminated soils would be transported offsite for disposal at one or more existing licensed solid waste facilities. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

5-YEAR SITE REVIEW PERIODIC COSTS (Years 4, 9, 14, 19, 24, 29, 34, 39, 44, and 49)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
5-Year Site Review, Community Awareness Activities, & ICs Maintenanc	1	LS	$35,000	$35,000	Includes site inspection and 5-year review report
SUBTOTAL				$35,000	
Contingency (Scope and Bid)	20%			$7,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$42,000	
Project Management	10%			$4,200	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support	15%			$6,300	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$52,500	
TOTAL PERIODIC COST				**$53,000**	Total capital cost is rounded to the nearest $1,000.

Notes:

Percentages used for indirect costs are based on guidance from Section 5.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

Abbreviations:

CY Cubic Yard
LS Lump Sum
QTY Quantity

TABLE SCS-4

Alternative **4**

Excavation and Disposal of Contaminated Soils at the Mine Waste Joint Repository

SCREENING COST ESTIMATE SUMMARY

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 4 includes excavation of contaminated soils on residential and commercial properties and within the repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Clean soil or rock would be used to backfill excavation areas to match the surface conditions that previously existed. Clean soil or rock is assumed to be transported from offsite borrow areas tested to ensure that contamination is not present. The backfill placed in yards would be covered with topsoil and revegetated. Excavated contaminated soils would be transported for disposal at a permanent mine waste joint-repository (Wood Gulch Repository) for mine waste rock and tailings associated with the Flat Creek/IMM Site. Wood Gulch Repository will be constructed, operated, and maintained as part of OU3. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Institutional Controls for Containment Alternative	1	LS	$10,000	$10,000	
SUBTOTAL				$10,000	
Contingency (Scope and Bid)	20%			$2,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$12,000	
Project Management	10%			$1,200	The high end of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$13,200	
TOTAL CAPITAL COST				**$13,000**	Total capital cost is rounded to the nearest $1,000.

EARTHWORK CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Contaminated Soils Excavation, Transport and Disposal (Wood Gulch Repository)	30,000	CY	$20	$600,000	Includes site clearing, mob/demob, removal and waste transportation to repository
Backfilling and Restoration of Excavated Areas	30,000	CY	$15	$450,000	
SUBTOTAL				$1,050,000	
Contingency (Scope and Bid)	20%			$210,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$1,260,000	
Project Management	6%			$75,600	Middle value of the recommended range in EPA 540-R-00-002 was used.
Remedial Design	12%			$151,200	Middle value of the recommended range in EPA 540-R-00-002 was used.
Construction Management	8%			$100,800	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$1,587,600	
TOTAL CAPITAL COST				**$1,588,000**	Total capital cost is rounded to the nearest $1,000.

ANNUAL OPERATION AND MAINTENANCE (O&M) COSTS

TOTAL ANNUAL O&M COST				**$0**	No O&M costs are included; contaminated soil left in place is assumed to exist under structures.

TABLE SCS-4

Alternative **4**

Excavation and Disposal of Contaminated Soils at the Mine Waste Joint Repository

SCREENING COST ESTIMATE SUMMARY

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 4 includes excavation of contaminated soils on residential and commercial properties and within the repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Clean soil or rock would be used to backfill excavation areas to match the surface conditions that previously existed. Clean soil or rock is assumed to be transported from offsite borrow areas tested to ensure that contamination is not present. The backfill placed in yards would be covered with topsoil and revegetated. Excavated contaminated soils would be transported for disposal at a permanent mine waste joint-repository (Wood Gulch Repository) for mine waste rock and tailings associated with the Flat Creek/IMM Site. Wood Gulch Repository will be constructed, operated, and maintained as part of OU3. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

5-YEAR SITE REVIEW PERIODIC COSTS (Years 4, 9, 14, 19, 24, 29, 34, 39, 44, and 49)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
5-Year Site Review, Community Awareness Activities, & ICs Maintenanc	1	LS	$35,000	$35,000	Includes site inspection and 5-year review report
SUBTOTAL				$35,000	
Contingency (Scope and Bid)	20%			$7,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$42,000	
Project Management	10%			$4,200	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support	15%			$6,300	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$52,500	
TOTAL PERIODIC COST				**$53,000**	Total capital cost is rounded to the nearest $1,000.

Notes:

Percentages used for indirect costs are based on guidance from Section 5.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.
Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

Abbreviations:

CY Cubic Yard
LS Lump Sum
QTY Quantity

TABLE SCS-5

Alternative **5**

Excavation of Contaminated Soils, Treatment, and Disposal of Treated Soils at the Mine Waste Joint Repository

SCREENING COST ESTIMATE SUMMARY

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 5 includes excavation of contaminated soils on residential and commercial properties and within the repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Excavated contaminated soils would be transported for disposal after treatment at the Wood Gulch Repository as discussed for Alternative 4. Alternative 5 also includes treatment of newly-excavated contaminated soils prior to disposal. A treatment additive such as Portland cement, TSP, or other types of stabilization agents would be added to the newly-excavated contaminated soils prior to disposal to bind the contaminants and reduce their mobility from leaching. Soils excavated from the repository at the Mineral County Airport have previously been treated using Portland cement or TSP. Thus no further treatment of these soils would be required prior to final disposal at the mine waste joint repository. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Institutional Controls for Containment Alternative	1	LS	$10,000	$10,000	
SUBTOTAL				$10,000	
Contingency (Scope and Bid)	20%			$2,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$12,000	
Project Management	10%			$1,200	The high end of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$13,200	
TOTAL CAPITAL COST				**$13,000**	Total capital cost is rounded to the nearest $1,000.

EARTHWORK CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Contaminated Soils Excavation, Transport and Disposal (Wood Gulch Repository)	30,000	CY	$20	$600,000	Includes site clearing, mob/demob, removal and waste transportation to repository
Backfilling and Restoration of Excavated Areas	30,000	CY	$15	$450,000	
Contaminated Soils Treatment	15,000	CY	$30	$450,000	
SUBTOTAL				$1,500,000	
Contingency (Scope and Bid)	20%			$300,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$1,800,000	
Project Management	6%			$108,000	Middle value of the recommended range in EPA 540-R-00-002 was used.
Remedial Design	12%			$216,000	Middle value of the recommended range in EPA 540-R-00-002 was used.
Construction Management	8%			$144,000	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$2,268,000	
TOTAL CAPITAL COST				**$2,268,000**	Total capital cost is rounded to the nearest $1,000.

TABLE SCS-5

Alternative **5**

Excavation of Contaminated Soils, Treatment, and Disposal of Treated Soils at the Mine Waste Joint Repository

SCREENING COST ESTIMATE SUMMARY

Site: Flat Creek OU1
Location: Superior, MT
Phase: Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 5 includes excavation of contaminated soils on residential and commercial properties and within the repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Excavated contaminated soils would be transported for disposal after treatment at the Wood Gulch Repository as discussed for Alternative 4. Alternative 5 also includes treatment of newly-excavated contaminated soils prior to disposal. A treatment additive such as Portland cement, TSP, or other types of stabilization agents would be added to the newly-excavated contaminated soils prior to disposal to bind the contaminants and reduce their mobility from leaching. Soils excavated from the repository at the Mineral County Airport have previously been treated using Portland cement or TSP. Thus no further treatment of these soils would be required prior to final disposal at the mine waste joint repository. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

ANNUAL OPERATION AND MAINTENANCE (O&M) COSTS

TOTAL ANNUAL O&M COST	**$0**	No O&M costs are included; contaminated soil left in place is assumed to exist under structures.

5-YEAR SITE REVIEW PERIODIC COSTS (Years 4, 9, 14, 19, 24, 29, 34, 39, 44, and 49)

DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
5-Year Site Review, Community Awareness Activities, & ICs Maintenanc	1	LS	$35,000	$35,000	Includes site inspection and 5-year review report
SUBTOTAL				$35,000	
Contingency (Scope and Bid)	20%			$7,000	10% Scope, 10% Bid (Low end of the recommended range in EPA 540-R-00-002).
SUBTOTAL				$42,000	
Project Management	10%			$4,200	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support	15%			$6,300	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL				$52,500	
TOTAL PERIODIC COST				**$53,000**	Total capital cost is rounded to the nearest $1,000.

Notes:

Percentages used for indirect costs are based on guidance from Section 5.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

Abbreviations:

CY Cubic Yard
LS Lump Sum
QTY Quantity
YR Year

TABLE SCS - NOTES

SCREENING COST ESTIMATE SUMMARY

Unit Cost Basis for Various Work Elements/Activities Under Alternative 1, 2, 3, 4, and 5

Site: **Flat Creek OU1**
Location: **Superior, MT**
Phase: **Feasibility Study**
Base Year: **2011**

WORK ELEMENT DESCRIPTION	GENERAL RESPONSE ACTION(S) REPRESNTED	ALTERNATIVE(S)	UNIT COST	UNIT(S)	COST SOURCE	NOTES
5-Year Site Review & Community Awareness	Monitoring, Land Use Controls	1	$30,000	LS	Detailed Estimate	Refer to Appendix F, Table CW1-1 and -2
5-Year Site Review, Community Awareness Activities, & ICs Maintenance	Monitoring, Land Use Controls	2	$45,000	LS	Detailed Estimate	Refer to Appendix F, Table CW2-2, -11, and -12
5-Year Site Review, Community Awareness Activities, & ICs Maintenance	Monitoring, Land Use Controls	3, 4, & 5	$35,000	LS	Detailed Estimate	Refer to Appendix F, Table CW3-12, -13, and -14
Institutional Controls for Containment Alternative	Land Use Controls	2	$45,000	LS	Detailed Estimate	Refer to Appendix F, Table CW2-1
Institutional Controls for Excavation/Transport/Disposal Alternatives	Land Use Controls	3, 4, & 5	$10,000	LS	Detailed Estimate	Refer to Appendix F, Table CW3-1
Annual Inspection and Maintenance of Covers	Monitoring, Land Use Controls, Containment	2	$10,000	YR	Detailed Estimate	Refer to Appendix F, Table CW2-3A, and -3B
In-Place Capping of Contaminated Soils	Containment	2	$90,000	ACR	Detailed Estimate	Refer to Appendix F, Table CW2-4, -5, -6, -7, -8, -9, and -10
Contaminated Soils Excavation, Transport and Disposal (Existing Licensed Disposal Facility)	Removal/Transport/Disposal	3	$50	CY	Detailed Estimate	Refer to Appendix F, Table CW3-3, -4, -5, -8, -9, -10, and -11
Contaminated Soils Excavation, Transport and Disposal (Wood Gulch Repository)	Removal/Transport/Disposal	4 & 5	$20	CY	Detailed Estimate	Refer to Appendix F, Table CW4-3, -4, -5, -8, -9, -10, and -11
Backfilling and Restoration of Excavated Areas	Removal/Transport/Disposal	3, 4, & 5	$15	CY	Detailed Estimate	Refer to Appendix F, Table CW3-2, -6, and -7
Contaminated Soils Treatment	Treatment	5	$30	CY	Detailed Estimate	Refer to Appendix F, Table CW5-12

Notes: Unit costs in this table are rounded to the nearest $5,000 (large unit costs) or nearest $5 (small unit costs)

Abbreviations:

ACR Acre
CY Cubic Yard
LS Lump Sum
YR Year

Appendix E

Detailed Analysis of Retained Alternatives

The detailed evaluation and analysis of each alternative is assessed using the two threshold criteria and five balancing criteria are presented in the following Appendix E. The justifications common to more than one alternative have been indicated using gray text to allow the reader to focus on the differences between alternatives.

Flat Creek IMM Superfund Site

OU1 Feasibility Study Report

September 9, 2011

Alternative 1
No Further Action

Table E-1. Evaluation Summary for Overall Protection of Human Health and the Environment – Alternative 1

Evaluation Factors for Overall Protection of Human Health and the Environment	Evaluation Summary
Adequate protection of human health and the environment (short- and long-term) from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site	■ Areas of newly-identified contaminated soils would be left unaddressed. ■ The existing repository at the Mineral County Airport would be left in its current condition. ■ Direct human exposure to metals in contaminated soils through inhalation and ingestion would not be reduced. ■ PRAOs would be unaddressed.

Table E-2. Evaluation Summary for Compliance with ARARs – Alternative 1

Evaluation Factors for Compliance with ARARs	Evaluation Summary
Compliance with chemical-specific ARARs	■ No action would be taken to address contaminated soils. Thus this criterion is not met.
Compliance with location-specific ARARs	■ Location-specific ARARs would not be triggered since no new remedial measures would be undertaken.
Compliance with action-specific ARARs	■ Action-specific ARARs would not be triggered since no new remedial measures would be undertaken.

Table E-3. Evaluation Summary for Long-Term Effectiveness and Permanence – Alternative 1

Evaluation Factors for Long-Term Effectiveness and Permanence	Evaluation Summary
Magnitude of residual risk remaining from untreated waste or treatment residuals remaining at the conclusion of the remedial activities	■ No new remedial actions would be undertaken to address contaminated soils. ■ Direct human exposure to metals in contaminated soils through inhalation and ingestion would not be reduced.
Adequacy and reliability of controls that are used to manage treatment residuals and untreated waste remaining at the site	■ No controls are put in place under the no action alternative. Thus contaminated soils would be left uncontrolled. ■ Contaminated soils could migrate to other media and could pose unacceptable risks to humans.

Table E-4. Evaluation Summary for Reduction of Toxicity, Mobility, or Volume through Treatment – Alternative 1

Evaluation Factors for Reduction of Toxicity, Mobility, or Volume through Treatment	Evaluation Summary
The treatment processes, the alternative uses, and materials they will treat	■ This alternative would not treat contaminated soils. Thus there would be no reduction of toxicity, mobility, or volume of contamination through treatment. ■ The statutory preference for treatment as a principal element of the remedial action would not be met.
The amount of hazardous substances, pollutants, or contaminants that will be destroyed or treated, including how the principal threat(s) will be addressed	
The degree of expected reduction in toxicity, mobility, or volume of the waste due to treatment	
The degree to which the treatment is irreversible	
The type and quantity of residuals that will remain following treatment, considering the persistence, toxicity, mobility, and propensity to bioaccumulate such hazardous substances and their constituents	
Whether the alternative would satisfy the statutory preference for treatment as a principal element of the remedial action	

Table E-5. Short-Term Effectiveness Evaluation Summary – Alternative 1

Evaluation Factors for Short-Term Effectiveness	Evaluation Summary
Short-term risks that might be posed to the community during implementation of an alternative	■ Contaminated soils could pose potential short-term risks at OU1, which are unaddressed under this alternative. ■ Direct human exposure to metals in contaminated soils through inhalation and ingestion would not be reduced.
Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures	■ Workers performing site inspections during 5-year site reviews would potentially be exposed to contaminated soils that pose unacceptable risks. ■ These risks could be mitigated through the use of monitoring and personal protective equipment.
Potential adverse environmental impacts resulting from construction and implementation of an alternative and the reliability of the available mitigation measures during implementation in preventing or reducing the potential impacts	■ No further remedial action would be undertaken. Thus there would be no potential adverse impacts resulting from the alternative.
Time until protection is achieved	■ No further remedial action would be undertaken to address contaminated soils. Thus protection would not be achieved under this alternative.

Table E-6. Implementability Evaluation Summary – Alternative 1

Evaluation Factors for Implementability		Evaluation Summary
Technical feasibility	Technical difficulties and unknowns associated with the construction and operation of a technology	■ Contaminated soils would be left unaddressed. No new remedial actions would be undertaken to address contaminated soils. Thus these criteria are not applicable. ■ Non-intrusive visual inspections, which are part of Alternative 1 would be performed during 5-year reviews and could be easily implemented with available labor, material, and technical resources.
	Reliability of the technology, focusing on technical problems that will lead to schedule delays	
	Ease of undertaking additional remedial actions including what, if any, future remedial actions would be needed and the difficulty to implement additional remedial actions	
	Ability to monitor the effectiveness of the remedy, including an evaluation of risks of exposure should monitoring be insufficient to detect a system failure	
Administrative feasibility	Activities needed to coordinate with other offices and agencies	■ Contaminated soils would be left unaddressed. ■ No remedial actions would be undertaken to address the site. Thus there would be no need to obtain approvals from other regulatory agencies.
	The ability and time required to obtain any necessary approvals and permits from other agencies (for offsite actions)	■ No offsite remedial activities would be conducted under this alternative.
Availability of services and materials	Availability of adequate offsite treatment, storage capacity, and disposal capacity and services	■ No new remedial actions would be undertaken. Thus this criterion is not applicable.
	Availability of necessary equipment and specialists and provisions to ensure any necessary additional resources	■ Technical equipment and specialists are available for conducting inspections during 5-year site reviews.
	Availability of services and materials plus the potential for obtaining competitive bids, which is particularly important for innovative technologies	
	Availability of prospective technologies	

Table E-7. Cost Evaluation Summary – Alternative 1

Evaluation Factors for Cost	Approximate Cost (Dollars)
Total capital cost	None
Total annual O&M cost	None
Total periodic cost	$480,000
Total cost (excluding present value discounting)	$480,000
Total present value cost	$123,000

Note: Total costs are for the assumed period of evaluation (Years 0 through 49). Costs are rounded to the nearest $1,000.

Alternative 2
In-Place Capping of Contaminated Soils

Table E-8. Evaluation Summary for Overall Protection of Human Health and the Environment – Alternative 2

Evaluation Factors for Overall Protection of Human Health and the Environment	Evaluation Summary
Adequate protection of human health and the environment (short- and long-term) from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site	■ Contaminated soils would be addressed through in-place capping (covers) coupled with institutional and access controls to protect the covers. ■ With proper construction and maintenance, the covers would eliminate exposure of people to contaminated soils. Migration of contamination to air and surface water would be eliminated and migration to groundwater would be reduced. ■ Capping of contaminated soils would pose short-term risks to workers, the community, and the environment. These risks would be mitigated through dust suppression (water- or chemical-based) during implementation. ■ Land use controls would be used to restrict access and use of the existing repository at the Mineral County Airport and the properties with contamination left in place. ■ Monitoring would be performed to determine protectiveness of the remedy. ■ PRAOs would be addressed where in-place capping is implemented.

Table E-9. Evaluation Summary for Compliance with ARARs – Alternative 2

Evaluation Factors for Compliance with ARARs	Evaluation Summary
Compliance with chemical-specific ARARs	■ Contaminated soils capped in-place would physically address exposure to contaminants and discharges to air, thus meeting chemical-specific ARARs.
Compliance with location-specific ARARs	■ Location-specific ARARs for the remedy would be addressed during implementation of the remedial action.
Compliance with action-specific ARARs	■ Action-specific ARARs for the remedy would be addressed during implementation of the remedial action.

Table E-10. Evaluation Summary for Long-Term Effectiveness and Permanence – Alternative 2

Evaluation Factors for Long-Term Effectiveness and Permanence	Evaluation Summary
Magnitude of residual risk remaining from untreated waste or treatment residuals remaining at the conclusion of the remedial activities	■ All of the identified contaminated soils would be covered in place. The waste repository at the Mineral County Airport would receive a permanent cover. ■ Long-term effectiveness would not be entirely ensured since contaminated soils potentially posing a risk are left on site (although covered). Protection to human health and the environment is partially dependent on legal enforcement and people's adherence to institutional controls. ■ Monitoring would be performed to determine long-term effectiveness and permanence of the remedy.
Adequacy and reliability of controls that are used to manage treatment residuals and untreated waste remaining at the site	■ Long-term effectiveness and permanence for capped areas would be dependent on continued integrity of the covers and adherence to institutional and access controls. This is less certain on residential properties. ■ Land use controls such as institutional controls and access controls would require maintenance and monitoring in perpetuity. Even with maintenance and monitoring, long-term effectiveness cannot be ensured since people could ignore them, especially at residential properties. ■ Legal enforcement of institutional controls may be necessary. ■ O&M activities would be periodically required to repair damage or erosion to the covers and access controls. ■ Monitoring would be performed to determine long-term effectiveness and permanence of the remedy.

Table E-11. Evaluation Summary for Reduction of Toxicity, Mobility, or Volume through Treatment – Alternative 2

Evaluation Factors for Reduction of Toxicity, Mobility, or Volume through Treatment	Evaluation Summary
The treatment processes, the alternative uses, and materials they will treat	■ This alternative would not treat contaminated soils. Thus there would be no reduction of toxicity, mobility, or volume of contamination through treatment. ■ The statutory preference for treatment as a principal element of the remedial action would not be met.
The amount of hazardous substances, pollutants, or contaminants that will be destroyed or treated, including how the principal threat(s) will be addressed	
The degree of expected reduction in toxicity, mobility, or volume of the waste due to treatment	
The degree to which the treatment is irreversible	
The type and quantity of residuals that will remain following treatment, considering the persistence, toxicity, mobility, and propensity to bioaccumulate such hazardous substances and their constituents	
Whether the alternative would satisfy the statutory preference for treatment as a principal element of the remedial action	

Table E-12. Short-Term Effectiveness Evaluation Summary – Alternative 2

Evaluation Factors for Short-Term Effectiveness	Evaluation Summary
Short-term risks that might be posed to the community during implementation of an alternative	■ There would be impacts to the community under this alternative, as truck traffic would be required for transport of clean borrow materials for construction of covers. ■ Work area restrictions (such as exclusion zones) would be implemented during construction to reduce short-term exposure risks to the community. ■ Residents of residential properties could be exposed to contaminated soils during implementation of the remedial action. Protective measures, such as dust suppression (water- or chemical-based) would be used to address those risks. ■ Access controls would not address short-term exposure to contaminated soils on residential and commercial properties.
Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures	■ Surface disturbance of contaminated soils could pose short-term risks to workers installing covers. ■ Protective measures, such as dust suppression (water- or chemical-based) and PPE would be used to address those risks. ■ Work area restrictions (such as exclusion zones) would be implemented during construction to reduce short-term exposure risks to workers. ■ Transport of clean borrow materials for construction of covers would pose short-term risks to workers from increased traffic. ■ Other potential impacts could be from safety hazards during remedial implementation, such as falls, electrical hazards, and mechanical hazards.
Potential adverse environmental impacts resulting from construction and implementation of an alternative and the reliability of the available mitigation measures during implementation in preventing or reducing the potential impacts	■ The alternative would involve surface disturbance of contaminated soils which could pose potential adverse impacts through dispersion of dust. ■ Water- or chemical- based suppression would be used for controlling contaminated soils and dust during construction. ■ There could also be some impacts to the environment during implementation of the remedial action due to use of heavy construction and hauling equipment. Use of fuel efficient and low emission equipment could mitigate these impacts. ■ Development of offsite borrow areas could adversely impact the environment. Mitigation measures could include selection of easily accessible borrow locations and reclamation of borrow areas after use.
Time until protection is achieved	■ The proposed remedial action and land use controls could be implemented in approximately 1 year.

Table E-13. Implementability Evaluation Summary – Alternative 2

Evaluation Factors for Implementability		Evaluation Summary
Technical feasibility	Technical difficulties and unknowns associated with the construction and operation of a technology	■ Cover construction around homes or structures, trees, subsurface utilities, and roads may be challenging at specific locations. ■ Logistics for working with large number of heavy equipment and trucks at the site could be difficult to manage. ■ Institutional controls may be more difficult to implement and reliably operate, especially for residential properties, due to various types of ownership, types of land use, and levels of occupancy.
	Reliability of the technology, focusing on technical problems that will lead to schedule delays	■ In-place capping (covering) of contaminated soils is reliable and could be easily constructed. ■ Suitable uncontaminated materials for soil cover system construction are not available on site. Soil cover construction materials would be required from offsite sources which might delay the schedule. ■ Monitoring, implementation, and enforcement of institutional controls may be more difficult, especially for properties due to various types of ownership, types of land use, and levels of occupancy. ■ Access permission at residential and commercial properties for implementing the remedial alternative is not currently available, but could be obtained. This could cause some delays in the schedule.
	Ease of undertaking additional remedial actions, including what, if any, future remedial actions would be needed and the difficulty to implement additional remedial actions	■ Placing additional soil cover could be implemented with relative ease if required in the future. ■ Additional remedial action may be more difficult to implement on residential and commercial properties due to various types of ownership, types of land use, and levels of occupancy.
	Ability to monitor the effectiveness of the remedy, including an evaluation of risks of exposure should monitoring be insufficient to detect a system failure	■ A comprehensive inspection, monitoring, and maintenance program would be implemented to maintain the integrity of covers and effectiveness of land use controls. ■ Monitoring and maintenance of covers and institutional controls may be more difficult for residential properties due to various types of ownership, types of land use, and levels of occupancy. ■ Periodic monitoring (inspections and sampling) would be conducted to ensure overall protection of human health and environment.
Administrative feasibility	Activities needed to coordinate with other offices and agencies	■ Regulatory approval for in-place capping of contaminated soils using covers should be obtainable. ■ Access permission at residential and commercial properties for implementing the remedial action may not be currently available, but could be obtained. ■ Regulatory approvals for institutional and access controls should be obtainable. However, some difficulties may be encountered with regard to types of restrictions. ■ Regulatory approvals for monitoring and maintenance should be obtainable.
	The ability and time required to obtain any necessary approvals and permits from other agencies (for offsite actions)	■ Development of offsite borrow sources for cover materials would require coordination and approval from the affected agency.

Table E-13. Implementability Evaluation Summary – Alternative 2 (continued)

Evaluation Factors for Implementability		Evaluation Summary
Availability of services and materials	Availability of adequate offsite treatment, storage capacity, and disposal capacity and services	■ This remedial action would not require treatment, storage and disposal services. Thus this criterion is not applicable.
	Availability of necessary equipment and specialists and provisions to ensure any necessary additional resources	■ Labor, equipment, and materials for cover construction are available. ■ Suitable cover construction materials would be required from offsite sources. ■ Total volume of suitable soil cover and backfill material required would be approximately 22,517 cy. ■ Approximately 1,126 truck loads of suitable soil would be required to haul in from offsite borrow sources. ■ Materials, equipment, and labor resources used for land use controls and monitoring are easily obtainable. ■ Technical equipment and specialists are available for implementation of institutional controls and monitoring.
	Availability of services and materials plus the potential for obtaining competitive bids, which is particularly important for innovative technologies	
	Availability of prospective technologies	

Table E-14. Cost Evaluation Summary – Alternative 2

Evaluation Factors for Cost	Approximate Cost (Dollars)
Total capital cost	$897,000
Total annual O&M cost	$784,000
Total periodic cost	$680,000
Total cost (excluding present value discounting)	$2,361,000
Total present value cost	$1,292,000

Note: Total costs are for the assumed period of evaluation (Years 0 through 49). Costs are rounded to the nearest $1,000.

Alternative 3

Excavation and Disposal of Contaminated Soils at Licensed Solid Waste Facilities

Table E-15. Evaluation Summary for Overall Protection of Human Health and the Environment – Alternative 3

Evaluation Factors for Overall Protection of Human Health and the Environment	Evaluation Summary
Adequate protection of human health and the environment (short- and long-term) from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site	■ The majority of contaminated soils would be addressed through excavation and disposal at licensed solid waste disposal facilities. ■ Excavation and disposal of contaminated soils at licensed solid waste disposal facilities would eliminate exposure of people to contaminated soils. Migration of contamination to air, surface water, and groundwater would be eliminated. ■ Excavation, transportation, and disposal of contaminated soils would pose short-term risks to workers, the community, and the environment. These risks would be mitigated through dust suppression (water- or chemical-based) and proper handling and transportation procedures during implementation. ■ Land use controls (a combination of institutional controls, community awareness activities, and access controls) would be used at a limited number of properties to restrict access to and use of contaminated soil left in place under or adjacent to structures or obstructions. ■ Monitoring would be performed during construction to ensure protectiveness of the remedy. ■ PRAOs would be addressed through excavation and disposal at licensed solid waste disposal facilities coupled with land use controls and monitoring on a limited number of properties.

Table E-16. Evaluation Summary for Compliance with ARARs – Alternative 3

Evaluation Factors for Compliance with ARARs	Evaluation Summary
Compliance with chemical-specific ARARs	■ Contaminated soils excavated and disposed of at licensed solid waste disposal facilities would physically address exposure to contaminants, thus meeting chemical-specific ARARs.
Compliance with location-specific ARARs	■ Location-specific ARARs for the remedy would be addressed during implementation of the remedial action.
Compliance with action-specific ARARs	■ Action-specific ARARs for the remedy would be addressed during implementation of the remedial action.

Table E-17. Evaluation Summary for Long-Term Effectiveness and Permanence – Alternative 3

Evaluation Factors for Long-Term Effectiveness and Permanence	Evaluation Summary
Magnitude of residual risk remaining from untreated waste or treatment residuals remaining at the conclusion of the remedial activities	■ The majority of contaminated soils would be excavated. The total area excavated under this alternative would be approximately 6 acres. ■ Contaminated soil may be left in place at a limited number of properties under or adjacent to structures or obstructions. However, exposure to these contaminated soils would be addressed through land use controls. ■ Protection to human health and the environment is partially dependent on legal enforcement and people's adherence to institutional controls. ■ Monitoring would be performed to determine long-term effectiveness and permanence of the remedy. ■ Large portions of OU1 would be remediated to allow for unlimited use and unrestricted exposure under the current and potential future land uses.
Adequacy and reliability of controls that are used to manage treatment residuals and untreated waste remaining at the site.	■ Long-term effectiveness and permanence for properties containing contaminated soils is addressed through excavation of contaminated soils with disposal and backfilling with clean soil. ■ Land use controls at a limited number of properties leaving contaminated soil in place after excavation would require maintenance and monitoring in perpetuity. Even with maintenance and monitoring, long-term effectiveness cannot be ensured since people could ignore them, especially at residential properties. ■ Legal enforcement of institutional controls may be necessary. ■ Disposal of contaminated soils at licensed solid waste disposal facilities would provide long-term effectiveness and permanence, assuming the facilities receive adequate O&M.

Table E-18. Evaluation Summary for Reduction of Toxicity, Mobility, or Volume through Treatment – Alternative 3

Evaluation Factors for Reduction of Toxicity, Mobility, or Volume through Treatment	Evaluation Summary
The treatment processes, the alternative uses, and materials they will treat	■ Generally, Bevill exempt mining waste could be accepted at licensed solid waste disposal facilities without prior treatment. However, final acceptance of the contaminated soils is determined by the individual facilities and thus some of the soils may require treatment prior to disposal. ■ It is assumed for the purpose of this FS that contaminated soils under this alternative will not require treatment prior to disposal. Thus there would be no reduction of toxicity, mobility, or volume of contamination through treatment. ■ The statutory preference for treatment as a principal element of the remedial action would not be met.
The amount of hazardous substances, pollutants, or contaminants that will be destroyed or treated, including how the principal threat(s) will be addressed	
The degree of expected reduction in toxicity, mobility, or volume of the waste due to treatment	
The degree to which the treatment is irreversible	
The type and quantity of residuals that will remain following treatment, considering the persistence, toxicity, mobility, and propensity to bioaccumulate such hazardous substances and their constituents	
Whether the alternative would satisfy the statutory preference for treatment as a principal element of the remedial action	

Table E-19. Short-Term Effectiveness Evaluation Summary –Alternative 3

Evaluation Factors for Short-Term Effectiveness	Evaluation Summary
Short-term risks that might be posed to the community during implementation of an alternative	■ Residents of residential properties could be exposed to contaminated soils during implementation of the remedial action. ■ Excavation of contaminated soils could pose short-term risks to the community living close to contaminated soils from inhalation of dust. Protective measures, such as dust suppression (water- or chemical-based) would be used to address those risks. ■ Transportation and disposal of contaminated soils could pose short-term risks to the community. These risks would be mitigated through source control, such as dust suppression (water- or chemical-based) and proper handling and transportation procedures during implementation. ■ There would be additional impacts to the community under this alternative, as truck traffic would be required for disposal of contaminated soils at licensed solid waste disposal facilities as well as transport of backfill soils. ■ Land use controls could be implemented shortly after construction to protect the community and the environment from contaminated soils left in place at a limited number of properties. ■ Work area restrictions (such as exclusion zones) would be implemented during construction to reduce short-term exposure risks to the community. ■ Transport of clean borrow materials for construction of covers and backfilling excavations would pose short-term risks to the community from increased traffic.
Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures	■ Excavation and disposal of contaminated soils and backfilling of excavations could pose short-term risks to workers. ■ Protective measures, such as dust suppression (water- or chemical-based) and PPE would be used to address those risks. ■ Work area restrictions (such as exclusion zones) would be implemented during construction to reduce short-term exposure risks to workers. ■ There would be additional impacts to workers under this alternative, as truck traffic would be required for disposal of contaminated soils at licensed solid waste disposal facilities as well as transport of backfill soils. ■ Other potential impacts could be from safety hazards during remedial implementation, such as falls, electrical hazards, and mechanical hazards.
Potential adverse environmental impacts resulting from construction and implementation of an alternative and the reliability of the available mitigation measures during implementation in preventing or reducing the potential impacts	■ Excavation of contaminated soils could pose potential adverse impacts through dispersion of dust. ■ Water- or chemical- based suppression would be used for controlling contaminated soils and dust during construction. ■ There could also be some impacts to the environment during implementation of the remedial action due to use of heavy construction and hauling equipment. Use of fuel efficient and low emission equipment could mitigate these impacts. ■ Development of offsite borrow areas could adversely impact the environment. Mitigation measures could include selection of easily accessible borrow locations and reclamation of borrow areas after use.
Time until protection is achieved	■ The proposed remedial action could be implemented in approximately 1 year.

Table E-20. Implementability Evaluation Summary – Alternative 3

Evaluation Factors for Implementability		Evaluation Summary
Technical feasibility	Technical difficulties and unknowns associated with the construction and operation of a technology	■ Excavation and backfilling around homes or structures, trees, subsurface utilities, and roads may be challenging at specific locations. ■ Institutional controls may be more difficult to implement and reliably operate, especially for residential properties, due to various types of ownership, types of land use, and levels of occupancy. However, they would only be needed on a limited number of properties where contaminated soils would be left in place under or adjacent to structures or obstructions. ■ Logistics for working with large number of heavy equipment and trucks at site could be difficult to manage. ■ Large volumes of contaminated soils would need to be transported offsite for disposal. ■ Special management procedures may be required for disposal at the permitted facilities. ■ Total volume to be excavated and transported for disposal would be approximately 29,904 cy. ■ Approximately 1,278 truck loads would be required to haul the whole excavated volume of contaminated soils.
	Reliability of the technology, focusing on technical problems that will lead to schedule delays	■ Excavation and backfilling around homes or structures, trees, subsurface utilities, and roads may be challenging at specific locations. ■ Suitable uncontaminated materials for backfilling excavation areas are not available on site. Soil backfill materials would be required from offsite which might delay the schedule. ■ Monitoring, implementation, and enforcement of institutional controls may be more difficult, especially for properties due to various types of ownership, types of land use, and levels of occupancy. However, they would only be needed on a limited number of properties where contaminated soils would be left in place under or adjacent to structures or obstructions. ■ Access permission at residential and commercial properties for implementing the remedial alternative is not currently available, but could be obtained. This could cause some delays in the schedule. ■ Offsite disposal of excavated contaminated soils at licensed disposal facilities is relatively straightforward. However, final acceptance of the contaminated soils would be determined by the individual facilities. ■ Special management procedures may be required for disposal at the licensed facilities.
	Ease of undertaking additional remedial actions, including what, if any, future remedial actions would be needed and the difficulty to implement additional remedial actions	■ Future excavation and disposal of contaminated soils could be implemented. ■ Additional remedial action may be more difficult to implement on residential and commercial properties due to various types of ownership, types of land use, and levels of occupancy.
Technical feasibility - continued	Ability to monitor the effectiveness of the remedy, including an evaluation of risks of exposure should monitoring be insufficient to detect a system failure	■ Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. ■ Maintenance of institutional controls may be more difficult for residential properties due to various types of ownership, types of land use, and levels of occupancy.

Table E-20. Implementability Evaluation Summary – Alternative 3 (continued)

Evaluation Factors for Implementability		Evaluation Summary
Administrative feasibility	Activities needed to coordinate with other offices and agencies	■ Regulatory approval needed to excavate and transport contaminated soils should be obtainable. ■ Access permission at residential and commercial properties for implementing the remedial action may not be currently available, but could be obtained. ■ Regulatory approvals for institutional controls should be obtainable. However, some difficulties may be encountered with regard to types of restrictions.
	The ability and time required to obtain any necessary approvals and permits from other agencies (for offsite actions)	■ Regulatory and facility approval for offsite disposal at licensed disposal facilities should be obtainable. However, final acceptance of the contaminated soils would be determined by the individual facilities. ■ Development of offsite borrow sources for backfill would require coordination and approval from the affected agency.
Availability of services and materials	Availability of adequate offsite treatment, storage capacity, and disposal capacity and services	■ Licensed solid waste disposal facilities (Class II facilities) authorized for Group II solid wastes are available within the State of Montana. The two closest Class II facilities are located 60 miles and 170 miles from the site. ■ Generally, Bevill exempt mine waste could be accepted at licensed solid waste facilities without prior treatment. However, final acceptance of the contaminated soils is determined by the individual facilities and thus some of the soils may require treatment prior to disposal. ■ The licensed solid waste disposal facilities should have sufficient capacity to accept contaminated soils for disposal. ■ Total volume of contaminated soils for offsite disposal would be approximately 29,904 cy. ■ Approximately 1,278 truck loads would be required to haul contaminated soils to offsite disposal facilities.
	Availability of necessary equipment and specialists and provisions to ensure any necessary additional resources	■ Suitable backfill materials would be required from offsite sources. ■ Total volume of suitable soil cover and backfill material required would be approximately 16,902 cy. ■ Approximately 845 truck loads would be required to haul in the suitable material. ■ Labor, equipment, and materials for contaminated soils excavation and clean soil backfilling are available. ■ Materials, equipment, and labor resources used for monitoring during construction are easily obtainable. ■ Technical equipment and specialists are available for implementation of institutional controls and monitoring.
	Availability of services and materials plus the potential for obtaining competitive bids, which is particularly important for innovative technologies	
	Availability of prospective technologies	

Table E-21. Cost Evaluation Summary – Alternative 3

Evaluation Factors for Cost	Approximate Cost (Dollars)
Total capital cost	$2,685,000
Total annual O&M cost	None
Total periodic cost	$490,000
Total cost (excluding present value discounting)	$3,175,000
Total present value cost	$2,811,000

Note: Total costs are for the assumed period of evaluation (Years 0 through 49). Costs are rounded to the nearest $1,000.

Alternative 4

Excavation and Disposal of Contaminated Soils at the Mine Waste Joint Repository

Table E-22. Evaluation Summary for Overall Protection of Human Health and the Environment – Alternative 4

Evaluation Factors for Overall Protection of Human Health and the Environment	Evaluation Summary
Adequate protection of human health and the environment (short- and long-term) from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site	■ The majority of contaminated soils would be addressed through excavation and disposal at the mine waste joint repository (Wood Gulch Repository) constructed under OU3. ■ Excavation and disposal of contaminated soils at the mine waste joint repository would eliminate exposure of people to contaminated soils. Migration of contamination to air, surface water, and groundwater would be reduced or eliminated. ■ Excavation, transportation, and disposal of contaminated soils would pose short-term risks to workers, the community, and the environment. These risks would be mitigated through dust suppression (water- or chemical-based) and proper handling and transportation procedures during implementation. ■ Land use controls (a combination of institutional controls, community awareness activities, and access controls) would be used at a limited number of properties to restrict access to and use of contaminated soil left in place under or adjacent to structures or obstructions. ■ Monitoring would be performed during construction to ensure protectiveness of the remedy. ■ PRAOs would be addressed through excavation and disposal at the mine waste joint repository coupled with land use controls and monitoring on a limited number of properties.

Table E-23. Evaluation Summary for Compliance with ARARs – Alternative 4

Evaluation Factors for Compliance with ARARs	Evaluation Summary
Compliance with chemical-specific ARARs	■ Contaminated soils excavated and disposed of at the mine waste joint repository would physically address exposure to contaminants, thus meeting chemical-specific ARARs.
Compliance with location-specific ARARs	■ Location-specific ARARs for the remedy would be addressed during implementation of the remedial action.
Compliance with action-specific ARARs	■ Action-specific ARARs for the remedy would be addressed during implementation of the remedial action.

Table E-24. Evaluation Summary for Long-Term Effectiveness and Permanence – Alternative 4

Evaluation Factors for Long-Term Effectiveness and Permanence	Evaluation Summary
Magnitude of residual risk remaining from untreated waste or treatment residuals remaining at the conclusion of the remedial activities	■ The majority of contaminated surface soils would be excavated. The total area excavated under this alternative would be approximately 6 acres. ■ Contaminated soil may be left in place at a limited number of properties under or adjacent to structures or obstructions. However, exposure to these contaminated soils would be addressed through land use controls. ■ Protection to human health and the environment is partially dependent on legal enforcement and people's adherence to institutional controls. ■ Monitoring would be performed during construction to ensure protectiveness of the remedy. ■ Large portions of OU1 would be remediated to allow for unlimited use and unrestricted exposure under the current and potential future land uses.
Adequacy and reliability of controls that are used to manage treatment residuals and untreated waste remaining at the site.	■ Long-term effectiveness and permanence for properties containing contaminated soils would be addressed through excavation and disposal at the mine waste joint repository, and backfilling with clean soil. ■ Land use controls at a limited number of properties leaving contaminated soil in place after excavation would require maintenance and monitoring in perpetuity. Even with maintenance and monitoring, long-term effectiveness cannot be ensured since people could ignore them, especially at residential properties. ■ Legal enforcement of institutional controls may be necessary. ■ Disposal of contaminated soils at the mine waste joint repository would provide long-term effectiveness and permanence, assuming the repository receives adequate O&M.

Table E-25. Evaluation Summary for Reduction of Toxicity, Mobility, or Volume through Treatment – Alternative 4

Evaluation Factors for Reduction of Toxicity, Mobility, or Volume through Treatment	Evaluation Summary
The treatment processes, the alternative uses, and materials they will treat	■ Generally, Bevill exempt mining waste could be accepted at the mine waste joint repository without prior treatment. However, final acceptance of the contaminated soils at the mine waste joint repository would be determined by EPA and DEQ. ■ It is assumed for the purpose of this FS that contaminated soils under this alternative will not require treatment prior to disposal. Thus there would be no reduction of toxicity, mobility, or volume of contamination through treatment. ■ The statutory preference for treatment as a principal element of the remedial action would not be met.
The amount of hazardous substances, pollutants, or contaminants that will be destroyed or treated, including how the principal threat(s) will be addressed	
The degree of expected reduction in toxicity, mobility, or volume of the waste due to treatment	
The degree to which the treatment is irreversible	
The type and quantity of residuals that will remain following treatment, considering the persistence, toxicity, mobility, and propensity to bioaccumulate such hazardous substances and their constituents	
Whether the alternative would satisfy the statutory preference for treatment as a principal element of the remedial action	

Table E-26. Short-Term Effectiveness Evaluation Summary – Alternative 4

Evaluation Factors for Short-Term Effectiveness	Evaluation Summary
Short-term risks that might be posed to the community during implementation of an alternative	■ Residents of residential properties could be exposed to contaminated soils during implementation of the remedial action. ■ Excavation of contaminated soils could pose short-term risks to the community living close to contaminated soils from inhalation of dust. Protective measures, such as dust suppression (water- or chemical-based) would be used to address those risks. ■ Transportation and disposal of contaminated soils would pose short-term risks to the community. These risks would be mitigated through source control, such as dust suppression (water- or chemical-based) and proper handling and transportation procedures during implementation. ■ Land use controls could be implemented shortly after construction to protect the community and the environment from contaminated soils left in place at a limited number of properties. ■ Work area restrictions (such as exclusion zones) would be implemented during construction to reduce short-term exposure risks to the community. ■ There would be additional impacts to the community under this alternative, as truck traffic would be required for disposal of contaminated soils at the mine waste joint repository as well as transport of backfill soils.
Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures	■ Excavation and disposal of contaminated soils and backfilling of excavations could pose short-term risks to workers. ■ Protective measures, such as dust suppression (water- or chemical-based) and PPE would be used to address those risks. ■ Work area restrictions (such as exclusion zones) would be implemented during construction to reduce short-term exposure risks to workers. ■ There would be additional impacts to workers under this alternative, as truck traffic would be required for disposal of contaminated soils at the mine waste joint repository as well as transport of backfill soils. ■ Other potential impacts could be from safety hazards during remedial implementation, such as falls, electrical hazards, and mechanical hazards.
Potential adverse environmental impacts resulting from construction and implementation of an alternative and the reliability of the available mitigation measures during implementation in preventing or reducing the potential impacts	■ Excavation of contaminated soils could pose potential adverse impacts through dispersion of dust. ■ Water- or chemical- based suppression would be used for controlling contaminated soils and dust during construction. ■ There could also be some impacts to the environment during implementation of the remedial action due to use of heavy construction and hauling equipment and use of offsite borrow. Use of fuel efficient and low emission equipment and careful selection and reclamation of borrow areas after use could mitigate these impacts. ■ Development of offsite borrow areas could adversely impact the environment. Mitigation measures could include selection of easily accessible borrow locations and reclamation of borrow areas after use.
Time until protection is achieved	■ The proposed remedial action could be implemented in approximately 1 year.

Table E-27. Implementability Evaluation Summary – Alternative 4

Evaluation Factors for Implementability		Evaluation Summary
Technical feasibility	Technical difficulties and unknowns associated with the construction and operation of a technology	■ Excavation and backfilling around homes or structures, trees, subsurface utilities, and roads may be challenging at specific locations. ■ Institutional controls may be more difficult to implement and reliably operate, especially for residential properties, due to various types of ownership, types of land use, and levels of occupancy. However, they would only be needed on a limited number of properties where contaminated soils would be left in place under or adjacent to structures or obstructions. ■ Logistics for working with large number of heavy equipment and trucks at site could be difficult to manage. ■ Large volumes of contaminated soils would need to be transported to the mine waste joint repository for disposal. ■ Total volume to be excavated and transported for disposal would be approximately 29,904 cy. ■ Approximately 1,278 truck loads would be required to haul the whole excavated volume of contaminated soils.
	Reliability of the technology, focusing on technical problems that will lead to schedule delays	■ Excavation and backfilling around homes or structures, trees, subsurface utilities, and roads may be challenging at specific locations. ■ Placement of contaminated soils within the repository would be coordinated under OU3. ■ Suitable uncontaminated materials for backfilling excavation areas are not available on site. Soil backfill materials would be required from offsite which might delay the schedule. ■ Monitoring, implementation, and enforcement of institutional controls may be more difficult, especially for properties due to various types of ownership, types of land use, and levels of occupancy. However, they would only be needed on a limited number of properties where contaminated soils would be left in place under or adjacent to structures or obstructions. ■ Access permission at residential and commercial properties for implementing the remedial alternative is not currently available, but could be obtained. This could cause some delays in the schedule. ■ Disposal of excavated contaminated soils at the mine waste joint repository is relatively straightforward. However, final acceptance of the contaminated soils would be determined by EPA and DEQ. ■ Special management procedures may be required for disposal at the mine waste joint repository.
	Ease of undertaking additional remedial actions, including what, if any, future remedial actions would be needed and the difficulty to implement additional remedial actions	■ Future excavation and disposal of contaminated soils could be implemented. ■ Additional remedial action may be more difficult to implement on residential and commercial properties due to various types of ownership, types of land use, and levels of occupancy.
	Ability to monitor the effectiveness of the remedy, including an evaluation of risks of exposure should monitoring be insufficient to detect a system failure	■ Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. ■ Maintenance of institutional controls may be more difficult for residential properties due to various types of ownership, types of land use, and levels of occupancy.

Table E-27. Implementability Evaluation Summary – Alternative 4 (continued)

Evaluation Factors for Implementability		Evaluation Summary
Administrative feasibility	Activities needed to coordinate with other offices and agencies	■ Regulatory approval needed to excavate and transport contaminated soils should be obtainable. ■ Access permission at residential and commercial properties for implementing the remedial action may not be currently available, but could be obtained. ■ Regulatory approvals for institutional controls should be obtainable. However, some difficulties may be encountered with regard to types of restrictions.
	The ability and time required to obtain any necessary approvals and permits from other agencies (for offsite actions)	■ Regulatory and facility approval for disposal at mine waste joint repository should be obtainable. However, final acceptance of the contaminated soils would be determined by EPA and DEQ. ■ Development of offsite borrow sources for backfill would require coordination and approval from the affected agency.
Availability of services and materials	Availability of adequate offsite treatment, storage capacity, and disposal capacity and services	■ The proposed mine waste joint repository (Wood Gulch Repository), located just north of Superior, will be constructed under OU3 and should have sufficient capacity to accept contaminated soils for disposal. ■ Generally, Bevill exempt mining waste could be accepted at the mine waste joint repository without prior treatment. However, final acceptance of the contaminated soils at the mine waste joint repository would be determined by EPA and DEQ. ■ Total volume of contaminated soils for disposal would be approximately 29,904 cy. ■ Approximately 1,278 truck loads would be required to haul contaminated soils to the mine waste joint repository.
	Availability of necessary equipment and specialists and provisions to ensure any necessary additional resources	■ Suitable backfill materials would be required from offsite sources. ■ Total volume of suitable soil cover and backfill material required would be approximately 16,902 cy. ■ Approximately 845 truck loads would be required to haul in the suitable material. ■ Labor, equipment, and materials for contaminated soils excavation and clean soil backfilling are available. ■ Materials, equipment, and labor resources used for monitoring during construction are easily obtainable. ■ Technical equipment and specialists are available for implementation of institutional controls and monitoring.
	Availability of services and materials plus the potential for obtaining competitive bids, which is particularly important for innovative technologies	
	Availability of prospective technologies	

Table E-28. Cost Evaluation Summary – Alternative 4

Evaluation Factors for Cost	Approximate Cost (Dollars)
Total capital cost	$1,369,000
Total annual O&M cost	None
Total periodic cost	$490,000
Total cost (excluding present value discounting)	$1,859,000
Total present value cost	$1,496,000

Note: Total costs are for the assumed period of evaluation (Years 0 through 49). Costs are rounded to the nearest $1,000.

Alternative 5

Excavation of Contaminated Soils, Treatment, and Disposal of Treated Soils at the Mine Waste Joint Repository

Table E-29. Evaluation Summary for Overall Protection of Human Health and the Environment – Alternative 5

Evaluation Factors for Overall Protection of Human Health and the Environment	Evaluation Summary
Adequate protection of human health and the environment (short- and long-term) from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site	■ The majority of contaminated soils would be addressed through excavation and disposal at the mine waste joint repository (Wood Gulch Repository) constructed under OU3. ■ Excavation and disposal of contaminated soils at the mine waste joint repository would eliminate exposure of people to contaminated soils. Migration of contamination to air, surface water, and groundwater would be reduced or eliminated. ■ Treatment of contaminated soils by solidification/stabilization would provide an extra level of protection of human health and the environment over untreated contaminated soils. Stabilization/solidification would prevent leaching of contamination to surrounding soils and groundwater when treated soils are disposed of at the mine waste joint repository. ■ Excavation, transportation, and disposal of contaminated soils would pose short-term risks to workers, the community, and the environment. These risks would be mitigated through dust suppression (water- or chemical-based) and proper handling and transportation procedures during implementation. ■ Land use controls (a combination of institutional controls, community awareness activities, and access controls) would be used at a limited number of properties to restrict access to and use of contaminated soil left in place under or adjacent to structures or obstructions. ■ Monitoring would be performed during construction to ensure protectiveness of the remedy. ■ PRAOs would be addressed through excavation and disposal at the mine waste joint repository coupled with land use controls and monitoring on a limited number of properties.

Table E-30. Evaluation Summary for Compliance with ARARs – Alternative 5

Evaluation Factors for Compliance with ARARs	Evaluation Summary
Compliance with chemical-specific ARARs	■ Contaminated soils excavated and disposed of at the mine waste joint repository would physically address exposure to contaminants, thus meeting chemical-specific ARARs.
Compliance with location-specific ARARs	■ Location-specific ARARs for the remedy would be addressed during implementation of the remedial action.
Compliance with action-specific ARARs	■ Action-specific ARARs for the remedy would be addressed during implementation of the remedial action.

Table E-31. Evaluation Summary for Long-Term Effectiveness and Permanence – Alternative 5

Evaluation Factors for Long-Term Effectiveness and Permanence	Evaluation Summary
Magnitude of residual risk remaining from untreated waste or treatment residuals remaining at the conclusion of the remedial activities	■ The majority of contaminated surface soils would be excavated. The total area excavated under this alternative would be approximately 6 acres. ■ Contaminated soil may be left in place at a limited number of properties under or adjacent to structures or obstructions. However, exposure to these contaminated soils would be addressed through land use controls. ■ Protection to human health and the environment is partially dependent on legal enforcement and people's adherence to institutional controls. ■ Monitoring would be performed during construction to ensure protectiveness of the remedy. ■ Large portions of OU1 would be remediated to allow for unlimited use and unrestricted exposure under the current and potential future land uses.
Adequacy and reliability of controls that are used to manage treatment residuals and untreated waste remaining at the site.	■ Long-term effectiveness and permanence for properties containing contaminated soils would be addressed through excavation and disposal at the mine waste joint repository, and backfilling with clean soil. ■ Land use controls at a limited number of properties leaving contaminated soil in place after excavation would require maintenance and monitoring in perpetuity. Even with maintenance and monitoring, long-term effectiveness cannot be ensured since people could ignore them, especially at residential properties. ■ Legal enforcement of institutional controls may be necessary. ■ Disposal of contaminated soils at the mine waste joint repository would provide long-term effectiveness and permanence, assuming the repository receives adequate O&M. ■ Treatment of contaminated soils would provide greater protection against contaminant leaching, thus providing greater long-term effectiveness and permanence in case the repository does not receive adequate O&M.

Table E-32. Evaluation Summary for Reduction of Toxicity, Mobility, or Volume through Treatment – Alternative 5

Evaluation Factors for Reduction of Toxicity, Mobility, or Volume through Treatment	Evaluation Summary
The treatment processes, the alternative uses, and materials they will treat	■ Generally, Bevill exempt mining waste could be accepted at the mine waste joint repository without prior treatment. However, final acceptance of the contaminated soils at the mine waste joint repository would be determined by EPA and DEQ. ■ The contaminated soils under this alternative would be treated by solidification/stabilization prior to disposal. The treatment of contaminated soils prior to disposal in the mine waste joint repository would provide extra protection from leaching of contamination to surrounding soils and groundwater. ■ Stabilization bench testing during the 2002 TCRA showed that stabilization treatment reduced lead and arsenic TCLP values to well below TCLP standards, significantly reducing the mobility of lead and arsenic. ■ Although stabilization bench testing did not evaluate antimony, based on literature research it is expected that mobility of antimony would be reduced to a similar degree as arsenic. ■ Solidification/stabilization treatment of metal contaminated soils is shown to provide a long term treatment solution. ■ The statutory preference for treatment as a principal element of the remedial action would be met.
The amount of hazardous substances, pollutants, or contaminants that will be destroyed or treated, including how the principal threat(s) will be addressed	
The degree of expected reduction in toxicity, mobility, or volume of the waste due to treatment	
The degree to which the treatment is irreversible	
The type and quantity of residuals that will remain following treatment, considering the persistence, toxicity, mobility, and propensity to bioaccumulate such hazardous substances and their constituents	
Whether the alternative would satisfy the statutory preference for treatment as a principal element of the remedial action	

Table E-33. Short-Term Effectiveness Evaluation Summary – Alternative 5

Evaluation Factors for Short-Term Effectiveness	Evaluation Summary
Short-term risks that might be posed to the community during implementation of an alternative	■ Residents of residential properties could be exposed to contaminated soils during implementation of the remedial action. ■ Excavation of contaminated soils could pose short-term risks to the community living close to contaminated soils from inhalation of dust. Protective measures, such as dust suppression (water- or chemical-based) would be used to address those risks. ■ Transportation and disposal of contaminated soils would pose short-term risks to the community. These risks would be mitigated through source control, such as dust suppression (water- or chemical-based) and proper handling and transportation procedures during implementation. ■ Land use controls could be implemented shortly after construction to protect the community and the environment from contaminated soils left in place at a limited number of properties. ■ Work area restrictions (such as exclusion zones) would be implemented during construction to reduce short-term exposure risks to the community. ■ There would be additional impacts to the community under this alternative, as truck traffic would be required for disposal of contaminated soils at the mine waste joint repository as well as transport of backfill soils and stabilization agents.
Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures	■ Excavation and disposal of contaminated soils and backfilling of excavations could pose short-term risks to workers. ■ Protective measures, such as dust suppression (water- or chemical-based) and PPE would be used to address those risks. ■ Work area restrictions (such as exclusion zones) would be implemented during construction to reduce short-term exposure risks to workers. ■ There would be additional impacts to workers under this alternative, as truck traffic would be required for disposal of contaminated soils at the mine waste joint repository as well as transport of backfill soils and stabilization agents. ■ Treatment of contaminated soils could also increase short-term exposure risks to workers. These risks could be addressed by engineered controls (blowers, filters etc.) at the treatment location. ■ Other potential impacts could be from safety hazards during remedial implementation, such as falls, electrical hazards, and mechanical hazards.
Potential adverse environmental impacts resulting from construction and implementation of an alternative and the reliability of the available mitigation measures during implementation in preventing or reducing the potential impacts	■ Excavation of contaminated soils could pose potential adverse impacts through dispersion of dust. ■ Water- or chemical- based suppression would be used for controlling contaminated soils and dust during construction. ■ Treatment of contaminated soils could also increase impacts to the environment. These risks could be addressed by engineered controls (blowers, filters etc.) at the treatment location. ■ There could also be some impacts to the environment during implementation of the remedial action due to use of heavy construction and hauling equipment. Use of fuel efficient and low emission equipment could mitigate these impacts. ■ Development of offsite borrow areas could adversely impact the environment. Mitigation measures could include selection of easily accessible borrow locations and reclamation of borrow areas after use.
Time until protection is achieved	■ The proposed remedial action could be implemented in approximately 1 year.

Table E-34. Implementability Evaluation Summary – Alternative 5

Evaluation Factors for Implementability		Evaluation Summary
Technical feasibility	Technical difficulties and unknowns associated with the construction and operation of a technology	■ Excavation and backfilling around homes or structures, trees, subsurface utilities, and roads may be challenging at specific locations. ■ Institutional controls may be more difficult to implement and reliably operate, especially for residential properties, due to various types of ownership, types of land use, and levels of occupancy. However, they would only be needed on a limited number of properties where contaminated soils would be left in place under or adjacent to structures or obstructions. ■ Logistics for working with large number of heavy equipment and trucks at site could be difficult to manage. ■ Large volumes of contaminated soils would need to be transported to the mine waste joint repository for disposal. ■ Total volume to be excavated and transported for disposal would be approximately 29,904 cy. ■ Approximately 1,278 truck loads would be required to haul the whole excavated volume of contaminated soils. ■ Treatment of contaminated soils using stabilization has been previously implemented at the site.
	Reliability of the technology, focusing on technical problems that will lead to schedule delays	■ Excavation and backfilling around homes or structures, trees, subsurface utilities, and roads may be challenging at specific locations. ■ Placement of treated soils within the repository would be coordinated under OU3. ■ Suitable uncontaminated materials for backfilling excavation areas are not available on site. Soil backfill materials would be required from offsite which might delay the schedule. ■ Monitoring, implementation, and enforcement of institutional controls may be more difficult, especially for properties due to various types of ownership, types of land use, and levels of occupancy. However, they would only be needed on a limited number of properties where contaminated soils would be left in place under or adjacent to structures or obstructions. ■ Access permission at residential and commercial properties for implementing the remedial alternative is not currently available, but could be obtained. This could cause some delays in the schedule. ■ Treatment of contaminated soils using stabilization/solidification is relatively straightforward but will require logistical coordination with delivery of contaminated soil at the mine waste joint repository. ■ Disposal of excavated contaminated soils at the mine waste joint repository is relatively straightforward. However, final acceptance of the contaminated soils would be determined by EPA and DEQ. ■ Special management procedures may be required for disposal at the mine waste joint repository.
	Ease of undertaking additional remedial actions, including what, if any, future remedial actions would be needed and the difficulty to implement additional remedial actions	■ Future excavation, treatment, and disposal of contaminated soils could be implemented. ■ Additional remedial action may be more difficult to implement on residential and commercial properties due to various types of ownership, types of land use, and levels of occupancy.

Table E-34. Implementability Evaluation Summary – Alternative 5 (continued)

Evaluation Factors for Implementability		Evaluation Summary
Technical feasibility (continued)	Ability to monitor the effectiveness of the remedy, including an evaluation of risks of exposure should monitoring be insufficient to detect a system failure	■ Confirmation that soils remaining within excavations are below RGs will be determined using visual inspections coupled with sample collection and analysis. ■ Confirmation that soils treated are below PRGs will be determined using sample collection and analysis. ■ Maintenance of institutional controls may be more difficult for residential properties due to various types of ownership, types of land use, and levels of occupancy.
Administrative feasibility	Activities needed to coordinate with other offices and agencies	■ Regulatory approval needed to excavate and transport contaminated soils should be obtainable. ■ Access permission at residential and commercial properties for implementing the remedial action may not be currently available, but could be obtained. ■ Regulatory approvals for institutional controls should be obtainable. However, some difficulties may be encountered with regard to types of restrictions.
	The ability and time required to obtain any necessary approvals and permits from other agencies (for offsite actions)	■ Regulatory approval needed to initiate treatment of contaminated soils should be obtainable. ■ Regulatory and facility approval for disposal at mine waste joint repository should be obtainable. However, final acceptance of the treated contaminated soils would be determined by EPA and DEQ. ■ Development of offsite borrow sources for backfill would require coordination and approval from the affected agency.
Availability of services and materials	Availability of adequate offsite treatment, storage capacity, and disposal capacity and services	■ Treatment services for stabilization of contaminated soils should be available regionally since they have been previously used at OU1. ■ The proposed mine waste joint repository (Wood Gulch Repository), located just north of Superior, will be constructed under OU3 and should have sufficient capacity to accept contaminated soils for disposal. ■ Generally, Bevill exempt mining waste could be accepted at the mine waste joint repository without prior treatment. However, final acceptance of the contaminated soils at the mine waste joint repository would be determined by EPA and DEQ. ■ Total volume of contaminated soils for disposal would be approximately 29,904 cy. ■ Approximately 1,278 truck loads would be required to haul contaminated soils to the mine waste joint repository.
	Availability of necessary equipment and specialists and provisions to ensure any necessary additional resources	■ Suitable backfill materials would be required from offsite sources. ■ Total volume of suitable soil cover and backfill material required would be approximately 16,902 cy. ■ Approximately 845 truck loads would be required to haul in the suitable material. ■ Labor, equipment, and materials for contaminated soils excavation and clean soil backfilling are available. ■ Labor, equipment, and materials for treatment of contaminated soils using stabilization/solidification is limited locally but should be available regionally. ■ Materials, equipment, and labor resources used for monitoring during construction are easily obtainable. ■ Technical equipment and specialists are available for implementation of institutional controls and monitoring.
	Availability of services and materials plus the potential for obtaining competitive bids, which is particularly important for innovative technologies	
	Availability of prospective technologies	

Table E-35. Cost Evaluation Summary – Alternative 5

Evaluation Factors for Cost	Approximate Cost (Dollars)
Total capital cost	$2,048,000
Total annual O&M cost	None
Total periodic cost	$490,000
Total cost (excluding present value discounting)	$2,538,000
Total present value cost	$2,174,000

Note: Total costs are for the assumed period of evaluation (Years 0 through 49). Costs are rounded to the nearest $1,000.

Appendix F

Detailed Alternative Analysis Cost Information

Flat Creek IMM Superfund Site

OU1 Feasibility Study Report

September 9, 2011

The cost spreadsheets included in this appendix were developed in accordance with EPA 540-R-00-002 (OSWER 9355.0-75) July 2000.

These costs should be used to compare alternative relative costs. Costs for project management, remedial design, and construction management were determined as percentages of capital cost per the guidance. Costs for these work items may not reflect costs for implementation. These costs are determined based on specific client requirements during implementation.

Present Value and Cost Estimate Summary

Alternative 1
No Further Action

TABLE PV-1

PRESENT VALUE ANALYSIS

Alternative 1
No Further Action

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Year[1]	Capital Costs[2]	Annual O&M Costs	Periodic Costs	Total Annual Expenditure[3]	Discount Factor (7.0%)	Present Value[4]
0	$0	$0	$0	$0	1.0000	$0
1	$0	$0	$0	$0	0.9346	$0
2	$0	$0	$0	$0	0.8734	$0
3	$0	$0	$0	$0	0.8163	$0
4	$0	$0	$48,000	$48,000	0.7629	$36,619
5	$0	$0	$0	$0	0.7130	$0
6	$0	$0	$0	$0	0.6663	$0
7	$0	$0	$0	$0	0.6227	$0
8	$0	$0	$0	$0	0.5820	$0
9	$0	$0	$48,000	$48,000	0.5439	$26,107
10	$0	$0	$0	$0	0.5083	$0
11	$0	$0	$0	$0	0.4751	$0
12	$0	$0	$0	$0	0.4440	$0
13	$0	$0	$0	$0	0.4150	$0
14	$0	$0	$48,000	$48,000	0.3878	$18,614
15	$0	$0	$0	$0	0.3624	$0
16	$0	$0	$0	$0	0.3387	$0
17	$0	$0	$0	$0	0.3166	$0
18	$0	$0	$0	$0	0.2959	$0
19	$0	$0	$48,000	$48,000	0.2765	$13,272
20	$0	$0	$0	$0	0.2584	$0
21	$0	$0	$0	$0	0.2415	$0
22	$0	$0	$0	$0	0.2257	$0
23	$0	$0	$0	$0	0.2109	$0
24	$0	$0	$48,000	$48,000	0.1971	$9,461
25	$0	$0	$0	$0	0.1842	$0
26	$0	$0	$0	$0	0.1722	$0
27	$0	$0	$0	$0	0.1609	$0
28	$0	$0	$0	$0	0.1504	$0
29	$0	$0	$48,000	$48,000	0.1406	$6,749
30	$0	$0	$0	$0	0.1314	$0
31	$0	$0	$0	$0	0.1228	$0
32	$0	$0	$0	$0	0.1147	$0
33	$0	$0	$0	$0	0.1072	$0
34	$0	$0	$48,000	$48,000	0.1002	$4,810
35	$0	$0	$0	$0	0.0937	$0
36	$0	$0	$0	$0	0.0875	$0
37	$0	$0	$0	$0	0.0818	$0
38	$0	$0	$0	$0	0.0765	$0
39	$0	$0	$48,000	$48,000	0.0715	$3,432
40	$0	$0	$0	$0	0.0668	$0
41	$0	$0	$0	$0	0.0624	$0
42	$0	$0	$0	$0	0.0583	$0
43	$0	$0	$0	$0	0.0545	$0
44	$0	$0	$48,000	$48,000	0.0509	$2,443
45	$0	$0	$0	$0	0.0476	$0
46	$0	$0	$0	$0	0.0445	$0
47	$0	$0	$0	$0	0.0416	$0
48	$0	$0	$0	$0	0.0389	$0
49	$0	$0	$48,000	$48,000	0.0363	$1,742
TOTALS:	$0	$0	$480,000	**$480,000**		$123,249
TOTAL PRESENT VALUE OF ALTERNATIVE 1 [5]						**$123,000**

Notes:

[1] The alternative is expected to require cost expenditures for perpituity since soils would have contaminant concentrations above RGs that would allow for unlimited use and unrestricted exposure under the current and potential future land uses. However the period of analysis was assumed to be 50 years (Years 0 through 49) because the increase of present value cost after Year 49 due to small periodic expenditures is minimal relative to the accuracy range of the estimate.

[2] Capital costs, for purposes of this analysis, are assumed to be distributed as indicated on Table CS-1.

[3] Total annual expenditure is the total cost per year with no discounting.

[4] Present value is the total cost per year including a 7.0% discount factor for that year. See Table PV-ADRFT for details.

[5] Total present value is rounded to the nearest $1,000. Inflation and depreciation are excluded from the present value cost.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

TABLE PV-ADRFT

PRESENT VALUE ANALYSIS

Annual Discount Rate Factors Table

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Discount Rate (Percent): 7.0

Year	Discount Factor[1,2]	Year	Discount Factor[1,2]
0	1.0000	26	0.1722
1	0.9346	27	0.1609
2	0.8734	28	0.1504
3	0.8163	29	0.1406
4	0.7629	30	0.1314
5	0.7130	31	0.1228
6	0.6663	32	0.1147
7	0.6227	33	0.1072
8	0.5820	34	0.1002
9	0.5439	35	0.0937
10	0.5083	36	0.0875
11	0.4751	37	0.0818
12	0.4440	38	0.0765
13	0.4150	39	0.0715
14	0.3878	40	0.0668
15	0.3624	41	0.0624
16	0.3387	42	0.0583
17	0.3166	43	0.0545
18	0.2959	44	0.0509
19	0.2765	45	0.0476
20	0.2584	46	0.0445
21	0.2415	47	0.0416
22	0.2257	48	0.0389
23	0.2109	49	0.0363
24	0.1971		
25	0.1842		

Notes:

[1] Annual discount factors were calculated using the formulas and guidance presented in Section 4.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.

[2] The real discount rate of 7.0% was obtained from "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000, Page 4-5.

TABLE CS-1

Alternative 1
No Further Action

COST ESTIMATE SUMMARY

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: No new remedial action activities would be initiated at the site to address remaining contaminated soils or otherwise mitigate the associated risks to human health and the environment. A "no action"/"no further action" alternative is required by the NCP to provide an environmental baseline against which impacts of the various remedial alternatives can be compared. Five-year site reviews would be performed as required by the NCP to evaluate whether adequate protection of human health and the environment is provided since contaminated soils would remain at the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses. Community awareness activities would be performed concurrent with five-year site reviews to inform the public about hazards associated with contamination at OU1. Monitoring (consisting primarily of non-intrusive visual inspections) would be performed as necessary to complete the five-year site reviews.

CAPITAL COSTS

TOTAL CAPITAL COST	**$0**	No capital costs are assumed.

ANNUAL OPERATION AND MAINTENANCE (O&M) COSTS

TOTAL ANNUAL O&M COST	**$0**	No annual O&M costs are assumed.

PERIODIC COSTS (Years 4, 9, 14, 19, 24, 29, 34, 39, 44, and 49)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Five-Year Site Reviews	CW1-1	1	LS	$26,705	$26,705	Includes five-year site inspection and report; assumed to be statutory review that occurs every five years after initiation of remedial action (Year 0).
Community Awareness Activities	CW1-2	1	LS	$5,528	$5,528	
SUBTOTAL					$32,233	
Contingency (Scope and Bid)		20%			$6,447	10% Scope, 10% Bid (Low end of recommended range in EPA 540-R-00-002).
SUBTOTAL					$38,680	
Project Management		10%			$3,868	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support		15%			$5,802	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$48,350	
TOTAL PERIODIC COST					**$48,000**	Total capital cost is rounded to the nearest $1,000.

Notes:
Percentages used for indirect costs are based on guidance from Section 5.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 540-R-00-002 (July 2000).
Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

Abbreviations:
EA Each
QTY Quantity
LS Lump Sum

Present Value and Cost Estimate Summary

Alternative 2
In-Place Capping of Contaminated Soils

TABLE PV-2

PRESENT VALUE ANALYSIS

Alternative 2
In-Place Capping of Contaminated Soils

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Year[1]	Capital Costs (Institutional Controls)[2]	Capital Costs (Earthwork)[2]	Annual O&M Costs	Periodic Costs	Total Annual Expenditure[3]	Discount Factor (7.0%)	Present Value[4]
0	$75,000	$822,000	$0	$0	$897,000	1.0000	$897,000
1	$0	$0	$16,000	$0	$16,000	0.9346	$14,954
2	$0	$0	$16,000	$0	$16,000	0.8734	$13,974
3	$0	$0	$16,000	$0	$16,000	0.8163	$13,061
4	$0	$0	$16,000	$68,000	$84,000	0.7629	$64,084
5	$0	$0	$16,000	$0	$16,000	0.7130	$11,408
6	$0	$0	$16,000	$0	$16,000	0.6663	$10,661
7	$0	$0	$16,000	$0	$16,000	0.6227	$9,963
8	$0	$0	$16,000	$0	$16,000	0.5820	$9,312
9	$0	$0	$16,000	$68,000	$84,000	0.5439	$45,688
10	$0	$0	$16,000	$0	$16,000	0.5083	$8,133
11	$0	$0	$16,000	$0	$16,000	0.4751	$7,602
12	$0	$0	$16,000	$0	$16,000	0.4440	$7,104
13	$0	$0	$16,000	$0	$16,000	0.4150	$6,640
14	$0	$0	$16,000	$68,000	$84,000	0.3878	$32,575
15	$0	$0	$16,000	$0	$16,000	0.3624	$5,798
16	$0	$0	$16,000	$0	$16,000	0.3387	$5,419
17	$0	$0	$16,000	$0	$16,000	0.3166	$5,066
18	$0	$0	$16,000	$0	$16,000	0.2959	$4,734
19	$0	$0	$16,000	$68,000	$84,000	0.2765	$23,226
20	$0	$0	$16,000	$0	$16,000	0.2584	$4,134
21	$0	$0	$16,000	$0	$16,000	0.2415	$3,864
22	$0	$0	$16,000	$0	$16,000	0.2257	$3,611
23	$0	$0	$16,000	$0	$16,000	0.2109	$3,374
24	$0	$0	$16,000	$68,000	$84,000	0.1971	$16,556
25	$0	$0	$16,000	$0	$16,000	0.1842	$2,947
26	$0	$0	$16,000	$0	$16,000	0.1722	$2,755
27	$0	$0	$16,000	$0	$16,000	0.1609	$2,574
28	$0	$0	$16,000	$0	$16,000	0.1504	$2,406
29	$0	$0	$16,000	$68,000	$84,000	0.1406	$11,810
30	$0	$0	$16,000	$0	$16,000	0.1314	$2,102
31	$0	$0	$16,000	$0	$16,000	0.1228	$1,965
32	$0	$0	$16,000	$0	$16,000	0.1147	$1,835
33	$0	$0	$16,000	$0	$16,000	0.1072	$1,715
34	$0	$0	$16,000	$68,000	$84,000	0.1002	$8,417
35	$0	$0	$16,000	$0	$16,000	0.0937	$1,499
36	$0	$0	$16,000	$0	$16,000	0.0875	$1,400
37	$0	$0	$16,000	$0	$16,000	0.0818	$1,309
38	$0	$0	$16,000	$0	$16,000	0.0765	$1,224
39	$0	$0	$16,000	$68,000	$84,000	0.0715	$6,006
40	$0	$0	$16,000	$0	$16,000	0.0668	$1,069
41	$0	$0	$16,000	$0	$16,000	0.0624	$998
42	$0	$0	$16,000	$0	$16,000	0.0583	$933
43	$0	$0	$16,000	$0	$16,000	0.0545	$872
44	$0	$0	$16,000	$68,000	$84,000	0.0509	$4,276
45	$0	$0	$16,000	$0	$16,000	0.0476	$762
46	$0	$0	$16,000	$0	$16,000	0.0445	$712
47	$0	$0	$16,000	$0	$16,000	0.0416	$666
48	$0	$0	$16,000	$0	$16,000	0.0389	$622
49	$0	$0	$16,000	$68,000	$84,000	0.0363	$3,049
TOTALS:	$75,000	$822,000	$784,000	$680,000	$2,361,000		$1,291,864
TOTAL PRESENT VALUE OF ALTERNATIVE 2 [5]							**$1,292,000**

Notes:

[1] The alternative is expected to require cost expenditures for perpituity since soils under covers and structures would have contaminant concentrations above RGs that would allow for unlimited use and unrestricted exposure under the current and potential future land uses. However the period of analysis was assumed to be 50 years (Years 0 through 49) because the increase of present value cost after Year 49 due to small annual and periodic expenditures is minimal relative to the accuracy range of the estimate.

[2] Capital costs, for purposes of this analysis, are assumed to be distributed as indicated on Table CS-2.

[3] Total annual expenditure is the total cost per year with no discounting.

[4] Present value is the total cost per year including a 7.0% discount factor for that year. See Table PV-ADRFT for details.

[5] Total present value is rounded to the nearest $1,000. Inflation and depreciation are excluded from the present value cost.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

TABLE PV-ADRFT

PRESENT VALUE ANALYSIS

Annual Discount Rate Factors Table

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Discount Rate (Percent): 7.0

Year	Discount Factor[1,2]	Year	Discount Factor[1,2]
0	1.0000	26	0.1722
1	0.9346	27	0.1609
2	0.8734	28	0.1504
3	0.8163	29	0.1406
4	0.7629	30	0.1314
5	0.7130	31	0.1228
6	0.6663	32	0.1147
7	0.6227	33	0.1072
8	0.5820	34	0.1002
9	0.5439	35	0.0937
10	0.5083	36	0.0875
11	0.4751	37	0.0818
12	0.4440	38	0.0765
13	0.4150	39	0.0715
14	0.3878	40	0.0668
15	0.3624	41	0.0624
16	0.3387	42	0.0583
17	0.3166	43	0.0545
18	0.2959	44	0.0509
19	0.2765	45	0.0476
20	0.2584	46	0.0445
21	0.2415	47	0.0416
22	0.2257	48	0.0389
23	0.2109	49	0.0363
24	0.1971		
25	0.1842		

Notes:

[1] Annual discount factors were calculated using the formulas and guidance presented in Section 4.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.

[2] The real discount rate of 7.0% was obtained from "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000, Page 4-5.

TABLE CS-2

Alternative **2**

In-Place Capping of Contaminated Soils

COST ESTIMATE SUMMARY

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 2 includes in-place capping (covering) of contaminated soils on residential properties. The contaminated soils within the repository at the Mineral County Airport would also receive a permanent cover. Covers used to contain contaminated soils are assumed to be constructed from clean soil or rock that is transported from offsite borrow areas tested to ensure that contamination is not present. Land use controls would be implemented to protect and restrict use of covered areas, and provide awareness of risks from potential exposure to contaminated soils. Monitoring would consist of visual inspections to ensure that covers and land use controls are protective of human health and the environment. Maintenance of covers would be performed as necessary to maintain protectiveness. Five-year site reviews would be performed since contaminated soils under covers as well as under or adjacent to structures and obstructions would remain at properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Implementation of Institutional Controls	CW2-1	1	LS	$43,311	$43,311	
SUBTOTAL					$43,311	
Contingency (Scope and Bid)		20%			$8,662	10% Scope, 10% Bid (Low end of recommended range in EPA 540-R-00-002).
SUBTOTAL					$51,973	
Project Management		10%			$5,197	The high end of the recommended range in EPA 540-R-00-002 was used.
Remedial Design		20%			$10,395	The high end of the recommended range in EPA 540-R-00-002 was used.
Construction Management		15%			$7,796	The high end of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$75,361	
TOTAL CAPITAL COST					**$75,000**	Total capital cost is rounded to the nearest $1,000.

EARTHWORK CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Mobilization/Demobilization	CW2-7	1	LS	$19,464	$19,464	
Borrow Material Sampling	CW2-10	1	LS	$1,613	$1,613	
Cover Construction	CW2-5	1	LS	$386,701	$386,701	
Sod Establishment Over Soil Covers	CW2-6	1	LS	$86,827	$86,827	
Property Fixture Removal and Re-Installation	CW2-4	1	LS	$26,258	$26,258	
Surveying for Construction Control	CW2-8	1	LS	$8,759	$8,759	
Site Maintenance and Control During Construction	CW2-9	1	YR	$14,155	$14,155	
SUBTOTAL					$543,777	
Contingency (Scope and Bid)		20%			$108,755	10% Scope, 10% Bid (Low end of recommended range in EPA 540-R-00-002).
SUBTOTAL					$652,532	
Project Management		6%			$39,152	Middle value of the recommended range in EPA 540-R-00-002 was used.
Remedial Design		12%			$78,304	Middle value of the recommended range in EPA 540-R-00-002 was used.
Construction Management		8%			$52,203	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$822,191	
TOTAL CAPITAL COST					**$822,000**	Total capital cost is rounded to the nearest $1,000.

TABLE CS-2

Alternative **2**

In-Place Capping of Contaminated Soils

COST ESTIMATE SUMMARY

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 2 includes in-place capping (covering) of contaminated soils on residential properties. The contaminated soils within the repository at the Mineral County Airport would also receive a permanent cover. Covers used to contain contaminated soils are assumed to be constructed from clean soil or rock that is transported from offsite borrow areas tested to ensure that contamination is not present. Land use controls would be implemented to protect and restrict use of covered areas, and provide awareness of risks from potential exposure to contaminated soils. Monitoring would consist of visual inspections to ensure that covers and land use controls are protective of human health and the environment. Maintenance of covers would be performed as necessary to maintain protectiveness. Five-year site reviews would be performed since contaminated soils under covers as well as under or adjacent to structures and obstructions would remain at properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

ANNUAL OPERATIONS AND MAINTENANCE (O&M) COSTS (Years 1 through 49)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Cover Maintenance	CW2-3A	1	LS	$7,545	$7,545	
Annual Site Inspection	CW2-3B	1	LS	$2,952	$2,952	
SUBTOTAL					$10,497	
Contingency (Scope and Bid)		20%			$2,099	10% Scope, 10% Bid (Low end of recommended range in EPA 540-R-00-002).
SUBTOTAL					$12,596	
Project Management		10%			$1,260	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support		15%			$1,889	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$15,745	
TOTAL ANNUAL O&M COST					**$16,000**	Total O&M cost is rounded to the nearest $1,000.

PERIODIC COSTS (Years 4, 9, 14, 19, 24, 29, 34, 39, 44, and 49)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Five-Year Site Reviews	CW2-2	1	LS	$26,705	$26,705	Includes five-year site inspection and report; assumed to be statutory review that occurs every five years after initiation of remedial action (Year 0).
Community Awareness Activities	CW2-11	1	LS	$5,528	$5,528	
Institutional Controls Maintenance	CW2-12	1	LS	$13,126	$13,126	Includes reviewing and updating institutional controls.
SUBTOTAL					$45,359	
Contingency (Scope and Bid)		20%			$9,072	10% Scope, 10% Bid (Low end of recommended range in EPA 540-R-00-002).
SUBTOTAL					$54,431	
Project Management		10%			$5,443	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support		15%			$8,165	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$68,039	
TOTAL PERIODIC COST					**$68,000**	Total capital cost is rounded to the nearest $1,000.

Notes:

Percentages used for indirect costs are based on guidance from Section 5.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.
Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

Abbreviations:

EA Each
LS Lump Sum
QTY Quantity
YR Year

Present Value and Cost Estimate Summary

Alternative 3
Excavation and Disposal of Contaminated Soils at Licensed Solid Waste Facilities

TABLE PV-3

PRESENT VALUE ANALYSIS

Alternative 3

Excavation and Disposal of Contaminated Soils at Licensed Solid Waste Facilities

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Year[1]	Capital Costs (Institutional Controls)[2]	Capital Costs (Earthwork)[2]	Annual O&M Costs	Periodic Costs	Total Annual Expenditure[3]	Discount Factor (7.0%)	Present Value[4]
0	$15,000	$2,670,000	$0	$0	$2,685,000	1.0000	$2,685,000
1	$0	$0	$0	$0	$0	0.9346	$0
2	$0	$0	$0	$0	$0	0.8734	$0
3	$0	$0	$0	$0	$0	0.8163	$0
4	$0	$0	$0	$49,000	$49,000	0.7629	$37,382
5	$0	$0	$0	$0	$0	0.7130	$0
6	$0	$0	$0	$0	$0	0.6663	$0
7	$0	$0	$0	$0	$0	0.6227	$0
8	$0	$0	$0	$0	$0	0.5820	$0
9	$0	$0	$0	$49,000	$49,000	0.5439	$26,651
10	$0	$0	$0	$0	$0	0.5083	$0
11	$0	$0	$0	$0	$0	0.4751	$0
12	$0	$0	$0	$0	$0	0.4440	$0
13	$0	$0	$0	$0	$0	0.4150	$0
14	$0	$0	$0	$49,000	$49,000	0.3878	$19,002
15	$0	$0	$0	$0	$0	0.3624	$0
16	$0	$0	$0	$0	$0	0.3387	$0
17	$0	$0	$0	$0	$0	0.3166	$0
18	$0	$0	$0	$0	$0	0.2959	$0
19	$0	$0	$0	$49,000	$49,000	0.2765	$13,549
20	$0	$0	$0	$0	$0	0.2584	$0
21	$0	$0	$0	$0	$0	0.2415	$0
22	$0	$0	$0	$0	$0	0.2257	$0
23	$0	$0	$0	$0	$0	0.2109	$0
24	$0	$0	$0	$49,000	$49,000	0.1971	$9,658
25	$0	$0	$0	$0	$0	0.1842	$0
26	$0	$0	$0	$0	$0	0.1722	$0
27	$0	$0	$0	$0	$0	0.1609	$0
28	$0	$0	$0	$0	$0	0.1504	$0
29	$0	$0	$0	$49,000	$49,000	0.1406	$6,889
30	$0	$0	$0	$0	$0	0.1314	$0
31	$0	$0	$0	$0	$0	0.1228	$0
32	$0	$0	$0	$0	$0	0.1147	$0
33	$0	$0	$0	$0	$0	0.1072	$0
34	$0	$0	$0	$49,000	$49,000	0.1002	$4,910
35	$0	$0	$0	$0	$0	0.0937	$0
36	$0	$0	$0	$0	$0	0.0875	$0
37	$0	$0	$0	$0	$0	0.0818	$0
38	$0	$0	$0	$0	$0	0.0765	$0
39	$0	$0	$0	$49,000	$49,000	0.0715	$3,504
40	$0	$0	$0	$0	$0	0.0668	$0
41	$0	$0	$0	$0	$0	0.0624	$0
42	$0	$0	$0	$0	$0	0.0583	$0
43	$0	$0	$0	$0	$0	0.0545	$0
44	$0	$0	$0	$49,000	$49,000	0.0509	$2,494
45	$0	$0	$0	$0	$0	0.0476	$0
46	$0	$0	$0	$0	$0	0.0445	$0
47	$0	$0	$0	$0	$0	0.0416	$0
48	$0	$0	$0	$0	$0	0.0389	$0
49	$0	$0	$0	$49,000	$49,000	0.0363	$1,779
TOTALS:	$15,000	$2,670,000	$0	$490,000	$3,175,000		$2,810,818
TOTAL PRESENT VALUE OF ALTERNATIVE 3 [5]							**$2,811,000**

Notes:

[1] The alternative is expected to require cost expenditures for perpituity since soils left beneath structures could have contaminant concentrations above RGs that would not allow for unlimited use and unrestricted exposure under the current and potential future land uses. However the period of analysis was assumed to be 50 years (Years 0 through 49) because the increase of present value cost after Year 49 due to small periodic expenditures is minimal relative to the accuracy range of the estimate.

[2] Capital costs, for purposes of this analysis, are assumed to be distributed as indicated on Table CS-3.

[3] Total annual expenditure is the total cost per year with no discounting.

[4] Present value is the total cost per year including a 7.0% discount factor for that year. See Table PV-ADRFT for details.

[5] Total present value is rounded to the nearest $1,000. Inflation and depreciation are excluded from the present value cost.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

TABLE PV-ADRFT

PRESENT VALUE ANALYSIS

Annual Discount Rate Factors Table

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Discount Rate (Percent): 7.0

Year	Discount Factor[1,2]	Year	Discount Factor[1,2]
0	1.0000	26	0.1722
1	0.9346	27	0.1609
2	0.8734	28	0.1504
3	0.8163	29	0.1406
4	0.7629	30	0.1314
5	0.7130	31	0.1228
6	0.6663	32	0.1147
7	0.6227	33	0.1072
8	0.5820	34	0.1002
9	0.5439	35	0.0937
10	0.5083	36	0.0875
11	0.4751	37	0.0818
12	0.4440	38	0.0765
13	0.4150	39	0.0715
14	0.3878	40	0.0668
15	0.3624	41	0.0624
16	0.3387	42	0.0583
17	0.3166	43	0.0545
18	0.2959	44	0.0509
19	0.2765	45	0.0476
20	0.2584	46	0.0445
21	0.2415	47	0.0416
22	0.2257	48	0.0389
23	0.2109	49	0.0363
24	0.1971		
25	0.1842		

Notes:

[1] Annual discount factors were calculated using the formulas and guidance presented in Section 4.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.

[2] The real discount rate of 7.0% was obtained from "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000, Page 4-5.

TABLE CS-3

Alternative 3

COST ESTIMATE SUMMARY

Excavation and Disposal of Contaminated Soils at Licensed Solid Waste Facilities

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 3 includes excavation of contaminated soils on residential and commercial properties and within the repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Clean soil or rock would be used to backfill excavation areas to match the surface conditions that previously existed. Clean soil or rock is assumed to be transported from offsite borrow areas tested to ensure that contamination is not present. The backfill placed in yards would be covered with topsoil and revegetated. Excavated contaminated soils would be transported offsite for disposal at one or more existing licensed solid waste facilities. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Implementation of Institutional Controls	CW3-1	1	LS	$8,806	$8,806	
SUBTOTAL					$8,806	
Contingency (Scope and Bid)		20%			$1,761	10% Scope, 10% Bid (Low end of the recommended range).
SUBTOTAL					$10,567	
Project Management		10%			$1,057	The high end of the recommended range in EPA 540-R-00-002 was used.
Remedial Design		20%			$2,113	The high end of the recommended range in EPA 540-R-00-002 was used.
Construction Management		15%			$1,585	The high end of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$15,322	
TOTAL CAPITAL COST					**$15,000**	Total capital cost is rounded to the nearest $1,000.

EARTHWORK CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Mobilization/Demobilization	CW3-8	1	LS	$56,317	$56,317	
Contaminated Soil Excavation	CW3-4	1	LS	$76,466	$76,466	
Transportation and Disposal of Contaminated Soil at Existing Licensed Solid Waste Facilities	CW3-5	1	LS	$1,186,214	$1,186,214	
Confirmatory Soil Sampling Within Excavations	CW3-11	1	LS	$103,869	$103,869	
Borrow Material Sampling	CW3-2	1	LS	$1,502	$1,502	
Backfilling of Excavated Areas	CW3-6	1	LS	$303,814	$303,814	
Sod Establishment Over Backfilled Areas	CW3-7	1	LS	$86,827	$86,827	
Property Fixture Removal and Re-Installation	CW3-3	1	LS	$26,258	$26,258	
Surveying for Construction Control	CW3-9	1	LS	$8,759	$8,759	
Site Maintenance and Control During Construction	CW3-10	1	YR	$19,474	$19,474	
SUBTOTAL					$1,869,500	
Contingency (Scope and Bid)		20%			$373,900	10% Scope, 10% Bid (Low end of recommended range in EPA 540-R-00-002).
SUBTOTAL					$2,243,400	
Project Management		5%			$112,170	Middle value of the recommended range in EPA 540-R-00-002 was used.
Remedial Design		8%			$179,472	Middle value of the recommended range in EPA 540-R-00-002 was used.
Construction Management		6%			$134,604	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$2,669,646	
TOTAL CAPITAL COST					**$2,670,000**	Total capital cost is rounded to the nearest $1,000.

ANNUAL OPERATION AND MAINTENANCE (O&M) COSTS

TOTAL ANNUAL O&M COST	**$0**	No O&M costs are included; contaminated soil left in place is assumed to exist under structures.

TABLE CS-3

Alternative 3

COST ESTIMATE SUMMARY

Excavation and Disposal of Contaminated Soils at Licensed Solid Waste Facilities

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 3 includes excavation of contaminated soils on residential and commercial properties and within the repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Clean soil or rock would be used to backfill excavation areas to match the surface conditions that previously existed. Clean soil or rock is assumed to be transported from offsite borrow areas tested to ensure that contamination is not present. The backfill placed in yards would be covered with topsoil and revegetated. Excavated contaminated soils would be transported offsite for disposal at one or more existing licensed solid waste facilities. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

PERIODIC COSTS (Years 4, 9, 14, 19, 24, 29, 34, 39, 44, and 49)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Five-Year Site Reviews	CW3-12	1	LS	$26,098	$26,098	Includes five-year site inspection and report; assumed to be statutory review that occurs every five years after initiation of remedial action (Year 0).
Community Awareness Activities	CW3-13	1	LS	$5,528	$5,528	
Institutional Controls Maintenance	CW3-14	1	LS	$1,258	$1,258	Includes reviewing and updating institutional controls.
SUBTOTAL					$32,884	
Contingency (Scope and Bid)		20%			$6,577	10% Scope, 10% Bid (Low end of recommended range in EPA 540-R-00-002).
SUBTOTAL					$39,461	
Project Management		10%			$3,946	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support		15%			$5,919	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$49,326	
TOTAL PERIODIC COST					**$49,000**	Total capital cost is rounded to the nearest $1,000.

Notes:
Percentages used for indirect costs are based on guidance from Section 5.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.
Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

Abbreviations:
EA Each
LS Lump Sum
QTY Quantity
YR Year

Present Value and Cost Estimate Summary

Alternative 4
Excavation and Disposal of Contaminated Soils at the Mine Waste Joint Repository

TABLE PV-4

PRESENT VALUE ANALYSIS

Alternative 4

Excavation and Disposal of Contaminated Soils at the Mine Waste Joint Repository

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Year[1]	Capital Costs (Institutional Controls)[2]	Capital Costs (Earthwork)[2]	Annual O&M Costs	Periodic Costs	Total Annual Expenditure[3]	Discount Factor (7.0%)	Present Value[4]
0	$15,000	$1,354,000	$0	$0	$1,369,000	1.0000	$1,369,000
1	$0	$0	$0	$0	$0	0.9346	$0
2	$0	$0	$0	$0	$0	0.8734	$0
3	$0	$0	$0	$0	$0	0.8163	$0
4	$0	$0	$0	$49,000	$49,000	0.7629	$37,382
5	$0	$0	$0	$0	$0	0.7130	$0
6	$0	$0	$0	$0	$0	0.6663	$0
7	$0	$0	$0	$0	$0	0.6227	$0
8	$0	$0	$0	$0	$0	0.5820	$0
9	$0	$0	$0	$49,000	$49,000	0.5439	$26,651
10	$0	$0	$0	$0	$0	0.5083	$0
11	$0	$0	$0	$0	$0	0.4751	$0
12	$0	$0	$0	$0	$0	0.4440	$0
13	$0	$0	$0	$0	$0	0.4150	$0
14	$0	$0	$0	$49,000	$49,000	0.3878	$19,002
15	$0	$0	$0	$0	$0	0.3624	$0
16	$0	$0	$0	$0	$0	0.3387	$0
17	$0	$0	$0	$0	$0	0.3166	$0
18	$0	$0	$0	$0	$0	0.2959	$0
19	$0	$0	$0	$49,000	$49,000	0.2765	$13,549
20	$0	$0	$0	$0	$0	0.2584	$0
21	$0	$0	$0	$0	$0	0.2415	$0
22	$0	$0	$0	$0	$0	0.2257	$0
23	$0	$0	$0	$0	$0	0.2109	$0
24	$0	$0	$0	$49,000	$49,000	0.1971	$9,658
25	$0	$0	$0	$0	$0	0.1842	$0
26	$0	$0	$0	$0	$0	0.1722	$0
27	$0	$0	$0	$0	$0	0.1609	$0
28	$0	$0	$0	$0	$0	0.1504	$0
29	$0	$0	$0	$49,000	$49,000	0.1406	$6,889
30	$0	$0	$0	$0	$0	0.1314	$0
31	$0	$0	$0	$0	$0	0.1314	$0
32	$0	$0	$0	$0	$0	0.1228	$0
33	$0	$0	$0	$0	$0	0.1147	$0
34	$0	$0	$0	$49,000	$49,000	0.1072	$5,253
35	$0	$0	$0	$0	$0	0.1002	$0
36	$0	$0	$0	$0	$0	0.0937	$0
37	$0	$0	$0	$0	$0	0.0875	$0
38	$0	$0	$0	$0	$0	0.0818	$0
39	$0	$0	$0	$49,000	$49,000	0.0765	$3,749
40	$0	$0	$0	$0	$0	0.0715	$0
41	$0	$0	$0	$0	$0	0.0668	$0
42	$0	$0	$0	$0	$0	0.0624	$0
43	$0	$0	$0	$0	$0	0.0583	$0
44	$0	$0	$0	$49,000	$49,000	0.0545	$2,671
45	$0	$0	$0	$0	$0	0.0509	$0
46	$0	$0	$0	$0	$0	0.0476	$0
47	$0	$0	$0	$0	$0	0.0445	$0
48	$0	$0	$0	$0	$0	0.0416	$0
49	$0	$0	$0	$49,000	$49,000	0.0389	$1,906
TOTALS:	$15,000	$1,354,000	$0	$490,000	$1,859,000		$1,495,710
TOTAL PRESENT VALUE OF ALTERNATIVE 4 [5]							**$1,496,000**

Notes:

[1] The alternative is expected to require cost expenditures for perpituity since soils left beneath structures could have contaminant concentrations above RGs that would not allow for unlimited use and unrestricted exposure under the current and potential future land uses. However the period of analysis was assumed to be 50 years (Years 0 through 49) because the increase of present value cost after Year 49 due to small periodic expenditures is minimal relative to the accuracy range of the estimate.

[2] Capital costs, for purposes of this analysis, are assumed to be distributed as indicated on Table CS-4.

[3] Total annual expenditure is the total cost per year with no discounting.

[4] Present value is the total cost per year including a 7.0% discount factor for that year. See Table PV-ADRFT for details.

[5] Total present value is rounded to the nearest $1,000. Inflation and depreciation are excluded from the present value cost.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

TABLE PV-ADRFT

PRESENT VALUE ANALYSIS

Annual Discount Rate Factors Table

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Discount Rate (Percent): 7.0

Year	Discount Factor[1,2]	Year	Discount Factor[1,2]
0	1.0000	26	0.1722
1	0.9346	27	0.1609
2	0.8734	28	0.1504
3	0.8163	29	0.1406
4	0.7629	30	0.1314
5	0.7130	31	0.1228
6	0.6663	32	0.1147
7	0.6227	33	0.1072
8	0.5820	34	0.1002
9	0.5439	35	0.0937
10	0.5083	36	0.0875
11	0.4751	37	0.0818
12	0.4440	38	0.0765
13	0.4150	39	0.0715
14	0.3878	40	0.0668
15	0.3624	41	0.0624
16	0.3387	42	0.0583
17	0.3166	43	0.0545
18	0.2959	44	0.0509
19	0.2765	45	0.0476
20	0.2584	46	0.0445
21	0.2415	47	0.0416
22	0.2257	48	0.0389
23	0.2109	49	0.0363
24	0.1971		
25	0.1842		

Notes:

[1] Annual discount factors were calculated using the formulas and guidance presented in Section 4.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.

[2] The real discount rate of 7.0% was obtained from "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000, Page 4-5.

TABLE CS-4

Alternative 4

Excavation and Disposal of Contaminated Soils at the Mine Waste Joint Repository

COST ESTIMATE SUMMARY

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 4 includes excavation of contaminated soils on residential and commercial properties and within the repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Clean soil or rock would be used to backfill excavation areas to match the surface conditions that previously existed. Clean soil or rock is assumed to be transported from offsite borrow areas tested to ensure that contamination is not present. The backfill placed in yards would be covered with topsoil and revegetated. Excavated contaminated soils would be transported for disposal at a permanent mine waste joint-repository (Wood Gulch Repository) for mine waste rock and tailings associated with the Flat Creek/IMM Site. Wood Gulch Repository will be constructed, operated, and maintained as part of OU3. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Implementation of Institutional Controls	CW4-1	1	LS	$8,806	$8,806	
SUBTOTAL					$8,806	
Contingency (Scope and Bid)		20%			$1,761	10% Scope, 10% Bid (Low end of the recommended range).
SUBTOTAL					$10,567	
Project Management		10%			$1,057	The high end of the recommended range in EPA 540-R-00-002 was used.
Remedial Design		20%			$2,113	The high end of the recommended range in EPA 540-R-00-002 was used.
Construction Management		15%			$1,585	The high end of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$15,322	
TOTAL CAPITAL COST					**$15,000**	Total capital cost is rounded to the nearest $1,000.

EARTHWORK CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Mobilization/Demobilization	CW4-8	1	LS	$39,610	$39,610	
Contaminated Soil Excavation	CW4-4	1	LS	$76,466	$76,466	
Transportation and Disposal of Contaminated Soil at Mine Waste Joint Repository	CW4-5	1	LS	$229,197	$229,197	
Confirmatory Soil Sampling Within Excavations	CW4-11	1	LS	$103,869	$103,869	
Borrow Material Sampling	CW4-2	1	LS	$1,502	$1,502	
Backfilling of Excavated Areas	CW4-6	1	LS	$303,814	$303,814	
Sod Establishment Over Backfilled Areas	CW4-7	1	LS	$86,827	$86,827	
Property Fixture Removal and Re-Installation	CW4-3	1	LS	$26,258	$26,258	
Surveying for Construction Control	CW4-9	1	LS	$8,759	$8,759	
Site Maintenance and Control During Construction	CW4-10	1	YR	$19,474	$19,474	
SUBTOTAL					$895,776	
Contingency (Scope and Bid)		20%			$179,155	10% Scope, 10% Bid (Low end of recommended range in EPA 540-R-00-002).
SUBTOTAL					$1,074,931	
Project Management		6%			$64,496	Middle value of the recommended range in EPA 540-R-00-002 was used.
Remedial Design		12%			$128,992	Middle value of the recommended range in EPA 540-R-00-002 was used.
Construction Management		8%			$85,994	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$1,354,413	
TOTAL CAPITAL COST					**$1,354,000**	Total capital cost is rounded to the nearest $1,000.

ANNUAL OPERATION AND MAINTENANCE (O&M) COSTS

TOTAL ANNUAL O&M COST	**$0**	No O&M costs are included; contaminated soil left in place is assumed to exist under structures.

TABLE CS-4

Alternative 4

Excavation and Disposal of Contaminated Soils at the Mine Waste Joint Repository

COST ESTIMATE SUMMARY

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 4 includes excavation of contaminated soils on residential and commercial properties and within the repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Clean soil or rock would be used to backfill excavation areas to match the surface conditions that previously existed. Clean soil or rock is assumed to be transported from offsite borrow areas tested to ensure that contamination is not present. The backfill placed in yards would be covered with topsoil and revegetated. Excavated contaminated soils would be transported for disposal at a permanent mine waste joint-repository (Wood Gulch Repository) for mine waste rock and tailings associated with the Flat Creek/IMM Site. Wood Gulch Repository will be constructed, operated, and maintained as part of OU3. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

PERIODIC COSTS (Years 4, 9, 14, 19, 24, 29, 34, 39, 44, and 49)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Five-Year Site Reviews	CW4-12	1	LS	$26,098	$26,098	Includes five-year site inspection and report; assumed to be statutory review that occurs every five years after initiation of remedial action (Year 0).
Community Awareness Activities	CW4-13	1	LS	$5,528	$5,528	
Institutional Controls Maintenance	CW4-14	1	LS	$1,258	$1,258	Includes reviewing and updating institutional controls.
SUBTOTAL					$32,884	
Contingency (Scope and Bid)		20%			$6,577	10% Scope, 10% Bid (Low end of recommended range in EPA 540-R-00-002).
SUBTOTAL					$39,461	
Project Management		10%			$3,946	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support		15%			$5,919	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$49,326	
TOTAL PERIODIC COST					**$49,000**	Total capital cost is rounded to the nearest $1,000.

Notes:
Percentages used for indirect costs are based on guidance from Section 5.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.
Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

Abbreviations:

EA	Each
LS	Lump Sum
QTY	Quantity
YR	Year

Present Value and Cost Estimate Summary

Alternative 5
Excavation of Contaminated Soils, Treatment, and Disposal of Treated Soils at the Mine Waste Joint Repository

TABLE PV-5

PRESENT VALUE ANALYSIS

Alternative 5

Excavation of Contaminated Soils, Treatment, and Disposal of Treated Soils at the Mine Waste Joint Repository

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Year[1]	Capital Costs (Institutional Controls)[2]	Capital Costs (Earthwork)[2]	Annual O&M Costs	Periodic Costs	Total Annual Expenditure[3]	Discount Factor (7.0%)	Present Value[4]
0	$15,000	$2,033,000	$0	$0	$2,048,000	1.0000	$2,048,000
1	$0	$0	$0	$0	$0	0.9346	$0
2	$0	$0	$0	$0	$0	0.8734	$0
3	$0	$0	$0	$0	$0	0.8163	$0
4	$0	$0	$0	$49,000	$49,000	0.7629	$37,382
5	$0	$0	$0	$0	$0	0.7130	$0
6	$0	$0	$0	$0	$0	0.6663	$0
7	$0	$0	$0	$0	$0	0.6227	$0
8	$0	$0	$0	$0	$0	0.5820	$0
9	$0	$0	$0	$49,000	$49,000	0.5439	$26,651
10	$0	$0	$0	$0	$0	0.5083	$0
11	$0	$0	$0	$0	$0	0.4751	$0
12	$0	$0	$0	$0	$0	0.4440	$0
13	$0	$0	$0	$0	$0	0.4150	$0
14	$0	$0	$0	$49,000	$49,000	0.3878	$19,002
15	$0	$0	$0	$0	$0	0.3624	$0
16	$0	$0	$0	$0	$0	0.3387	$0
17	$0	$0	$0	$0	$0	0.3166	$0
18	$0	$0	$0	$0	$0	0.2959	$0
19	$0	$0	$0	$49,000	$49,000	0.2765	$13,549
20	$0	$0	$0	$0	$0	0.2584	$0
21	$0	$0	$0	$0	$0	0.2415	$0
22	$0	$0	$0	$0	$0	0.2257	$0
23	$0	$0	$0	$0	$0	0.2109	$0
24	$0	$0	$0	$49,000	$49,000	0.1971	$9,658
25	$0	$0	$0	$0	$0	0.1842	$0
26	$0	$0	$0	$0	$0	0.1722	$0
27	$0	$0	$0	$0	$0	0.1609	$0
28	$0	$0	$0	$0	$0	0.1504	$0
29	$0	$0	$0	$49,000	$49,000	0.1406	$6,889
30	$0	$0	$0	$0	$0	0.1314	$0
31	$0	$0	$0	$0	$0	0.1228	$0
32	$0	$0	$0	$0	$0	0.1147	$0
33	$0	$0	$0	$0	$0	0.1072	$0
34	$0	$0	$0	$49,000	$49,000	0.1002	$4,910
35	$0	$0	$0	$0	$0	0.0937	$0
36	$0	$0	$0	$0	$0	0.0875	$0
37	$0	$0	$0	$0	$0	0.0818	$0
38	$0	$0	$0	$0	$0	0.0765	$0
39	$0	$0	$0	$49,000	$49,000	0.0715	$3,504
40	$0	$0	$0	$0	$0	0.0668	$0
41	$0	$0	$0	$0	$0	0.0624	$0
42	$0	$0	$0	$0	$0	0.0583	$0
43	$0	$0	$0	$0	$0	0.0545	$0
44	$0	$0	$0	$49,000	$49,000	0.0509	$2,494
45	$0	$0	$0	$0	$0	0.0476	$0
46	$0	$0	$0	$0	$0	0.0445	$0
47	$0	$0	$0	$0	$0	0.0416	$0
48	$0	$0	$0	$0	$0	0.0389	$0
49	$0	$0	$0	$49,000	$49,000	0.0363	$1,779
TOTALS:	$15,000	$2,033,000	$0	$490,000	$2,538,000		$2,173,818
TOTAL PRESENT VALUE OF ALTERNATIVE 5 [5]							**$2,174,000**

Notes:

[1] The alternative is expected to require cost expenditures for perpituity since soils left beneath structures could have contaminant concentrations above RGs that would not allow for unlimited use and unrestricted exposure under the current and potential future land uses. However the period of analysis was assumed to be 50 years (Years 0 through 49) because the increase of present value cost after Year 49 due to small periodic expenditures is minimal relative to the accuracy range of the estimate.

[2] Capital costs, for purposes of this analysis, are assumed to be distributed as indicated on Table CS-5.

[3] Total annual expenditure is the total cost per year with no discounting.

[4] Present value is the total cost per year including a 7.0% discount factor for that year. See Table PV-ADRFT for details.

[5] Total present value is rounded to the nearest $1,000. Inflation and depreciation are excluded from the present value cost.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

TABLE PV-ADRFT

PRESENT VALUE ANALYSIS

Annual Discount Rate Factors Table

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Discount Rate (Percent): 7.0

Year	Discount Factor[1,2]	Year	Discount Factor[1,2]
0	1.0000	26	0.1722
1	0.9346	27	0.1609
2	0.8734	28	0.1504
3	0.8163	29	0.1406
4	0.7629	30	0.1314
5	0.7130	31	0.1228
6	0.6663	32	0.1147
7	0.6227	33	0.1072
8	0.5820	34	0.1002
9	0.5439	35	0.0937
10	0.5083	36	0.0875
11	0.4751	37	0.0818
12	0.4440	38	0.0765
13	0.4150	39	0.0715
14	0.3878	40	0.0668
15	0.3624	41	0.0624
16	0.3387	42	0.0583
17	0.3166	43	0.0545
18	0.2959	44	0.0509
19	0.2765	45	0.0476
20	0.2584	46	0.0445
21	0.2415	47	0.0416
22	0.2257	48	0.0389
23	0.2109	49	0.0363
24	0.1971		
25	0.1842		

Notes:

[1] Annual discount factors were calculated using the formulas and guidance presented in Section 4.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.

[2] The real discount rate of 7.0% was obtained from "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000, Page 4-5.

TABLE CS-5

Alternative 5
Excavation of Contaminated Soils, Treatment, and Disposal of Treated Soils at the Mine Waste Joint Repository

COST ESTIMATE SUMMARY

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 5 includes excavation of contaminated soils on residential and commercial properties and within the temporary repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Excavated contaminated soils would be transported for disposal after treatment at the Wood Gulch Repository as discussed for Alternative 4. Alternative 5 also includes treatment of newly-excavated contaminated soils prior to disposal. A treatment additive such as Portland cement, TSP, or other types of stabilization agents would be added to the newly-excavated contaminated soils prior to disposal to bind the contaminants and reduce their mobility from leaching. Soils excavated from the temporary repository at the Mineral County Airport have previously been treated using Portland cement or TSP. Thus no further treatment of these soils would be required prior to final disposal at the mine waste joint repository. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Implementation of Institutional Controls	CW5-1	1	LS	$8,806	$8,806	
SUBTOTAL					$8,806	
Contingency (Scope and Bid)		20%			$1,761	10% Scope, 10% Bid (Low end of the recommended range).
SUBTOTAL					$10,567	
Project Management		10%			$1,057	The high end of the recommended range in EPA 540-R-00-002 was used.
Remedial Design		20%			$2,113	The high end of the recommended range in EPA 540-R-00-002 was used.
Construction Management		15%			$1,585	The high end of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$15,322	
TOTAL CAPITAL COST					**$15,000**	Total capital cost is rounded to the nearest $1,000.

EARTHWORK CAPITAL COSTS: (Assumed to be Incurred During Year 0)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Mobilization/Demobilization	CW5-8	1	LS	$44,879	$44,879	
Contaminated Soil Excavation	CW5-4	1	LS	$76,466	$76,466	
Transportation and Disposal of Contaminated Soil at Mine Waste Joint Repository	CW5-5	1	LS	$207,123	$207,123	
Confirmatory Soil Sampling Within Excavations	CW5-11	1	LS	$103,869	$103,869	
Borrow Material Sampling	CW5-2	1	LS	$1,502	$1,502	
Backfilling of Excavated Areas	CW5-6	1	LS	$303,814	$303,814	
Sod Establishment Over Backfilled Excavations	CW5-7	1	LS	$86,827	$86,827	
Property Fixture Removal and Re-Installation	CW5-3	1	LS	$26,258	$26,258	
Surveying for Construction Control	CW5-9	1	LS	$8,759	$8,759	
Site Maintenance and Control During Construction	CW5-10	1	YR	$19,474	$19,474	
Treatment (Stabilization) of Untreated Soils at Staging Area	CW5-12	1	LS	$465,420	$465,420	
SUBTOTAL					$1,344,391	
Contingency (Scope and Bid)		20%			$268,878	10% Scope, 10% Bid (Low end of recommended range in EPA 540-R-00-002).
SUBTOTAL					$1,613,269	
Project Management		6%			$96,796	Middle value of the recommended range in EPA 540-R-00-002 was used.
Remedial Design		12%			$193,592	Middle value of the recommended range in EPA 540-R-00-002 was used.
Construction Management		8%			$129,062	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$2,032,719	
TOTAL CAPITAL COST					**$2,033,000**	Total capital cost is rounded to the nearest $1,000.

ANNUAL OPERATION AND MAINTENANCE (O&M) COSTS

TOTAL ANNUAL O&M COST					**$0**	No O&M costs are included; contaminated soil left in place is assumed to exist under structures.

TABLE CS-5

Alternative **5**

Excavation of Contaminated Soils, Treatment, and Disposal of Treated Soils at the Mine Waste Joint Repository

COST ESTIMATE SUMMARY

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011
Date: August 26, 2011

Description: Alternative 5 includes excavation of contaminated soils on residential and commercial properties and within the temporary repository at the Mineral County Airport to facilitate disposal. Excavation of contaminated surface materials would be conducted to the extent practicable. Confirmation that soils remaining within excavations are below PRGs will be determined using visual inspections coupled with sample collection and analysis. However, it may not be possible to fully excavate contaminated soils underneath or adjacent to structures or obstructions such as homes, trees, subsurface utilities, and roads. Thus contaminated soils may be left in place under or adjacent to these structures or obstructions. For purposes of this FS, land use controls are assumed to address these situations on a property by property basis. Excavated contaminated soils would be transported for disposal after treatment at the Wood Gulch Repository as discussed for Alternative 4. Alternative 5 also includes treatment of newly-excavated contaminated soils prior to disposal. A treatment additive such as Portland cement, TSP, or other types of stabilization agents would be added to the newly-excavated contaminated soils prior to disposal to bind the contaminants and reduce their mobility from leaching. Soils excavated from the temporary repository at the Mineral County Airport have previously been treated using Portland cement or TSP. Thus no further treatment of these soils would be required prior to final disposal at the mine waste joint repository. Five-year site reviews would be performed since contaminated soils would remain under or adjacent to structures and obstructions at some properties within the site with contaminant concentrations above PRGs that do not allow for unlimited use and unrestricted exposure under the current and potential future land uses.

PERIODIC COSTS (Years 4, 9, 14, 19, 24, 29, 34, 39, 44, and 49)

DESCRIPTION	WORKSHEET	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
Five-Year Site Reviews	CW5-13	1	LS	$26,098	$26,098	Includes five-year site inspection and report; assumed to be statutory review that occurs every five years after initiation of remedial action (Year 0).
Community Awareness Activities	CW5-14	1	LS	$5,528	$5,528	
Institutional Controls Maintenance	CW5-15	1	LS	$1,258	$1,258	Includes reviewing and updating institutional controls.
SUBTOTAL					$32,884	
Contingency (Scope and Bid)		20%			$6,577	10% Scope, 10% Bid (Low end of recommended range in EPA 540-R-00-002).
SUBTOTAL					$39,461	
Project Management		10%			$3,946	The high end of the recommended range in EPA 540-R-00-002 was used.
Technical Support		15%			$5,919	Middle value of the recommended range in EPA 540-R-00-002 was used.
TOTAL					$49,326	
TOTAL PERIODIC COST					**$49,000**	Total capital cost is rounded to the nearest $1,000.

Notes:

Percentages used for indirect costs are based on guidance from Section 5.0 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000.

Costs presented for this alternative are expected to have an accuracy between -30% to +50% of actual costs, based on the scope presented. They are prepared solely to facilitate relative comparisons between alternatives for FS evaluation purposes.

Abbreviations:

EA	Each
LS	Lump Sum
QTY	Quantity
YR	Year

Cost Worksheets

Alternative 1

TABLE CW1-1

Alternative 1 **Cost Worksheet:** **CW1-1**
Periodic Cost Sub-Element
Five-Year Site Reviews

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the five-year site visits and five-year site review report. The following cost includes labor, material and shipping costs for site visits and five-year site review reports. It is assumed 53 properties require inspection.

Cost Analysis:
Cost for Five-Year Site Review (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A6C	Site Inspection - 1 Person Crew	3	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$411.10	$411.10	$1,233.30	8%	9%	$1,452	MII MII Assemblies	
M57	Per Diem for 1 Person	3	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$123.00	$123.00	$369.00	0%	0%	$369	GSA www.gsa.gov	
L13	Project Manager	40	HR	1.00	$40.73	$40.73	$0.00	$0.00	$0.00	$0.00	$40.73	$1,629.20	100%	9%	$3,552	SE SalaryExpert.com	Hours for five-year review report.
L5	Environmental Engineer	80	HR	1.00	$33.35	$33.35	$0.00	$0.00	$0.00	$0.00	$33.35	$2,668.00	100%	9%	$5,816	SE SalaryExpert.com	Hours for five-year review report.
L7	Environmental Scientist	120	HR	1.00	$34.38	$34.38	$0.00	$0.00	$0.00	$0.00	$34.38	$4,125.60	100%	9%	$8,994	SE SalaryExpert.com	Hours for five-year review report.
L14	Quality Control Engineer	16	HR	1.00	$44.03	$44.03	$0.00	$0.00	$0.00	$0.00	$44.03	$704.48	100%	9%	$1,536	SE SalaryExpert.com	Hours for five-year review report.
L1	CAD Drafter	40	HR	1.00	$20.48	$20.48	$0.00	$0.00	$0.00	$0.00	$20.48	$819.20	100%	9%	$1,786	SE SalaryExpert.com	Hours for five-year review report.
L3	Clerks, Typist, Bookkeeper & Receptionist	40	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$780.00	100%	9%	$1,700	SE SalaryExpert.com	Hours for five-year review report.
M10A	Copy and Shipping Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,500.00	$1,500.00	$1,500.00	0%	0%	$1,500	A Allowance	
												TOTAL UNIT COST:			$26,705		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW1-2

Alternative 1 **Cost Worksheet:** **CW1-2**
Periodic Cost Sub-Element
Community Awareness Activities

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves setting up a community meeting to inform the local community about the status of the OU1 remedial action. The following includes the labor, material and other cost required for setting up the community awareness meeting which includes costs for renting a meeting hall, court reporter, and publishing and sending notices or informational flyers.

Cost Analysis:
Community Awareness Activities (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L12	General Superintendent (P.M.)	16	HR	1.00	$46.31	$46.31	$0.00	$0.00	$0.00	$0.00	$46.31	$740.96	100%	9%	$1,615	SE SalaryExpert.com	8 hrs per day, 2 days.
L13	Project Manager	16	HR	1.00	$40.73	$40.73	$0.00	$0.00	$0.00	$0.00	$40.73	$651.68	100%	9%	$1,421	SE SalaryExpert.com	8 hrs per day, 2 days.
M56	Per Diem for 2 Person	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$246.00	$246.00	$492.00	0%	0%	$492	GSA www.gsa.gov	
M65	Community Awareness Activities Allowance	1	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,000.00	$2,000.00	$2,000.00	0%	0%	$2,000	A Allowance	1 meeting per 5-yr review.
												TOTAL UNIT COST:			$5,528		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Adjustment Checklist:	**NOTES:**
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Cost Worksheets

Alternative 2

TABLE CW2-1

Alternative 2 **Cost Worksheet:** **CW2-1**
Capital Cost Sub-Element
Implementation of Institutional Controls

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves implementation of institutional controls for OU1. The following cost includes labor and materials to develop legal documents for institutional controls and cost for document submission and recording. The cost also includes site survey to establish the site and property boundaries for the legal documents. It is assumed that most properties within OU1 have had prior establishment of property boundaries for legal recording, and there are 53 properties that require ICs.

Cost Analysis:
Cost for Implementation of Institutional Controls (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L6	Environmental Lawyer	106	HR	1.00	$50.44	$50.44	$0.00	$0.00	$0.00	$0.00	$50.44	$5,346.64	100%	9%	$11,656	SE SalaryExpert.com	Assume 2 hours per affected property within OU1.
L15	Paralegal	159	HR	1.00	$30.29	$30.29	$0.00	$0.00	$0.00	$0.00	$30.29	$4,816.11	100%	9%	$10,499	SE SalaryExpert.com	Assume 3 hours per affected property within OU1.
L3	Clerks, Typist, Bookkeeper & Receptionist	53	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$1,033.50	100%	9%	$2,253	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
M11A	Document Submission and Recording Allowance	53	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$50.00	$50.00	$2,650.00	0%	0%	$2,650	A Allowance	
A38A	Site Survey	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$532.24	$532.24	$1,064.48	8%	9%	$1,253	MII MII Assemblies	Establish site and property boundary description for legal documents.
M12	Surveying Report Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$15,000.00	$15,000.00	$15,000.00	0%	0%	$15,000	A Allowance	
												TOTAL UNIT COST:			$43,311		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW2-2

Alternative 2
Periodic Cost Sub-Element
Five-Year Site Reviews

Cost Worksheet: **CW2-2**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves the site visit and five-year site review report. The following cost includes labor, material and shipping costs for site visits and five-year site review reports. It is assumed 53 properties require inspection.

Cost Analysis:
Cost for Five-Year Site Review (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A6C	Site Inspection - 1 Person Crew	3	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$411.10	$411.10	$1,233.30	8%	9%	$1,452	MII MII Assemblies	
M57	Per Diem for 1 Person	3	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$123.00	$123.00	$369.00	0%	0%	$369	GSA www.gsa.gov	
L13	Project Manager	40	HR	1.00	$40.73	$40.73	$0.00	$0.00	$0.00	$0.00	$40.73	$1,629.20	100%	9%	$3,552	SE SalaryExpert.com	Hours for five-year review report.
L5	Environmental Engineer	80	HR	1.00	$33.35	$33.35	$0.00	$0.00	$0.00	$0.00	$33.35	$2,668.00	100%	9%	$5,816	SE SalaryExpert.com	Hours for five-year review report.
L7	Environmental Scientist	120	HR	1.00	$34.38	$34.38	$0.00	$0.00	$0.00	$0.00	$34.38	$4,125.60	100%	9%	$8,994	SE SalaryExpert.com	Hours for five-year review report.
L14	Quality Control Engineer	16	HR	1.00	$44.03	$44.03	$0.00	$0.00	$0.00	$0.00	$44.03	$704.48	100%	9%	$1,536	SE SalaryExpert.com	Hours for five-year review report.
L1	CAD Drafter	40	HR	1.00	$20.48	$20.48	$0.00	$0.00	$0.00	$0.00	$20.48	$819.20	100%	9%	$1,786	SE SalaryExpert.com	Hours for five-year review report.
L3	Clerks, Typist, Bookkeeper & Receptionist	40	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$780.00	100%	9%	$1,700	SE SalaryExpert.com	Hours for five-year review report.
M10A	Copy and Shipping Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,500.00	$1,500.00	$1,500.00	0%	0%	$1,500	A Allowance	
												TOTAL UNIT COST:			$26,705		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW2-3A

Alternative 2
Capital Cost Sub-Element
Cover Maintenance

Cost Worksheet: **CW2-3A**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves the inspection and maintenance of site covers at OU1. It includes costs for on-site labor, equipment, materials and allowances for maintenance. It is assumed that covers would be inspected at least annually.

Cost Analysis:
Cost for Cover Maintenance (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A7A	Operations and Maintenance Crew	12	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$446.04	$446.04	$5,352.48	8%	9%	$6,301	MII MII Assemblies	1 day/month
M49	Annual O&M Allowance	6.2	ACR	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$200.00	$200.00	$1,244.00	0%	0%	$1,244	A Allowance	Includes annual cost for cover maintenance and erosion repair.
												TOTAL UNIT COST:			$7,545		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW2-3B

Alternative 2
Capital Cost Sub-Element
Annual Site Inspection

Cost Worksheet: **CW2-3B**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves the annual site inspection to inspect the integrity of the all the components of the remedy put in place such as covers. It includes costs for on-site labor, equipment, materials.

Cost Analysis:
Cost for Annual Site Inspection (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A6C	Site Inspection - 1 Person Crew	3	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$411.10	$411.10	$1,233.30	8%	9%	$1,452	MII MII Assemblies	3 days/year
M11	Site Inspection Report Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,500.00	$1,500.00	$1,500.00	0%	0%	$1,500	A Allowance	
												TOTAL UNIT COST:			$2,952		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW2-4

Alternative 2 **Cost Worksheet:** **CW2-4**
Capital Cost Sub-Element
Property Fixture Removal and Re-Installation

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the removal of fixtures on contaminated properties prior to capping and the re-installation of fixtures following restoration of those properties.

Cost Analysis:
Cost for Property Fixture Removal and Re-Installation (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Fixture Removal on Contaminated Properties																
A39A	Fixture Removal	150	HR	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$74.35	$74.35	$11,152.50	8%	9%	$13,129	MII MII Assemblies	2 hours per quadrant.
	Fixture Re-Installation after Restoration																
A39B	Fixture Re-Installation	150	HR	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$74.35	$74.35	$11,152.50	8%	9%	$13,129	MII MII Assemblies	2 hours per quadrant.
												TOTAL UNIT COST:			$26,258		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW2-5

Alternative 2
Capital Cost Sub-Element
Cover Construction

Cost Worksheet: **CW2-5**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves the construction of a soil or gravel cover over contaminated areas, depending on current or future land use. The orange construction fence is a visible marker layer to be placed below the cover. This sub-element includes cost for labor, equipment and material (soil from offsite borrow area and gravel from offsite quarry).

Cost Analysis:
Cost for Cover Construction (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Subsoil Placement Over Contaminated Soil																
A11B	Spreading/Grading-Large Area	2,223	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.28	$1.28	$2,845.44	8%	9%	$3,350	MII MII Assemblies	Includes work at the Mineral County Airport Repository.
A11A	Spreading/Grading-Small Area	14,649	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$44,532.96	8%	9%	$52,424	MII MII Assemblies	Includes work at residential and commercial properties.
A21A	Compaction - Large Area	2,223	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.22	$0.22	$489.06	8%	9%	$576	MII MII Assemblies	Includes work at the Mineral County Airport Repository.
A22A	Compaction - Small Area	14,649	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.71	$1.71	$25,049.79	8%	9%	$29,489	MII MII Assemblies	Includes work at residential and commercial properties.
M39A	Orange Fence	270,943	SF	1.00	$0.00	$0.00	$0.00	$0.00	$0.10	$0.00	$0.10	$27,094.32	8%	9%	$31,895	V Vendor Quote	Includes purchase and delivery to the Site.
	Topsoil Placement for Cover																
A11B	Spreading/Grading-Large Area	741	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.28	$1.28	$948.48	8%	9%	$1,117	MII MII Assemblies	Includes work at the Mineral County Airport Repository.
A11A	Spreading/Grading-Small Area	3,697	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$11,238.88	8%	9%	$13,230	MII MII Assemblies	Includes work at residential and commercial properties.
	Gravel Wearing Course Placement for Cover																
A11A	Spreading/Grading-Small Area	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$3,669.28	8%	9%	$4,319	MII MII Assemblies	
A22A	Compaction - Small Area	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.71	$1.71	$2,063.97	8%	9%	$2,430	MII MII Assemblies	
M43B	Gravel, Delivered	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$16.67	$0.00	$16.67	$20,120.69	8%	9%	$23,686	V Vendor Quote	
	Clean Fill (Subsoil) and Topsoil Amendment																
M45	Subsoil, Delivered	21,310	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$8.22	$0.00	$8.22	$175,168.20	8%	9%	$206,208	V Vendor Quote	Includes purchase and delivery to the Site.
M45A	Topsoil Amendment, Delivered	642	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$23.80	$0.00	$23.80	$15,271.00	8%	9%	$17,977	V Vendor Quote	Includes purchase and delivery to the Site.
												TOTAL UNIT COST:			$386,701		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

TABLE CW2-6

Alternative 2 **Cost Worksheet:** **CW2-6**
Capital Cost Sub-Element
Sod Establishment Over Soil Covers

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the revegetation of soil covers with sod. It includes costs for labor, material, and equipment.

Cost Analysis:
Cost for Sod Establishment Over Soil Covers (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Sodding																
A30B	Sodding Installation	214	MSF	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$160.91	$160.91	$34,434.74	8%	9%	$40,537	MII MII Assemblies	
M20A	Sod	214	MSF	1.00	$0.00	$0.00	$0.00	$0.00	$183.75	$0.00	$183.75	$39,322.50	8%	9%	$46,290	V Vendor Quote	Includes material and delivery to the Site.
												TOTAL UNIT COST:			$86,827		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW2-7

Alternative 2
Capital Cost Sub-Element
Mobilization/Demobilization

Cost Worksheet: **CW2-7**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves mobilization and demobilization of all the required equipment to and from the site respectively. It is assumed that the contractor will have a one-way travel distance no greater than 150 miles.

Cost Analysis:
Cost for Mobilization/Demobilization (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A37A	Mobilization and Demobilization - Heavy Equipment	5	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,527.62	$2,527.62	$12,638.10	8%	9%	$14,878	MII MII Assemblies	
A37B	Mobilization and Demobilization - Medium-Sized Equipment	4	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$973.99	$973.99	$3,895.96	8%	9%	$4,586	MII MII Assemblies	
												TOTAL UNIT COST:			$19,464		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW2-8

Alternative 2 **Cost Worksheet:** **CW2-8**
Capital Cost Sub-Element
Surveying for Construction Control

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves cost for site surveying before and after the remedial alternative is constructed.

Cost Analysis:
Cost for Surveying for Construction Control (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A38A	Site Survey	6	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$532.24	$532.24	$3,193.44	8%	9%	$3,759	MII MII Assemblies	Assume 1 hour per affected property within OU1.
M12A	Surveying Report Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,000.00	$5,000.00	$5,000.00	0%	0%	$5,000	A Allowance	
												TOTAL UNIT COST:			$8,759		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW2-9

Alternative 2 **Cost Worksheet:** **CW2-9**
Capital Cost Sub-Element
Site Maintenance and Control During Construction

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves site maintenance during construction. The annual costs for site maintenance during construction include labor, material, and equipment.

Cost Analysis:
Cost for Site Maintenance and Control During Construction (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Dust Control																
A1A	Dust Control/Washing	5	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$671.51	$671.51	$3,357.55	8%	9%	$3,953	MII MII Assemblies	Assumes onsite dust control and pavement washing for 3 days each month.
	Equipment Fueling																
A2A	Equipment Fueling	34	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$138.05	$138.05	$4,693.70	8%	9%	$5,525	MII MII Assemblies	
	Construction Safety and Traffic Control																
A33A	Barricade and Traffic Control Setup	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$783.49	$783.49	$1,566.98	8%	9%	$1,845	MII MII Assemblies	Assumes 1 day setting up and 1 day taking down barricades at the airport repository.
M36	3" x 1,000' Yellow Caution Tape	5	RL	1.00	$0.00	$0.00	$0.00	$0.00	$15.94	$0.00	$15.94	$79.70	8%	9%	$94	V Vendor Quote	Assumes caution tape for construction work at residential properties.
M38	Reflecting Barricade with Light	10	EA	1.00	$0.00	$0.00	$0.00	$0.00	$83.79	$0.00	$83.79	$837.90	8%	9%	$986	V Vendor Quote	Assumes a barricade located at the airport repository.
M39	Orange Safety Fence with Post	15	CLF	1.00	$0.00	$0.00	$0.00	$0.00	$99.21	$0.00	$99.21	$1,488.15	8%	9%	$1,752	V Vendor Quote	Assumes orange fencing for construction work at residential properties.
												TOTAL UNIT COST:			$14,155		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW2-10

Alternative 2
Capital Cost Sub-Element
Borrow Material Sampling

Cost Worksheet: **CW2-10**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves determining whether high concentrations of metals are present in the borrow source. The following includes the labor, material and equipment cost, and shipping cost required for the borrow material sampling.

Cost Analysis:
Cost for Borrow Material Sampling (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A4A	Sampling - 2 Person Crew	1	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$648.41	$648.41	$648.41	8%	9%	$763	MII MII Assemblies	1 hour per sample.
M58	Soil Sample Analysis (TAL Metals/Metalloids)	5	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$94.30	$94.30	$471.50	8%	9%	$555	V Vendor Quote	Analytical Method: CLP ILM05.4
M54C	Sample Shipping Allowance	1	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$100.00	$100.00	$100.00	8%	9%	$118	P Previous Work	15 Samples per shipment.
M53D	Sampling/Other Supplies	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$150.00	$150.00	$150.00	8%	9%	$177	P Previous Work	
												TOTAL UNIT COST:			$1,613		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

TABLE CW2-11

Alternative 2
Periodic Cost Sub-Element
Community Awareness Activities

Cost Worksheet: **CW2-11**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves setting up a community meeting to inform the local community about the status of the OU1 remedial action. The following includes the labor, material and other cost required for setting up the community awareness meeting which includes costs for renting a meeting hall, court reporter, and publishing and sending notices or informational flyers.

Cost Analysis:
Cost for Community Awareness Activities (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L12	General Superintendent (P.M.)	16	HR	1.00	$46.31	$46.31	$0.00	$0.00	$0.00	$0.00	$46.31	$740.96	100%	9%	$1,615	SE SalaryExpert.com	8 hrs per day
L13	Project Manager	16	HR	1.00	$40.73	$40.73	$0.00	$0.00	$0.00	$0.00	$40.73	$651.68	100%	9%	$1,421	SE SalaryExpert.com	8 hrs per day
M56	Per Diem for 2 Person	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$246.00	$246.00	$492.00	0%	0%	$492	GSA www.gsa.gov	
M65	Community Awareness Activities Allowance	1	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,000.00	$2,000.00	$2,000.00	0%	0%	$2,000	A Allowance	1 meeting per 5-yr review.
												TOTAL UNIT COST:			$5,528		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

TABLE CW2-12

Alternative 2 **Cost Worksheet:** **CW2-12**
Capital Cost Sub-Element
Institutional Controls Maintenance

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves maintenance of institutional controls for OU1. The following cost includes labor and materials to review and update legal documents for institutional controls and cost for document submission and recording. It is assumed that 53 properties require ICs.

Cost Analysis:
Cost for Institutional Controls Maintenance (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L6	Environmental Lawyer	53	HR	1.00	$50.44	$50.44	$0.00	$0.00	$0.00	$0.00	$50.44	$2,673.32	100%	9%	$5,828	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
L15	Paralegal	53	HR	1.00	$30.29	$30.29	$0.00	$0.00	$0.00	$0.00	$30.29	$1,605.37	100%	9%	$3,500	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
L3	Clerks, Typist, Bookkeeper & Receptionist	27	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$526.50	100%	9%	$1,148	SE SalaryExpert.com	Assume 0.5 hours per affected property within OU1.
M11A	Document Submission and Recording Allowance	53	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$50.00	$50.00	$2,650.00	0%	0%	$2,650	A Allowance	
												TOTAL UNIT COST:			$13,126		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Worksheets

Alternative 3

TABLE CW3-1

Alternative 3 **Cost Worksheet:** **CW3-1**
Capital Cost Sub-Element
Implementation of Institutional Controls

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves implementation of institutional controls for OU1. The following cost includes labor and materials to develop legal documents for institutional controls and cost for document submission and recording. The cost also includes site survey to establish the site and property boundaries for the legal documents. It is assumed that 5 properties will have contamination left in place and therefore require ICs.

Cost Analysis:
Cost for Implementation of Institutional Controls (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L6	Environmental Lawyer	10	HR	1.00	$50.44	$50.44	$0.00	$0.00	$0.00	$0.00	$50.44	$504.40	100%	9%	$1,100	SE SalaryExpert.com	Assume 2 hours per affected property within OU1.
L15	Paralegal	15	HR	1.00	$30.29	$30.29	$0.00	$0.00	$0.00	$0.00	$30.29	$454.35	100%	9%	$990	SE SalaryExpert.com	Assume 3 hours per affected property within OU1.
L3	Clerks, Typist, Bookkeeper & Receptionist	5	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$97.50	100%	9%	$213	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
M11A	Document Submission and Recording Allowance	5	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$50.00	$50.00	$250.00	0%	0%	$250	A Allowance	
A38A	Site Survey	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$532.24	$532.24	$1,064.48	8%	9%	$1,253	MII MII Assemblies	Establish site and property boundary description for legal documents.
M12A	Surveying Report Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,000.00	$5,000.00	$5,000.00	0%	0%	$5,000	A Allowance	
												TOTAL UNIT COST:			$8,806		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW3-2

Alternative 3
Capital Cost Sub-Element
Borrow Material Sampling

Cost Worksheet: **CW3-2**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves determining whether high concentrations of metals are present in the borrow source. The following includes the labor, material and equipment cost, and shipping cost required for the borrow material sampling.

Cost Analysis:
Cost for Borrow Material Sampling (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A4A	Sampling - 2 Person Crew	1	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$648.41	$648.41	$648.41	8%	9%	$763	MII MII Assemblies	
M58	Soil Sample Analysis (TAL Metals/Metalloids)	4	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$94.30	$94.30	$377.20	8%	9%	$444	V Vendor Quote	Analytical Method: CLP ILM05.4
M54C	Sample Shipping Allowance	1	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$100.00	$100.00	$100.00	8%	9%	$118	P Previous Work	15 Samples per shipment.
M53D	Sampling/Other Supplies	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$150.00	$150.00	$150.00	8%	9%	$177	P Previous Work	
												TOTAL UNIT COST:			$1,502		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW3-3

Alternative 3 **Cost Worksheet:** **CW3-3**
Capital Cost Sub-Element
Property Fixture Removal and Re-Installation

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the removal of fixtures on contaminated properties prior to excavation and the re-installation of fixtures following restoration of those properties.

Cost Analysis:
Cost for Property Fixture Removal and Re-Installation (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Fixture Removal on Contaminated Properties																
A39A	Fixture Removal	150	HR	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$74.35	$74.35	$11,152.50	8%	9%	$13,129	MII MII Assemblies	2 hours per quadrant.
	Fixture Re-Installation after Restoration																
A39B	Fixture Re-Installation	150	HR	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$74.35	$74.35	$11,152.50	8%	9%	$13,129	MII MII Assemblies	2 hours per quadrant.
												TOTAL UNIT COST:			$26,258		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	Field work will be in Level "D" PPE.
Escalation to Base Year	MII assembly costs include HPF adjustments.
Area Cost Factor	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Subcontractor Overhead and Profit	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Prime Contractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW3-4

Alternative 3 **Cost Worksheet:** **CW3-4**
Capital Cost Sub-Element
Contaminated Soil Excavation

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the excavation of contaminated soil for disposal at another location. It includes costs for labor, material, and equipment.

Cost Analysis:
Cost for Contaminated Soil Excavation (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A8B	Excavation - Small Area	12,743	BCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.13	$3.13	$39,885.59	8%	9%	$46,953	MII MII Assemblies	Includes work at residential and commercial properties.
A8A	Excavation - Large Area	13,265	BCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.89	$1.89	$25,070.85	8%	9%	$29,513	MII MII Assemblies	Includes work at the Mineral County Airport Repository.
												TOTAL UNIT COST:			$76,466		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW3-5

Alternative 3 **Cost Worksheet:** **CW3-5**

Capital Cost Sub-Element

Transportation and Disposal of Contaminated Soil at Existing Licensed Solid Waste Facilities

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011

Location: Mineral County, Montana

Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011

Base Year: 2011

Work Statement:

This sub-element involves hauling, handling, and disposal costs of excavated contaminated soil at existing licensed solid waste facilities (i.e. offsite Class II landfill facilities). It includes costs for labor, material, and equipment.

Cost Analysis:

Cost for Transportation and Disposal of Contaminated Soil (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Transportation and Disposal of Contaminated Soil																
A23A	Hauling - Residential Areas to Class II Landfill Facility	14,649	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$16.45	$16.45	$240,976.05	8%	9%	$283,677	MII MII Assemblies	Hauling by 20 CY Dump Truck, 60 miles each way
A23G	Hauling - Mineral County Airport to Class II Landfill Facility	15,255	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$10.57	$10.57	$161,245.35	8%	9%	$189,818	MII MII Assemblies	Hauling by 28 CY Tractor Trailer, 60 miles each way
M66	Landfill Disposal Fee	33,939	TN	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$21.00	$21.00	$712,719.00	0%	0%	$712,719	V Vendor Quote	
												TOTAL UNIT COST:			$1,186,214		

Notes:

HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000

The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:

NA Not Applicable - costs are from previous work or vendor quote

For citation references, the following sources apply:

MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW3-6

Alternative 3 **Cost Worksheet:** **CW3-6**
Capital Cost Sub-Element
Backfilling of Excavated Areas

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the backfilling of the excavated areas within properties. The backfill would include a subsoil layer placed below an amended topsoil layer or gravel wearing course layer (driveways). The orange construction fence is a visible marker layer to be placed in the bottom of the excavation. This sub-element includes cost for labor, equipment and material (soil from offsite borrow area and gravel from quarries).

Cost Analysis:
Cost for Backfilling of Excavated Areas (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Subsoil Placement Within Excavations																
A11B	Spreading/Grading-Large Area	1,482	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.28	$1.28	$1,896.96	8%	9%	$2,233	MII MII Assemblies	Includes work at the Mineral County Airport Repository.
A11A	Spreading/Grading-Small Area	9,775	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$29,716.00	8%	9%	$34,982	MII MII Assemblies	Includes work at residential and commercial properties.
A21A	Compaction - Large Area	1,482	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.22	$0.22	$326.04	8%	9%	$384	MII MII Assemblies	Includes work at the Mineral County Airport Repository.
A22A	Compaction - Small Area	9,775	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.71	$1.71	$16,715.25	8%	9%	$19,677	MII MII Assemblies	Includes work at residential and commercial properties.
M39A	Orange Fence	270,943	SF	1.00	$0.00	$0.00	$0.00	$0.00	$0.10	$0.00	$0.10	$27,094.32	8%	9%	$31,895	V Vendor Quote	Includes purchase and delivery to the Site.
	Topsoil Placement																
A11B	Spreading/Grading-Large Area	741	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.28	$1.28	$948.48	8%	9%	$1,117	MII MII Assemblies	Includes work at the Mineral County Airport Repository.
A11A	Spreading/Grading-Small Area	3,697	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$11,238.88	8%	9%	$13,230	MII MII Assemblies	Includes work at residential and commercial properties.
	Gravel Wearing Course Layer Placement																
A11A	Spreading/Grading-Small Area	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$3,669.28	8%	9%	$4,319	MII MII Assemblies	
A22A	Compaction - Small Area	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.71	$1.71	$2,063.97	8%	9%	$2,430	MII MII Assemblies	
M43B	Gravel, Delivered	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$16.67	$0.00	$16.67	$20,120.69	8%	9%	$23,686	V Vendor Quote	
	Clean Fill (Subsoil) and Topsoil																
M45	Subsoil, Delivered	15,695	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$8.22	$0.00	$8.22	$129,012.90	8%	9%	$151,874	V Vendor Quote	Includes purchase and delivery to the Site.
M45A	Topsoil Amendment, Delivered	642	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$23.80	$0.00	$23.80	$15,279.60	8%	9%	$17,987	V Vendor Quote	Includes purchase and delivery to the Site.
												TOTAL UNIT COST:			$303,814		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

TABLE CW3-7

Alternative 3 **Cost Worksheet:** **CW3-7**
Capital Cost Sub-Element
Sod Establishment Over Backfilled Areas

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the revegetation of the topsoil layer within backfilled excavations using sod. It includes costs for labor, material, and equipment.

Cost Analysis:
Sod Establishment Over Backfilled Areas (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Sodding Installation																
A30B	Sodding Installation	214	MSF	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$160.91	$160.91	$34,434.74	8%	9%	$40,537	MII MII Assemblies	
M20A	Sod	214	MSF	1.00	$0.00	$0.00	$0.00	$0.00	$183.75	$0.00	$183.75	$39,322.50	8%	9%	$46,290	V Vendor Quote	Includes material and delivery to the Site.
												TOTAL UNIT COST:			$86,827		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW3-8

Alternative 3
Capital Cost Sub-Element
Mobilization/Demobilization

Cost Worksheet: **CW3-8**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves mobilization and demobilization of all the required equipment to and from the site respectively. It is assumed that the contractor will have a one-way travel distance no greater than 150 miles.

Cost Analysis:
Cost for Mobilization/Demobilization (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A37A	Mobilization and Demobilization - Heavy Equipment	17	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,527.62	$2,527.62	$42,969.54	8%	9%	$50,584	MII MII Assemblies	
A37B	Mobilization and Demobilization - Medium-Sized Equipment	5	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$973.99	$973.99	$4,869.95	8%	9%	$5,733	MII MII Assemblies	
												TOTAL UNIT COST:			$56,317		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW3-9

Alternative 3 **Cost Worksheet:** **CW3-9**
Capital Cost Sub-Element
Surveying for Construction Control

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves cost for site surveying before and after the remedial alternative is constructed.

Cost Analysis:
Cost for Surveying for Construction Control (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A38A	Site Survey	6	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$532.24	$532.24	$3,193.44	8%	9%	$3,759	MII MII Assemblies	Assume 1 hour per affected property within OU1.
M12A	Surveying Report Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,000.00	$5,000.00	$5,000.00	0%	0%	$5,000	A Allowance	
												TOTAL UNIT COST:			$8,759		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW3-10

Alternative 3 **Cost Worksheet: CW3-10**
Capital Cost Sub-Element
Site Maintenance and Control During Construction

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves site maintenance during construction. The annual costs for site maintenance during construction include labor, material, and equipment.

Cost Analysis:
Cost for Site Maintenance and Control During Construction (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Dust Control																
A1A	Dust Control/Washing	7	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$671.51	$671.51	$4,700.57	8%	9%	$5,534	MII MII Assemblies	Assumes onsite dust control and pavement washing for 3 days each month
	Equipment Fueling																
A2A	Equipment Fueling	57	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$138.05	$138.05	$7,868.85	8%	9%	$9,263	MII MII Assemblies	
	Construction Safety and Traffic Control																
A33A	Barricade and Traffic Control Setup	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$783.49	$783.49	$1,566.98	8%	9%	$1,845	MII MII Assemblies	Assumes 1 day setting up and 1 day taking down barricades at the airport repository
M36	3" x 1,000' Yellow Caution Tape	5	RL	1.00	$0.00	$0.00	$0.00	$0.00	$15.94	$0.00	$15.94	$79.70	8%	9%	$94	V Vendor Quote	Assumes caution tape for construction work at residential properties
M38	Reflecting Barricade with Light	10	EA	1.00	$0.00	$0.00	$0.00	$0.00	$83.79	$0.00	$83.79	$837.90	8%	9%	$986	V Vendor Quote	Assumes a barricade located at the airport repository
M39	Orange Safety Fence with Post	15	CLF	1.00	$0.00	$0.00	$0.00	$0.00	$99.21	$0.00	$99.21	$1,488.15	8%	9%	$1,752	V Vendor Quote	Assumes orange fencing for construction work at residential properties
												TOTAL UNIT COST:			$19,474		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW3-11

Alternative 3 **Cost Worksheet:** **CW3-11**
Capital Cost Sub-Element
Confirmatory Soil Sampling Within Excavations

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the collection and analysis of soil samples from the excavated areas to document contamination that remains in place. The following cost includes labor, material and shipping costs for the collection and analyses of these samples.

Cost Analysis:
Cost for Confirmatory Soil Sampling Within Excavations (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A4A	Sampling - 2 Person Crew	57	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$648.41	$648.41	$36,959.37	8%	9%	$43,509	MII MII Assemblies	Assumes 15 samples collected per day.
M56	Per Diem for 2 Person	57	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$246.00	$246.00	$14,022.00	0%	0%	$14,022	GSA www.gsa.gov	Assumes 15 samples collected per day.
M58	Soil Sample Analysis (TAL Metals/Metalloids)	375	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$94.30	$94.30	$35,362.50	8%	9%	$41,629	V Vendor Quote	4 side wall samples and 1 floor sample per quadrant excavated.
M53B	Sampling/Other Supplies	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,500.00	$1,500.00	$1,500.00	8%	9%	$1,766	P Previous Work	
M54C	Sample Shipping Allowance	25	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$100.00	$100.00	$2,500.00	8%	9%	$2,943	P Previous Work	15 Samples per shipment.
												TOTAL UNIT COST:			$103,869		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW3-12

Alternative 3
Periodic Cost Sub-Element
Five-Year Site Reviews

Cost Worksheet: **CW3-12**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves the site visit and five-year site review report. The following cost includes labor, material and shipping costs for site visits and five-year site review reports. It is assumed 5 properties require inspection.

Cost Analysis:
Cost for Five-Year Site Review (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A6C	Site Inspection - 1 Person Crew	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$411.10	$411.10	$822.20	8%	9%	$968	MII MII Assemblies	
M57	Per Diem for 1 Person	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$123.00	$123.00	$246.00	0%	0%	$246	GSA www.gsa.gov	
L13	Project Manager	40	HR	1.00	$40.73	$40.73	$0.00	$0.00	$0.00	$0.00	$40.73	$1,629.20	100%	9%	$3,552	SE SalaryExpert.com	Hours for five-year review report.
L5	Environmental Engineer	80	HR	1.00	$33.35	$33.35	$0.00	$0.00	$0.00	$0.00	$33.35	$2,668.00	100%	9%	$5,816	SE SalaryExpert.com	Hours for five-year review report.
L7	Environmental Scientist	120	HR	1.00	$34.38	$34.38	$0.00	$0.00	$0.00	$0.00	$34.38	$4,125.60	100%	9%	$8,994	SE SalaryExpert.com	Hours for five-year review report.
L14	Quality Control Engineer	16	HR	1.00	$44.03	$44.03	$0.00	$0.00	$0.00	$0.00	$44.03	$704.48	100%	9%	$1,536	SE SalaryExpert.com	Hours for five-year review report.
L1	CAD Drafter	40	HR	1.00	$20.48	$20.48	$0.00	$0.00	$0.00	$0.00	$20.48	$819.20	100%	9%	$1,786	SE SalaryExpert.com	Hours for five-year review report.
L3	Clerks, Typist, Bookkeeper & Receptionist	40	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$780.00	100%	9%	$1,700	SE SalaryExpert.com	Hours for five-year review report.
M10A	Copy and Shipping Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,500.00	$1,500.00	$1,500.00	0%	0%	$1,500	A Allowance	
												TOTAL UNIT COST:			$26,098		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW3-13

Alternative 3 **Cost Worksheet: CW3-13**
Periodic Cost Sub-Element
Community Awareness Activities

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves setting up a community meeting to inform the local community about the status of the OU1 remedial action. The following includes the labor, material and other cost required for setting up the community awareness meeting which includes costs for renting a meeting hall, court reporter, and publishing and sending notices or informational flyers.

Cost Analysis:
Cost for Community Awareness Activities (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L12	General Superintendent (P.M.)	16	HR	1.00	$46.31	$46.31	$0.00	$0.00	$0.00	$0.00	$46.31	$740.96	100%	9%	$1,615	SE SalaryExpert.com	8 hrs per day
L13	Project Manager	16	HR	1.00	$40.73	$40.73	$0.00	$0.00	$0.00	$0.00	$40.73	$651.68	100%	9%	$1,421	SE SalaryExpert.com	8 hrs per day
M56	Per Diem for 2 Person	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$246.00	$246.00	$492.00	0%	0%	$492	GSA www.gsa.gov	
M65	Community Awareness Activities Allowance	1	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,000.00	$2,000.00	$2,000.00	0%	0%	$2,000	A Allowance	1 meeting per 5-yr review.
												TOTAL UNIT COST:			$5,528		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Adjustment Checklist:	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

TABLE CW3-14

Alternative 3 **Cost Worksheet:** **CW3-14**
Periodic Cost Sub-Element
Institutional Controls Maintenance

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves maintenance of institutional controls for OU1. The following cost includes labor and materials to review and update legal documents for institutional controls and cost for document submission and recording. It is assumed that 5 properties will have contamination left in place and therefore require ICs.

Cost Analysis:
Cost for Institutional Controls Maintenance (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L6	Environmental Lawyer	5	HR	1.00	$50.44	$50.44	$0.00	$0.00	$0.00	$0.00	$50.44	$252.20	100%	9%	$550	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
L15	Paralegal	5	HR	1.00	$30.29	$30.29	$0.00	$0.00	$0.00	$0.00	$30.29	$151.45	100%	9%	$330	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
L3	Clerks, Typist, Bookkeeper & Receptionist	3	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$58.50	100%	9%	$128	SE SalaryExpert.com	Assume 0.5 hours per affected property within OU1.
M11A	Document Submission and Recording Allowance	5	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$50.00	$50.00	$250.00	0%	0%	$250	A Allowance	
												TOTAL UNIT COST:			$1,258		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Worksheets

Alternative 4

TABLE CW4-1

Alternative 4 **Cost Worksheet:** **CW4-1**
Capital Cost Sub-Element
Implementation of Institutional Controls

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves implementation of institutional controls for OU1. The following cost includes labor and materials to develop legal documents for institutional controls and cost for document submission and recording. The cost also includes site survey to establish the site and property boundaries for the legal documents. It is assumed that 5 properties will have contamination left in place and therefore require ICs.

Cost Analysis:
Cost for Implementaiton of Institutional Controls (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L6	Environmental Lawyer	10	HR	1.00	$50.44	$50.44	$0.00	$0.00	$0.00	$0.00	$50.44	$504.40	100%	9%	$1,100	SE SalaryExpert.com	Assume 2 hours per affected property within OU1.
L15	Paralegal	15	HR	1.00	$30.29	$30.29	$0.00	$0.00	$0.00	$0.00	$30.29	$454.35	100%	9%	$990	SE SalaryExpert.com	Assume 3 hours per affected property within OU1.
L3	Clerks, Typist, Bookkeeper & Receptionist	5	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$97.50	100%	9%	$213	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
M11A	Document Submission and Recording Allowance	5	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$50.00	$50.00	$250.00	0%	0%	$250	A Allowance	
A38A	Site Survey	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$532.24	$532.24	$1,064.48	8%	9%	$1,253	MII MII Assemblies	Establish site and property boundary description for legal documents.
M12A	Surveying Report Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,000.00	$5,000.00	$5,000.00	0%	0%	$5,000	A Allowance	
												TOTAL UNIT COST:			$8,806		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW4-2

Alternative 4
Capital Cost Sub-Element
Borrow Material Sampling

Cost Worksheet: **CW4-2**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves determining whether high concentrations of metals are present in the borrow source. The following includes the labor, material and equipment cost, and shipping cost required for the borrow material sampling.

Cost Analysis:
Cost for Borrow Material Sampling (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A4A	Sampling - 2 Person Crew	1	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$648.41	$648.41	$648.41	8%	9%	$763	MII MII Assemblies	
M58	Soil Sample Analysis (TAL Metals/Metalloids)	4	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$94.30	$94.30	$377.20	8%	9%	$444	V Vendor Quote	Analytical Method: CLP ILM05.4
M54C	Sample Shipping Allowance	1	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$100.00	$100.00	$100.00	8%	9%	$118	P Previous Work	15 Samples per shipment.
M53D	Sampling/Other Supplies	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$150.00	$150.00	$150.00	8%	9%	$177	P Previous Work	
												TOTAL UNIT COST:			$1,502		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

TABLE CW4-3

Alternative 4 **Cost Worksheet:** **CW4-3**
Capital Cost Sub-Element
Property Fixture Removal and Re-Installation

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the removal of fixtures on contaminated properties prior to excavation and the re-installation of fixtures following restoration of those properties.

Cost Analysis:
Cost for Property Fixture Removal and Re-Installation (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Fixture Removal on Contaminated Properties																
A39A	Fixture Removal	150	HR	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$74.35	$74.35	$11,152.50	8%	9%	$13,129	MII MII Assemblies	2 hours per quadrant.
	Fixture Re-Installation after Restoration																
A39B	Fixture Re-Installation	150	HR	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$74.35	$74.35	$11,152.50	8%	9%	$13,129	MII MII Assemblies	2 hours per quadrant.
												TOTAL UNIT COST:			$26,258		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	Field work will be in Level "D" PPE.
Escalation to Base Year	MII assembly costs include HPF adjustments.
Area Cost Factor	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Subcontractor Overhead and Profit	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Prime Contractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW4-4

Alternative 4
Capital Cost Sub-Element
Contaminated Soil Excavation

Cost Worksheet: **CW4-4**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves the excavation of contaminated soil for disposal at another location. It includes costs for labor, material, and equipment.

Cost Analysis:
Cost for Contaminated Soil Excavation (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A8B	Excavation - Small Area	12,743	BCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.13	$3.13	$39,885.59	8%	9%	$46,953	MII MII Assemblies	Includes work at residential and commercial properties
A8A	Excavation - Large Area	13,265	BCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.89	$1.89	$25,070.85	8%	9%	$29,513	MII MII Assemblies	Includes work at the Mineral County Airport Repository
												TOTAL UNIT COST:			$76,466		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW4-5

Alternative 4 **Cost Worksheet: CW4-5**
Capital Cost Sub-Element
Transportation and Disposal of Contaminated Soil at Mine Waste Joint Repository

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves hauling and handling costs of excavated contaminated soil for disposal at the Mine Waste Joint Repository (i.e. Wood Gulch Repository), including placement. It includes costs for labor, material, and equipment.

Cost Analysis:
Cost for Transportation and Disposal of Contaminated Soil (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Hauling and Disposal																
A23D	Hauling - Residential Areas to Mine Waste Joint Repository	14,649	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5.95	$5.95	$87,161.55	8%	9%	$102,607	MII MII Assemblies	Hauling by 20 CY Dump Truck, 4 miles each way
A23E	Hauling - Mineral County Airport to Mine Waste Joint Repository	15,255	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4.54	$4.54	$69,257.70	8%	9%	$81,530	MII MII Assemblies	Hauling by 28 CY Tractor Trailer, 6 miles each way
A11B	Spreading/Grading-Large Area	29,904	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.28	$1.28	$38,277.12	8%	9%	$45,060	MII MII Assemblies	
												TOTAL UNIT COST:			$229,197		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW4-6

Alternative 4 **Cost Worksheet:** **CW4-6**
Capital Cost Sub-Element
Backfilling of Excavated Areas

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the backfilling of the excavated areas within properties. The backfill would include a subsoil layer placed below an amended topsoil layer or gravel top layer (driveways). The orange construction fence is a visible marker layer to be placed in the bottom of the excavation. This sub-element includes cost for labor, equipment and material (soil from offsite borrow area and gravel).

Cost Analysis:
Cost for Backfilling of Excavated Areas (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Subsoil Placement Over Contaminated Soil																
A11B	Spreading/Grading-Large Area	1,482	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.28	$1.28	$1,896.96	8%	9%	$2,233	MII MII Assemblies	Includes work at the Mineral County Airport Repository.
A11A	Spreading/Grading-Small Area	9,775	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$29,716.00	8%	9%	$34,982	MII MII Assemblies	Includes work at residential and commercial properties.
A21A	Compaction - Large Area	1,482	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.22	$0.22	$326.04	8%	9%	$384	MII MII Assemblies	Includes work at the Mineral County Airport Repository.
A22A	Compaction - Small Area	9,775	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.71	$1.71	$16,715.25	8%	9%	$19,677	MII MII Assemblies	Includes work at residential and commercial properties.
M39A	Orange Fence	270,943	SF	1.00	$0.00	$0.00	$0.00	$0.00	$0.10	$0.00	$0.10	$27,094.32	8%	9%	$31,895	V Vendor Quote	Includes purchase and delivery to the Site.
	Topsoil Placement for Cover																
A11B	Spreading/Grading-Large Area	741	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.28	$1.28	$948.48	8%	9%	$1,117	MII MII Assemblies	Includes work at the Mineral County Airport Repository.
A11A	Spreading/Grading-Small Area	3,697	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$11,238.88	8%	9%	$13,230	MII MII Assemblies	Includes work at residential and commercial properties.
	Gravel Wearing Course Layer Placement																
A11A	Spreading/Grading-Small Area	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$3,669.28	8%	9%	$4,319	MII MII Assemblies	
A22A	Compaction - Small Area	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.71	$1.71	$2,063.97	8%	9%	$2,430	MII MII Assemblies	
M43B	Gravel, Delivered	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$16.67	$0.00	$16.67	$20,120.69	8%	9%	$23,686	V Vendor Quote	
	Clean Fill (Subsoil) and Topsoil																
M45	Subsoil, Delivered	15,695	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$8.22	$0.00	$8.22	$129,012.90	8%	9%	$151,874	V Vendor Quote	Includes purchase and delivery to the Site.
M45A	Topsoil Amendment, Delivered	642	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$23.80	$0.00	$23.80	$15,279.60	8%	9%	$17,987	V Vendor Quote	Includes purchase and delivery to the Site.
												TOTAL UNIT COST:			$303,814		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

TABLE CW4-7

Alternative 4 **Cost Worksheet:** **CW4-7**
Capital Cost Sub-Element
Sod Establishment Over Backfilled Areas

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves the revegetation of the topsoil layer within backfilled excavations using sod. It includes costs for labor, material, and equipment.

Cost Analysis:
Sod Establishment Over Backfilled Areas (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Sodding Installation																
A30B	Sodding Installation	214	MSF	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$160.91	$160.91	$34,434.74	8%	9%	$40,537	MII MII Assemblies	
M20A	Sod	214	MSF	1.00	$0.00	$0.00	$0.00	$0.00	$183.75	$0.00	$183.75	$39,322.50	8%	9%	$46,290	V Vendor Quote	Includes material and delivery to the Site.
												TOTAL UNIT COST:			$86,827		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW4-8

Alternative 4
Capital Cost Sub-Element
Mobilization/Demobilization

Cost Worksheet: **CW4-8**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves mobilization and demobilization of all the required equipment to and from the site respectively. It is assumed that the contractor will have a one-way travel distance no greater than 150 miles.

Cost Analysis:
Cost for Mobilization/Demobilization (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A37A	Mobilization and Demobilization - Heavy Equipment	11	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,527.62	$2,527.62	$27,803.82	8%	9%	$32,731	MII MII Assemblies	
A37B	Mobilization and Demobilization - Medium-Sized Equipment	6	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$973.99	$973.99	$5,843.94	8%	9%	$6,879	MII MII Assemblies	
												TOTAL UNIT COST:			$39,610		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW4-9

Alternative 4 **Cost Worksheet:** **CW4-9**
Capital Cost Sub-Element
Surveying for Construction Control

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves cost for site surveying before and after the remedial alternative is constructed.

Cost Analysis:
Cost for Surveying for Construction Control (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A38A	Site Survey	6	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$532.24	$532.24	$3,193.44	8%	9%	$3,759	MII MII Assemblies	Assume 1 hour per affected property within OU1.
M12A	Surveying Report Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,000.00	$5,000.00	$5,000.00	0%	0%	$5,000	A Allowance	
												TOTAL UNIT COST:			$8,759		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW4-10

Alternative 4 **Cost Worksheet:** **CW4-10**
Capital Cost Sub-Element
Site Maintenance and Control During Construction

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves site maintenance during construction. The annual costs for site maintenance during construction include labor, material, and equipment.

Cost Analysis:
Cost for Site Maintenance and Control During Construction (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Dust Control																
A1A	Dust Control/Washing	7	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$671.51	$671.51	$4,700.57	8%	9%	$5,534	MII MII Assemblies	Assumes onsite dust control and pavement washing for 3 days each month
	Equipment Fueling																
A2A	Equipment Fueling	57	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$138.05	$138.05	$7,868.85	8%	9%	$9,263	MII MII Assemblies	
	Construction Safety and Traffic Control																
A33A	Barricade and Traffic Control Setup	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$783.49	$783.49	$1,566.98	8%	9%	$1,845	MII MII Assemblies	Assumes 1 day setting up and 1 day taking down barricades at the airport repository
M36	3" x 1,000' Yellow Caution Tape	5	RL	1.00	$0.00	$0.00	$0.00	$0.00	$15.94	$0.00	$15.94	$79.70	8%	9%	$94	V Vendor Quote	Assumes caution tape for construction work at residential properties
M38	Reflecting Barricade with Light	10	EA	1.00	$0.00	$0.00	$0.00	$0.00	$83.79	$0.00	$83.79	$837.90	8%	9%	$986	V Vendor Quote	Assumes a barricade located at the airport repository
M39	Orange Safety Fence with Post	15	CLF	1.00	$0.00	$0.00	$0.00	$0.00	$99.21	$0.00	$99.21	$1,488.15	8%	9%	$1,752	V Vendor Quote	Assumes orange fencing for construction work at residential properties
												TOTAL UNIT COST:			$19,474		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW4-11

Alternative 4 **Cost Worksheet:** **CW4-11**
Capital Cost Sub-Element
Confirmatory Soil Sampling Within Excavations

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the collection and analysis of soil samples from the excavated areas to document contamination that remains in place. The following cost includes labor, material and shipping costs for the collection and analyses of these samples.

Cost Analysis:
Cost for Confirmatory Soil Sampling Within Excavations (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A4A	Sampling - 2 Person Crew	57	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$648.41	$648.41	$36,959.37	8%	9%	$43,509	MII MII Assemblies	Assumes 15 samples collected per day.
M56	Per Diem for 2 Person	57	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$246.00	$246.00	$14,022.00	0%	0%	$14,022	GSA www.gsa.gov	Assumes 15 samples collected per day.
M58	Soil Sample Analysis (TAL Metals/Metalloids)	375	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$94.30	$94.30	$35,362.50	8%	9%	$41,629	V Vendor Quote	4 side wall samples and 1 floor sample per quadrant excavated.
M53B	Sampling/Other Supplies	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,500.00	$1,500.00	$1,500.00	8%	9%	$1,766	P Previous Work	
M54C	Sample Shipping Allowance	25	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$100.00	$100.00	$2,500.00	8%	9%	$2,943	P Previous Work	15 Samples per shipment.
												TOTAL UNIT COST:			$103,869		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	Field work will be in Level "D" PPE.
Escalation to Base Year	MII assembly costs include HPF adjustments.
Area Cost Factor	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Subcontractor Overhead and Profit	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Prime Contractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW4-12

Alternative 4
Periodic Cost Sub-Element
Five-Year Site Reviews

Cost Worksheet: **CW4-12**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves the site visit and five-year site review report. The following cost includes labor, material and shipping costs for site visits and five-year site review reports. It is assumed 5 properties require inspection.

Cost Analysis:
Cost for Five-Year Site Review (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A6C	Site Inspection - 1 Person Crew	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$411.10	$411.10	$822.20	8%	9%	$968	MII MII Assemblies	
M57	Per Diem for 1 Person	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$123.00	$123.00	$246.00	0%	0%	$246	GSA www.gsa.gov	
L13	Project Manager	40	HR	1.00	$40.73	$40.73	$0.00	$0.00	$0.00	$0.00	$40.73	$1,629.20	100%	9%	$3,552	SE SalaryExpert.com	Hours for five-year review report.
L5	Environmental Engineer	80	HR	1.00	$33.35	$33.35	$0.00	$0.00	$0.00	$0.00	$33.35	$2,668.00	100%	9%	$5,816	SE SalaryExpert.com	Hours for five-year review report.
L7	Environmental Scientist	120	HR	1.00	$34.38	$34.38	$0.00	$0.00	$0.00	$0.00	$34.38	$4,125.60	100%	9%	$8,994	SE SalaryExpert.com	Hours for five-year review report.
L14	Quality Control Engineer	16	HR	1.00	$44.03	$44.03	$0.00	$0.00	$0.00	$0.00	$44.03	$704.48	100%	9%	$1,536	SE SalaryExpert.com	Hours for five-year review report.
L1	CAD Drafter	40	HR	1.00	$20.48	$20.48	$0.00	$0.00	$0.00	$0.00	$20.48	$819.20	100%	9%	$1,786	SE SalaryExpert.com	Hours for five-year review report.
L3	Clerks, Typist, Bookkeeper & Receptionist	40	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$780.00	100%	9%	$1,700	SE SalaryExpert.com	Hours for five-year review report.
M10A	Copy and Shipping Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,500.00	$1,500.00	$1,500.00	0%	0%	$1,500	A Allowance	
												TOTAL UNIT COST:			$26,098		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW4-13

Alternative 4 **Cost Worksheet:** **CW4-13**
Periodic Cost Sub-Element
Community Awareness Activities

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves setting up a community meeting to inform the local community about the status of the OU1 remedial action. The following includes the labor, material and other cost required for setting up the community awareness meeting which includes costs for renting a meeting hall, court reporter, and publishing and sending notices or informational flyers.

Cost Analysis:
Cost for Community Awareness Activities (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L12	General Superintendent (P.M.)	16	HR	1.00	$46.31	$46.31	$0.00	$0.00	$0.00	$0.00	$46.31	$740.96	100%	9%	$1,615	SE SalaryExpert.com	8 hrs per day
L13	Project Manager	16	HR	1.00	$40.73	$40.73	$0.00	$0.00	$0.00	$0.00	$40.73	$651.68	100%	9%	$1,421	SE SalaryExpert.com	8 hrs per day
M56	Per Diem for 2 Person	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$246.00	$246.00	$492.00	0%	0%	$492	GSA www.gsa.gov	
M65	Community Awareness Activities Allowance	1	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,000.00	$2,000.00	$2,000.00	0%	0%	$2,000	A Allowance	1 meeting per 5-yr review.
												TOTAL UNIT COST:			$5,528		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Adjustment Checklist:	**NOTES:**
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

TABLE CW4-14

Alternative 4 **Cost Worksheet:** **CW4-14**
Periodic Cost Sub-Element
Institutional Controls Maintenance

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves maintenance of institutional controls for OU1. The following cost includes labor and materials to review and update legal documents for institutional controls and cost for document submission and recording. It is assumed that 5 properties will have contamination left in place and therefore require ICs.

Cost Analysis:
Cost for Institutional Controls Maintenance (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L6	Environmental Lawyer	5	HR	1.00	$50.44	$50.44	$0.00	$0.00	$0.00	$0.00	$50.44	$252.20	100%	9%	$550	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
L15	Paralegal	5	HR	1.00	$30.29	$30.29	$0.00	$0.00	$0.00	$0.00	$30.29	$151.45	100%	9%	$330	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
L3	Clerks, Typist, Bookkeeper & Receptionist	3	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$58.50	100%	9%	$128	SE SalaryExpert.com	Assume 0.5 hours per affected property within OU1.
M11A	Document Submission and Recording Allowance	5	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$50.00	$50.00	$250.00	0%	0%	$250	A Allowance	
												TOTAL UNIT COST:			$1,258		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Worksheets

Alternative 5

TABLE CW5-1

Alternative 5 **Cost Worksheet:** **CW5-1**
Capital Cost Sub-Element
Implementation of Institutional Controls

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves implementation of institutional controls for OU1. The following cost includes labor and materials to develop legal documents for institutional controls and cost for document submission and recording. The cost also includes site survey to establish the site and property boundaries for the legal documents. It is assumed that 5 properties will have contamination left in place and therefore require ICs.

Cost Analysis:
Cost for Implementation of Institutional Controls (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L6	Environmental Lawyer	10	HR	1.00	$50.44	$50.44	$0.00	$0.00	$0.00	$0.00	$50.44	$504.40	100%	9%	$1,100	SE SalaryExpert.com	Assume 2 hours per affected property within OU1.
L15	Paralegal	15	HR	1.00	$30.29	$30.29	$0.00	$0.00	$0.00	$0.00	$30.29	$454.35	100%	9%	$990	SE SalaryExpert.com	Assume 3 hours per affected property within OU1.
L3	Clerks, Typist, Bookkeeper & Receptionist	5	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$97.50	100%	9%	$213	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
M11A	Document Submission and Recording Allowance	5	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$50.00	$50.00	$250.00	0%	0%	$250	A Allowance	
A38A	Site Survey	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$532.24	$532.24	$1,064.48	8%	9%	$1,253	MII MII Assemblies	Establish site and property boundary description for legal documents.
M12A	Surveying Report Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,000.00	$5,000.00	$5,000.00	0%	0%	$5,000	A Allowance	
												TOTAL UNIT COST:			$8,806		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-2

Alternative 5 **Cost Worksheet:** **CW5-2**
Capital Cost Sub-Element
Borrow Material Sampling

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves determining whether high concetrations of metals are present in the borrow source. The following includes the labor, material and equipment cost, and shipping cost required for the borrow material sampling.

Cost Analysis:
Cost for Borrow Material Sampling (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A4A	Sampling - 2 Person Crew	1	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$648.41	$648.41	$648.41	8%	9%	$763	MII MII Assemblies	
M58	Soil Sample Analysis (TAL Metals/Metalloids)	4	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$94.30	$94.30	$377.20	8%	9%	$444	V Vendor Quote	Analytical Method: CLP ILM05.4
M54C	Sample Shipping Allowance	1	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$100.00	$100.00	$100.00	8%	9%	$118	P Previous Work	15 Samples per shipment.
M53D	Sampling/Other Supplies	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$150.00	$150.00	$150.00	8%	9%	$177	P Previous Work	
												TOTAL UNIT COST:			$1,502		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-3

Alternative 5 **Cost Worksheet:** **CW5-3**
Capital Cost Sub-Element
Property Fixture Removal and Re-Installation

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the removal of fixtures on contaminated properties prior to excavation and the re-installation of fixtures following restoration of those properties.

Cost Analysis:
Cost for Property Fixture Removal and Re-Installation (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Fixture Removal on Contaminated Properties																
A39A	Fixture Removal	150	HR	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$74.35	$74.35	$11,152.50	8%	9%	$13,129	MII MII Assemblies	2 hours per quadrant.
	Fixture Re-Installation after Restoration																
A39B	Fixture Re-Installation	150	HR	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$74.35	$74.35	$11,152.50	8%	9%	$13,129	MII MII Assemblies	2 hours per quadrant.
												TOTAL UNIT COST:			$26,258		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	Field work will be in Level "D" PPE.
Escalation to Base Year	MII assembly costs include HPF adjustments.
Area Cost Factor	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Subcontractor Overhead and Profit	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Prime Contractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-4

Alternative 5 **Cost Worksheet:** **CW5-4**
Capital Cost Sub-Element
Contaminated Soil Excavation

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the excavation of contaminated soil from OU1 for disposal at another location. It includes costs for labor, material, and equipment.

Cost Analysis:
Cost for Contaminated Soil Excavation (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A8B	Excavation - Small Area	12,743	BCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.13	$3.13	$39,885.59	8%	9%	$46,953	MII MII Assemblies	Includes work at residential and commercial properties
A8A	Excavation - Large Area	13,265	BCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.89	$1.89	$25,070.85	8%	9%	$29,513	MII MII Assemblies	Includes work at the Mineral County Airport Repository
												TOTAL UNIT COST:			$76,466		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-5

Alternative 5 **Cost Worksheet: CW5-5**

Capital Cost Sub-Element

Transportation and Disposal of Contaminated Soil at Mine Waste Joint Repository

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011

Location: Mineral County, Montana

Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011

Base Year: 2011

Work Statement:

This sub-element involves hauling and handling costs of excavated contaminated soil for disposal at the Mine Waste Joint Repository (i.e. Wood Gulch Repository), including placement. It includes costs for labor, material, and equipment.

Cost Analysis:

Cost for Transportation and Disposal of Contaminated Soil (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Hauling of Residential Soil to Staging Area																
A23B	Hauling - Residential Areas to Staging Area	14,649	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5.95	$5.95	$87,161.55	8%	9%	$102,607	MII MII Assemblies	Hauling by 20 CY Dump Truck, 4 miles each way
	Hauling and Disposal of Soil from Airport																
A23E	Hauling - Mineral County Airport to Mine Waste Joint Repository	15,255	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4.54	$4.54	$69,257.70	8%	9%	$81,530	MII MII Assemblies	Hauling by 28 CY Tractor Trailer, 6 miles each way
A11B	Spreading/Grading-Large Area	15,255	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.28	$1.28	$19,526.40	8%	9%	$22,986	MII MII Assemblies	
												TOTAL UNIT COST:			$207,123		

Notes:

HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000

The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:

NA Not Applicable - costs are from previous work or vendor quote

For citation references, the following sources apply:

MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-6

Alternative 5 **Cost Worksheet:** **CW5-6**
Capital Cost Sub-Element
Backfilling of Excavated Areas

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the backfilling of the excavated areas within properties. The backfill would include a subsoil layer placed below an amended topsoil layer or gravel top layer (driveways). The orange construction fence is a visible marker layer to be placed in the bottom of the excavation. This sub-element includes cost for labor, equipment and material (soil from offsite borrow area and gravel).

Cost Analysis:
Cost for Backfilling of Excavated Areas (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Subsoil Placement Over Contaminated Soil																
A11B	Spreading/Grading-Large Area	1,482	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.28	$1.28	$1,896.96	8%	9%	$2,233	MII MII Assemblies	Includes work at the Mineral County Airport Repository
A11A	Spreading/Grading-Small Area	9,775	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$29,716.00	8%	9%	$34,982	MII MII Assemblies	Includes work at residential and commercial properties
A21A	Compaction - Large Area	1,482	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.22	$0.22	$326.04	8%	9%	$384	MII MII Assemblies	Includes work at the Mineral County Airport Repository
A22A	Compaction - Small Area	9,775	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.71	$1.71	$16,715.25	8%	9%	$19,677	MII MII Assemblies	Includes work at residential and commercial properties
M39A	Orange Fence	270,943	SF	1.00	$0.00	$0.00	$0.00	$0.00	$0.10	$0.00	$0.10	$27,094.32	8%	9%	$31,895	V Vendor Quote	Includes purchase and delivery to the Site.
	Topsoil Placement for Cover																
A11B	Spreading/Grading-Large Area	741	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.28	$1.28	$948.48	8%	9%	$1,117	MII MII Assemblies	Includes work at the Mineral County Airport Repository
A11A	Spreading/Grading-Small Area	3,697	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$11,238.88	8%	9%	$13,230	MII MII Assemblies	Includes work at residential and commercial properties
	Gravel Wearing Course Layer Placement																
A11A	Spreading/Grading-Small Area	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$3,669.28	8%	9%	$4,319	MII MII Assemblies	
A22A	Compaction - Small Area	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.71	$1.71	$2,063.97	8%	9%	$2,430	MII MII Assemblies	
M43B	Gravel, Delivered	1,207	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$16.67	$0.00	$16.67	$20,120.69	8%	9%	$23,686	V Vendor Quote	
	Clean Fill (Subsoil) and Topsoil																
M45	Subsoil, Delivered	15,695	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$8.22	$0.00	$8.22	$129,012.90	8%	9%	$151,874	V Vendor Quote	Includes purchase and delivery to the Site.
M45A	Topsoil Amendment, Delivered	642	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$23.80	$0.00	$23.80	$15,279.60	8%	9%	$17,987	V Vendor Quote	Includes purchase and delivery to the Site.
												TOTAL UNIT COST:			$303,814		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

TABLE CW5-7

Alternative 5 **Cost Worksheet:** **CW5-7**
Capital Cost Sub-Element
Sod Establishment Over Backfilled Excavations

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the revegetation of the topsoil layer within backfilled excavations using sod. It includes costs for labor, material, and equipment.

Cost Analysis:
Cost for Sod Establishment Over Backfilled Excavations (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Sodding Installation																
A30B	Sodding Installation	214	MSF	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$160.91	$160.91	$34,434.74	8%	9%	$40,537	MII MII Assemblies	
M20A	Sod	214	MSF	1.00	$0.00	$0.00	$0.00	$0.00	$183.75	$0.00	$183.75	$39,322.50	8%	9%	$46,290	V Vendor Quote	Includes material and delivery to the Site.
												TOTAL UNIT COST:			$86,827		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-8

Alternative 5
Capital Cost Sub-Element
Mobilization/Demobilization

Cost Worksheet: **CW5-8**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves mobilization and demobilization of all the required equipment to and from the site respectively. It is assumed that the contractor will have a one-way travel distance no greater than 150 miles.

Cost Analysis:
Cost for developing Mob/Demob (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A37A	Mobilization and Demobilization - Heavy Equipment	12	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,527.62	$2,527.62	$30,331.44	8%	9%	$35,706	MII MII Assemblies	
A37B	Mobilization and Demobilization - Medium-Sized Equipment	8	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$973.99	$973.99	$7,791.92	8%	9%	$9,173	MII MII Assemblies	
												TOTAL UNIT COST:			$44,879		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-9

Alternative 5 **Cost Worksheet:** **CW5-9**
Capital Cost Sub-Element
Surveying for Construction Control

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves cost for site surveying before and after the remedial alternative is constructed.

Cost Analysis:
Cost for Surveying for Construction Control (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A38A	Site Survey	6	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$532.24	$532.24	$3,193.44	8%	9%	$3,759	MII MII Assemblies	Assume 1 hour per affected property within OU1.
M12A	Surveying Report Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,000.00	$5,000.00	$5,000.00	0%	0%	$5,000	A Allowance	
												TOTAL UNIT COST:			$8,759		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-10

Alternative 5 **Cost Worksheet: CW5-10**
Capital Cost Sub-Element
Site Maintenance and Control During Construction

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves site maintenance during construction. The annual costs for site maintenance during construction include labor, material, and equipment.

Cost Analysis:
Cost for Site Maintenance and Control During Construction (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Dust Control																
A1A	Dust Control/Washing	7	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$671.51	$671.51	$4,700.57	8%	9%	$5,534	MII MII Assemblies	Assumes onsite dust control and pavement washing for 3 days each month
	Equipment Fueling																
A2A	Equipment Fueling	57	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$138.05	$138.05	$7,868.85	8%	9%	$9,263	MII MII Assemblies	
	Construction Safety and Traffic Control																
A33A	Barricade and Traffic Control Setup	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$783.49	$783.49	$1,566.98	8%	9%	$1,845	MII MII Assemblies	Assumes 1 day setting up and 1 day taking down barricades at the airport repository
M36	3" x 1,000' Yellow Caution Tape	5	RL	1.00	$0.00	$0.00	$0.00	$0.00	$15.94	$0.00	$15.94	$79.70	8%	9%	$94	V Vendor Quote	Assumes caution tape for construction work at residential properties
M38	Reflecting Barricade with Light	10	EA	1.00	$0.00	$0.00	$0.00	$0.00	$83.79	$0.00	$83.79	$837.90	8%	9%	$986	V Vendor Quote	Assumes a barricade located at the airport repository
M39	Orange Safety Fence with Post	15	CLF	1.00	$0.00	$0.00	$0.00	$0.00	$99.21	$0.00	$99.21	$1,488.15	8%	9%	$1,752	V Vendor Quote	Assumes orange fencing for construction work at residential properties
												TOTAL UNIT COST:			$19,474		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

	NOTES:
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-11

Alternative 5 **Cost Worksheet: CW5-11**
Capital Cost Sub-Element
Confirmatory Soil Sampling Within Excavations

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves the collection and analysis of soil samples from the excavated areas to document contamination that remains in place. The following cost includes labor, material and shipping costs for the collection and analyses of these samples.

Cost Analysis:
Cost for Confirmatory Soil Sampling Within Excavations (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A4A	Sampling - 2 Person Crew	57	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$648.41	$648.41	$36,959.37	8%	9%	$43,509	MII MII Assemblies	Assumes 15 samples collected per day.
M56	Per Diem for 2 Person	57	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$246.00	$246.00	$14,022.00	0%	0%	$14,022	GSA www.gsa.gov	Assumes 15 samples collected per day.
M58	Soil Sample Analysis (TAL Metals/Metalloids)	375	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$94.30	$94.30	$35,362.50	8%	9%	$41,629	V Vendor Quote	4 side wall samples and 1 floor sample per quadrant excavated.
M53B	Sampling/Other Supplies	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,500.00	$1,500.00	$1,500.00	8%	9%	$1,766	P Previous Work	
M54C	Sample Shipping Allowance	25	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$100.00	$100.00	$2,500.00	8%	9%	$2,943	P Previous Work	15 Samples per shipment.
												TOTAL UNIT COST:			$103,869		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	Field work will be in Level "D" PPE.
Escalation to Base Year	MII assembly costs include HPF adjustments.
Area Cost Factor	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Subcontractor Overhead and Profit	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Prime Contractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-12

Alternative 5 **Cost Worksheet: CW5-12**
Capital Cost Sub-Element
Treatment (Stabilization) of Untreated Soils at Staging Area

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves treatment of untreated soils from residential areas by stabilization at the staging area prior to disposal. The treatment staging area is assumed to be located adjacent to the Wood Gulch Repository. It includes costs for on-site labor, equipment, and materials for stabilization treatment of contaminated soils prior to disposal. Several chemical agents are available for stabilization and can be substituted for Portland Cement if needed.

Cost Analysis: $353,009
Cost for Treatment (Stabilization) of Untreated Soils at Staging Area (Lump Sum) $353,009.00

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
	Treatment of Contaminated Soils																
A14A	Material Loading - Soils	14,649	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.93	$0.93	$13,623.57	8%	9%	$16,038	MII MII Assemblies	
M24	Portland Cement, Delivered	954	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$113.00	$0.00	$113.00	$107,802.00	8%	9%	$126,905	V Vendor Quote	Includes purchase and delivery to the Site.
A20	Pugmill Batch Plant - Soil Stabilization	14,649	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$9.06	$9.06	$132,719.94	8%	9%	$156,238	MII MII Assemblies	
M67	Mobilization/Demobilization of Pugmill Batch Plant	1	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$20,000.00	$20,000.00	$20,000.00	0%	0%	$20,000	A Allowance	
M59	TCLP Metals	171	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$76.17	$76.17	$13,025.07	8%	9%	$15,333	V Vendor Quote	
M54C	Sample Shipping Allowance	12	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$100.00	$100.00	$1,200.00	8%	9%	$1,413	P Previous Work	15 Samples per shipment.
	Loading / Hauling Treated Soils to Repository																
A14A	Material Loading - Soils	15,603	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.93	$0.93	$14,510.79	8%	9%	$17,082	MII MII Assemblies	
A23F	Hauling - Staging Area to Mine Waste Joint Repository	15,603	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.08	$3.08	$48,057.24	8%	9%	$56,573	MII MII Assemblies	
	Spreading Treated Soils at Repository																
A11A	Spreading/Grading-Small Area	15,603	LCY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.04	$3.04	$47,433.12	8%	9%	$55,838	MII MII Assemblies	
												TOTAL UNIT COST:			$465,420		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	Field work will be in Level "D" PPE.
Escalation to Base Year	MII assembly costs include HPF adjustments.
Area Cost Factor	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Subcontractor Overhead and Profit	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Prime Contractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-13

Alternative 5
Periodic Cost Sub-Element
Five-Year Site Reviews

Cost Worksheet: **CW5-13**

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: AB **Date:** 9/6/2011

Work Statement:
This sub-element involves the site visit and five-year site review report. The following cost includes labor, material and shipping costs for site visits and five-year site review reports. It is assumed 5 properties require inspection.

Cost Analysis:
Cost for Five-Year Site Review (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
A6C	Site Inspection - 1 Person Crew	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$411.10	$411.10	$822.20	8%	9%	$968	MII MII Assemblies	
M57	Per Diem for 1 Person	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$123.00	$123.00	$246.00	0%	0%	$246	GSA www.gsa.gov	
L13	Project Manager	40	HR	1.00	$40.73	$40.73	$0.00	$0.00	$0.00	$0.00	$40.73	$1,629.20	100%	9%	$3,552	SE SalaryExpert.com	Hours for five-year review report.
L5	Environmental Engineer	80	HR	1.00	$33.35	$33.35	$0.00	$0.00	$0.00	$0.00	$33.35	$2,668.00	100%	9%	$5,816	SE SalaryExpert.com	Hours for five-year review report.
L7	Environmental Scientist	120	HR	1.00	$34.38	$34.38	$0.00	$0.00	$0.00	$0.00	$34.38	$4,125.60	100%	9%	$8,994	SE SalaryExpert.com	Hours for five-year review report.
L14	Quality Control Engineer	16	HR	1.00	$44.03	$44.03	$0.00	$0.00	$0.00	$0.00	$44.03	$704.48	100%	9%	$1,536	SE SalaryExpert.com	Hours for five-year review report.
L1	CAD Drafter	40	HR	1.00	$20.48	$20.48	$0.00	$0.00	$0.00	$0.00	$20.48	$819.20	100%	9%	$1,786	SE SalaryExpert.com	Hours for five-year review report.
L3	Clerks, Typist, Bookkeeper & Receptionist	40	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$780.00	100%	9%	$1,700	SE SalaryExpert.com	Hours for five-year review report.
M10A	Copy and Shipping Allowance	1	LS	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,500.00	$1,500.00	$1,500.00	0%	0%	$1,500	A Allowance	
												TOTAL UNIT COST:			$26,098		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist: **NOTES:**

FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

TABLE CW5-14

Alternative 5 **Cost Worksheet: CW5-14**
Periodic Cost Sub-Element
Community Awareness Activities

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves setting up a community meeting to inform the local community about the status of the OU1 remedial action. The following includes the labor, material and other cost required for setting up the community awareness meeting which includes costs for renting a meeting hall, court reporter, and publishing and sending notices or informational flyers.

Cost Analysis:
Cost for Community Awareness Activities (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L12	General Superintendent (P.M.)	16	HR	1.00	$46.31	$46.31	$0.00	$0.00	$0.00	$0.00	$46.31	$740.96	100%	9%	$1,615	SE SalaryExpert.com	8 hrs per day
L13	Project Manager	16	HR	1.00	$40.73	$40.73	$0.00	$0.00	$0.00	$0.00	$40.73	$651.68	100%	9%	$1,421	SE SalaryExpert.com	8 hrs per day
M56	Per Diem for 2 Person	2	DY	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$246.00	$246.00	$492.00	0%	0%	$492	GSA www.gsa.gov	
M65	Community Awareness Activities Allowance	1	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,000.00	$2,000.00	$2,000.00	0%	0%	$2,000	A Allowance	1 meeting per 5-yr review.
												TOTAL UNIT COST:			$5,528		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Cost Adjustment Checklist:	**NOTES:**
FACTOR:	Field work will be in Level "D" PPE.
H&S Productivity (labor and equipment only)	MII assembly costs include HPF adjustments.
Escalation to Base Year	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Area Cost Factor	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Subcontractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
Prime Contractor Overhead and Profit	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

TABLE CW5-15

Alternative 5 **Cost Worksheet: CW5-15**
Periodic Cost Sub-Element
Institutional Controls Maintenance

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1 **Prepared By:** JN **Date:** 8/24/2011
Location: Mineral County, Montana
Phase: Final Feasibility Study **Checked By:** AB **Date:** 9/6/2011
Base Year: 2011

Work Statement:
This sub-element involves maintenance of institutional controls for OU1. The following cost includes labor and materials to review and update legal documents for institutional controls and cost for document submission and recording. It is assumed that 5 properties will have contamination left in place and therefore require ICs.

Cost Analysis:
Cost for Institutional Controls Maintenance (Lump Sum)

COST DATABASE CODE	DESCRIPTION	QTY	UNIT(S)	HPF	LABOR	ADJ LABOR	EQUIP	ADJ EQUIP	MATL	OTHER	UNMOD UC	UNMOD LIC	PC OH	PC PF	BUR LIC	COST SOURCE CITATION	COMMENTS
L6	Environmental Lawyer	5	HR	1.00	$50.44	$50.44	$0.00	$0.00	$0.00	$0.00	$50.44	$252.20	100%	9%	$550	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
L15	Paralegal	5	HR	1.00	$30.29	$30.29	$0.00	$0.00	$0.00	$0.00	$30.29	$151.45	100%	9%	$330	SE SalaryExpert.com	Assume 1 hour per affected property within OU1.
L3	Clerks, Typist, Bookkeeper & Receptionist	3	HR	1.00	$19.50	$19.50	$0.00	$0.00	$0.00	$0.00	$19.50	$58.50	100%	9%	$128	SE SalaryExpert.com	Assume 0.5 hours per affected property within OU1.
M11A	Document Submission and Recording Allowance	5	EA	1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$50.00	$50.00	$250.00	0%	0%	$250	A Allowance	
												TOTAL UNIT COST:			$1,258		

Notes:
HTRW productivity factor is from Exhibit B-3 or B-4 of "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", EPA 2000
The Cost Database Code is a reference code for linking with line item cost information with the cost source database and is not otherwise used within these cost worksheets.

Source of Cost Data:
NA Not Applicable - costs are from previous work or vendor quote
For citation references, the following sources apply:
MII (MII Assemblies), GSA (www.gsa.gov), SE (www.salaryexpert.com), A (Allowance), V (Vendor Quote), CW (Means CostWorks 2011), P (Previous Work), and FRTR (www.frtr.gov)

Cost Adjustment Checklist:

FACTOR:	NOTES:
H&S Productivity (labor and equipment only)	Field work will be in Level "D" PPE.
Escalation to Base Year	MII assembly costs include HPF adjustments.
Area Cost Factor	2011 cost sources are not escalated (EF=1.00). All other costs are escalated based on the USACE CWCCIS, EM 1110-2-1304, Mar 2011.
Subcontractor Overhead and Profit	An AF of 0.96 is used for Montana, except that an AF of 1.00 (national unmodified average) is used for MII assembly costs and local vendor quotes.
Prime Contractor Overhead and Profit	It is assumed that Subcontractor O&P is either included in the PC O&P or has been factored into vendor quotes or previous work.
	It is assumed that home office OH is 8% and profit is 9% for the Prime Contractor. Professional labor overhead is 100%. Allowances and items with mandated costs such as per diem do not have overhead and profit applied.

Abbreviations:

QTY	Quantity	ACR	Acres
EQUIP	Equipment	BCY	Bank Cubic Yard
MATL	Material	CLF	100 Linear Foot
HPF	HTRW Productivity Factor	DY	Days
ADJ LABOR	Adjusted Labor for HFP	EA	Each
ADJ EQUIP	Adjusted Equipment for HFP	LF	Linear Foot
UNMOD UC	Unmodified Unit Cost	HR	Hours
UNMOD LIC	Unmodified Line Item Cost	LB	Pounds
UNBUR LIC	Unburdened Line Item Cost	LCY	Loose Cubic Yard
PC OH	Prime Contractor Overhead	LS	Lump Sum
PC PF	Prime Contractor Profit	RL	Roll
BUR LIC	Burdened Line Item Cost	SY	Square Yard
		TN	Tons

Calculations

TABLE CA-2-1

Alternative 2
Calculation Worksheet
Required Materials Input Calculations

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: GH **Date:** 9/1/2011

Work Statement:
The spreadsheet also allow the user to change the quantities of earthwork, sodding, and period of construction. Changes to the input fields on this calculation sheet will also change the quantities of soil, cover construction and reclamation and the resulting capital costs.

Total Area to be Covered	Area (ACR)
Driveways & Alleys	1.31
Yards, Gardens, and Bare Areas	3.99
Mineral County Airport Repository	0.92
Total	6.22

In-Place Containment/Cover	Volume (LCY)
Total Backfill Materials Required:	22,517
Common Backfill Required - Small Area :	14,649
Common Backfill Required - Large Area :	2,223
Topsoil Required - Small Area :	3,697
Topsoil Required - Large Area :	741
Total Gravel Wearing Course Required:	1,207

Estimated Duration of the Project		
Number of Years to Complete:	0.2	years
Number of Months:	1.4	months
4 Days off per month in 30 day months:	26	per month
Number of working days:	34	days
Total number of working days:	34	days

Remedy Components	Sodding (MSF)
Sodding	214
Total	**214**

Remedy Components	Compost (CY)
Soil Amendment	642
Total	**642**

Remedy Components	Quadrants (EA)
Total Quadrants Covered	75
Total	**75**

Number Borrow Area Samples (1/5,000 CY)
5

Cover System - Driveways	Feet
Thickness of General Fill (Subsoil)	1.5
Thickness of Gravel Wearing Course Layer	0.5

Cover System - Yards/Gardens	Feet
Thickness of Subsoil	1.5
Thickness of Topsoil	0.5

Cover System - Repository	Feet
Thickness of Subsoil	1.5
Thickness of Topsoil	0.5

Description	Ratio/ Factors
Sodding	1.00
Expansion Factor	1.15

Soil Amendment	Ratio (CY/MSF)
Compost Amendment	3.00

Notes:
Input fields are denoted by a dashed line. Do not overwrite information not contained within the dashed lines.

TABLE CA-3-1

Alternative 3
Calculation Worksheet
Required Materials Calculations

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: GH **Date:** 9/1/2011

Work Statement:
The spreadsheet also allow the user to change the quantities of earthwork and period of construction. Changes to the input fields on this calculation sheet will also change the quantities of soil, backfill construction and reclamation and the resulting capital costs.

Total Area to be Excavated	Area (ACR)
Driveways & Alleys	1.31
Yards, Gardens, & Bare Areas	3.99
Mineral County Airport Repository	0.92
Total	6.22

Total Volume to be Excavated	Volume (LCY)
Driveways & Alleys	3,595
Yards, Gardens, & Bare Areas	11,054
Mineral County Airport Repository	15,255
Total	29,904

Approx. Weight of Contaminated Soils	Volume (LCY)	Weight (tons)
Gravel (Driveways & Alleys)	3,595	4,998
Soils (Yards, Gardens, & Bare Areas)	11,054	12,160
Soils (Repository)	15,255	16,781
Total	29,904	33,939

Excavated Area Backfill	Volume (LCY)
Total Backfill Materials Required:	16,902
Common Backfill Required - Small Area :	9,775
Common Backfill Required - Large Area :	1,482
Topsoil Required - Small Area :	3,697
Topsoil Required - Large Area :	741
Total Gravel Wearing Course Required:	1,207

Estimated Duration of the Project		
Number of Years to Complete:	0.3	years
Number of Months:	2.2	months
4 Days off per month in 30 days months:	26	per month
Number of working days:	57	days
Total number of working days:	57	days

Remedy Components	Sodding (MSF)
Sodding	214
Total	**214**

Remedy Components	Compost (CY)
Soil Amendment	642
Total	**642**

Number Borrow Area Samples (1/5,000 CY)
4

Area / Location	Excavation (FT)	Subsoil (FT)	Topsoil (FT)
Yards, Gardens, & Bare Areas	1.5	1.0	0.5
Repository	1.5	1.0	0.5

Area / Location	Excavation (FT)	Subsoil (FT)	Top Gravel (FT)
Driveways & Alleys	1.5	1.0	0.5

Description	Ratio/ Factors
Expansion Factor	1.15
Gravel Density[1] - tons/LCY	1.39
Soil Density[1] - tons/LCY	1.1

Confirmatory Soil Sampling	
Sample Density (Samples/Quad)	5
Total Quadrants Excavated (Quad)	75
Total Number of Samples	**375**

Soil Amendment	Ratio (CY/MSF)
Compost Amendment	3.00

Notes:
Input fields are denoted by a dashed line. Do not overwrite information not contained within the dashed lines.

[1] - Material density values from *Means Heavy Construction Handbook, 1993*

TABLE CA-4-1

Alternative 4
Calculation Worksheet
Required Materials Calculations

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: GH **Date:** 9/1/2011

Work Statement:
The spreadsheet also allow the user to change the quantities of earthwork and period of construction. Changes to the input fields on this calculation sheet will also change the quantities of soil, backfill construction and reclamation and the resulting capital costs.

Total Area to be Excavated	Area (ACR)
Driveways & Alleys	1.31
Yards, Gardens, & Bare Areas	3.99
Mineral County Airport Repository	0.92
Total	6.22

Total Volume to be Excavated	Volume (LCY)
Driveways & Alleys	3,595
Yards, Gardens, & Bare Areas	11,054
Mineral County Airport Repository	15,255
Total	29,904

Excavated Area/Full Site	Volume (LCY)
Total Backfill Materials Required:	16,902
Common Backfill Required - Small Area :	9,775
Common Backfill Required - Large Area :	1,482
Topsoil Required - Small Area :	3,697
Topsoil Required - Large Area :	741
Total Gravel Wearing Course Required:	1,207

Estimated Duration of the Project		
Number of Years to Complete:	0.3	years
Number of Months:	2.2	months
4 Days off per month in 30 days months:	26	per month
Number of working days:	57	days
Total number of working days:	57	days

Remedy Components	Sodding (MSF)
Sodding	214
Total	**214**

Remedy Components	Compost (CY)
Soil Amendment	642
Total	**642**

Number Borrow Area Samples (1/5,000 CY)
4

Area / Location	Excavation (FT)	Subsoil (FT)	Topsoil (FT)
Yards, Gardens, & Bare Areas	1.5	1.0	0.5
Repository	1.5	1.0	0.5

Area / Location	Excavation (FT)	Subsoil (FT)	Top Gravel (FT)
Driveways & Alleys	1.5	1.0	0.5

Description	Ratio/ Factors
Expansion Factor	1.15
Gravel Density[1] - tons/LCY	1.39
Soil Density[1] - tons/LCY	1.1

Confirmatory Soil Sampling	
Sample Density (Samples/Quad)	5
Total Quadrants Excavated (Quad)	75
Total Number of Samples	**375**

Soil Amendment	Ratio (CY/MSF)
Compost Amendment	3.00

Notes:
Input fields are denoted by a dashed line. Do not overwrite information not contained within the dashed lines.

[1] - Material density values from *Means Heavy Construction Handbook, 1993*

TABLE CA-5-1

Alternative 5
Calculation Worksheet
Required Materials Calculations

COST WORKSHEET

Site: Flat Creek/IMM Superfund Site - OU1
Location: Mineral County, Montana
Phase: Final Feasibility Study
Base Year: 2011

Prepared By: JN **Date:** 8/24/2011
Checked By: GH **Date:** 9/1/2011

Work Statement:
The spreadsheet also allow the user to change the quantities of earthwork and period of construction. Changes to the input fields on this calculation sheet will also change the quantities of soil, backfill construction and reclamation and the resulting capital costs.

Total Area to be Excavated	Area (ACR)
Driveways & Alleys	1.31
Yards, Gardens, & Bare Areas	3.99
Mineral County Airport Repository	0.92
Total	6.22

Total Volume to be Excavated	Volume (LCY)
Driveways & Alleys	3,595
Yards, Gardens, & Bare Areas	11,054
Mineral County Airport Repository	15,255
Total	29,904

Soils	Volume (LCY)	Weight (tons)
Gravel (Driveways & Alleys)	3,595	4,998
Soils (Yards, Gardens, & Bare Areas)	11,054	12,160
Soils (Repository)	15,255	16,781
Total	29,904	33,939

Total Weight of Stabilization Agents for Treatment	Dosage (%)	Weight (tons)	Volume (LCY)
Portland Cement	7	1,205	954

Excavated Area/Full Site	Volume (LCY)
Total Backfill Materials Required:	16,902
Common Backfill Required - Small Area :	9,775
Common Backfill Required - Large Area :	1,482
Topsoil Required - Small Area :	3,697
Topsoil Required - Large Area :	741
Total Top Gravel Required:	1,207

Estimated Duration of the Project		
Number of Years to Complete:	0.3	years
Number of Months:	2.2	months
4 Days off per month in 30 days months:	26	per month
Number of working days:	57	days
Total number of working days:	57	days

Remedy Components	Sodding (MSF)
Sodding	214
Total	**214**

Remedy Components	Compost (CY)
Soil Amendment	642
Total	**642**

Number Borrow Area Samples (1/5,000 CY)
4

Area / Location	Excavation (FT)	Subsoil (FT)	Topsoil (FT)
Yards, Gardens, & Bare Areas	1.5	1.0	0.5
Repository	1.5	1.0	0.5

Area / Location	Excavation (FT)	Subsoil (FT)	Top Gravel (FT)
Driveways & Alleys	1.5	1.0	0.5

Description	Ratio/ Factors
Expansion Factor	1.15
Gravel Density[1] - tons/LCY	1.39
Soil Density[1] - tons/LCY	1.1
Portland Cement Density[1] - tons/LCY	1.27

Confirmatory Soil Sampling	
Sample Density (Samples/Quad)	5
Total Quadrants Excavated (Quad)	75
Total Number of Samples	**375**

Soil Amendment	Ratio (CY/MSF)
Compost Amendment	3.00

Notes:
Input fields are denoted by a dashed line. Do not overwrite information not contained within the dashed lines.

[1] - Material density values from *Means Heavy Construction Handbook, 1993*

CDM

CDM Federal Programs Corporation

PROJECT:	Flat Creek	COMPUTED BY :	JN	CHECKED BY:	GH
JOB NO.:	3383-327	DATE :	6/8/2011	DATE CHECKED:	6/8/2011
CLIENT:	EPA Region 8			PAGE NO. :	1 of 1

Description: Determine cycle time and project timeline for hauling soils from residential/commercial properties to licensed disposal facility located 60 miles from the Flat Creek site for Alternative 3.

Dump Truck		
Type of truck (make and model):	**---**	
Hauling capacity (CY):	**20.0**	*MII Equipment Library*
Direct Loading from Excavator		
Type of loader (make and model):	**---**	
Loader capacity (CY):	**0.75**	
Loader production output (LCY/Hr):	33.75	*Means Productivity Std for Construction, 3rd Ed, 022.200.238.1300*
Loading time for one volume of load (min):	1.3	*Volume of 0.75 CY (Loader capacity)*
Number of bucket volume required to fill the truck:	27.0	*Truck capacity / Loader capacity*
Total loading time (min):	**36.0**	
Total loading time (min):	**36.00**	
Cycle Time for Trucks		
Hauling - Existing Landfill		
Cycle distance (miles):	**120**	*Loaded + empty travel distance*
Truck average speed (MPH):	55	*Assumed*
Time required for travel (Hr):	2.19	*Loaded + empty travel time*
Truck loading at site (Hr):	0.60	
Truck unloading at landfill site (Hr):	0.50	*Assumed*
Total cycle time for long haul (Hr):	**3.29**	
Length of day (Hr):	8	
Maximum number of Truckloads loaded per day:	13	
Number of Trucks required at site:	6	
Cycles per truck per day:	2	
Standby time per truck per day (Hr):	0.2	
Total Productivity per day (CY):	**260.0**	
Productivity per truck per hour (CY):	**5.9**	
Project Timeline		
Hauling - Residential/Commercial Soils to Existing Landfill		
Total volume of soil for disposal (BCY):	12,793	
Total volume of soil for disposal (CY):	14,712	
Daily Productivity (CY/day):	260.0	
Working days required for project (day):	57	

CDM

CDM Federal Programs Corporation

PROJECT:	Flat Creek	COMPUTED BY :	JN	CHECKED BY:	GH
JOB NO.:	3383-327	DATE :	6/8/2011	DATE CHECKED:	6/8/2011
CLIENT:	EPA Region 8			PAGE NO. :	1 of 1

Description: Determine cycle time and project timeline for hauling soils from Mineral County Airport repository to licensed disposal facility located 60 miles from the Flat Creek site for Alternative 3.

Truck Trailer		
Type of truck (make and model):	**---**	
Hauling capacity (CY):	**28.0**	*MII Equipment Library*
Direct Loading from Excavator		
Type of loader (make and model):	**---**	
Loader capacity (CY):	**1.5**	
Loader production output (CY/Hr):	67.5	*Means Productivity Std for Construction, 3rd Ed, 022.200.238.1300*
Loading time for one volume of load (min):	1.3	*Volume of 1.5 CY (Loader capacity)*
Number of bucket volume required to fill the truck:	19.0	*Truck capacity / Loader capacity*
Total loading time (min):	**25.3**	
Total loading time (min):	**25.33**	
Cycle Time for Trucks		
Hauling - Existing Landfill		
Cycle distance (miles):	**120**	*Loaded + empty travel distance*
Truck average speed (MPH):	55	*Assumed*
Time required for travel (Hr):	2.19	*Loaded + empty travel time*
Truck loading at site (Hr):	0.43	
Truck unloading at landfill site (Hr):	0.50	*Assumed*
Total cycle time for long haul (Hr):	**3.12**	
Length of day (Hr):	8	
Maximum number of Truckloads loaded per day:	17	
Number of Trucks required at site:	7	
Cycles per truck per day:	2.4	
Standby time per truck per day (Hr):	0.4	
Total Productivity per day (CY):	**476.0**	
Productivity per truck per hour (CY):	**8.5**	
Project Timeline		
Hauling - Airport Repository Soils to Existing Landfill		
Total volume of soil for disposal (BCY):	13,265	
Total volume of soil for disposal (CY):	15,255	
Daily Productivity (CY/day):	476.0	
Working days required for project (day):	33	

CDM

CDM Federal Programs Corporation

PROJECT:	Flat Creek	COMPUTED BY :	JN	CHECKED BY:	GH
JOB NO.:	3383-327	DATE :	6/8/2011	DATE CHECKED:	6/8/2011
CLIENT:	EPA Region 8			PAGE NO. :	1 of 1

Description: Determine cycle time and project timeline for hauling soils from residential/commercial properties to Wood Gulch Repository for Alternatives 4 & 5.

Dump Truck		
Type of truck (make and model):	**---**	
Hauling capacity (CY):	**20.0**	*MII Equipment Library*
Direct Loading from Excavator		
Type of loader (make and model):	**---**	
Loader capacity (CY):	**0.75**	
Loader production output (CY/Hr):	33.75	*Means Productivity Std for Construction, 3rd Ed, 022.200.238.1300*
Loading time for one volume of load (min):	1.3	*Volume of 0.75 CY (Loader capacity)*
Number of bucket volume required to fill the truck:	27.0	*Truck capacity / Loader capacity*
Total loading time (min):	**36.0**	
Total loading time (min):	**36.00**	
Cycle Time for Trucks		
Hauling - Wood Gulch Repository		
Cycle distance (miles):	**8**	*Loaded + empty travel distance*
Truck average speed (MPH):	25	*Assumed*
Time required for travel (Hr):	0.32	*Loaded + empty travel time*
Truck loading at site (Hr):	0.60	
Truck unloading at repository site (Hr):	0.25	*Assumed*
Total cycle time for long haul (Hr):	**1.17**	
Length of day (Hr):	8	
Maximum number of Truckloads loaded per day:	13	
Number of Trucks required at site:	2	
Cycles per truck per day:	7	
Standby time per truck per day (Hr):	0.4	
Total Productivity per day (CY):	**260.0**	
Productivity per truck per hour (CY):	**16.3**	
Project Timeline		
Hauling - Residential/Commercial Soils to Wood Gulch Repository		
Total volume of soil for disposal (BCY):	12,793	
Total volume of soil for disposal (CY):	14,712	
Daily Productivity (CY/day):	260.0	
Working days required for project (day):	57	

CDM

CDM Federal Programs Corporation

PROJECT:	Flat Creek	COMPUTED BY :	JN	CHECKED BY:	GH
JOB NO.:	3383-327	DATE :	6/8/2011	DATE CHECKED:	6/8/2011
CLIENT:	EPA Region 8			PAGE NO. :	1 of 1

Description: Determine cycle time and project timeline for hauling soils from Mineral County Airport repository to Wood Gulch Repository for Alternatives 4 & 5.

Truck Trailer		
Type of truck (make and model):	**---**	
Hauling capacity (CY):	**28.0**	*MII Equipment Library*
Direct Loading from Excavator		
Type of loader (make and model):	**---**	
Loader capacity (CY):	**1.5**	
Loader production output (CY/Hr):	67.5	*Means Productivity Std for Construction, 3rd Ed, 022.200.238.1300*
Loading time for one volume of load (min):	1.3	*Volume of 1.5 CY (Loader capacity)*
Number of bucket volume required to fill the truck:	19.0	*Truck capacity / Loader capacity*
Total loading time (min):	**25.3**	
Total loading time (min):	**25.33**	
Cycle Time for Trucks		
Hauling - Wood Gulch Repository		
Cycle distance (miles):	**12**	*Loaded + empty travel distance*
Truck average speed (MPH):	25	*Assumed*
Time required for travel (Hr):	0.48	*Loaded + empty travel time*
Truck loading at site (Hr):	0.43	
Truck unloading at repository site (Hr):	0.25	*Assumed*
Total cycle time for long haul (Hr):	**1.16**	
Length of day (Hr):	8	
Maximum number of Truckloads loaded per day:	17	
Number of Trucks required at site:	3	
Cycles per truck per day:	5.7	
Standby time per truck per day (Hr):	1.4	
Total Productivity per day (CY):	**476.0**	
Productivity per truck per hour (CY):	**19.8**	
Project Timeline		
Hauling - Airport Repository Soils to Wood Gulch Repository		
Total volume of soil for disposal (BCY):	13,265	
Total volume of soil for disposal (CY):	15,255	
Daily Productivity (CY/day):	476.0	
Working days required for project (day):	33	

Cost Estimate Backup

COST INDICES FOR ESCALATION

Base Year for Work: **2011**

Year	Cost Index[1]
1990	398.34
1991	406.78
1992	415.22
1993	427.83
1994	439.45
1995	452.31
1996	462.16
1997	472.17
1998	478.10
1999	486.21
2000	497.07
2001	503.52
2002	517.46
2003	529.95
2004	571.29
2005	608.36
2006	641.91
2007	673.52
2008	716.54
2009	703.00
2010	724.17
2011	742.91
2012	753.26
2013	765.31
2014	778.32
2015	791.55
2016	805.01
2017	819.50
2018	834.25
2019	849.27
2020	864.55
2021	880.11
2022	895.96
2023	912.08
2024	928.50
2025	945.21

[1] Yearly composite cost index (weighted average) from the U.S. Army Corps of Engineers Civil Works Construction Cost Index System (CWCCIS), EM 1110-2-1304, 31 March 2000. Revised as of 31 March 2011.

SalaryExpert Cost Sources

Base Year: 2011

COST CODES FOR LABOR AND UNIT COSTS

Cost Code	Description	Units	Unit Labor Cost	Unit Equipment Cost	Unit Material Cost	Unit Other Cost	Year of Cost Source	Escalation Factor	Area Factor	Adjusted Labor Cost	Adjusted Equipment Cost	Adjusted Material Cost	Adjusted Other Cost	PC OH	PC PF	Cost Source		Comments
																Source	Source ID	
L1	CAD Drafter	HR	**$20.48**	$0.00	$0.00	$0.00	2011	1	1	$20.48	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L2	Civil Engineer	HR	**$32.20**	$0.00	$0.00	$0.00	2011	1	1	$32.20	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L3	Clerks, Typist, Bookkeeper & Receptionist	HR	**$19.50**	$0.00	$0.00	$0.00	2011	1	1	$19.50	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L4	Electrical Engineer	HR	**$36.07**	$0.00	$0.00	$0.00	2011	1	1	$36.07	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L5	Environmental Engineer	HR	**$33.35**	$0.00	$0.00	$0.00	2011	1	1	$33.35	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L6	Environmental Lawyer	HR	**$50.44**	$0.00	$0.00	$0.00	2011	1	1	$50.44	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L7	Environmental Scientist	HR	**$34.38**	$0.00	$0.00	$0.00	2011	1	1	$34.38	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L8	Field Engineer	HR	**$31.54**	$0.00	$0.00	$0.00	2011	1	1	$31.54	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L9	Field Foreman	HR	**$25.84**	$0.00	$0.00	$0.00	2011	1	1	$25.84	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L10	Field Technician	HR	**$14.12**	$0.00	$0.00	$0.00	2011	1	1	$14.12	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L11	Geologist	HR	**$33.77**	$0.00	$0.00	$0.00	2011	1	1	$33.77	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L12	General Superintendent (P.M.)	HR	**$46.31**	$0.00	$0.00	$0.00	2011	1	1	$46.31	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L13	Project Manager	HR	**$40.73**	$0.00	$0.00	$0.00	2011	1	1	$40.73	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L14	Quality Control Engineer	HR	**$44.03**	$0.00	$0.00	$0.00	2011	1	1	$44.03	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L15	Paralegal	HR	**$30.29**	$0.00	$0.00	$0.00	2011	1	1	$30.29	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L18	Suveyor	HR	**$39.52**	$0.00	$0.00	$0.00	2011	1	1	$39.52	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	
L19	Suveyor Assistant	HR	**$25.47**	$0.00	$0.00	$0.00	2011	1	1	$25.47	$0.00	$0.00	$0.00	100%	9%	SE	SalaryExpert.com	

Base Year: 2011

COST CODES FOR MATERIAL AND UNIT COSTS

Cost Code	Description	Units	Unit Labor Cost	Unit Equipment Cost	Unit Material Cost	Unit Other Cost	Year of Cost Source	Escalation Factor	Area Factor	Adjusted Labor Cost	Adjusted Equipment Cost	Adjusted Material Cost	Adjusted Other Cost	PC OH	PC PF	Cost Source		Comments
																Source	Source ID	
M9	Signs	EA	$0.00	$0.00	**$101.43**	$0.00	2011	1	1	$0.00	$0.00	$101.43	$0.00	8%	9%	V	Vendor Quote	
M10A	Copy and Shipping Allowance	LS	$0.00	$0.00	$0.00	**$1,500**	2011	1	1	$0.00	$0.00	$0.00	$1,500.00	0%	0%	A	Allowance	
M11	Site Inspection Report Allowance	LS	$0.00	$0.00	$0.00	**$1,500**	2011	1	1	$0.00	$0.00	$0.00	$1,500.00	0%	0%	A	Allowance	
M11A	Document Submission and Recording Allowance	EA	$0.00	$0.00	$0.00	**$50**	2011	1	1	$0.00	$0.00	$0.00	$50.00	0%	0%	A	Allowance	
M12	Surveying Report Allowance	LS	$0.00	$0.00	$0.00	**$15,000.00**	2011	1	1	$0.00	$0.00	$0.00	$15,000.00	0%	0%	A	Allowance	
M12A	Surveying Report Allowance	LS	$0.00	$0.00	$0.00	**$5,000.00**	2011	1	1	$0.00	$0.00	$0.00	$5,000.00	0%	0%	A	Allowance	
M20	Seed, Hydromulch with Fertilizer	MSF	**$3.84**	**$10.60**	**$6.85**	$0.00	2011	1	1	$3.84	$10.60	$6.85	$0.00	8%	9%	CW11	32 92 1914 3100	Includes material and installation.
M20A	Sod	MSF	$0.00	$0.00	**$183.75**	$0.00	2011	1	1	$0.00	$0.00	$183.75	$0.00	8%	9%	V	Vendor Quote	Includes material and delivery to the Site.
M24	Portland Cement, Delivered	LCY	**$0.00**	**$0.00**	**$113.00**	$0.00	2011	1	1	$0.00	$0.00	$113.00	$0.00	8%	9%	V	Vendor Quote	Includes purchase and delivery to the Site.
M25	Blastox (Calcium Silicate Blend), Delivered	TN	**$0.00**	**$0.00**	**$522.22**	$0.00	2011	1	1	$0.00	$0.00	$522.22	$0.00	8%	9%	V	Vendor Quote	Includes purchase and delivery to the Site.
M26	Ferrous Sulfate Blend, Delivered	TN	$0.00	$0.00	**$522.22**	$0.00	2011	1	1	$0.00	$0.00	$522.22	$0.00	8%	9%	V	Vendor Quote	Includes purchase and delivery to the Site.
M36	3" x 1,000' Yellow Caution Tape	RL	$0.00	$0.00	**$15.94**	$0.00	2011	1	1	$0.00	$0.00	$15.94	$0.00	8%	9%	V	Vendor Quote	Includes purchase and delivery to the Site.
M37	3" x 1,000' Red Danger Asbestos Haz Tape	RL	$0.00	$0.00	**$15.94**	$0.00	2009	1.06	1	$0.00	$0.00	$16.90	$0.00	8%	9%	V	Vendor Quote	Includes purchase and delivery to the Site.
M38	Reflecting Barricade with Light	EA	$0.00	$0.00	**$83.79**	$0.00	2011	1	1	$0.00	$0.00	$83.79	$0.00	8%	9%	V	Vendor Quote	Includes purchase and delivery to the Site.
M39	Orange Safety Fence with Post	CLF	$0.00	$0.00	**$99.21**	$0.00	2011	1	1	$0.00	$0.00	$99.21	$0.00	8%	9%	V	Vendor Quote	Includes purchase and delivery to the Site.
M39A	Orange Fence	SF	$0.00	$0.00	**$0.10**	$0.00	2011	1	1	$0.00	$0.00	$0.10	$0.00	8%	9%	V	Vendor Quote	Includes purchase and delivery to the Site.
M43B	Gravel, Delivered	LCY	$0.00	$0.00	**$16.67**	$0.00	2011	1	1	$0.00	$0.00	$16.67	$0.00	8%	9%	V	Vendor Quote	
M45	Subsoil, Delivered	LCY	$0.00	$0.00	**$7.90**	$0.00	2008	1.04	1	$0.00	$0.00	$8.22	$0.00	8%	9%	V	Vendor Quote	Includes purchase and delivery to the Site.
M45A	Topsoil Amendment, Delivered	LCY	$0.00	$0.00	**$23.80**	$0.00	2011	1	1	$0.00	$0.00	$23.80	$0.00	8%	9%	V	Vendor Quote	Includes purchase and delivery to the Site.
M46	Poly Tank, 5,000 Gal	EA	$0.00	$0.00	**$1,998.95**	$0.00	2011	1	1	$0.00	$0.00	$1,998.95	$0.00	8%	9%	V	Vendor Quote	Includes purchase and delivery to the Site.
M49	Annual O&M Allowance	ACR	$0.00	$0.00	$0.00	**$200.00**	2011	1	1	$0.00	$0.00	$0.00	$200.00	0%	0%	A	Allowance	Includes annual cost for cover maintenance and erosion repair.
M50	Soil Sample Analysis (PLM-VE)	EA	$0.00	$0.00	$0.00	**$25.00**	2008	1.04	1	$0.00	$0.00	$0.00	$26.00	8%	9%	P	Previous Work	
M50A	Soil Sample Analysis (Stereomicroscopy)	EA	$0.00	$0.00	$0.00	**$25.00**	2008	1.04	1	$0.00	$0.00	$0.00	$26.00	8%	9%	P	Previous Work	
M53B	Sampling/Other Supplies	LS	$0.00	$0.00	$0.00	**$1,500.00**	2011	1	1	$0.00	$0.00	$0.00	$1,500.00	8%	9%	P	Previous Work	
M53D	Sampling/Other Supplies	LS	$0.00	$0.00	$0.00	**$150.00**	2011	1	1	$0.00	$0.00	$0.00	$150.00	8%	9%	P	Previous Work	
M54A	Sample Shipping Allowance	LS	$0.00	$0.00	$0.00	**$3,000.00**	2008	1.04	1	$0.00	$0.00	$0.00	$3,120.00	0%	0%	A	Allowance	For 2 Events
M54B	Sample Shipping Allowance	LS	$0.00	$0.00	$0.00	**$2,000.00**	2011	1	1	$0.00	$0.00	$0.00	$2,000.00	0%	0%	A	Allowance	For 1 Event
M54C	Sample Shipping Allowance	EA	$0.00	$0.00	$0.00	**$100.00**	2011	1	1	$0.00	$0.00	$0.00	$100.00	8%	9%	P	Previous Work	15 Samples per shipment.
M54D	Sample Shipping Allowance	LS	$0.00	$0.00	$0.00	**$500.00**	2011	1	1	$0.00	$0.00	$0.00	$500.00	8%	9%	A	Allowance	
M55	Per Diem for 3 Person	DY	$0.00	$0.00	$0.00	**$369.00**	2011	1	1	$0.00	$0.00	$0.00	$369.00	0%	0%	GSA	www.gsa.gov	
M56	Per Diem for 2 Person	DY	$0.00	$0.00	$0.00	**$246.00**	2011	1	1	$0.00	$0.00	$0.00	$246.00	0%	0%	GSA	www.gsa.gov	
M57	Per Diem for 1 Person	DY	$0.00	$0.00	$0.00	**$123.00**	2011	1	1	$0.00	$0.00	$0.00	$123.00	0%	0%	GSA	www.gsa.gov	
M58	Soil Sample Analysis (TAL Metals/Metalloids)	EA	$0.00	$0.00	$0.00	**$94.30**	2011	1	1	$0.00	$0.00	$0.00	$94.30	8%	9%	V	Vendor Quote	Analytical Method: CLP ILM05.4
M59	TCLP Metals	EA	$0.00	$0.00	$0.00	**$76.17**	2011	1	1	$0.00	$0.00	$0.00	$76.17	8%	9%	V	Vendor Quote	
M65	Community Awareness Activities Allowance	EA	$0.00	$0.00	$0.00	**$2,000.00**	2011	1	1	$0.00	$0.00	$0.00	$2,000.00	0%	0%	A	Allowance	1 meeting per 5-yr review.
M66	Landfill Disposal Fee	TN	$0.00	$0.00	$0.00	**$21.00**	2011	1	1	$0.00	$0.00	$0.00	$21.00	0%	0%	V	Vendor Quote	
M67	Mobilization/Demobilization of Pugmill Batch Plant	EA	$0.00	$0.00	$0.00	$20,000.00	2011	1	1	$0.00	$0.00	$0.00	$20,000.00	0%	0%	A	Allowance	

Base Year: 2011

COST CODES FOR SUBCONTRACTORS AND UNIT COSTS

Cost Code	Work or Material Description	Description for Cost Worksheets	Units	Unit Cost	Year of Cost Source	Escalation Factor	Area Factor	Adjusted Unit Cost	PC OH	PC PF	Cost Source		Comments
											Source	Source ID	
S1A	Asphalt Pavement Construction	Asphalt Pavement Construction - Resurfacing Only	SF	**$3.00**	2008	1.04	1	$3.12	8%	9%	V	Vendor Quote	Includes labor, material and equipment cost
S2A	Asphalt Pavement Construction	Asphalt Pavement Construction - Base and Surfacing	SF	**$5.40**	2008	1.04	1	$5.62	8%	9%	V	Vendor Quote	Includes labor, material and equipment cost
S3A	Contaminated Soils Handling	Contaminated Soils Handling at the Mine	TN	**$5.50**	2008	1.04	1	$5.72	8%	9%	V	Vendor Quote	Includes labor, material and equipment cost

Base Year: 2011

COST CODES FOR MII ASSEMBLIES AND UNIT COSTS

Cost Code	Work or Material Description	Description for Cost Worksheets	Units	MII Unit Cost	Year of Cost Source	Escalation Factor	Area Factor	Adjusted MII Unit Cost	PC OH	PC PF	Cost Source		Comments
											Source	Source ID	
A1A	Dust Control	Dust Control/Washing	DY	**$671.51**	2011	1.00	1	$671.51	8%	9%	MII	MII Assemblies	
A2A	Equipment Fueling	Equipment Fueling	DY	**$138.05**	2011	1.00	1	$138.05	8%	9%	MII	MII Assemblies	
A4A	Sampling - 2 Person Crew	Sampling - 2 Person Crew	DY	**$648.41**	2011	1.00	1	$648.41	8%	9%	MII	MII Assemblies	
A5A	Sampling - 3 Person Crew	Sampling - 3 Person Crew	DY	**$885.71**	2011	1.00	1	$885.71	8%	9%	MII	MII Assemblies	
A6A	Site Inspection - 2 Person Crew	Site Inspection - 2 Person Crew	DY	**$743.50**	2011	1.00	1	$743.50	8%	9%	MII	MII Assemblies	
A6B	Visual Inspection - 2 Person Crew	Visual Inspection - 2 Person Crew	DY	**$743.50**	2011	1.00	1	$743.50	8%	9%	MII	MII Assemblies	
A6C	Site Inspection - 1 Person Crew	Site Inspection - 1 Person Crew	DY	**$411.10**	2011	1.00	1	$411.10	8%	9%	MII	MII Assemblies	
A6D	Visual Inspection - 1 Person Crew	Visual Inspection - 1 Person Crew	DY	**$411.10**	2011	1.00	1	$411.10	8%	9%	MII	MII Assemblies	
A7A	Site Operations and Maintenance	Operations and Maintenance Crew	DY	**$446.04**	2011	1.00	1	$446.04	8%	9%	MII	MII Assemblies	
A7B	Site Operations and Maintenance	Fence Maintenance Crew	DY	**$446.04**	2011	1.00	1	$446.04	8%	9%	MII	MII Assemblies	
A8A	Excavation - Large Area	Excavation - Large Area	BCY	**$1.89**	2011	1.00	1	$1.89	8%	9%	MII	MII Assemblies	
A8B	Excavation - Small Area	Excavation - Small Area	BCY	**$3.13**	2011	1.00	1	$3.13	8%	9%	MII	MII Assemblies	
A10	Raking Soils for Treatment by Stabilization	Raking Soils for Treatment by Stabilization	MSF	**$22.04**	2011	1.00	1	$22.04	8%	9%	MII	MII Assemblies	
A11A	Spreading/Grading-Small Area	Spreading/Grading-Small Area	LCY	**$3.04**	2011	1.00	1	$3.04	8%	9%	MII	MII Assemblies	
A11B	Spreading/Grading-Large Area	Spreading/Grading-Large Area	LCY	**$1.28**	2011	1.00	1	$1.28	8%	9%	MII	MII Assemblies	
A14A	Material Loading - Soils	Material Loading - Soils	LCY	**$0.93**	2011	1.00	1	$0.93	8%	9%	MII	MII Assemblies	
A20	Pugmill Batch Plant - Soil Stabilization	Pugmill Batch Plant - Soil Stabilization	LCY	**$9.06**	2011	1.00	1	$9.06	8%	9%	MII	MII Assemblies	
A21A	Compaction - Large Area	Compaction - Large Area	LCY	**$0.22**	2011	1.00	1	$0.22	8%	9%	MII	MII Assemblies	
A22A	Compaction - Small Area	Compaction - Small Area	LCY	**$1.71**	2011	1.00	1	$1.71	8%	9%	MII	MII Assemblies	
A23A	Hauling - Residential Areas to Class II Landfill Facility	Hauling - Residential Areas to Class II Landfill Facility	LCY	**$16.45**	2011	1.00	1	$16.45	8%	9%	MII	MII Assemblies	Hauling by 20 CY Dump Truck, 60
A23B	Hauling - Residential Areas to Staging Area	Hauling - Residential Areas to Staging Area	LCY	**$5.95**	2011	1.00	1	$5.95	8%	9%	MII	MII Assemblies	Hauling by 20 CY Dump Truck, 4
A23C	Hauling - Mineral County Airport to Staging Area	Hauling - Mineral County Airport to Staging Area	LCY	**$4.54**	2011	1.00	1	$4.54	8%	9%	MII	MII Assemblies	Hauling by 28 CY Tractor Trailer, 6
A23D	Hauling - Residential Areas to Mine Waste Joint Repository	Hauling - Residential Areas to Mine Waste Joint Repository	LCY	**$5.95**	2011	1.00	1	$5.95	8%	9%	MII	MII Assemblies	Hauling by 20 CY Dump Truck, 4
A23E	Hauling - Mineral County Airport to Mine Waste Joint Repository	Hauling - Mineral County Airport to Mine Waste Joint Repository	LCY	**$4.54**	2011	1.00	1	$4.54	8%	9%	MII	MII Assemblies	Hauling by 28 CY Tractor Trailer, 6 miles each way
A23F	Hauling - Staging Area to Mine Waste Joint Repository	Hauling - Staging Area to Mine Waste Joint Repository	LCY	**$3.08**	2011	1.00	1	$3.08	8%	9%	MII	MII Assemblies	Hauling by 20 CY Dump Truck, 4
A23G	Hauling - Mineral County Airport to Class II Landfill Facility	Hauling - Mineral County Airport to Class II Landfill Facility	LCY	**$10.57**	2011	1.00	1	$10.57	8%	9%	MII	MII Assemblies	Hauling by 28 CY Tractor Trailer, 60
A23H	Hauling - Borrow Area to Residential Areas	Hauling - Borrow Area to Residential Areas	LCY	**$4.85**	2011	1.00	1	$4.85	8%	9%	MII	MII Assemblies	
A30B	Sodding Installation	Sodding Installation	MSF	**$160.91**	2011	1.00	1	$160.91	8%	9%	MII	MII Assemblies	
A31B	Fence Installation	Fence Installation - Clean Area	LF	**$4.12**	2011	1.00	1	$4.12	8%	9%	MII	MII Assemblies	
A31C	Signage Installation	Signage Installation - Clean Area	HR	**$153.97**	2011	1.00	1	$153.97	8%	9%	MII	MII Assemblies	
A32A	Water Truck Operation	Water Truck Operation	DY	**$1,168.42**	2011	1.00	1	$1,168.42	8%	9%	MII	MII Assemblies	
A33A	Barricade and Traffic Control	Barricade and Traffic Control Setup	DY	**$783.49**	2011	1.00	1	$783.49	8%	9%	MII	MII Assemblies	
A37A	Mobilization and Demobilization - Heavy Equipment	Mobilization and Demobilization - Heavy Equipment	EA	**$2,527.62**	2011	1.00	1	$2,527.62	8%	9%	MII	MII Assemblies	
A37B	Mobilization and Demobilization - Medium-Sized Equipment	Mobilization and Demobilization - Medium-Sized Equipment	EA	**$973.99**	2011	1.00	1	$973.99	8%	9%	MII	MII Assemblies	
A37C	Mobilization and Demobilization - Small Equipment	Mobilization and Demobilization - Small Equipment	EA	**$316.28**	2011	1.00	1	$316.28	8%	9%	MII	MII Assemblies	
A37D	Mobilization and Demobilization - Self-Propelled Equipment	Mobilization and Demobilization - Self-Propelled Equipment	EA	**$2,022.56**	2011	1.00	1	$2,022.56	8%	9%	MII	MII Assemblies	
A38A	Site Survey	Site Survey	DY	**$532.24**	2011	1.00	1	$532.24	8%	9%	MII	MII Assemblies	
A39A	Fixture Removal	Fixture Removal	HR	**$74.35**	2011	1.00	1	$74.35	8%	9%	MII	MII Assemblies	2 hours per quadrant.
A39B	Fixture Re-Installation	Fixture Re-Installation	HR	**$74.35**	2011	1.00	1	$74.35	8%	9%	MII	MII Assemblies	2 hours per quadrant.