



121 S. Jackson St., Moscow, ID 83843
Phone: (208) 882-7858; Fax: (208) 883-3785

108 W. Idaho Ave., Kellogg, ID 83837
Phone: (208) 786-1206; Fax: (208) 786-1209

3501 W. Elder St., Ste. 102, Boise, ID 83705
Phone: (208) 336-7080; Fax: (208) 908-4980

10905 E. Montgomery Dr., Ste. 3
Spokane Valley, WA 99206-6606
Phone: (509) 928-1063; Fax: (509) 928-1067

302 N. Last Chance Gulch, Ste. 409
Helena, MT 59601
Phone: (406) 441-5441; Fax: (406) 441-5443

www.terragraphics.com

TECHNICAL MEMORANDUM

To: Pebbles Clark, MT DEQ

From: Jamie Mongoven, PE
Tom Smith, PE, PG

Date: November 9, 2009

Subject: Highland Mine, Silver Bow County, MT
DEQ Contract No. 407041-TO13, Task Order No. 13,
Work Task 1 - Final EEE/CA Addendum

Job Code: 09211

The purpose of this technical memorandum is to review and assess the “Final Expanded Engineering Evaluation/Cost Analysis for the Highland Mine Site” (EEE/CA) prepared by Pioneer Technical Services, Inc, March 1997 for the Montana Department of Environmental Quality (DEQ), and to address any standards that have been revised since 1997. This technical memorandum comprises Work Item 1 of Task Order 13 pursuant to Contract No. 407041 between TerraGraphics and DEQ. The scope of the EEE/CA is to significantly reduce or eliminate the impacts of the waste rock on surface water. The reclamation alternatives considered for implementation at this site are classified as interim or removal actions and are not necessarily considered as the final reclamation remedies or alternatives. In addition, the reclamation alternatives presented in this memorandum are applicable only to the solid media; no reclamation alternatives were developed for the treatment of groundwater, surface water, or stream sediment run-off from the subject site. The items listed below are being considered to ensure the preferred alternatives selected meet current standards and to address any standards that have been revised since 1997.

1. Identify a preferred reclamation alternative.
2. Review and update Applicable or Relevant and Appropriate Requirements (ARARs).
3. Review and update the preferred alternative’s compliance with ARARs.
4. Update the cost estimate for the preferred alternative.
5. Determine waste volumes.
6. Determine all local, county, state, and federal agencies that shall be contacted to implement the preferred alternative.

1 Identification of a Preferred Reclamation Alternative

The EEE/CA provided five alternatives for solid mine wastes and five alternatives for adit discharge. The EEE/CA identified the combination of alternatives 3 and 3b as the preferred alternatives: Alternative 3 for solid media, in-place containment of waste rock and tailings, and Alternative 3b for the adit discharge. The proposed work elements in these alternatives are as follows:

- installing a temporary diversion to isolate the adit discharge from the mine wastes,
- removal of tailings from the flow path,
- consolidating the solid media mine wastes (WR1 and tailings) in the area of WR1,
- grading and amending the mine wastes,
- applying cover soil over the graded materials,
- fertilizing, seeding, and mulching, and
- reconstructing the drainage channel to the edge of the site.

Generally, Alternative 3 involves combining the waste into one repository, reducing the steepness of the slope of WR1, and establishing vegetation on top of the solid media contaminant source. Vegetation will be established upon a containment cover applied over the waste source. Covers may range from a simple, single-layered soil cover to a complex, multi-layered cover consisting of synthetic materials and soil. The purpose of establishing vegetation is to stabilize the surface and decrease net infiltration through the waste.

Alternative 3b Containment Removal/Channel Restoration, as proposed in the EEE/CA for adit discharge, involves reconstruction of the flow channel after the mine wastes have been removed, using armored banks (i.e., riprap) to reduce erosion potential. Structures are proposed to be incorporated within the channel on the steeper slopes to act as catch basins for migrating sediments.

A combination of Alternatives 3 and 3b were identified as the preferred alternatives and estimated in the 1997 EEE/CA to reduce the overall site risks (human health and ecological) by 75%, which would allow the site to comply with the recreational use scenario (Pioneer Technical Services, 1997). These alternatives are still the most cost effective alternatives which will provide adequate protection to human health and the environment.

2 Review and update 1997 EEE/CA ARARs (Section 4 of the EEE/CA)

In November 2008, the DEQ-Mine Waste Cleanup Bureau prepared a summary of federal and state ARARs for reclamation projects. A copy of the summary is attached. Table 1 shows the preliminary identification of ARARs as they apply to the Highland Mine Site.

Table 1 Preliminary Identification of Applicable or Relevant and Appropriate Requirements (ARARs) for the Highland Mine Site

ARARs for Reclamation Projects, November 2008	Applicable	Relevant and Appropriate	Not Likely Applicable
3.1 Federal Contaminant-Specific ARARs			
3.1.1 Safe Drinking Water Act		X	
3.1.2 Clean Water Act		X	
3.1.3 National Ambient Air Quality Standards	X		
3.2 State Contaminant-Specific ARARs			
3.2.1 Groundwater Protection			X
3.2.2 Montana Water Quality Act	X		
3.2.3 Montana Ambient Air Quality Regulations	X		
4.1 Federal Location-Specific ARARs			
4.1.1 National Historic Preservation Act	X		
4.1.2 Archaeological and Historic Preservation Act	X		
4.1.3 Historic Sites Act of 1935	X		
4.1.4 Protection and Enhancement of the Cultural Environmental	X		
4.1.5 The Archaeological Resources Protection Act of 1979		X	
4.1.6 American Indian Religious Freedom Act	X		
4.1.7 Native American Graves Protection and Repatriation Act	X		
4.1.8 Fish and Wildlife Coordination Act	X		
4.1.9 Endangered Species Act	X		
4.1.10 Floodplain Management Regulations	X		
4.1.11 Protection of Wetlands Regulations	X		
4.1.12 Clean Water Act		X	
4.1.13 Migratory Bird Treaty Act	X		
4.1.14 Bald Eagle Protection Act	X		
4.1.15 Resource Conservation and Recovery Act	X		
4.2 State Location-Specific ARARs			
4.2.1 Montana Antiquities Act		X	
4.2.2 Montana Human Skeletal Remains and Burial Site Protection Act	X		
4.2.3 Montana Floodplain and Floodway Management Act	X		
4.2.4 Montana Stream Protection Requirements	X		
4.2.5 Montana Solid Waste Management Act	X		
4.2.6 Endangered Species and Wildlife	X		

Table 1 Preliminary Identification of Applicable or Relevant and Appropriate Requirements (ARARs) for the Highland Mine Site

ARARs for Reclamation Projects, November 2008		Applicable	Relevant and Appropriate	Not Likely Applicable
5.0 Action-Specific ARARs				
5.1	Federal and State Water Protection Requirements	X		
5.1.1	Clean Water Act	X		
5.1.2	Montana Pollutant Discharge Elimination System Requirements	X		
5.1.3	Water Quality Statutes and Regulations	X		
5.1.4	Stormwater Runoff Control Requirements	X		
5.2	Federal and State RCRA Subtitle C Requirements	X		
5.3	Federal and State RCRA Subtitle D and Solid Waste Management Requirements	X		
5.3.1	Federal Requirements		X	
5.3.2	State of Montana Solid Waste Requirements	X		
5.4	Federal and State Mine Reclamation Requirements		X	
5.4.1	Surface Mining Control and Reclamation Act		X	
5.4.2	Montana Statutory and Regulatory Requirements		X	
5.5	Air Requirements	X		
5.6	Noxious Weeds	X		
6.0 To Be Considered Documents				
7.0 Other Laws (Non-Exclusive List)				
7.1	Other Federal Laws	X		
	Occupational Safety and Health Regulations	X		
7.2	Other State Laws			
A	Groundwater Act			X
B	Public Water Supply Regulations			X
C	Water Rights	X		
D	Controlled Ground Water Areas		X	
E	Occupational Health Act, Section 50-70-101, et.seq., MCA.	X		
F	Montana Safety Act	X		
G	Employee and Community Hazardous Chemical Information	X		

Reviewing the standards, the most stringent contaminant levels appear to be listed in Circular DEQ-7 (which falls under ARAR 5.1.3). The 1997 EEE/CA sampling data show surface water mercury concentrations exceeding current surface water quality standards (Table 2). The other primary contaminants, listed in Table 2, remain below current water quality standards; however, arsenic, copper, and iron were slightly elevated

relative to background concentrations. Surface water samples of Basin Creek were obtained at seven different locations in 1996, starting at a point one mile downstream (SW-1) of the adit and continuing upstream to the adit (AD-1). Sample locations are shown in Figure 3-1 of the 1997 EEE/CA. Table 2 compares the surface water total metals concentrations to the Human Health and Safety Standards (HHSS) listed in Circular DEQ-7 (2008).

Table 2 Surface Water Total Metals

Primary Contaminants of Concern	HHSS Circular DEQ-7 µg/L		May 1996 Sampling µg/L	
	1997	2008	Low	High
Arsenic (As)	18	10	0.59 U	5
Cadmium (Cd)	5	5	0.1 U	0.1 U
Copper (Cu)	1000	1300	4.1 U	4.1 U
Lead (Pb)	15	15	0.41 U	0.49
Mercury (Hg)	0.2	0.05	<0.11 U	0.18**
Zinc (Zn)	5000	2000	9.8 U	10

U – Undetectable

**exceed current water quality standards for Circular DEQ-7

As shown in the 1997 EEE/CA, mercury is detectable around and downgradient from the existing waste rock and tailings piles. Surface water samples at locations SW-1, SW-3, SW-4, and SW-5, generally located downstream of the waste rock pile, had detectable mercury levels, while SW-2, SW-6, and AD-1 (adit discharge) did not have detectable levels of mercury (below the laboratory detection limits). There was no detectable mercury at the adit discharge; therefore, it is believed that by isolating the adit discharge and surface water run-off from the waste rock and tailings there should be a substantial reduction in the total metals deposited into Basin Creek (Pioneer Technical Services, 1997).

3 Review and update the preferred alternative’s compliance with ARARs (Sections 8.4.2, 8.8.1, and 8.8.2 of the EEE/CA)

The preferred Alternatives 3 and 3b are proposed to address the surface water quality ARARs. The groundwater ARARs have not been reviewed for this site as they are outside of the scope of this project. The reclamation alternatives considered for implementation at this site are classified as interim or removal actions and are not necessarily considered as the final reclamation remedies or alternatives. All other ARARs have been reviewed and are shown above in section 2.

4 Update the cost estimate for the preferred alternative (Appendix C Tables C-1 and C-8 of the EEE/CA)

All quantities for the preliminary cost estimate were based on observed conditions and quantities provided in the 1997 EEE/CA. Several items in the EEE/CA cost estimates are generalized and listed as lump sum with minimal explanation as to what is covered in the lump sum. The attached tables include the 1997 EEE/CA cost estimates and the updated cost estimates. Where necessary, additional items and descriptions were added for

clarity. The quantities listed in the attached Preliminary Cost Estimate (Tables 3, 4, and 5) are for the preferred Alternatives 3 and 3b proposed in this memo.

5 Determination of waste volumes

The 1997 EEE/CA estimated the total waste rock pile volume to be 8,800 cubic yards (cy) and the tailings volume to be relocated at around 2,000 cy. A topographical survey will be completed by DEQ's surveying contractor after this memorandum has been submitted. Upon completion of the survey, the waste rock and tailings volumes will be reviewed and amended, as necessary, and included in the Engineering Reclamation Design and Construction Bid Document Package.

6 Determine all local, county, state and federal agencies that shall be contacted to implement the preferred alternative

The following additional entities/agencies are to be contacted prior to implementation of the preferred alternatives:

- Butte/Silver Bow County Water Department, Public Works Water Utilities Division – the adit discharge is the head water for Basin Creek, which serves as one of the water supplies for Butte/Silver Bow County.
- United States Forest Service, Beaverhead-Deer Lodge National Forest – since the site is accessed by Forest Service roads.
- Land Owner - Timberline Resources Corporation.

Summary

In summary, the mercury levels measured in 1996 now exceed current Human Health and Safety Standards per Circular DEQ-7 (2008). This is due to the reduction in acceptable limits from 0.2 µg/L in the 1997 standards to 0.05 µg/L in 2008. Alternatives 3 and 3b are the preferred alternatives proposed in this memorandum. Combining these two alternatives will address the ARARs by reducing the contact between the waste rock and surface water, along with reducing the waste rock pile steepness, then covering and re-vegetating the slopes to further reduce the chances of erosion. The groundwater ARARs were not assessed in the 1997 EEE/CA or in this addendum as they are beyond the scope of this project. This addendum was prepared on available information included in the 1997 EEE/CA.

Please call us any time at your convenience if you have any concerns or questions.

Attachments:

Applicable or Relevant and Appropriate Requirements (ARARs) for Reclamation Projects
Table 3 EEE/CA addendum cost estimate - alternative 3 in-place containment (waste rock and tailings) 2009

Table 4 EEE/CA addendum cost estimate - alternative 3b contaminant removal and channel restoration 2009

Table 5 EEE/CA addendum alternative cost comparison 2009

**APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS
(ARARS)
FOR
RECLAMATION PROJECTS**

NOVEMBER, 2008

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ARARS FOR RECLAMATION PROJECTS

1.0 INTRODUCTON - HISTORY OF ARARS AT ABANDONED MINED LAND RECLAMATION SITES

After the enactment of the Federal Surface Mining Control and Reclamation Act in 1977 (“SMCRA”, 30 USC §§ 1201-1238), the State of Montana could be delegated the authority to implement the Abandoned Mined Lands Reclamation (“AMLR”) program authorized by that Act, as well as funding for implementation of that program, by the Federal Office of Surface Mining, Reclamation, and Enforcement (“OSM”). The State enacted necessary legislation to implement the AMLR program according to State law and had a plan (“Reclamation Plan”) to do so, which was approved by OSM. Delegation of exclusive authority for the program would follow. Montana passed necessary legislation for reclamation of coal mines (Title 82, Chapter 4, Part 2, MCA), as well as legislation for reclamation of other types of mines (Title 82, Chapter 4, Part 3, MCA – Metal Mine Reclamation, and Title 82, Chapter 4, Part 4, Part 4, MCA – Open Cut Mining Reclamation).

Satisfaction of the requirements of SMCRA by the State of Montana resulted in the delegation by OSM to the State of Montana of the exclusive authority to implement the Reclamation Plan in the State of Montana on November 24, 1980. While the delegation of the program in 1980 was limited to abandoned coal mine reclamation, it was expanded by Montana’s showing it had reclaimed all eligible abandoned coal mines, whereupon OSM approved the 1995 amendments to the State’s Reclamation Plan to include non-coal abandoned mines. This approval resulted in additional delegation of authority to the State of Montana to implement reclamation of abandoned hardrock mines as well as quarries.

In the 1995 Amendments to its Reclamation Plan, the State of Montana stated that the AMLR program would comply with the National Contingency Plan (“NCP”). Among other things, the NCP provides a procedure for evaluating alternative cleanup methods for hazardous wastes. The NCP also establishes cleanup standards for hazardous wastes, which standards are referred to in the NCP as “ARARs.” By requiring compliance with the NCP, the State adopted the NCP procedures for evaluation of alternatives in addressing AMLR Reclamation Projects, as well as ARARS. At the same time, utilization of the evaluation of alternatives procedures found in the NCP satisfied the evaluation of alternatives required for major Federal actions undertaken by the Federal government which could have a significant effect on the environment as required by the Federal National Environmental Policy Act (“NEPA”, 42 USC 4321 – 4370).

AMLR, which is based upon SMCRA, is one of several legal authorities available in the State of Montana for cleanup of mine wastes, the others being the Federal Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA” or “Superfund”, 42 USC 9601 – 9675) and the State’s counterpart to the Federal

Superfund law, the Comprehensive Environmental Cleanup and Responsibility Act (“CECRA,” §§ 75-10-701 - 752 MCA).

To paraphrase the Federal Superfund statute, at 42 USC 121(d)(E)(4), in remedy selection for cleanup of an hazardous waste site, if a State ARAR is not consistently applied, a remedy may be selected by the Federal government which does attain that ARAR. Such a decision could result in State standards not being applied to Federal mine waste cleanups in the State of Montana. Consequently, to avoid the risk that State standards would not be applied within the State of Montana, ARARs should be consistently applied in the State’s three mine waste cleanup programs (Superfund, CECRA, and AMLR).

The interaction of SMCRA and CERCLA requirements, particularly the interaction of the consistency requirement of CERCLA and the adoption of the NCP in Montana’s 1995 Reclamation Plan, resulted in procedures and standards for the Montana AMLR program which address NEPA alternatives analysis and incorporate CERCLA standards (i.e., ARARs).

The ARARs described below are, by necessity, generic because they are to be used as part of the evaluation process developed by the AMLR program for analysis of alternatives for AMLR Projects. This evaluation results in the Expanded Engineering Evaluation/Cost Analysis (“EEE/CA”) which precedes selection of a Reclamation alternative.

The ARARs listed below are based upon those identified for the Neihart Operable Unit 1, Carpenter-Snow Creek Mining District NPL Site (June, 2007). The wastes include both mining and milling wastes, which exist at a typical AMLR site. The text of the ARARs analysis used has been updated and adapted to allow its application to AMLR sites in general.

2.0 TYPES OF ARARS

ARARs are either applicable or relevant and appropriate. Applicable requirements are those standards, requirements, criteria, or limitations promulgated under federal or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, or contaminant, remedial action, location or other circumstances found at a CERCLA site. 40 CFR Section 300.5 Relevant and appropriate requirements are those “Standards, requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not “applicable” to hazardous substances, pollutants, contaminants, remedial actions, locations, or other circumstances found at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site such that their use is well suited to the particular site.” Id. Factors which may be considered in making this determination are presented in 40 CFR 300.400 (g)(2).

Each ARAR or group of related ARARs identified herein is followed by a specific statutory or regulatory citation, a classification describing whether the ARAR is

applicable or relevant and appropriate, and a description which summarizes the requirements.

ARARs are divided into contaminant specific, location specific, or action specific requirements, as described in the NCP and EPA Guidance.

Contaminant specific ARARs include those laws and regulations governing the release to the environment of materials possessing certain chemical or physical characteristics or containing specific chemical compounds. Contaminant specific ARARs generally set health or risk based numerical values or methodologies which, when applied to site specific conditions, result in the establishment of numerical values. These values establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment. Location specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of cleanup activities because they are in specific locations. Location specific ARARs relate to the geographic or physical position of the site, rather than to the nature of the contaminants. Action specific ARARs are usually technology or activity based requirements or limitations on actions taken with respect to hazardous substances.

Many requirements listed here are promulgated as identical or nearly identical requirements in both federal and state law, usually pursuant to delegated environmental programs administered by both EPA and the states, such as many of the requirements of the federal Clean Water Act and the Montana Water Quality Act. The Preamble to the final NCP states that such a situation results in citation to the state provision as the appropriate standard, but treatment of the provisions is a federal requirement. ARARs and other laws which are unique to state law are identified as state ARARs.

As noted previously, the 1995 Reclamation Plan provides that the NCP was adopted for Reclamation activities. Those activities are directly analogous to "removal actions" under CERCLA. As stated in the NCP at 55 FR 8695 (March 8, 1990):

The purpose of removal actions generally is to respond to a release...so as to prevent, minimize, or mitigate harm to human health and the environment. Although all removals must be protective...removals are distinct from remedial actions in that they may mitigate or stabilize the threat rather than comprehensively address all the threats at a site. Consequently, removal actions cannot be expected to attain all ARARs. Remedial actions, in contrast, must comply with all ARARs or obtain a waiver. (emphasis supplied).

Consequently, the NCP, at 40 CFR 300.410 provides that ARARS at removal actions:

...shall, to the extent practicable, considering the exigencies of the situation, attain...[ARARs]. In determining whether compliance with ARARs is

practicable, the lead agency may consider appropriate factors, including:

- a) the urgency of the situation; and
- b) the scope of the removal action to be conducted.

Therefore, based upon the NCP, after an ARAR has been identified for a Reclamation project, the EEE/CA should evaluate how the alternatives will attain ARARs and select an alternative that complies with ARARs to the extent practicable. If an ARAR cannot be complied with, the EEE/CA should indicate why, utilizing the two part test set out above, attainment is not practicable.

3.0 CONTAMINANT-SPECIFIC ARARs

3.1 Federal

3.1.1 Safe Drinking Water Act

Safe Drinking Water Act, 42 U.S.C. ' 300f, et seq., National Primary and Secondary Drinking Water Regulations, 40 CFR Parts 141 and 142 (relevant and appropriate). The National Primary and Secondary Drinking Water Regulations (40 CFR Parts 141 and 143) establish maximum contaminant levels (MCL) for chemicals in drinking water distributed in public water systems. These are enforceable in Montana under the Public Water Supplies, Distribution, and Treatment Act and corresponding regulations, MCA ' 75-6-101, et seq., and ARM ' 17.38.203. Safe Drinking Water Act MCLs are relevant and appropriate to for reclamation projects because the groundwater in a reclamation project area is a potential source of drinking water.

The determination that the drinking water standards are relevant and appropriate for reclamation projects is supported by the regulations and guidance. The Preamble to the NCP clearly states that the MCLs are relevant and appropriate for ground or surface water that is a current or potential source of drinking water. See 55 Fed. Reg. 8750, March 8, 1990, and 40 CFR ' 300.430(e)(2)(I)(B). MCLs developed under the Safe Drinking Water Act generally are ARARs for current or potential drinking water sources. See, EPA Guidance On Remedial Action For Contaminated Groundwater at Superfund Sites, OSWER Dir. #9283.1-2, December 1988.

In addition, maximum contaminant level goals (MCLG) may also be relevant and appropriate . See 55 Fed. Reg. 8750-8752. MCLGs are health-based goals which are established at levels at which no known or anticipated adverse effects on the health of persons occur and which allow an adequate margin of safety. According to the NCP, MCLGs that are set at levels above zero must be attained for ground or surface waters that are current or potential sources of drinking water. Where the MCLG for a contaminant has been set at a level of zero, the MCL promulgated for that contaminant must be attained.

The MCLs and MCLGs for contaminants of concern are:

<u>Contaminant</u>	<u>MCL (mg/L)</u>	<u>MCLG^a (mg/L)</u>
Antimony	0.006	0.006
Arsenic	0.01	NE
Cadmium	0.005 ^b	0.005 ^b

Copper	1.3 ^c	1.3 ^c
Iron	0.3 ^d	NE
Lead	0.015 ^c	0
Manganese	0.05 ^d	NE
Mercury	0.002 ^b	0.002 ^b
Silver	NE	NE
Thallium	0.002 ^b	0.0005
Zinc	5.0 ^d	NE

NE - Not Established

^a 40 CFR ' 141.51(b)

^b 40 CFR ' 141.62(c)

^c 40 CFR ' 141.80(c) B No MCL, but specifies BAT to be applied.

^d 40 CFR ' 143.3 B Secondary MCL

ARM 17.38.203 incorporates by reference into State law the MCLs for inorganic substances set forth in 40 CFR Part 141 (Primary Drinking Water Standards).

3.1.2 Clean Water Act

Federal Surface Water Quality Requirements, Clean Water Act, 33 USC ' 1251, et seq. (applicable). 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.

3.1.3 National Ambient Air Quality Standards

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 ARM ' 17.8.222 [lead] and ARM ' 17.8.223 [PM-10].) The PM-10 standard is 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), 24-hour average concentration, and the lead standard is 1.5 $\mu\text{g}/\text{m}^3$, maximum arithmetic mean averaged over a calendar quarter.

3.2 State

3.2.1 Groundwater Protection

ARM 17.30.1005 (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.

ARM 17.30.1006 (applicable) provides that groundwater is classified into Classes I through IV based on its specific conductance and establishes the applicable ground water quality standards with respect to each groundwater classification.

Concentrations of dissolved substances in Class I or II groundwater may not exceed the human health standards listed in department Circular DEQ-7.¹ These levels are listed below for the primary contaminants of concern.

¹

Montana Department of Environmental Quality, Water Quality Division, Circular DEQ-7, Montana Numeric Water Quality Standards (February 2008).

<u>Contaminant</u>	<u>DEQ-7 Standard (mg/L)^a</u>
Antimony	0.006
Arsenic	0.01
Cadmium	0.005
Copper	1.3
Iron	NE ^b
Lead	0.015
Manganese	NE ^b
Mercury	0.002
Silver	0.1
Thallium	0.002
Zinc	2.0

NE- Not Established

^a DEQ-7 standards for metals and arsenic in ground water are based on the dissolved portion of the sample (after filtration through a 0.45 Φ m membrane filter).

^b Concentrations of iron and manganese must not reach values that interfere with the uses specified in the surface and groundwater standards (ARM 17.30.601 et seq. and ARM 17.30.1001 et seq.). The secondary maximum contaminant levels of 300 Φ g/L and 50 Φ g/L, respectively, may be considered guidance to determine levels that will interfere with the specified uses.

Reclamation projects must meet the DEQ-7 standards for all contaminants at a Reclamation site. In addition, for Class I and Class II ground water, no increase of a parameter may cause a violation of Section 75-5-303, MCA (nondegradation).

ARM 17.30.1006 requires that concentrations of other dissolved or suspended substances must not exceed levels that render the waters harmful, detrimental or injurious to public health. Maximum allowable concentrations of these substances also must not exceed acute or chronic problem levels that would adversely affect existing or designated beneficial uses of groundwater of that classification.

ARM 17.30.1011 (applicable)

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 Section 75-5-303, MCA, and ARM Title 17, Chapter 30, Subchapter 7.

An additional concern with respect to ARARs for groundwater is the impact of groundwater upon surface water. If significant loadings of contaminants from groundwater sources to any surface water within a Reclamation Project contribute to the inability of the stream to meet classification standards, then alternatives to alleviate such groundwater loading must be evaluated and, if appropriate, implemented. Groundwater in certain areas may have to be remediated to levels more stringent than the groundwater classification standards in order to achieve the standards for affected surface water. See Compliance with Federal Water Quality Criteria, OSWER Publication 9234.2-09/FS (June 1990) (AWhere the ground water flows naturally into the surface water, the ground-water remediation should be designed so that the receiving surface-water body will be able to meet any ambient water-quality standards [such as State WQSs or FWQC] that may be ARARs for the surface water.@)

3.2.2 Montana Water Quality Act

State of Montana Surface Water Quality Requirements, Montana Water Quality Act, Section 75-5-101, et seq., MCA, and implementing regulations (applicable). General. The Clean Water Act, 33 U.S.C. § 1251, et seq., provides the authority for each state to adopt water quality standards (40 CFR Part 131) designed to protect beneficial uses of each water body and requires each state to designate uses for each water body. The Montana Water Quality Act, Section 75-5-101, et seq., MCA, establishes requirements to protect, maintain and improve 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. Pursuant to this authority and the criteria established by Montana surface water quality regulations, ARM § 17.30.601, et seq., Montana has established the Water-Use Classification system. The classification for specific surface water bodies within the State are set for in ARM 17.30.607 et. seq. The applicable standards for each classification are set forth in ARM 17.30.621 through ARM 17.30.629, inclusive.

ARM 17.30.637 (applicable). 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 17.30.637 also states that no waste may be discharged and no activities conducted which, either alone or in combination with other waste activities, will cause violation of surface water quality standards.

In addition, ARM 17.30.637 provides that leaching pads, tailings ponds, or water or waste or product holding facilities must be located, constructed, operated and maintained in such a manner and of such materials to prevent any discharge, seepage, drainage, infiltration, or flow which may result in pollution of state waters, and a monitoring system may be required to ensure such compliance.

Section 75-5-605, MCA (applicable) provides that it is unlawful to cause pollution of any state waters or to place or cause to be placed, any wastes where they will cause pollution of any state waters.

Section 75-5-303, MCA (applicable) states that existing uses of state waters and the level of quality of state waters necessary to protect those uses must be maintained and protected.

ARM 17.30.705 (applicable). For all state waters, existing and anticipated uses and water quality necessary to support those uses must be maintained and protected.

3.2.3 Montana Ambient Air Quality Regulations

Montana Ambient Air Quality Regulations, ARM 17.8.206, -.222, -.220, and -.223 (applicable). The following provisions establish air quality standards.

ARM 17.8.206. This provision establishes sampling, data collection, and analytical requirements to ensure compliance with ambient air quality standards.

ARM 17.8.222. Lead emissions to ambient air shall not exceed a ninety (90) day average of 1.5 micrograms per cubic liter of air.

ARM 17.8.220. Settled particulate matter shall not exceed a thirty (30) day average of 10 grams per square meter.

ARM 17.8.223. PM-10 concentrations in ambient air shall not exceed a 24 hour average of 150 micrograms per cubic meter of air and an annual average of 50 micrograms per cubic meter of air.

4.0 LOCATION-SPECIFIC ARARS

The statutes and regulations set forth below relate to solid waste, floodplains, floodways, streambeds, and the preservation of certain cultural, historic, natural or other national resources located in certain areas that may be adversely affected by Reclamation.

4.1 Federal

4.1.1 National Historic Preservation Act

National Historic Preservation Act, 16 USC ' 470, 40 CFR ' 6.301(b), 36 CFR Part 63, Part 65, and Part 800 (NHPA) (applicable). This statute and implementing regulations require Federal agencies to take into account the effect of Reclamation upon any district, site, building, structure, or object that is included in or eligible for the Register of Historic Places. If the effect of Reclamation cannot be reasonably avoided, Measures will be implemented to minimize or mitigate the potential effects of the activity. In addition, Indian cultural and historical resources must be evaluated and effects avoided, minimized or mitigated.

4.1.2 Archaeological and Historic Preservation Act

Archaeological and Historic Preservation Act, 16 USC ' 469, 40 CFR 6.301(c) (applicable). This statute and implementing regulations establish requirements for the evaluation and preservation of historical and archaeological data, including Indian cultural and historic data, which may be destroyed through alteration of terrain as a result of a Federal program (such as AMLR). This requires the AMLR Program to survey the site for covered scientific, prehistorical or archaeological artifacts. If eligible scientific, prehistoric, or archeological data are developed during reclamation, they shall be preserved in accordance with these requirements.

4.1.3 Historic Sites Act of 1935

Historic Sites Act of 1935, 16 USC ' 461, et seq., 40 CFR 6.310(a) (applicable). This statute and implementing regulations require federal agencies to consider the existence and location of land marks on the National Registry of National Landmarks and to avoid undesirable impacts on such landmarks.

4.1.4 Protection and Enhancement of the Cultural Environment

Executive Order 11593 Protection and Enhancement of the Cultural Environment, 16 USC ' 470 (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 Reclamation activities should threaten cultural resources.

4.1.5 The Archaeological Resources Protection Act of 1979

The Archaeological Resources Protection Act of 1979, 16 USC ' 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 Reclamation activities.

4.1.6 American Indian Religious Freedom Act

American Indian Religious Freedom Act, 42 U.S.C. ' 1996. (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.

4.1.7 Native American Graves Protection and Repatriation Act

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.

4.1.8 Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act, 16 USC ' 661, 40 CFR 6.302 (applicable). This statute and implementing regulations require that Federal agencies or federally funded projects ensure that any modification of any stream or other water body affected by any action authorized or funded by the Federal agency provide for adequate protection of fish and wildlife resources. This ARAR requires consultation with the U.S. Fish and Wildlife Service and the Montana Department of Fish, Wildlife, and Parks. Further consultation will occur during Reclamation design and construction.

4.1.9 Endangered Species Act

Endangered Species Act, 16 USC ' 1531, 50 CFR Parts 17 and 402 (applicable). This statute and implementing regulations provide that federal activities not jeopardize the continued existence of any threatened or endangered species. This ARAR will be achieved through consultation with the U.S. Fish and Wildlife Service and the Montana Department of Fish, Wildlife and Parks during Reclamation design and construction action. Specific avoidance or

other mitigation measures identified shall be incorporated into the Reclamation design and implemented as part of construction.

4.1.10 Floodplain Management Regulations

Floodplain Management Regulations, Executive Order No. 11988 and 40 CFR ' 6.302(b) (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.

4.1.11 Protection of Wetlands Regulations

Protection of Wetlands Regulations, 40 CFR Part 6, Appendix A, and Executive Order No. 11990 (applicable). Steps will be taken to avoid or mitigate the adverse impacts associated with the destruction or loss of wetlands to the extent possible and avoidance of new construction in wetlands if a practicable alternative exists. Wetlands are defined as those areas that are inundated or saturated by groundwater or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Compliance with this ARAR will be achieved through consultation with the U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers, to determine the existence and category of wetlands present at the site, and any avoidance or mitigation and replacement which may be necessary.

4.1.12 Clean Water Act

Section 404, Clean Water Act, 33 USC ' ' 1251 et seq., 33 CFR Part 330 (applicable). Regulates discharge of dredged or fill materials into waters of the United States. Substantive requirements of portions of Nationwide Permit No. 38 (General and Specific Conditions) are applicable to Reclamation activities conducted within waters of the United States within the Reclamation Project area.

4.1.13 Migratory Bird Treaty Act

Migratory Bird Treaty Act, 16 USC ' 703, et seq. (applicable). This requirement establishes a federal responsibility for the protection of the international migratory bird resource and requires continued consultation with the USFWS during Reclamation design and construction to ensure that Reclamation of the site does not unnecessarily impact migratory birds.

4.1.14 Bald Eagle Protection Act

Bald Eagle Protection Act, 16 USC ' 668, et seq. (applicable). This requirement establishes a federal responsibility for protection of bald and golden eagles, and requires continued consultation with the U.S. Fish and Wildlife Service during Reclamation design and construction to ensure that Reclamation of the site does not unnecessarily adversely affect bald and golden eagles.

4.1.15 Resource Conservation and Recovery Act

Resource Conservation and Recovery Act and regulations, 40 CFR ' 264.18 (a) and (b) (relevant and appropriate). These regulations provide seismic and floodplain restrictions on the location of a waste management unit.

4.2 State

4.2.1 Montana Antiquities Act

Montana Antiquities Act, Section 22-3-421, et seq., MCA (relevant and appropriate). The Montana Antiquities Act addresses the responsibilities of State agencies regarding historic and prehistoric sites including buildings, structures, paleontological sites, archaeological sites on state owned lands. Each State agency is responsible for establishing rules regarding historic resources under their jurisdiction which address National Register eligibility, appropriate permitting procedures and other historic preservation goals. The State Historic Preservation Office maintains information related to the responsibilities of State Agencies under the Antiquities Act.

4.2.2 Montana Human Skeletal Remains and Burial Site Protection Act

Montana Human Skeletal Remains and Burial Site Protection Act (1991), Section 22-3-801, MCA (applicable). The Human Skeletal Remains and Burial Site Protection Act is the result of years of work by Montana Tribes, State agencies and organizations interested in ensuring that all graves within the State of Montana are adequately protected. If human skeletal remains or burial sites are encountered during Reclamation, then requirements will be applicable.

4.2.3 Montana Floodplain and Floodway Management Act

Montana Floodplain and Floodway Management Act and Regulations, Section 76-5-401, et seq., MCA, ARM 36.15.601, et seq. (applicable). The Floodplain and Floodway Management Act and regulations specify types of uses and structures that are allowed or prohibited in the designated 100-year floodway² and floodplain.³ If a Reclamation Project contains streams or creeks that run through areas that can flood, these standards are applicable to Reclamation Projects within these floodplain areas.

A. Prohibited uses. Uses prohibited anywhere in either the floodway or the floodplain are:

- Ⓐ solid and hazardous waste disposal; and
- Ⓐ storage of toxic, flammable, hazardous, or explosive materials.

ARM 36.15.605(2) and 36.15.703 (Applicable); see also ARM 36.15.602(5)(b) (Applicable). These provisions effectively prohibit the placement of mine waste repositories within the 100-year floodplain and require mine wastes addressed by Reclamation to be removed from the floodplain.

²

The "floodway" is the channel of a watercourse or drainway and those portions of the floodplain adjoining the channel that are reasonably required to carry and discharge the floodwater of the watercourse or drainway. ARM 36.15.101(13).

³

The "floodplain" is the area adjoining the watercourse or drainway which would be covered by the floodwater of a base (100-year) flood except for sheetflood areas that receive less than one foot of water per occurrence. The floodplain consists of the floodway and flood fringe. ARM 36.15.101(11).

In the floodway, additional prohibitions apply, including prohibition of:

- Ⓐ a building for living purposes or place of assembly or permanent use by human beings;
- Ⓐ any structure or excavation that will cause water to be diverted from the established floodway, cause erosion, obstruct the natural flow of water, or reduce the carrying capacity of the floodway; and
- Ⓐ the construction or permanent storage of an object subject to flotation or movement during flood level periods.

Section 76-5-403, MCA (Applicable).

B. Applicable considerations in use of floodplain or floodway. Applicable regulations also specify factors that must be considered in allowing diversions of the stream, changes in place of diversion of the stream, flood control works, new construction or alteration of artificial obstructions, or any other nonconforming use within the floodplain or floodway. Many of these requirements are set forth as factors that must be considered in determining whether a permit can be issued for certain obstructions or uses. While permit requirements are not directly applicable to Reclamation construction conducted entirely on site, the substantive criteria used to determine whether a proposed obstruction or use is permissible within the floodway or floodplain are applicable standards. Factors which must be considered in addressing any obstruction or use within the floodway or floodplain include:

- Ⓐ the danger to life and property from backwater or diverted flow caused by the obstruction or use;
- Ⓐ the danger that the obstruction or use will be swept downstream to the injury of others;
- Ⓐ the availability of alternate locations;
- Ⓐ the construction or alteration of the obstruction or use in such a manner as to lessen the danger;
- Ⓐ the permanence of the obstruction or use; and
- Ⓐ the anticipated development in the foreseeable future of the area which may be affected by the obstruction or use.

See Section 76-5-406, MCA; ARM 36.15.216 (Applicable, substantive provisions only). Conditions or restrictions that generally apply to specific activities within the floodway or floodplain are:

- Ⓐ the proposed activity, construction, or use cannot increase the upstream elevation of the 100-year flood a significant amount (2 foot or as otherwise determined by the permit issuing authority) or significantly increase flood velocities, ARM 36.15.604 (Applicable, substantive provisions only); and
- Ⓐ the proposed activity, construction, or use must be designed and constructed to minimize potential erosion. See ARM 36.15.605.

For the substantive conditions and restrictions applicable to specific obstructions or uses, see the following applicable regulations:

Excavation of material from pits or pools - ARM 36.15.602(1).

Water diversions or changes in place of diversion - ARM 36.15.603.

Flood control works (levees, floodwalls, and riprap must comply with specified safety standards) - ARM 36.15.606.

Roads, streets, highways and rail lines (must be designed to minimize increases in flood heights) - ARM 36.15.701(3)(c).

Structures and facilities for liquid or solid waste treatment and disposal (must be floodproofed to ensure that no pollutants enter flood waters and may be allowed and approved only in accordance with Montana Department of Environmental Quality (DEQ) regulations, which include certain additional prohibitions on such disposal) - ARM 36.15.701(3)(d).

Residential structures - ARM 36.15.702(1).

Commercial or industrial structures - ARM 36.15.702(2).

4.2.4 Montana Stream Protection Requirements

Montana Natural Streambed and Land Preservation Act and Regulations, Section 75-7-101, et.seq., MCA, and ARM 36.2.401, et.seq., (applicable). Applicable if Reclamation alters or affects a streambed or its banks. The adverse effects of any such action must be minimized.

ARM 36.2.410 (applicable) establishes minimum standards which would be applicable if Reclamation 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. Reclamation 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. All disturbed areas must be managed during construction and reclaimed after construction to minimize erosion. Temporary structures used during construction must be designed to handle high flows reasonably anticipated during the construction period. Temporary structures must be completely removed from the stream channel at the conclusion of construction, and the area must be restored to a natural or stable condition. Channel alterations must be designed to retain original stream length or otherwise provide hydrologic stability. Streambank vegetation must be protected except where removal of such vegetation is necessary for the completion of the Reclamation project. When removal of vegetation is necessary, it must be kept to a minimum. Riprap, rock, and other material used in a project must be of adequate size, shape, and density and must be properly placed to protect the streambank from erosion. The placement of road fill material in a stream, the placement of debris or other materials in a stream where it can erode or float into the stream, Reclamation projects that permanently prevent fish migration, operation of construction equipment in a stream, and excavation of streambed gravels are prohibited unless specifically authorized by the district. Such projects must also protect the use of water for any useful or beneficial purpose. See Section 75-7-102, MCA.

Sections 87-5-502 and 504, MCA (applicable -- substantive provisions only), provide 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.

While the administrative / procedural requirements, including the consent and approval requirements set forth in these statutes and regulations are not ARARs, consultation with the Montana Department of Fish, Wildlife and Parks, and any conservation district or board of county commissioners (or consolidated city/county government) is encouraged during the design and implementation of Reclamation to assist in the evaluation of the factors discussed above.

4.2.5 Montana Solid Waste Management Act

Montana Solid Waste Management Act and regulations, Section 75-10-201, et seq., MCA, ARM 17.50.505 (applicable). Sets forth requirements applying to the location of any solid waste management facility. Among other things, the location must have sufficient acreage, must not be within a 100-year floodplain, must be located so as to prevent pollution of ground, surface, and private and public water supply systems, and must allow for reclamation of the land.

Under ARM 17.50.505, a facility for the treatment, storage or disposal of solid wastes:

1. must be located where a sufficient acreage of suitable land is available for solid waste management;
2. may not be located in a 100-year floodplain;
3. may be located only in areas which will prevent the pollution of ground and surface waters and public and private water supply systems;
4. must be located to allow for reclamation and reuse of the land;
5. drainage structures must be installed where necessary to prevent surface runoff from entering waste management areas; and
6. where underlying geological formations contain rock fractures or fissures which may lead to pollution of the ground water or areas in which springs exist that are hydraulically connected to a proposed disposal facility, only Class III disposal facilities may be approved⁴.

Even Class III landfills may not be located on the banks of or in a live or intermittent stream or water saturated areas, such as marshes or deep gravel pits which contain exposed ground water. ARM 17.54.505(2)(j).

⁴ Group III consist of primarily inert wastes, including industrial mineral wastes which are essentially inert and non-water soluble and do not contain hazardous waste constituents. ARM 17.50.503(1)(b).

These standards apply to any facility for the treatment, storage, or disposal of mine wastes, including, for example, any mine waste repository, tailings deposit, or waste rock pile that is actively managed as part of a Reclamation Project.

Section 75-10-212, MCA. For solid wastes, Section 75-10-212, MCA, 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.

4.2.6 Endangered Species and Wildlife

Sections 87-5-106, 107 and 111, MCA (applicable). Endangered species should also be protected in order to maintain and to the extent possible, enhance their numbers. These Sections list endangered species, prohibited acts, and penalties. Section 87-5-201, MCA (applicable) concerns protection of wild birds, nests and eggs and under ARM 12.5.201 certain activities are prohibited with respect to specified endangered species.

5.0 ACTION-SPECIFIC ARARS

5.1 Federal and State Water Protection Requirements

5.1.1 Clean Water Act

Clean Water Act, Point Source Discharges requirements, 33 USC ' 1342 (applicable, substantive provisions only). Section 402 of the Clean Water Act, 33 USC ' 1342, *et seq.*, authorizes the issuance of permits for the discharge of any pollutant. This includes storm water discharges associated with industrial activity. See, 40 CFR ' 122.1(b)(2)(iv). Industrial activity includes inactive mining operations that discharge storm water contaminated by contact with or that has come into contact with any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations, see, 40 CFR ' 122.26(b)(14)(iii); landfills, land application sites, and open dumps that receive or have received any industrial wastes including those subject to regulation under RCRA subtitle D, see, 40 CFR ' 122.26(b)(14)(v); and construction activity including clearing, grading, and excavation activities, see, 40 CFR ' 122.26(b)(14)(x). Because the State of Montana has been delegated the authority to implement the Clean Water Act, these requirements are enforced in Montana through the Montana Pollutant Discharge Elimination System (MPDES). The MPDES requirements are set forth below.

5.1.2 Montana Pollutant Discharge Elimination System Requirements

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. The substantive requirements, including the requirement to properly operate and maintain all facilities and systems of treatment and control are applicable requirements for a repository containing mine waste.

Technology-Based Treatment, ARM 17.30.1203 and 1344 (applicable). Provisions of 40 CFR Part 125 for criteria and standards for the imposition of technology-based treatment requirements are adopted and incorporated in MPDES permits. Although the permit requirement would not apply to on-site discharges, the substantive requirements of Part 125 are applicable, i.e., for toxic and nonconventional pollutants treatment must apply the best available technology economically achievable (BAT); for conventional pollutants, application of the best conventional pollutant control technology (BCT) is required. Where effluent limitations are not specified for the particular industry or industrial category at issue, BCT/BAT technology-based treatment requirements are determined on a case by case basis using best professional judgment (BPJ). See CERCLA Compliance with Other Laws Manual, Vol. I, August 1988, p. 3-4 and 3-7.

5.1.3 Water Quality Statutes and Regulations

Causing of Pollution, Section 75-5-605, MCA (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.

Nondegradation, Section 75-5-303, MCA (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. Section 75-5-317, MCA, provides an exemption from nondegradation requirements which allows changes of existing water quality resulting from an emergency or Reclamation that is designed to protect the public health or the environment and that is approved, authorized, or required by the department. Degradation meeting these requirements may be considered nonsignificant.

Surface Water, ARM 17.30.637 (applicable). Prohibits discharges containing substances 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; or (e) create conditions which produce undesirable aquatic life.

ARM 17.30.705 (applicable). This provides that for all state waters, 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.

5.1.4 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.

General Permits (applicable). Pursuant to ARM 17.30.1341, DEQ has issued general storm water permits for certain activities. The substantive requirements of the following permits are applicable for the following activities: for construction activities B General Permit for Storm Water Discharge Associated with Construction Activity, Permit No. MTR100000 (April 16, 2007); for mining activities B General Discharge Permit for Storm Water Associated with Mining and with Oil and Gas Activities, Permit No. MTR300000 (November 17, 2002);⁵ and for industrial activities B General Permit for Storm Water Discharge Associated with Industrial Activity, Permit No. MTR000000 (October 1, 2006).⁶

⁵ This permit covers point source discharges of storm water from mining and milling activities (including active, inactive, and abandoned mine and mill sites) including activities with Standard Industrial Code 14 (metal mining).

⁶ Industrial activities are defined as all industries defined in 40 CFR 122, 123, and 124, excluding construction, mining, oil & gas extraction activities and storm water discharges subject to effluent limitations guidelines. This includes wood treatment operations, as well as the production of slag.

Generally, the permits require the permittee to implement best management practice (BMP) and to take all reasonable steps to minimize or prevent any discharge which has a reasonable likelihood of adversely affecting human health or the environment. However, if there is evidence indicating potential or realized impacts on water quality due to any storm water discharge associated with the activity, an individual MPDES permit or alternative general permit may be required.

A related mine reclamation requirement is set out in ARM 17.24.633 (relevant and appropriate), which requires that all surface drainage from disturbed areas that have been graded, seeded or planted must be treated by the best technology currently available (BTCA) before discharge. Sediment control through BTCA practices must be maintained until the disturbed area has been reclaimed, the revegetation requirements have been met, and the area meets state and federal requirements for the receiving stream.

5.2 Federal and State RCRA Subtitle C Requirements

Federal and State RCRA Subtitle C Requirements, 42 U.S.C. Section 6921, et seq. (relevant and appropriate for solid wastes, applicable for hazardous wastes). The presentation of RCRA Subtitle C requirements in this section assumes that there will be solid wastes left in place in waste management areas (i.e., a repository) as a result of Reclamation. Because of the similarity of this waste management area to the RCRA waste management unit, certain discrete portions of the RCRA Subtitle C implementing regulations will be relevant and appropriate for Reclamation. RCRA Subtitle C and implementing regulations are designated as applicable for any hazardous wastes that are actively generated as part of this remedial action or that were placed or disposed after 1980. Also, should hazardous wastes be discovered as part of any Reclamation, EPA reserves the right to identify RCRA Subtitle C requirements in more detail at a later date. All federal RCRA Subtitle C requirements set forth below are incorporated by reference as State of Montana requirements as provided for under ARM 17.53.105(2) unless mentioned otherwise below.

40 CFR Part 264 Subpart F.

General Facility Standards. These are potentially relevant and appropriate for solid wastes at Reclamation sites. Any waste management unit or similar area would be required to comply with the following requirements.

40 CFR † 264.92, .93. and .94. Prescribes groundwater protection standards.

40 CFR † 264.97. Prescribes general groundwater monitoring requirements.

40 CFR † 264.98. Prescribes requirements for monitoring and detecting indicator parameters.

Closure requirements.

40 CFR † 264.111. Provides that the owner or operator of a hazardous waste management facility must close the facility in a way that minimizes the need for further maintenance, and controls or eliminates the leaching or escape of hazardous waste or its constituents, leachate, or runoff to the extent necessary to protect human health and the environment.

40 CFR ' 264.117. Incorporates monitoring requirements in Part 264, including those mentioned at Part 264.97 and Part 264.303. It governs the length of the post-closure care period, permits a lengthened security period, and prohibits any use of the property which would disturb the integrity of the management facility.

40 CFR ' 264.310. Specifies requirements for caps, maintenance, and monitoring after closure.

40 CFR ' 264.301. Prescribes design and operating requirements for landfills.

40 CFR ' 264.301(a). Provides for a single liner and leachate collection and removal system.

40 CFR ' 264.301(f). Requires a run-on control system.

40 CFR ' 264.301(g). Requires a run-off management system.

40 CFR ' 264.301(h). Requires prudent management of facilities for collection and holding of run-on and run-off.

40 CFR ' 264.301(i). Requires that wind dispersal of particulate matter be controlled.

5.3 Federal and State RCRA Subtitle D and Solid Waste Management Requirements

40 CFR Part 257 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. See 40 CFR ' 257.1(a). This part comes into play whenever there is a disposal of any solid or hazardous waste from a facility. Disposal is defined as the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters. See 40 CFR ' 257.2. Facility means any land and appurtenances thereto used for the disposal of solid wastes. Solid waste requirements are either applicable to mine wastes as solid waste or are relevant and appropriate for the management, handling, storage, monitoring and disposal of the mine wastes to be addressed in a Reclamation Project.

5.3.1. Federal Requirements

40 CFR ' 257 (applicable). Establishes Criteria for Classification of Solid Waste Disposal Facilities and Practices. Reclamation will comply with the following requirements.

40 CFR ' 257.3-1. Washout of solid waste in facilities in a floodplain posing a hazard to human life, wildlife, or land or water resources shall not occur.

40 CFR ' 257.3-2. Facilities shall not contribute to the taking of endangered species or the endangering of critical habitat of endangered species.

40 CFR ' 257.3-3. A facility shall not cause a discharge of pollutants, dredged or fill material, into waters of the United States in violation of Sections 402 and 404 of the

Clean Water Act, as amended, and shall not cause non-point source pollution, in violation of applicable legal requirements implementing an area wide or statewide water quality management plan that has been approved by the Administrator under Section 208 of the Clean Water Act, as amended.

40 CFR • 257.3-4. A facility shall not contaminate an underground source of drinking water beyond the solid waste boundary or beyond an alternative boundary specified in accordance with this section.

40 CFR • 257.3-8(d). Access to a facility shall be controlled so as to prevent exposure of the public to potential health and safety hazards at the site.

5.3.2. State of Montana Solid Waste Requirements.

The Montana Solid Waste Management Act, Section 75-10-201 et seq., MCA, and regulations are applicable to the management and disposal of all solid wastes, including mine wastes at sites that are not currently subject to operating permit requirements.

ARM • 17.50.505(1) and (2) (applicable). Sets forth standards that all solid waste disposal sites must meet, including the requirements that (1) Class II landfills must confine solid waste and leachate to the disposal facility. If there is the potential for leachate migration, it must be demonstrated that leachate will only migrate to underlying formations which have no hydraulic continuity with any state waters; (2) adequate separation of group II wastes from underlying or adjacent water must be provided⁷; and (3) no new disposal units or lateral expansions may be located in wetlands. ARM 17.50.505 also specifies general soil and hydrogeological requirements pertaining to the location of any solid waste management facility.

ARM 17.50.506 (applicable). Specifies design requirements for landfills. Landfills must either be designed to ensure that MCLs are not exceeded or the landfill must contain a composite liner and leachate collection system which comply with specified criteria.

ARM 17.50.511 (applicable). Sets forth operational and maintenance and design requirements for solid waste management facilities using land filling methods. Specific requirements specified in ARM 17.50.511 that are applicable are run-on and run-off control systems requirements, requirements that sites be fenced to prevent unauthorized access, and prohibitions of point source and nonpoint source discharges which would violate Clean Water Act requirements.

⁷ The extent of separation shall be established on a case-by-case basis, considering terrain and the type of underlying soil formations, and facility design.

ARM 17.50.523 (applicable). Specifies that solid waste must be transported in such a manner as to prevent its discharge, dumping, spilling or leaking from the transport vehicle.

ARM 17.50.530 (applicable). Sets forth the closure requirements for landfills. Class II landfills must meet the following criteria: (1) install a final cover that is designed to minimize infiltration and erosion; (2) design and construct the final cover system to minimize infiltration through the closed unit by the use of an infiltration layer that contains a minimum 18 inches of earthen material and has a permeability less than or equal to the permeability of any bottom liner, barrier layer, or natural subsoils or a permeability no greater than 1×10^{-5} cm/sec, whichever is less; (3) minimize erosion of the final cover by the use of a seed bed layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth and protecting the infiltration layer from frost effects and rooting damage; (4) revegetate the final cover with native plant growth within one year of placement of the final cover.

ARM17.50.531 (applicable). Sets forth post closure care requirements for Class II landfills. Post closure care must be conducted for a period sufficient to protect human health and the environment. Post closure care requires maintenance of the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the cover and comply with the groundwater monitoring requirements found at ARM Title 17, chapter 50, subchapter 7.

Section 75-10-206, MCA, allows variances to be granted from solid waste regulations if failure to comply with the rules does not result in a danger to public health or safety or compliance with specific rules would produce hardship without producing benefits to the health and safety of the public that outweigh the hardship.

5.4 Federal and State Mine Reclamation Requirements

5.4.1 Surface Mining Control and Reclamation Act

Surface Mining Control and Reclamation Act, 30 USC ' ' 1201-1326 (relevant and appropriate). This Act and implementing regulations found at 30 CFR Parts 784 and 816 establish provisions designed to protect the environment from the effects of surface coal mining operations, and to a lesser extent non-coal mining. These requirements are relevant and appropriate to the covering of discrete areas of contamination. The regulations require that revegetation be used to stabilize soil covers over reclaimed areas. They also require that revegetation be done according to a plan which specifies schedules, species which are diverse and effective, planting methods, mulching techniques, irrigation if appropriate, and appropriate soil testing. Reclamation performance standards are currently relevant and appropriate to mining waste sites.

5.4.2 Montana Statutory and Regulatory Requirements

Montana Strip and Underground Mine Reclamation Act, Section 82-4-201, et seq., MCA (relevant and appropriate) and Montana Metal Mining Act, Section 82-4-301, et seq., MCA (relevant and appropriate). The specified portions of the following statutory or regulatory provisions, as identified below, are relevant and appropriate requirements.

Section 82-4-231, MCA. Requires operators to reclaim and revegetate affected lands using most modern technology available. Operators must grade, backfill, topsoil, reduce high walls,

stabilize subsidence, control water, minimize erosion, subsidence, land slides, and water pollution.

Section 82-4-233, MCA. Operators must plant vegetation that will yield a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area and capable of self-regeneration.

Section 82-4-336, MCA. Disturbed areas must be reclaimed to utility and stability comparable to adjacent areas.

ARM 17.24.501. Provides general backfilling and grading requirements. Backfill must be placed so as to minimize sedimentation, erosion, and leaching of acid or toxic materials into waters, unless otherwise approved. Final grading must be to the approximate original contour of the land and final slopes must be graded to prevent slope failure, may not exceed the angle of repose, and must achieve a minimum long term static safety factor of 1:3. The disturbed area must be blended with surrounding and undisturbed ground to provide a smooth transition in topography.

ARM 17.24.519. Requires monitoring of settling of regraded areas.

ARM 17.24.631(1), (2), (3)(a) and (b). Requires minimization of disturbances to the prevailing hydrologic balance. Changes in water quality and quantity, in the depth to groundwater and in the location of surface water drainage channels will be minimized. Other pollution minimization devices must be used if appropriate, including stabilizing disturbed areas through land shaping, diverting runoff, planting quickly germinating and growing stands of temporary vegetation, regulating channel velocity of water, lining drainage channels with rock or vegetation, mulching, and control of acid-forming, and toxic-forming waste materials.

ARM 17.24.633. Surface drainage from a disturbed area must be treated by the best technology currently available (BTCA). Treatment must continue until the area is stabilized.

ARM 17.24.634. Requires disturbed drainages be restored to the approximate pre-disturbance configuration. Drainage design must emphasize channel and floodplain dimensions that approximate the pre-mining configuration and that will blend with the undisturbed drainage above and below the area to be reclaimed. The average stream gradient must be maintained with a concave longitudinal profile. This regulation provides specific requirements for designing the reclaimed drainage to: (1) approximate an appropriate geomorphic habit or characteristic pattern; (2) remain in dynamic equilibrium with the system without the use of artificial structural controls; (3) improve unstable premining conditions; (4) provide for floods and for the long-term stability of the landscape; and (5) establish a premining diversity of aquatic habitats and riparian vegetation.

ARM 17.24.635 through 17.24.637 set forth requirements for temporary and permanent diversions.

ARM 17.24.638. Sediment control measures must be implemented during operations.

ARM 17.24.639. Sets forth requirements for construction and maintenance of sedimentation ponds.

ARM 17.24.640. Discharges from sedimentation ponds, permanent and temporary impoundments, must be controlled to reduce erosion and enlargement of stream channels, and to minimize disturbance of the hydrologic balance.

ARM 17.24.641. Establishes practices to avoid drainage from acid or toxic forming spoil material into ground and surface water.

ARM 17.24.643 through 17.24.646. Provisions for groundwater protection, groundwater recharge protection, and groundwater and surface water monitoring.

ARM 17.24.701 and 702. Requirements for redistributing and stockpiling of soil for reclamation. Also, outlines practices to prevent compaction, slippage, erosion, and deterioration of biological properties of soil.

ARM 17.24.703. When using materials other than, or along with, soil for final surfacing in reclamation, the operator must demonstrate that the material (1) is at least as capable as the soil of supporting the approved vegetation and subsequent land use, and (2) the medium must be the best available in the area to support vegetation. Such substitutes must be used in a manner consistent with the requirements for redistribution of soil in ARM 17.24.701 and 702.

ARM 17.24.711. Requires that a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area of land to be affected shall be established except on road surfaces and below the low-water line of permanent impoundments. See also Section 82-4-233, MCA (Relevant and Appropriate). Vegetative cover is considered of the same seasonal variety if it consists of a mixture of species of equal or superior utility when compared with the natural vegetation during each season of the year. This requirement may not be appropriate where other cover is more suitable for the particular land use or another cover is requested by the landowner.

ARM 17.24.713. Seeding and planting of disturbed areas must be conducted during the first appropriate period favorable for planting after final seedbed preparation.

ARM 17.24.714. Mulch or cover crop or both must be used until adequate permanent cover can be established.

ARM 17.24.716. Establishes method of revegetation.

ARM 17.24.717. Relates to the planting of trees and other woody species if necessary, as provided in Section 82-4-233, MCA, to establish a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the affected area and capable of self-regeneration and plant succession at least equal to the natural vegetation of the area, except that introduced species may be used in the revegetation process where desirable and necessary to achieve the approved land use plan.

ARM 17.24.718. Requires soil amendments, irrigation, management, fencing, or other measures, if necessary to establish a diverse and permanent vegetative cover.

ARM 17.24.721. Specifies that rills or gullies in reclaimed areas must be filled, graded or otherwise stabilized and the area reseeded or replanted if the rills and gullies are disrupting the reestablishment of the vegetative cover or causing or contributing to a violation of water quality standards for a receiving stream.

ARM 17.24.723. States that operators shall conduct approved periodic measurements of vegetation, soils, water, and wildlife, and if data indicate that corrective measures are necessary, shall propose such measures.

ARM 17.24.724. Specifies that revegetation success must be measured against approved technical standards or unmined reference areas. Reference areas and standards must be representative of vegetation and related site characteristics occurring on lands exhibiting good ecological integrity. Required management for these reference areas is set forth.

ARM 17.24.726. Requires standard and consistent field and laboratory methods to obtain and evaluate revegetated area data with reference area data and/or technical standards, and sets out the required methods for measuring productivity.

ARM 17.24.731. If toxicity to plants or animals on the revegetated area or the reference area is suspected due to the effects of the disturbance, comparative chemical analyses may be required.

ARM 17.24.751. Sets forth requirements to protect and enhance fish and wildlife habitat.

ARM 17.24.824. If land use is to be other than grazing land or fish and wildlife habitat, areas of land affected by mining must be restored in a timely manner to higher or better uses achievable under criteria and procedures set forth.

5.5 Air Requirements

Remedial activities will comply with the Montana Ambient Air Quality Regulations (above) and with the following requirements to ensure that existing air quality will not be adversely affected by Reclamation.

ARM 17.8.308(1), (2) and (3) (applicable). Airborne particulate matter. 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. Emissions shall not exhibit an opacity exceeding 20% or greater averaged over 6 consecutive minutes.

ARM 17.8.304(2) (applicable). Visible Air Contaminants. Emissions into the outdoor atmosphere shall not exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

ARM 17.8.604 (applicable). Lists certain wastes that may not be disposed of by open burning, including oil or petroleum products, RCRA hazardous wastes, chemicals, and treated lumber and timbers. Any waste which is moved from the site where it was generated and any trade waste (material resulting from construction or operation of any business, trade, industry, or demolition project) may be open burned only in accordance with the substantive requirements of ARM 17.8.611 or 612.

ARM 17.24.761 (relevant and appropriate). Specifies a range of measures for controlling fugitive dust emissions during mining and reclamation activities. Some of these measures could be considered relevant and appropriate to control fugitive dust emissions in connection with excavation, earth moving and transportation activities conducted as part of Reclamation at the site. Such measures include, for example, paving, watering, chemically stabilizing, or frequently compacting and scraping roads, promptly removing rock, soil or other dust-forming debris from roads, restricting vehicle speeds, revegetating, mulching, or otherwise stabilizing the surface of

areas adjoining roads, restricting unauthorized vehicle travel, minimizing the area of disturbed land, and promptly revegetating regraded lands.

5.6 Noxious Weeds

Noxious Weeds, Section 7-22-2101(8)(a), MCA. 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. Designated noxious weeds are listed in ARM 4.5.201 through 4.5.204 and must be managed consistent with weed management criteria developed under Section 7-22-2109(2)(b), MCA.

6.0 TO BE CONSIDERED (TBC) DOCUMENTS

A list of TBC documents is included in the Preamble to the NCP, 55 Fed. Reg. 8765 (March 8, 1990). Those documents, plus any additional similar or related documents issued since that time, should be considered during the conduct of the Reclamation design and construction.

7.0 OTHER LAWS (NON-EXCLUSIVE LIST)

CERCLA defines as ARARs only federal environmental and state environmental and siting laws. Reclamation design, implementation, and operation and maintenance must comply with other applicable laws, except as may be provided in SMCRA.

The following other laws are included here to provide a reminder of other legal requirements Reclamation activity. They are not an exhaustive list of such requirements, but are included because they set out matters that must be addressed and, in some cases, may require advance planning. They are not included as ARARs because they are not environmental or facility siting laws. Because they are not ARARs, they are not subject to ARAR waiver provisions.

7.1 Other Federal Laws

Occupational Safety and Health Regulations. The federal Occupational Safety and Health Act regulations found at 29 CFR Part 1910 and Part 1926 are applicable to worker protection during the conduct of Reclamation .

7.2 Other State Laws

A. Groundwater Act

The Groundwater Act, ' 85-2-501, et seq., MCA, and implementing regulations, ARM 17.30.601, et seq. govern uses of groundwater and provide measures to protect groundwater from depletion or contamination. The regulations also set requirements for water wells.

Section 85-2-505, MCA, precludes the wasting of groundwater. Any well producing waters that contaminate other waters must be plugged or capped, and wells must be constructed and maintained so as to prevent waste, contamination, or pollution of groundwater.

Section 85-2-516, MCA, states that within 60 days after any well is completed a well log report must be filed by the driller with the DNRC and the appropriate county clerk and recorder.

B. Public Water Supply Regulations

If remedial action at the site requires any reconstruction or modification of any public water supply line or sewer line, the construction standards specified in ARM 17.38.101(4) (Applicable) must be observed.

C. Water Rights

Section 85-2-101, MCA, declares that all waters within the state are the state's property, and may be appropriated for beneficial uses. The wise use of water resources is encouraged for the maximum benefit to the people and with minimum degradation of natural aquatic ecosystems.

Parts 3 and 4 of Title 85, Chapter 2, MCA, set out requirements for obtaining water rights and appropriating and utilizing water. All requirements of these parts are laws which must be complied with in any action using or affecting waters of the state. Some of the specific requirements are set forth below.

Section 85-2-301, MCA, of Montana law provides that a person may only appropriate water for a beneficial use.

Section 85-2-302, MCA, specifies that a person may not appropriate water or commence construction of diversion, impoundment, withdrawal or distribution works therefor except by applying for and receiving a permit from the Montana Department of Natural Resources and Conservation. While the permit itself may not be required under federal law, appropriate notification and submission of an application should be performed and a permit should be applied for in order to establish a priority date in the prior appropriation system.

Section 85-2-306, MCA, specifies the conditions on which groundwater may be appropriated, and, at a minimum, requires notice of completion and appropriation within 60 days of well completion.

Section 85-2-311, MCA, specifies the criteria which must be met in order to appropriate water and includes requirements that:

1. there are unappropriated waters in the source of supply;
2. the proposed use of water is a beneficial use; and
3. the proposed use will not interfere unreasonably with other planned uses or developments.

Section 85-2-402, MCA, specifies that an appropriator may not change an appropriated right except as provided in this section with the approval of the DNRC.

Section 85-2-412, MCA, provides that, where a person has diverted all of the water of a stream by virtue of prior appropriation and there is a surplus of water over and above what is actually and necessarily used, such surplus must be returned to the stream.

D. Controlled Ground Water Areas

Pursuant to Section 85-2-507, MCA, the Montana Department of Natural Resources and Conservation may grant either a permanent or a temporary controlled ground water area. The maximum allowable time for a temporary area is two years, with a possible two-year extension.

Pursuant to Section 85-2-506, MCA, designation of a controlled ground water area may be proposed if: (i) excessive ground water withdrawals would cause contaminant migration; (ii) ground water withdrawals adversely affecting ground water quality within the ground water area are occurring or are likely to occur; or (iii) ground water quality within the ground water area is not suited for a specific beneficial use.

E. Occupational Health Act, Section 50-70-101, et seq., MCA.

ARM 17.74.101 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. This rule is

applicable only to limited categories of workers and for most workers the similar federal standard in 29 CFR § 1910.95 applies.

ARM 17.74.102 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. In accordance with this rule, no worker shall be exposed to air contaminant levels in excess of the threshold limit values listed in the rule. This rule is applicable only to limited categories of workers and for most workers the similar federal standard in 29 CFR § 1910.1000 applies.

F. Montana Safety Act

Sections 50-71-201, 202 and 203, MCA, state 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 every other thing reasonably necessary to protect the life and safety of its employees. Employees are prohibited from refusing to use or interfering with the use of safety devices.

G. Employee and Community Hazardous Chemical Information

Sections 50-78-201, 202, and 204, MCA, state 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.

Table 3

EEE/CA ADDENDUM COST ESTIMATE - ALTERNATIVE 3 IN-PLACE CONTAINMENT (WASTE ROCK and TAILINGS) 2009

	Quantity	Units	Unit Price	Cost	Unit Cost Reference
CAPITAL COST					
Mobilization, Bonding, and Insurance	1	L.S.	\$ 40,000.00	\$ 40,000.00	Engineering Estimate
Road Improvement/Road Construction					Engineering Estimate
Traffic Control	1	L.S.	\$ 1,200.00	\$ 1,200.00	
Grade/reshape/add gravel/compact	2000	S.Y.	\$ 5.50	\$ 11,000.00	
Stream Diversion (temporary)					Engineering Estimate
Excavation	1400	C.Y.	\$ 3.50	\$ 4,900.00	
Liner Stream Protection System	1800	S.Y.	\$ 4.00	\$ 7,200.00	
Tailings Removal and Haul	2000	CY	\$ 18.00	\$ 36,000.00	Engineering Estimate
Waste Rock Grading Recontouring	0.7	Acres	\$ 12,000.00	\$ 8,400.00	Engineering Estimate
Excavation/Transportation/Grade Borrow Cover Soil for Waste Rock Dump and Tailings Area (1.2 acre repository)					MDT Average Bid Tabulations
2 feet of Cover	4000	C.Y.	\$ 18.00	\$ 72,000.00	MDT Average Bid Tabulations
6 inches of Topsoil Material	1000	C.Y.	\$ 26.00	\$ 26,000.00	MDT Average Bid Tabulations
Organic Amendment (Transportation and Incorporation)	2	Acres	\$ 12,000.00	\$ 24,000.00	Engineering Estimate
Fertilize and Seed	2	Acres	\$ 4,500.00	\$ 9,000.00	Engineering Estimate
Mulch (Waste Rock and/or Tailings)	1.2	Acres	\$ 4,800.00	\$ 5,760.00	Engineering Estimate
Erosion Control Mat	4000	S.Y.	\$ 3.50	\$ 14,000.00	Engineering Estimate
Run-on Control Ditch Construction	500	L.F.	\$ 8.00	\$ 4,000.00	Engineering Estimate
Install Fences (Range Panel / Wood Post Fence)	850	L.F.	\$ 7.50	\$ 6,375.00	Engineering Estimate
Obliterate and Reclaim Temporary Roads	2000	L.F.	\$ 6.00	\$ 12,000.00	Engineering Estimate
Subtotal				\$ 281,835.00	
Construction Oversight	15%			\$ 42,275.25	
Subtotal Capital Costs				\$ 324,110.25	
Contingency	10%			\$ 32,411.03	
TOTAL CAPITAL COSTS				\$ 356,521.28	

POST CLOSURE MONITORING AND MAINTENANCE COSTS *

Inspections	1	/YEAR	\$ 1,000.00	\$ 1,000.00	
Sampling and Analysis	2	/YEAR	\$ 750.00	\$ 1,500.00	
Maintenance	1	L.S.	\$ 1,500.00	\$ 1,500.00	
Subtotal				\$ 4,000.00	
Contingency	10%			\$ 400.00	
ANNUAL O&M COST				\$ 4,400.00	

PRESENT WORTH

TOTAL CAPITAL COSTS		\$ 356,521.28	
PRESENT WORTH, POST-CLOSURE MAINTENANCE AND MONITORING (10%)		\$41,478.42	For 30 years of operation
TOTAL		\$ 397,999.70	

Table 4

EEE/CA ADDENDUM COST ESTIMATE - ALTERNATIVE 3b CONTAMINANT REMOVAL AND CHANNEL RESTORATION 2009

	Quantity	Units	Unit Price	Cost	Unit Cost Reference
CAPITAL COST					
Mobilization, Bonding, and Insurance	1	L.S.	\$ 13,000.00	\$ 13,000.00	Engineering Estimate
Excavation of Contaminated Sediment	1	L.S.	\$ 7,000.00	\$ 7,000.00	Engineering Estimate
Stream Reconstruction	1	L.S.	\$ 11,000.00	\$ 11,000.00	Engineering Estimate
Stream Diversion (During Construction)	1	L.S.	\$ 12,000.00	\$ 12,000.00	Engineering Estimate
Run-on Control Ditch Construction	100	L.F.	\$ 8.00	\$ 800.00	Engineering Estimate
Install Fences (Range Panel / Wood Post Fence)	125	L.F.	\$ 7.50	\$ 937.50	Engineering Estimate
Stream Structures	100	L.F.	\$ 180.00	\$ 18,000.00	Engineering Estimate
Subtotal				\$ 62,737.50	
Construction Oversight	15%			\$ 9,410.63	
Subtotal Capital Costs				\$ 72,148.13	
Contingency	10%			\$ 7,214.81	
TOTAL CAPITAL COSTS				\$ 79,362.94	

POST CLOSURE MONITORING AND MAINTENANCE COSTS *

Inspections	2	/YEAR	\$ 600.00	\$ 1,200.00	
Sampling and Analysis	2	/YEAR	\$ 750.00	\$ 1,500.00	
Maintenance	1	L.S.	\$ 1,000.00	\$ 1,000.00	
Subtotal				\$ 3,700.00	
Contingency	10%			\$ 370.00	
ANNUAL O&M COST				\$ 4,070.00	

PRESENT WORTH

TOTAL CAPITAL COSTS				\$ 79,362.94	
PRESENT WORTH, POST-CLOSURE MAINTENANCE AND MONITORING (10%)				\$38,367.54	
TOTAL	30 YEARS			\$ 117,730.48	

Table 5			
EEE/CA ADDENDUM ALTERNATIVE COST COMPARISON 2009			
	1997 ESTIMATED CAPITAL COST	2009 ENGINEERS ESTIMATED CAPITAL COST	REMARKS
ALTERNATIVE 3	\$ 180,800.00	\$ 356,500.00	In place containment
ALTERNATIVE 3b	\$ 48,500.00	\$ 79,400.00	Contaminant removal and channel restoration
ALTERNATIVE 3 AND 3b w/ 30 YEAR O&M	\$ 257,300.00	\$ 505,400.00	Combined cost estimate

Notes:

1. 1997 EEE/CA Construction estimates for Lump Sum items are difficult to determine a current cost for this 2009 Addendum Estimate, as there were minimal descriptions of work items included in the 1997 EEE/CA estimate.
2. The 2009 Addendum Estimate shows Mobilization, Bonding and Insurance as ~10% of the total cost. The 1997 EEE/CA estimated close to 25% of total cost.
3. Cost estimates for various items may differ from alternative to alternative based on the different work and specialized equipment required for construction of each alternative.
4. O & M costs are combined alternatives 3 and 3b - Inspections are combined but sampling, and maintenance are not; all costs have been adjusted for inflation at 2.68% a.p.r.