TECHNICAL SUPPORT FOR
ROCKY MOUNTAIN ARSENAL

Record of Decision for the On-Post Operable Unit

Volume 3
Appendices A and B

Version 3.1

June 1996

Contract No. DAAA 05-92-D-0002

Prepared by:

Foster Wheeler Environmental Corporation

Prepared for:

U.S. Army Program Manager's Office for the
Rocky Mountain Arsenal

This document is intended to comply with the National Environmental Policy Act of 1969.

The information and conclusions presented in this report represent the official position of the Department of the Army unless expressly modified by a subsequent document. This report constitutes the relevant portion of the administrative record for this CERCLA operable unit.

The use of trade names in this report does not constitute an official endorsement or approval of the use of such commercial products. This report may not be cited for purposes of advertisement.

M9604819

Table of Contents

Declaration D-1

Decision Summary

1.0 Site Name, Location, and Description 1-1
1.1 Environmental Setting 1-1
1.1.1 Physiography 1-1
1.1.2 Climate 1-2
1.1.3 Existing Cultural Features 1-2
1.1.4 Cultural Resources 1-3
1.2 Geology 1-4
1.3 Hydrology 1-4
1.4 Biological Habitat 1-5

2.0 Site History and Enforcement Activities 2-1
2.1 Production and Operational History 2-1
2.2 Waste Disposal Operations 2-3
2.3 Previous Investigations 2-4
2.4 Past and Ongoing Response Actions 2-5
2.5 History of Enforcement Activities 2-10
2.5.1 CERCLA Enforcement Activities 2-10
2.5.2 State Enforcement Activities 2-12
2.5.3 Conceptual Remedy 2-14

3.0 Highlights of Community Participation 3-1

4.0 Scope and Role of the On-Post Operable Unit 4-1

5.0 Summary of Site Characteristics 5-1
5.1 Sources of Contamination 5-1
5.2 Nature of Contamination 5-1
5.3 Contaminant Migration Pathways 5-1
5.4 Extent of Contamination 5-2
5.5 Potential Human and Environmental Exposure 5-8

6.0 Summary of Site Risks 6-1
6.1 Human Health Risk Characterization 6-1
6.1.1 Identification of Contaminants of Concern 6-2
6.1.2 Exposure Assessment 6-3
6.1.2.1 Characterization of Exposure Setting and Potentially Exposed Populations 6-3
6.1.2.2 Identification of Exposure Pathways 6-4
6.1.2.3 Estimation of Exposure Point Concentrations 6-5
6.1.2.4 Exposure Parameters 6-6
6.1.3 Toxicity Assessment 6-6
6.1.4 Risk Characterization 6-8
6.1.4.1 Calculation of PPLVs 6-8
6.1.4.2 Determination of Carcinogenic and Noncarcinogenic Risks 6-10
6.2 Ecological Risk Characterization 6-14
6.2.1 Identification of Contaminants of Concern 6-15
6.2.2 Exposure Assessment 6-15
6.2.3 Toxicity Assessment 6-17
6.2.4 Risk Characterization 6-19

6.2.4.1 Methods 6-19
6.2.4.2 Results 6-20
6.2.4.3 Continuing Biological Studies 6-22
6.3 Uncertainty Analysis 6-24
6.3.1 Human Health Risk Characterization 6-25
6.3.1.1 Chemical Database 6-25
6.3.1.2 Exposure Point Concentration 6-25
6.3.1.3 Land-Use and Exposure Scenarios 6-25
6.3.1.4 Human Health Toxicity Estimates 6-26
6.3.1.5 Exposure Parameters and PPLVs 6-26
6.3.1.6 Risk Estimates 6-27
6.3.2 Ecological Risk Characterization 6-28
6.3.2.1 Chemical Database 6-28
6.3.2.2 Exposure Pathways 6-28
6.3.2.3 Exposure Concentrations 6-28
6.3.2.4 Ecological Toxicity Estimates 6-29
6.3.2.5 Risk Estimates 6-30
6.3.2.6 Ecological Measurement Endpoints 6-30
6.4 Conclusions 6-31

7.0 Description of the Feasibility Study Process and the Remedial Alternatives Developed ... 7-1
7.1 Summary of the Feasibility Study Process 7-1
7.1.1 Area of Contamination 7-2
7.1.2 Corrective Action Management Unit 7-3
7.1.3 Development of Criteria for Evaluating Soil Contamination 7-4
7.1.4 Soil Volume Modeling and Estimation 7-5
7.2 Remedial Alternatives for Groundwater 7-7
7.2.1 Description of Medium 7-7
7.2.2 Remedial Action Objectives 7-7
7.2.3 Description of Sitewide Remedial Alternatives for Groundwater 7-8
7.2.3.1 Alternative 1 – Boundary Systems 7-8
7.2.3.2 Alternative 2 – Boundary Systems/IRAs 7-11
7.2.3.3 Alternative 3 – Boundary Systems/IRAs/On-Post Dewatering 7-13
7.2.3.4 Alternative 4 – Boundary Systems/IRAs/Intercept Systems 7-14
7.3 Description of Sitewide Remedial Alternatives for Structures 7-15
7.3.1 Description of Medium 7-15
7.3.2 Remedial Action Objectives 7-15
7.3.3 Description of Sitewide Remedial Alternatives for Structures 7-16
7.3.3.1 Alternative 1 – Landfill/Cap in Place 7-18
7.3.3.2 Alternative 2 – Landfill/Consolidate 7-19
7.3.3.3 Alternative 3 – Landfill 7-19
7.4 Description of Sitewide Remedial Alternatives for Soil 7-20
7.4.1 Description of Medium 7-20
7.4.2 Remedial Action Objectives 7-20
7.4.3 Description of Sitewide Remedial Alternatives for Soil 7-20
7.4.3.1 Alternative 1 – Caps/Covers 7-21
7.4.3.2 Alternative 2 – Landfill/Caps 7-22
7.4.3.3 Alternative 3 – Landfill 7-23
7.4.3.4 Alternative 4 – Consolidation/Caps/Treatment/Landfill 7-24
7.4.3.5 Alternative 5 – Caps/Treatment/Landfill 7-27

8.0 Comparative Analysis of Alternatives 8-1
8.1 Comparative Analysis of Alternatives for Groundwater 8-1
8.1.1 Overall Protection of Human Health and the Environment 8-1
8.1.2 Compliance with ARARs 8-2
8.1.3 Long-Term Effectiveness and Permanence 8-2
8.1.4 Reduction of Toxicity, Mobility, or Volume Through Treatment 8-3
8.1.5 Short-Term Effectiveness 8-3
8.1.6 Implementability 8-4
8.1.7 Cost 8-4
8.1.8 State Acceptance 8-4
8.1.9 Community Acceptance 8-4
8.1.10 Conclusions 8-5
8.2 Comparative Analysis of Alternatives for Structures 8-6
8.2.1 Overall Protection of Human Health and the Environment 8-6
8.2.2 Compliance with ARARs 8-6
8.2.3 Long-Term Effectiveness and Permanence 8-6
8.2.4 Reduction of Toxicity, Mobility, or Volume Through Treatment 8-7
8.2.5 Short-Term Effectiveness 8-7
8.2.6 Implementability 8-8
8.2.7 Cost 8-8
8.2.8 State Acceptance 8-8
8.2.9 Community Acceptance 8-9
8.2.10 Conclusions 8-9
8.3 Comparative Analysis of Alternatives for Soil 8-9
8.3.1 Overall Protection of Human Health and the Environment 8-10
8.3.2 Compliance with ARARs 8-10
8.3.3 Long-Term Effectiveness and Permanence 8-11
8.3.4 Reduction of Toxicity, Mobility, or Volume Through Treatment 8-12
8.3.5 Short-Term Effectiveness 8-12
8.3.6 Implementability 8-13
8.3.7 Cost 8-14
8.3.8 State Acceptance 8-14
8.3.9 Community Acceptance 8-14
8.3.10 Conclusions 8-15

9.0 Identification of the Selected Remedy 9-1
9.1 Groundwater Alternative 4 – Boundary Systems/IRAs/Intercept Systems 9-1
9.2 Structures Alternative 2 – Landfill/Consolidate 9-3
9.3 Soil Alternative 4 – Consolidation/Caps/Treatment/Landfill 9-3
9.4 Additional Components of the Selected Remedy 9-7
9.5 Remediation Goals and Standards 9-10
9.6 Cost of the Selected Remedy 9-10
9.7 Long-Term Operations 9-10

10.0 Statutory Determinations 10-1
10.1 Consistency with the Statutory Requirements of CERCLA in Section 121 10-1
10.1.1 Protection of Human Health and the Environment 10-1
10.1.1.1 Groundwater 10-1
10.1.1.2 Structures 10-2
10.1.1.3 Soil 10-2
10.1.1.4 Additional Components of the Remedy 10-3
10.1.2 Compliance with ARARs 10-5
10.1.2.1 Chemical-Specific ARARs 10-5

10.1.2.2 Location-Specific ARARs 10-6
10.1.2.3 Action-Specific ARARs 10-7
10.1.2.4 Other Requirements 10-7
10.1.3 Cost Effectiveness 10-7
10.1.4 Utilization of Permanent Solutions to the Maximum Extent Practicable 10-7
10.2 State and Community Acceptance 10-8
10.2.1 State Acceptance 10-8
10.2.2 Community Acceptance 10-8
10.3 Consistency with NCP 10-8
10.4 Consistency with NEPA 10-9
10.5 Summary 10-9

11.0 Documentation of Significant Changes 11-1

12.0 Responsiveness Summary 12-1
12.1 Introduction 12-1
12.2 History of Community Relations Activities 12-1
12.3 Responses to Comments 12-3

Glossary G-1

Bibliography B-1

Appendices

A Applicable or Relevant and Appropriate Requirements
B Agreement in Principle Regarding a Water Supply Between the Army, Shell, and SACWSD

Appendix A

Applicable or Relevant and Appropriate Requirements and Information To Be Considered

Appendix A

Table of Contents

Section	Page
List of Tables	**A-iii**
List of Acronyms and Abbreviations	**A-v**
Statutory Citations	**A-ix**
A.1.0 Introduction	**A-1**
A.2.0 Chemical-Specific Requirements	**A-3**
A.2.1 Groundwater and Surface Water Requirements	A-3
A.2.2 Chemical-Specific Requirements for Soil	A-7
A.2.3 Chemical-Specific Requirements for Structures	A-7
A.2.4 Chemical-Specific Requirements for Air	A-8
A.3.0 Location-Specific Requirements	**A-8**
A.4.0 Action-Specific Requirements	**A-10**
A.5.0 Other Potential Requirements	**A-11**
A.6.0 References	**A-18**
A.7.0 Tables	**A-21**

List of Tables

Table

A-1 List of Rocky Mountain Arsenal Target Constituents Addressed by the Groundwater Monitoring Program
A-2 List of Rocky Mountain Arsenal Target Constituents Addressed by the Surface Water Monitoring Program
A-3 ARARs for Groundwater for Northwest Boundary Containment System
A-4 ARARs for Groundwater for Irondale Containment System
A-5 ARARs for Groundwater for North Boundary of Rocky Mountain Arsenal
A-6 ARARs for Groundwater at Basin A Neck IRA Treatment System
A-7 TBCs for Groundwater
A-8 ARARs for Surface Water
A-9 TBCs for Surface Water
A-10 TBCs for Soil and Sediments
A-11 Location-Specific ARARs and TBCs
A-12 Action-Specific ARARs and TBCs for Conventional Excavation/Backfill
A-13 Action-Specific ARARs and TBCs for Stockpiles of Debris/Equipment from Structures
A-14 Action-Specific ARARs and TBCs for Demolition of Structures
A-15 Action-Specific ARARs and TBCs for Trenches
A-16 Action-Specific ARARs and TBCs for Caps/Covers
A-17 Action-Specific ARARs and TBCs for Concrete Liners
A-18 Action-Specific ARARs and TBCs for Slurry Walls
A-19 Action-Specific ARARs and TBCs for Hazardous Waste Landfills
A-20 Action-Specific ARARs and TBCs for Thermal Desorption
A-21 Action-Specific ARARs and TBCs for Incineration/Pyrolysis
A-22 Action-Specific ARARs and TBCs for Off-Post Incineration of Structural Materials
A-23 Action-Specific ARARs and TBCs for Soil Heating
A-24 Action-Specific ARARs and TBCs for In Situ Vitrification
A-25 Action-Specific ARARs and TBCs for Hot Gas Decontamination of Structures and Debris
A-26 Action-Specific ARARs and TBCs for UXO Demilitarization/Chemical Agent Decontamination
A-27 Action-Specific ARARs and TBCs for Direct Solidification/Stabilization
A-28 Action-Specific ARARs and TBCs for In Situ Solidification/Stabilization
A-29 Action-Specific ARARs and TBCs for Biological Reactor Treatment
A-30 Action-Specific ARARs and TBCs for UV/Ozone and In Situ Groundwater Treatment
A-31 Action-Specific ARARs and TBCs for Solvent Extraction
A-32 Action-Specific ARARs and TBCs for Pipe Plugging
A-33 Action-Specific ARARs and TBCs for Vacuum Dusting
A-34 Action-Specific ARARs and TBCs for In Situ Steam Cleaning
A-35 Action-Specific ARARs and TBCs for Sand Blasting
A-36 Action-Specific ARARs and TBCs for Salvage of Structures
A-37 Action-Specific ARARs and TBCs for Air Stripping
A-38 Action-Specific ARARs and TBCs for GAC Adsorption
A-39 Action-Specific ARARs and TBCs for Chemical Oxidation
A-40 Action-Specific ARARs and TBCs for GAA Adsorption
A-41 Action-Specific ARARs and TBCs for On-Post Transportation of Wastes
A-42 Action-Specific ARARs and TBCs for Institutional Controls
A-43 Action-Specific ARARs and TBCs for Continued Existing Actions
A-44 Action-Specific ARARs and TBCs for Caustic Washing

rma\1512G

List of Tables (Continued)

Table

A-45 Action-Specific ARARs and TBCs for Soil Drying
A-46 Worker Air Exposure Standards for Chemicals Potentially Associated with Groundwater, Soil, or Structures
A-47 Worker Air Exposure Standards for Chemical Agent Constituents
A-48 Standards Pertaining to Air Emissions from Potential Remedial Actions

List of Acronyms and Abbreviations

°F	Degrees Fahrenheit
$\mu g/m^3$	Micrograms Per Cubic Meter
µg/l	Micrograms Per Liter
A	Agent
ACGIH	American Conference of Governmental Industrial Hygienists
ACM	Asbestos-Containing Material
ACOE	Army Corps of Engineers
AEL	Airborne Exposure Limit
AIR	Automobile Inspection and Readjustment
AOC	Area of Contamination
APEN	Air Pollution Emission Notice
AR	Army Regulations
ARAR	Applicable or Relevant and Appropriate Requirements
Army	U.S. Army
AS	Agent Stabilizer
AWQC	Ambient Water Quality Criteria
BDAT	Best Demonstrated Available Technology
BGEPA	Bald and Golden Eagle Protection Act
CAA	Clean Air Act
$CaCo_3$	Calcium Carbonate
CAMU	Corrective Action Management Unit
CBSG	Colorado Basic Standards for Groundwater
CBSM	Colorado Basic Standards and Methodologies for Surface Water
cc	Cubic Centimeter
CCR	Code of Colorado Regulations
CCWE	Constituent Concentration in Waste Extract
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CG	Phosgene
cm	Centimeter
cm^3	Cubic Centimeter
CN	Cyanide
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COC	Contaminant of Concern
CP	Combustion Product
Cr	Chromium
CRL	Certified Reporting Limit
CRS	Colorado Revised Statute
CSRG	Containment System Remediation Goal
CWA	Clean Water Act
CWC	Draft Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction
DA	Draft Army
DAA	Detailed Analysis of Alternatives
db(A)	Decibel

List of Acronyms and Abbreviations
(Continued)

DBCP	Dibromochloropropane
DCPD	Dicyclopentadiene
DDE	2,2-Bis(para-chlorophenyl)-1,1-dichlorethene
DDT	2,2-Bis(para-chlorophenyl)-1,1,1-trichloroethane
DIMP	Diisopropylmethyl phosphonate
DM	Adamsite
DOD	Department of Defense
DP	Decontamination Product
DSA	Development and Screening of Alternatives
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESSVEP	Enhanced Surface Soil Vacuum Extraction Process
F	Fluoride
FFA	Federal Facilities Agreement
FR	Federal Register
FS	Feasibility Study
ft	Feet
ft^2	Square Feet
FWQC	Federal Water Quality Criteria
GAA	Granular Activated Alumina
GAC	Granular Activated Carbon
GB	Isopropylmethyl Phosphonofluoridate
GC/MS	Gas Chromatograph/Mass Spectrometer
GC	Gas Chromatograph
H	Mustard
HD	Distilled Mustard
Hg	Mercury
HL	Mustard-Lewisite Mixture
HP	Hydrolysis Product
Hr	Hour
HRD	Hardness
ICP	Incomplete Combustion Product
ICP	Inductively Coupled Plasma
ICS	Irondale Containment System
ICt_{50}	Median Incapacitating Dose
IRA	Interim Remedial Action
IRIS	Integrated Risk Information System
kg	Kilogram
kg/mo	Kilograms Per Month
L	Lewisite
LCt_{50}	Median Lethal Dose
LDR	Land Disposal Restriction
MAX	Maximum Peak Above the Ceiling
MBTA	Migratory Bird Treaty Act

List of Acronyms and Abbreviations
(Continued)

MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
mg/l	Milligrams Per Liter
mg/m^3	Milligrams Per Cubic Meter
Mg	Magnesium
mm	Millimeter
MPC	Maximum Peak Concentration
NAAQS	National Ambient Air Quality Standards
naw/gp	Non-Agent Worker/General Population
NBCS	North Boundary Containment System
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NO_2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NWBCS	Northwest Boundary Containment System
OCP	Organochlorine Pesticide
OERR	Office of Emergency Response (EPA)
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OT	One Time Exposure If No Other Measurable Exposure Occurs
PAM	Pamphlet
Pb	Lead
PCB	Polychlorinated Biphenyl
PEL	Permissible Exposure Limit
PM_{10}	Particulate Matter with Diameter Less Than or Equal to 10 Micrometers
ppm	Parts Per Million
PQL	Practical Quantitation Limit
PRG	Preliminary Remediation Goal
RCRA	Resource Conservation and Recovery Act
REL	Recommended Exposure Limit
rf	Respirable Fraction
RISR	Remedial Investigation Summary Report
RMA	Rocky Mountain Arsenal
ROD	Record of Decision
RTIC	Rocky Mountain Arsenal Technical Information Center
SDP	Stabilizer Decontamination Product
SDWA	Safe Drinking Water Act
SEL	Source Emission Limit
SF	Square Feet
SHO	Semivolatile Halogenated Organic
SO_2	Sulfur Dioxide
STEL	Short-Term Exposure Limit

List of Acronyms and Abbreviations
(Continued)

TBC	To-Be-Considered Criteria
TEGD	Technical Enforcement Guidance Document
TLV	ACGIH Threshold Limit Value
TM	Technical Manual
TSCA	Toxic Substances Control Act
TSP	Total Suspended Solids
TU	Temporary Units
TWA	Time-Weighted Average
UFS	Unconfined Flow System
USAEC	U.S. Atomic Energy Commission
USATHAMA	United States Army Toxic and Hazardous Materials Agency
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
UTS	Universal Treatment Standards
UV	Ultraviolet
UW	Unmasked Worker
UXO	Unexploded Ordnance
VAO	Volatile Aromatic Organic
VHO	Volatile Halogenated Organic
VOC	Volatile Organic Compound
VX	Ethyl S-Dimethylaminoethyl Methylphosphonothiolate

Statutory Citations

Citation	Citation Name
16 USC Section 661 et seq.	Fish and Wildlife Coordination Act
16 USC Section 668 et seq.	Bald Eagle Protection Act
16 USC Section 703-711	Migratory Bird Treaty Act
16 USC Section 1531 et seq.	Endangered Species Act
42 USCS Section 7412	Clean Air Act – National Emission Standards for Hazardous Air Pollutants (NESHAPS)
42 USCS Section 7502-7503	Clean Air Act – Nonattainment Plan Provisions/Permit Requirements
CRS Section 25-12-101 to 25-12-108	Colorado Revised Statutes – Noise Abatement
CRS Section 33-2-101 to 33-2-107	Colorado Nongame, Endangered, or Threatened Species Conservation Act
CRS Section 42-4-307(8)	Colorado Revised Statutes – Regulation of Vehicles and Traffic

A.1.0 Introduction

Appendix A is a compilation of chemical-, location-, and action-specific applicable or relevant and appropriate requirements (ARARs) and to-be-considered criteria (TBCs) that are pertinent to potential remediation alternatives at the Rocky Mountain Arsenal (RMA). This Appendix identifies ARARs and TBCs for contaminated water, soil, and structures at RMA.

The ARARs and TBCs identified in this appendix have been compiled to comply with Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Pursuant to this section, an ARAR is defined as "any standard, requirement, criterion, or limitation under any Federal environmental law ... or ... any promulgated standard, requirement, criterion, or limitation under a State environmental or facility siting law that is more stringent than any Federal standard ... [that] is legally applicable to the hazardous substance or pollutant or contaminant or is relevant and appropriate under the circumstances of the release or threatened release" at the designated site. Throughout this appendix, since selected remedial actions are presently broad in scope, ARARs citation references are generally broad. Upon entering the design phase of each remedial action and prior to remedial implementation, specific sections within the cited references will be identified and serve as the pertinent ARARs.

ARARs were identified according to the procedures outlined in the most recent U.S. Environmental Protection Agency (EPA) guidance (EPA 1988; Office of Emergency Response-EPA (OERR-EPA) 1988; Office of Solid Waste and Emergency Response (OSWER 1989b) and the National Oil and Hazardous Substances Contingency Plan (NCP) (40 Code of Federal Regulations (CFR 300) (EPA 1990). This Appendix to the Record of Decision (ROD) identifies the ARARs that will be attained by the selected remedies. As there are no specific ARARs that will not be attained (in instances where chemical-specific ARARs standards are below current practical quantification limits [PQLs], and compliance cannot therefore be confirmed, meeting these PQLs will serve as attainment of these ARARs standards), this ROD does not identify any waivers that will be invoked. The PQLs are the Colorado Department of Public Health and Environment's laboratory PQLs.

Federal and state regulations and guidance that were reviewed fall into one of the following three categories: applicable requirements, relevant and appropriate requirements, and other criteria, advisories, or guidance TBC. These requirements are defined in the NCP (40 CFR 300) as follows:

- Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site; they fulfill all jurisdictional prerequisites. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable (40 CFR Section 300.5).

- Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate (40 CFR 300.5).

- In addition to applicable or relevant and appropriate requirements, the lead and support agencies may, as appropriate, identify TBCs for a particular release. The TBC category consists of advisories, criteria, or guidance that were developed by EPA, other federal agencies, or states that may be useful in developing CERCLA remedies [40 CFR 300.400(g)(3)].

The NCP (40 CFR 300) establishes the basic criteria for applicability of a federal or state regulation as specifically addressing the contaminants, actions, or location of a CERCLA site. If a regulation is determined to be applicable or relevant and appropriate, only the substantive portions of the regulation are considered to be applicable. Substantive portions of a requirement refer to those portions of an ARAR that pertain directly to actions or conditions in the environment. They generally involve a quantitative limitation or performance objective. Administrative requirements are those mechanisms that facilitate implementation of the substantive requirements, and they typically include record keeping and reporting, documentation, issuance of permits, and approval of or consultation with administrative bodies. On the other hand, monitoring requirements, including recording of the monitoring results in some form, are generally considered substantive because they are usually necessary to document attainment of cleanup levels and compliance with emission and discharge limitations.

Some regulations are not directly "applicable" to potential remediation alternatives at the RMA, but may be considered "relevant and appropriate." As defined by the EPA in the NCP (40 CFR 300), regulations that are relevant and appropriate must address situations sufficiently similar to those encountered at the CERCLA site such that their usage is well suited to the particular site. Only those "relevant and appropriate" requirements that are determined to be both relevant and appropriate must be complied with. The NCP (40 CFR 300) requires that the following comparisons be made to determine relevance and appropriateness:

- The purpose of the requirement and the purpose of the CERCLA action

- The medium regulated or affected by the requirement and the medium contaminated or affected at the CERCLA site

- The substances regulated by the requirement and the substances found at the CERCLA site

- The actions or activities regulated by the requirement and the remedial action contemplated at the CERCLA site

- Any variances, waivers, or exemptions of the requirement and their availability for the circumstances at the CERCLA site

- The type of place regulated and the type of place affected by the release or CERCLA action

- The type and size of structure or facility regulated and the type and size of structure or facility affected by the release or contemplated by the CERCLA action

- Any consideration of use or potential use of the affected resources in the requirement and the use or potential use of the affected resources at the CERCLA site (40 CFR 300.400(g)(2))

Requirements that are judged both relevant and appropriate must be compiled with to the same degree as if they were applicable, unless the ARAR meets the CERCLA criteria for a waiver under Section 121(d)(4) of CERCLA. Other regulations, advisories, or guidance may be useful in developing protectiveness criteria for contaminants for which there are no ARARs. These regulations fall into the TBC category. TBCs are not enforceable, but may be useful in developing remedies. The U.S. Army (Army) will conduct a review of the remedial actions selected for RMA every five years. Requirements that are promulgated or modified after the ROD is signed must be attained (or waived) if determined to be applicable or relevant and appropriate and necessary to ensure that the remedy is protective of human health and the environment (40 CFR 300.430 (f)(1)(ii)(B)).

A.2.0 Chemical-Specific Requirements

Chemical-specific ARARs set concentration limits or ranges in various environmental media for specific hazardous substances, pollutants, or contaminants. Such ARARs either set protective cleanup levels for the contaminants of concern (COCs) in the designated media or indicate an appropriate level of discharge based on health- and risk-based analyses and technological considerations. This section discusses the rationale for chemical-specific requirements for water, soil, and structures media.

A.2.1 Groundwater and Surface Water Requirements

The CERCLA Compliance with Other Laws Manual (OERR-EPA 1988) identifies federal standards developed under the Resource Conservation and Recovery Act (RCRA), the Safe Drinking Water Act (SDWA), and the Clean Water Act (CWA) as ARARs. These ARARs include the following:

- SDWA Maximum Contaminant Levels (MCLs): 40 CFR 141 Subparts B and G, 40 CFR 143.3

- SDWA Maximum Contaminant Level Goals (MCLGs): 40 CFR 141 Subpart F
- CWA Water Quality Criteria (FWQC): 33 USC Section 1313
- RCRA MCLs: 40 CFR Section 264.94

With respect to state standards, ARARs include the following when these provisions are equivalent to or more stringent than federal requirements:

- Colorado Rules and Regulations Pertaining to Hazardous Waste: 5 Code of Colorado Regulations (CCR) 1007-3
- Colorado Basic Standards for Groundwater (CBSGs): 5CCR 1002-8
- Colorado Primary Drinking Water Regulations: 5CCR 1003-5
- Colorado Basic Standards and Methodologies for Surface Water (CBSM): 5CCR 1002-8

The SDWA establishes standards for public drinking water systems (40 CFR Parts 141 and 143). These standards have been established as part of the National Primary and Secondary Drinking Water Regulations. SDWA MCLs apply to "public water systems," i.e., systems that provide piped water for human consumption to at least 15 service connections or an average of at least 25 persons daily for at least 60 days of the year (40 CFR Section 141.2).

EPA has also promulgated MCLGs in 40 CFR Sections 141.50 through 141.51. Although MCLGs are nonenforceable health goals for public water supply systems and, therefore, not applicable to RMA, Section 121 of CERCLA requires remedial actions to attain at a minimum MCLGs where such goals are relevant and appropriate under the circumstances of the release or threatened release (42 USC Section 9621(d)(2)(A)). EPA has nonetheless stated that, disregarding special circumstances, "MCLs ... are the appropriate standard because they represent the level of quality for the nation's drinking water supplies" (53 FR 51441, December 21, 1988). EPA further states that MCLGs are not relevant at most CERCLA sites because "they would impose a more restrictive requirement than exists for the drinking water consumed by most households in the country." Therefore, EPA (53 FR 51441, December 21, 1988) believes that MCLs are sufficiently protective in achieving the CERCLA goal of protecting human health and the environment. However, according to the NCP (EPA 1990), MCLGs set at levels above zero must be attained by remedial actions for groundwater and surface waters that are current or potential sources of drinking water. Therefore, the Army has determined that non-zero MCLGs are ARARs. Where MCLGs are set at zero, the MCL will generally be the ARAR.

There are no EPA Integrated Risk Information System (IRIS) values per se identified in the database as ARARs. IRIS contains a compilation of health-based values (e.g., unit cancer risks, drinking water health advisories, ambient water quality criteria [AWQC]) that are TBCs. IRIS was consulted for values when other sources of information were not available.

FWQC are nonpromulgated surface water guidelines developed under Section 304 of the CWA that are used by Colorado, in conjunction with designated uses for a stream segment, to establish water quality standards under Section 303 of the CWA (33 United States Code (USC) §1313). Although FWQC are nonenforceable, and thus cannot be applicable, Section 121 of CERCLA states that remedial actions must attain FWQC where they are relevant and appropriate under the circumstances of a release or threatened release (42 USC §9621(d)(2)(a)).

In determining whether FWQC are relevant, the primary factors to consider are the designated or potential uses of the water, the media affected, and the purposes for which the potential requirements are intended. FWQC have been established for protection of human health and for protection of aquatic life. FWQC for protection of human health address both consumption of water and fish and consumption of fish only. FWQC for protection of aquatic life consider both acute and chronic effects (33 USC §1313). A review of the site circumstances regarding any release or threatened release indicates that the relevant and appropriate FWQC applicable and protective to this site are the water criteria for the protection of aquatic life. Because Colorado has a promulgated numeric water quality standard, the state standard is relevant and appropriate.

The state and the Army disagree as to whether state surface water quality standards as they relate to agriculture are ARARs at RMA. The issue is not considered to be of significance because the Federal Facility Agreement (FFA) and the Rocky Mountain Arsenal National Wildlife Refuge Act of 1992 prohibit agricultural uses of RMA, including all farming activities such as the raising of livestock, crops, or vegetables. The Parties each preserve their legal positions as to whether state agricultural surface water quality standards are ARARs.

ARARs and TBCs for groundwater and surface water were identified by evaluating the current lists of target contaminants addressed by the groundwater (Table A-1) and surface water (Table A-2) monitoring programs and identifying corresponding standards, regulations, or requirements. Tables A-1 and A-2 provide a comprehensive list of COCs at the site to use as a basis to identify ARARs and TBCs. This list is updated annually to ensure that all COCs are monitored for on a regular basis.

Groundwater standards for RMA as designated in the ROD are referred to as Containment System Remediation Goals (CSRGs). The CSRGs are based on the Preliminary Remediation Goals (PRGs) that were developed as part of the

Detailed Analysis of Alternatives (DAA). Four different sets of PRGs are included in the ROD. These include three sets of CSRGs for the three boundary systems and one for the Basin A Neck IRA system. The compounds listed for each system were selected based on current or likely exceedances of applicable standards.

The CSRGs for the North Boundary Containment System (NBCS) and the Northwest Boundary Containment System (NWBCS) were based on off-post health-based CSRGs for compounds for which these had been developed, CBSGs, and MCLs for compounds for which the other two criteria did not exist.

The CSRGs for Basin A Neck IRA system are different in that health-based criteria were only used for compounds for which there are no CBSGs or MCLs. MCLs were used if CBSGs did not exist.

The existing groundwater standards are still applicable for the Irondale Containment System (ICS).

PQLs and certified reporting limits (CRLs) were included, along with CSRGs, as currently applicable criteria for compounds for which the CSRGs were lower than the PQLs and CRLs.

This is the same approach that was taken to identify constituent ARARs in the ROD. In the ROD, the target contaminant list consisted of parameters monitored for in Task 44 of the remedial investigation; groundwater and surface water analytes monitored as part of the comprehensive monitoring program; other target United States Army Toxic and Hazardous Materials Agency (USATHAMA) compounds; and non-target compounds detected in groundwater that were added to the Chemical Index.

Over the years the target analyte list has changed slightly due to the addition of analytes or to the deletion of analytes that were not detected, detected well below existing standards, detected only one time over a number of years, detected using a gas chromatograph/mass spectrometer (GC/MS) method for quality assurance and quality control, or are of no concern. Accordingly, the current ARARs and TBCs for groundwater and surface water differ from those potential ARARs and TBCs that were identified in the Development and Screening of Alternatives report (Ebasco 1992a).

Tables A-3 through A-7 contain ARARs and TBCs identified for groundwater at each groundwater treatment system. ARARs and TBCs for surface water are identified in Tables A-8 and A-9.

Each requirement was reviewed to determine whether it was applicable or relevant and appropriate in accordance with the CERCLA Compliance with Other Laws Manual (OSWER 1989b). If more than one ARAR was identified

for a contaminant, the most stringent ARAR was selected. If no ARAR existed for a contaminant, the most stringent TBC appropriate under the circumstances was selected. Finally, if the numerical values of the ARARs or TBCs are a function of the hardness of the surface water or groundwater, the hardness value corresponding to each requirement is given in the "HRD" (hardness) column of the table.

A.2.2 Chemical-Specific Requirements for Soil

The proposed RCRA Corrective Action Rule example action levels (55 FR 30798, July 27, 1990), LDR Universal Treatment Standard (UTS) levels for soil, Toxic Substances Control Act (TSCA) Polychlorinated Biphenyl (PCB) Spill Cleanup Policy (40 CFR Part 761 Subpart G), and EPA's proposed sediment criteria for the protection of benthic organisms for dieldrin and endrin, are TBC values for soil, sediments, and lake sediments at RMA. Land Disposal Restriction (LDR) Best Demonstrated Available Technology (BDAT) levels (40 CFR Part 268, 6CCR 1007-3 Part 268) are ARARs if placement occurs. For on-site disposal, placement occurs when wastes are moved from one Area of Contamination (AOC) (or unit) into another AOC (or unit). Placement does not occur when wastes are left in place or moved within a single AOC. (Section 7.1.1 of the ROD presents a more detailed discussion on placement.)

The proposed RCRA Corrective Action Rule example action levels (55 FR 30798, July 27, 1990) are TBCs for determining cleanup levels for soil and groundwater at RMA. The proposed rule was developed using risk-based information to identify action levels needed at facilities that are contaminated as a result of inadequate management of hazardous waste. Some of the COCs in this proposed rule are also contaminants found at RMA in the soil. The types of cleanup activities contemplated by the proposed rule are similar to some of the types of cleanup activities now being considered for RMA. Table A-10 lists the specific RCRA Corrective Action Rule levels to be considered for soil and sediment remedial actions.

RCRA, TSCA, and laws governing asbestos also set specific values that may be ARARs or TBCs for RMA soil and sediments. EPA proposed soil treatment standards in the UTS rule on September 14, 1993, but deferred action on soil LDRs when that rule was finalized; consequently, UTSs are TBCs with respect to soil at RMA. TSCA establishes guidance on action levels for PCBs in soil that are TBCs.

A.2.3 Chemical-Specific Requirements for Structures

TSCA PCB cleanup levels established for spills occurring after May 4, 1987 in addition to PCB cleanup standards contained in EPA's "Guidance on Remedial Actions for Superfund Sites with PCB Contamination" are TBC values for PCB contaminated structure surfaces and debris. The LDR BDAT levels are ARARs for structural debris if placement occurs (refer to Section 7.1.1 of the ROD for discussion on placement).

A.2.4 Chemical-Specific Requirements for Air

The CERCLA Compliance with Other Laws Manual Part II (EPA 1989) identifies federal standards developed under the Clean Air Act (CAA). These ARARs include the following:

- National Ambient Air Quality Standards (NAAQS): 40 CFR 61
- National Emission Standards for Hazardous Air Pollutants (NESHAPs): 40 CFR 50

State standards that are equivalent or more stringent than federal requirements are also considered ARARs and these include the following:

- Colorado Ambient Air Standards: 5 CCR 1001-5 Regulation 3, 5 CCR 1001-14
- Control of Hazardous Air Pollutants: 5 CCR 1001-8
- Odor Emission Regulations: 5 CCR 1001.4 Regulation 2

A.3.0 Location-Specific Requirements

Remedial actions may be restricted or precluded by location-specific ARARs that are contingent upon the location or characteristics of the site and the requirements that apply to it. These regulations include the Colorado siting requirements for hazardous waste disposal sites (6 CCR 1007-2, Part 2), laws regarding development or other activities in wetlands or floodplains, and laws regarding preservation of historic or cultural sites. The Colorado siting requirements are applicable to the locations, design, and design performance of any hazardous wastes disposal site. With regard to RMA, the siting requirements are applicable to the proposed hazardous waste landfill that is to be part of the designated Corrective Action Management Unit (CAMU). Location-specific ARARs and TBCs are listed in Table A-11.

In determining location-specific ARARs, the following characteristics of RMA must be taken into account:

- Absence of karst topography underlying RMA
- Absence of faults underlying RMA that have had displacement in Holocene time
- Potential presence of areas designated as national historic landmarks or national preservation areas
- Presence of wetlands as shown in the Remedial Investigation Summary Report (RISR) (Ebasco 1992b)
- Presence of 100-year floodplains associated with most drainages at RMA, as shown in the RISR (Ebasco 1992b)

All requirements pertaining to the protection and management of floodplains and wetlands are considered potentially applicable to the remedial activities described in this ROD. Location-specific ARARs pertaining to floodplains are contained in Executive Order 11988 (44 Federal Register (FR) 43239, July 7, 1979; procedures codified in regulations under the National Environmental Policy Act (NEPA), 40 CFR Part 6, and 40 CFR Section 257.3-1(a)). The provisions of 40 CFR Section 257.3-1(a) are applicable only to units regulated under RCRA, but are considered relevant and appropriate requirements concerning the construction of facilities and conduct of remedial actions in floodplain zones. Location-specific ARARs pertaining to wetlands are contained in Executive Order 11990 and 40 CFR Part 6. Excerpts from these requirements are provided below:

Floodplains

- "Evaluate the potential effects of actions ...[that would be taken] in a floodplain to avoid, to the extent possible, adverse effects associated with direct and indirect development of a floodplain" (40 CFR Section 6.302 (b)).
- "Ensure that ...(the federal agency's) planning programs and budget requests reflect consideration of flood hazards and floodplain management, including the restoration and preservation of such land areas as natural undeveloped floodplains ..." (40 CFR Part 6, Appendix A, Section 1(a)).
- "Executive Order 11988 ...requires Federal agencies to ...prescribe procedures to implement the policies and procedures of [the] Executive Order" (40 CFR Part 6, Appendix A, Section 1(a)).
- "Where there is no practical alternative to locating in a floodplain, minimize the impact of floods on human safety, health and ... the natural environment" (40 CFR Part 6, Appendix A, Section 3(b)(2)).
- "Restore and preserve natural and beneficial values served by floodplains" (40 CFR Part 6, Appendix A, Section 3(b)(3)).
- "Identify floodplains which require restoration and preservation and recommend management programs necessary to protect these floodplains and to include such considerations as part of on-going planning programs" (40 CFR Part 6, Appendix A, Section 3(b)(5)).
- "Facilities or practices in floodplains shall not restrict the flow of the base flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste, so as to pose a threat to human life, wildlife, or land or water resources" (40 CFR Section 257.3-1(a)).

Wetlands

- "Requires Federal agencies conducting certain activities to avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands" (40 CFR Section 6.302(a)).
- "The responsible official shall either avoid adverse impacts or minimize them if no practicable alternative to the action exists" (40 CFR Section 6.302(a)).

Floodplains and Wetlands

- "Before undertaking an Agency action, each program office must determine whether or not the action will be located in or affect a floodplain or wetlands" (40 CFR Part 6, Appendix A, Section 6(a)(1)).
- "The Agency shall utilize maps prepared by the Federal Insurance Administration of the Federal Emergency Management Agency ..., Fish and Wildlife Service ..., and other appropriate agencies to determine whether a proposed action is located in or will likely affect a floodplain or wetlands" (40 CFR Part 6, Appendix A, Section 6(a)(1)).
- If an action "is likely to impact a floodplain or wetlands, the public should be informed through appropriate public notice procedures" (40 CFR Part 6, Appendix A, Section 6(a)(2)).
- "If the Agency determines a proposed action is located in or affects a floodplain or wetlands, a floodplain/wetlands assessment shall be undertaken ... [that] shall consist of a description of the proposed action, a discussion of its effect on the floodplain/wetlands, and shall also describe the alternatives considered" (40 CFR Part 6, Appendix A, Section 6(a)(3)).
- "A public notice of the floodplain/wetlands assessment shall be made consistent with the public involvement requirements of the applicable program" (40 CFR Part 6, Appendix A, Section 6(a)(4)).
- "For all Agency actions proposed to be in or affecting a floodplain/wetlands, the Agency shall provide further public notice announcing this decision. This decision shall be accompanied by a Statement of Findings, not to exceed three pages. This statement should include" all items outlined in the statute" (40 CFR Part 6, Appendix A, Section 6(a)(6)).

Requirements adopted as part of RCRA are applicable or relevant and appropriate to remedial actions conducted at CERCLA sites. Location-specific ARARs that may be relevant and appropriate for on-post remediation are contained in 40 CFR Section 257.3-1, which applies directly to floodplain management, and 40 CFR 264 Subpart B, which contains EPA regulations for owners and operators of RCRA-permitted hazardous waste facilities.

The Army is in the process of conducting an archeological, architectural, historical, and prehistorical cultural resource survey. This survey could identify structures that may be protected under the National Historic Preservation Act (36 CFR Part 800) or the Archeological Resources Protection Act (16 USC Section 469a-1). Location-specific ARARs would be triggered if culturally significant structures are identified at RMA.

A.4.0 Action-Specific Requirements

Action-specific ARARs and TBCs are standards that establish restrictions or controls on particular kinds of remedial activities related to management of hazardous substances or pollutants. These requirements are triggered by the particular remedial activities, as opposed to the specific chemicals present or the location of the remediation activity. For example, if a particular remedial action could result in emissions of regulated air pollutants, then certain air

regulations could be ARARs for that particular remedial action. Tables A-12 through A-45 contain ARARs and TBCs for the technologies that are part of any of the alternatives considered in the ROD for water, soil, and structures. Each table contains ARARs and TBCs for a specific technology that may represent only one part of a complete alternative that consists of several technologies. Therefore several ARAR tables will be applied to each alternative. Throughout this appendix, since selected remedial actions are presently broad in scope, ARARs citation references are generally broad. Upon entering the design phase of each remedial action and prior to remedial implementation, specific sections within the cited references will be identified and serve as the pertinent ARARs.

A.5.0 Other Potential Requirements

In addition to the chemical-, location-, and action-specific ARARs and TBCs, there are a number of other requirements and potential requirements that could constrain and direct remedial actions at RMA. These additional requirements are addressed below.

Federal Facility Agreement

Provisions of the FFA regarding use restrictions, federal ownership, and access restrictions are not ARARs or TBCs; however, compliance with these restrictions is required.

Asbestos-Containing Materials

Asbestos-containing materials (ACM) that may be found in structures or soil during remediation will be managed in accordance with potential ARARs identified in the Asbestos Interim Remedial Action (IRA). ACM generated during remedial activities will be disposed in a landfill that is designed and managed in accordance with ARARs specified in the appropriate ARAR tables.

Polychlorinated Biphenyls

The methodology for PCB-contaminated materials is regulated under 40 CFR Part 761 and described EPA guidance (OERR-EPA 1990b). The Army has undertaken several programs to identify, inventory, and dispose of its PCB contamination in structures, equipment, and soil as described below:

- The PCB IRA program identifies and inventories PCB-contaminated materials in nonagent and structures not owned by Shell. Contaminated equipment is disposed in a landfill that meets TSCA requirements. Some large pieces of contaminated equipment, which have proven difficult to remove, are left in place, to be disposed as part of the final structures cleanup. PCB-contaminated structural materials or soil are also left in place for final cleanup under this program. The one exception is a soil removal action at the Building 621B salvage yard. PCB-contaminated materials that are handled in the final cleanup will be treated and disposed of in landfills that meet TSCA requirements.

- The Chemical Process-Related Activities IRA decontaminates and removes equipment that is potentially agent contaminated. Decontaminated agent equipment that is also PCB-contaminated is currently stored on post, and will be disposed of in a landfill that meets TSCA requirements.

- The electrical substation and transformer maintenance activities have resulted in the removal and proper disposal of all PCB-contaminated equipment.

Equipment, structures, and soil for which the Army has a responsibility will be handled as follows:

- Equipment: PCB fluids will be drained and sent off post for disposal in compliance with applicable TSCA regulations. PCB-contaminated equipment will be disposed in a landfill that meets TSCA requirements. The action levels that will be used to classify a piece of equipment as PCB-contaminated will be taken from 40 CFR Part 761. The equipment will be disposed under one of three possible scenarios:

  - Identified and disposed as part of the ongoing PCB IRA

  - Identified under the PCB IRA, but disposed under the final structures cleanup

  - Agent-decontaminated materials that will be disposed under the final structures cleanup

- Structural Materials: The PCB contamination in No Future Use structural materials will be identified in the PCB IRA completion report. Based on a 50-parts per million (ppm) action level, structural materials will be addressed in one of two ways:

  - Structural materials with PCB concentrations of 50 ppm or above that exist above the ground elevation, as well as contaminated parts of ground floor slabs and foundations that will be removed, will be identified prior to demolition, segregated during demolition, and disposed in a landfill that meets TSCA requirements. Similar materials with PCB concentrations below 50 ppm will not require disposal in a TSCA landfill.

  - PCB-contaminated sections of ground floor slabs or foundations that are not required to be demolished as part of the remediation, and that have PCB concentrations of less than 50 ppm, will be left in place. However, if such slab or foundation material has PCB concentrations of 50 ppm or greater, it will be removed during demolition and disposed of in a landfill that meets TSCA design requirements.

- Soil: Action on PCB-contaminated soil is dependent on the concentration and location as follows:

  - The three PCB-contaminated soil areas identified by the PCB IRA with concentrations of 250 ppm or greater will be removed. The limits of contamination will be determined based on visual evidence with immunoassay field confirmation sampling (EPA method SW-846).

  - There are five PCB-contaminated soil areas identified by the PCB IRA with concentrations from 50 ppm to below 250 ppm. These areas will receive a minimum 3 feet (ft) of soil cover, and the PCB-contaminated soil there will be left in place. The soil cover will be maintained as part of the wildlife refuge and is subject to the institutional controls of the FFA.

- No remaining areas of PCB-contaminated soil with concentrations above 50 ppm have been identified by the PCB IRA. If necessary, any suspected PCB soil contamination areas will be characterized further during the remedial design. If additional PCB-contaminated soil is found with concentrations of 50 ppm or above, the Army will determine any necessary remedial action in consultation with EPA.

Army Future Use structures have been managed for occupancy under current environmental and worker protection regulations. There is no evidence of PCB contamination in this medium group.

Structures and equipment for which Shell has responsibility will be handled as follows:

- All Shell buildings to be demolished during the final remedy will be inspected for equipment containing fluids potentially contaminated with PCBs prior to demolition. Suspected fluids will be drained and sent off post for disposal in compliance with applicable TSCA regulations. Equipment that contained these fluids as well as all other equipment will be disposed of in a landfill that meets TSCA requirements. Significant Contamination History structures will be demolished and the resulting debris will be placed in a landfill that meets TSCA requirements. Other Contamination History structures will be evaluated by Shell and EPA for any visual evidence of leaks or spills. If observed in areas where potential PCB releases may reasonably have been expected to occur, the affected structural debris will be disposed in a landfill that meets TSCA requirements. Examples of this type of visual evidence would include stains near equipment potentially containing PCB fluids or stains in buildings where there are numerous instances of equipment potentially containing PCB-contaminated fluids. Further details of this work will be addressed at the remedial design stage.

- All fluorescent light ballasts will be disposed at an off-post disposal facility in accordance with applicable TSCA regulations.

Shell does not have responsibility for any structures within the Future Use or Agent History Medium Groups.

Protection of Wildlife

The provisions of the FFA that call for the preservation and management of wildlife at RMA are not ARARs; however, compliance with these provisions is required. Sections 44.2(e) and (f) of the FFA specifically address activities at RMA and provide for the following:

> (e) Wildlife habitat(s) shall be preserved and managed as necessary to protect endangered species of wildlife to the extent required by the Endangered Species Act, 16 USC Section 1531 et seq., migratory birds to the extent required by the Migratory Bird Treaty Act, 16 USC Section 703 et seq., and bald eagles to the extent required by the Bald and Golden Eagle Protection Act, 16 USC Section 668 et seq.
>
> (f) Other than as may be necessary in connection with a Response Action or as necessary to construct or operate a Response Action Structure, no major alteration shall be permitted in the geophysical characteristics of the Arsenal if such alteration may likely have an adverse effect on the natural drainage of the Arsenal for floodplain management, recharge of groundwater, operation and maintenance of Response Action Structures, and protection of wildlife habitat(s).

The provisions of the Endangered Species Act, (ESA) [16 USC Sections 1531 et seq.; 50 CFR Section 424.02(d)(2); 50 CFR Part 402; 50 CFR Part 17] the Migratory Bird Treaty Act, (MBTA) (16 USC Section 703 et seq.; 50 CFR 10 and 11) and the Bald and Golden Eagle Protection Act (BGEPA) (16 USC Section 668 et seq.) apply to RMA. The Army will establish remediation goals for site contaminants to maintain and enhance healthy populations of the species subject to the ESA, MBTA and BGEPA and their habitats at RMA. Remediation goals for soil and sediment that are consistent with the ESA, MBTA, and BGEPA will be established using a methodology agreed to by the Army, Shell, Colorado, and EPA in consultation with the U.S. Fish and Wildlife Service (USFWS). The Army will also consult with USFWS to determine whether any of the CERCLA activities or remedial alternatives might have a short-term impact on a subject species or its habitat. If a determination is made that the Army's activities or remedial alternatives could impact a subject species or its habitat, the Army will consult with the USFWS to determine whether the activity should proceed and what, if any mitigation measures are necessary, in light of any long-term benefits to protection of populations of the subject species.

The Parties disagree on whether the substantive portions of Colorado Wildlife Enforcement and Penalties Provisions (Colorado Revised Statute (CRS) 33-1-101, et seq. and CRS 33-6-101, et seq.) and Wildlife Commission Regulations (2 CCR 406-8) are ARARs. USFWS, in cooperation with the Colorado Department of Natural Resources, agrees to advise the Army, as the lead agency, with respect to the substance of the above-referenced state wildlife laws and regulations in order to ensure that where indicated, such state laws and regulations are taken into account in connection with the implementation of the selected remedy to the extent they are not inconsistent with federal law and regulations. The Parties each reserve all rights with respect to their respective legal and jurisdictional arguments relating to whether the above-cited state laws and regulations relative to wildlife should be treated as ARARs.

Wastewater from Remedial Actions

Remedial actions at RMA could potentially generate wastewaters from structures and soil. Some of the wastewater generated will be directed to the RMA wastewater treatment plant and treated in accordance with the CERCLA Wastewater Treatment System IRA and the ARARs found therein.

Land Disposal Restrictions

LDRs are applicable requirements for prohibited substances in the event that placement occurs. For subject materials that are managed within a CAMU, or moved from outside to within the CAMU for disposal, as may be established at RMA in the selected remedy, LDRs are not required to be met because placement is not by definition occurring. Similarly, for restricted wastes consolidated (and not otherwise managed) within an AOC, as may be established at RMA in the selected remedy, LDRs are not required to be met because placement is not occurring (refer to Section 7.1.1 of the ROD for discussion on placement). Except for restricted wastes consolidated within, or moved

into a CAMU, and restricted wastes consolidated within an AOC, LDRs are applicable and require, among other things, treatment of listed or characteristic hazardous wastes to BDAT levels prior to placement in land disposal units. The following EPA guidance documents with respect to LDRs are considered TBCs:

- Determining When LDRs are Applicable to CERCLA Response Actions, Superfund LDR Guide 5, OSWER No. 9347.3-OGFS (July 1989b)

- Determining When LDRs are Relevant and Appropriate to CERCLA Response Actions, Superfund LDR Guide 7, OSWER No. 9347.3-OBFS (December 1989a)

- EPA Hazardous Waste Land Disposal Restrictions Policy, 55 FR 6640 (February 26, 1990)

Treatment standards for debris contaminated with listed hazardous waste or debris that exhibits hazardous waste characteristics were finalized by EPA on August 18, 1992 and incorporated by reference by the state of Colorado on October 19, 1993. The alternative debris BDAT standards were intended to make land disposal of hazardous debris more feasible. The rule requires that debris contaminated with listed hazardous waste must be handled as if it were hazardous until the listed waste is treated according to BDAT and then the debris can be placed in a nonhazardous waste landfill. Debris that exhibits a characteristic of a hazardous waste must be treated according to BDAT and may be land disposed as nonhazardous once the characteristic is removed. EPA's LDRs for waste debris do not apply to contaminated soil, except for soil mixed with manmade debris (57 FR 958, January 9, 1992.)

LDRs will be considered action-specific ARARs if the soil, sediment, or debris is shown to be RCRA-characteristic waste or to contain RCRA-listed waste, and the remedial alternatives involve "placement" of these RCRA hazardous wastes.

The CAMU regulations allow for exceptions from the LDRs for remediation wastes managed at CAMUs or temporary units. The Colorado Hazardous Waste Commission adopted state regulations with the intention that the state regulations be interpreted in a manner consistent with the federal CAMU rule. The CAMU regulations provide flexibility and allow for expeditious implementation of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.

Agent Management and Disposal

Department of Defense (DOD)/Army Regulations addressing unexploded ordnance (UXO) and agent management and disposal are ARARs for any of the possible remedial actions proposed for RMA. These include but are not limited to the following:

- Draft Army (DA) Pamphlet 50-6, Chapter 7 for suspected (or known) chemical munitions. Army Regulation (AR) 50-6-Chemical Surety Program

- AR 75-15 – Emergency Disposal of Munitions (both explosive and chemical munitions) – gives Explosive Ordnance Division (EOD) or Army Technical Escort Unit the authority to explosively dispose of munitions too hazardous to move.

- Draft AR 385-61 – Army Toxic Chemical Agent Safety Program

- Draft AR 385-64 – Ammunition and Explosives

- AR 385-131 – Chemical Agent Safety

State RCRA Authority

The state of Colorado is authorized to administer portions of the hazardous waste management program (e.g., RCRA) to regulate the generation, treatment, storage, and disposal of hazardous waste within Colorado. As such, the Colorado regulations are pertinent to the management of hazardous waste. These regulations, with the exception of LDR requirements for contaminated soil and debris, may also be relevant and appropriate in situations, i.e., where necessary to protect human health and the environment, in which a remediation waste is "sufficiently similar" to a RCRA-listed waste or when the proposed remedial action is similar to a RCRA-regulated activity. According to the "CERCLA Compliance with Other Laws Manual," when evaluating whether Subtitle C requirements are relevant and appropriate, the mere presence of hazardous constituents in a CERCLA waste does not mean the waste is sufficiently similar to a RCRA hazardous waste to trigger Subtitle C as an ARAR. Judgment should be used in assessing whether the waste closely resembles a RCRA hazardous waste, considering the chemical composition form, concentration, and any other information pertinent to the nature of the waste.

Although the Colorado hazardous waste management regulations are similar to the federal requirements, both federal and state general regulatory citations are provided in the ARARs tables. Only substantive portions of the regulations require compliance with CERCLA on-site activities. It should be noted that "substantive requirements" are those requirements that pertain directly to actions or conditions in the environment. In addition, Table A-12 contains a list of Colorado standards for owners or operators of hazardous waste treatment, storage, and disposal facilities that are more stringent than the equivalent federal regulations. Since selected remedial actions are presently broad in scope, ARARs citations with respect to hazardous waste requirements are also broad. Upon entering the design phase of each remedial action, and prior to remedial implementation, specific sections within the cited references will be identified and serve as the pertinent ARARs.

Worker Protection Standards

Table A-46 presents chemical-specific worker exposure guidelines established by the Occupational Safety and Health Administration (OSHA), the American Conference of Governmental Industrial Hygienists (ACGIH), and the National Institute for Occupational Safety and Health (NIOSH). OSHA does not apply to federal employees; however, DOD employees are covered by OSHA under Executive Order No. 12196, which addresses employee health and safety standards.

The worker protection standards presented in Table A-46 address exposure standards for chemicals detected and potentially associated with water, soil, and structures at RMA. Because ACGIH and NIOSH are not governmental agencies, their threshold limit values (TLVs) and recommended exposure limits (RELs) are presented here as TBCs. OSHA values are presented as ARARs for protection of workers during remediation. OSHA regulations for worker health and safety, which are codified at 29 CFR 1910, are independently applicable to the remedial actions at RMA. Table A-47 presents worker air exposure standards for chemical agent constituents established by the Occupational Safety and Health Administration (OSHA), the American Conference of Governmental Industrial Hygienists (ACGIH), the National Institute for Occupational Safety and Health (NIOSH), and Department of the Army.

Air Emission Standards

Air emission standards that pertain to remedial actions at RMA are identified in Table A-48. The substantive requirements necessary to control particulate and fugitive dust emissions from off-site transport will be addressed in the remedial design phase of the project.

Chemical Weapons Convention

The draft Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction (CWC) provides for a declaration of the possession of any chemical weapons production facilities and the ultimate destruction of such. The CWC was signed by 130 nations, including the United States, in January 1993. Each nation must submit a declaration as to whether it owns or possesses any chemical weapons or whether any chemical weapons are located in its jurisdiction or control. Chemical weapons are defined as toxic chemicals and their precursors, munitions, and devices specifically designed to cause death or harm through the toxic properties of the chemicals, which would be released by employment of munitions or devices.

A.6.0 References

Army (U.S. Army)

1995 (February 1) AR [Army Regulation] 50-6, Nuclear and Chemical Weapons and Material.

1991 (May 17) DA PAM [Department of the Army Pamphlet] 50-6, Chemical Accident or Incident Response Assistance (CAIRA) Operations.

1987 (May 22) AR 385-64, Ammunition and Explosives Safety Standards.

1985 (August 27) AR 385-61, Safety Studies and Reviews of Chemical Agents and Associated Weapon Systems.

1978 (November 1) AR 75-15, Responsibilities and Procedures for Explosive Ordnance Disposal.

AMC (Army Materiel Command)

1987 (October 9) AMC [Army Materiel Command Regulation] 385-131, Safety Regulation for Chemical Agents, H, HD, HT, GB, and VX.

Ebasco (Ebasco Services Incorporated)

1992a (December) Final On-Post Feasibility Study, Development and Screening of Alternatives. Prepared for the Program Manager for Rocky Mountain Arsenal. Version 4.1, 7 v. RTIC 92363R01.

1992b (January) Final Remedial Investigation Summary Report, Version 3.2, RTIC 92017R01.

1989 (July) Water Remedial Investigation Report, Final, Version 3.3; Volume II, Appendix C. RTIC 89186R01.

Ebasco et al.

1988 (May) Rocky Mountain Arsenal Chemical Index; Appendix C. Table C-3, Volumes I-III.

EPA (U.S. Environmental Protection Agency)

1990 (March 8) National Oil and Hazardous Substances Pollution Contingency Plan, Final Rule, 40 CFR Part 300 (Federal Register 55(46): 8666-8865). (NCP).

1989 Integrated Risk Information System (IRIS). (Note: This is an EPA computerized database.)

1988 Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA. Interim Final (EPA/540/G-89/004).

1986 TGST Methods for Evaluating Solid Wastes: Physical/Chemical Methods, Third ed.

EPA et al.

1989 (February) Federal Facility Agreement for Rocky Mountain Arsenal. RTIC 89068R01. (FFA)

Harding Lawson Associates

1995 (December) Rocky Mountain Arsenal Offpost Operable Unit Final Record of Decision, Rocky Mountain Arsenal, Commerce City, Colorado. Prepared for the Program Manager for Rocky Mountain Arsenal.

OERR-EPA (Office of Emergency and Remedial Response, U.S. Environmental Protection Agency)

1990a (September) Superfund LDR Guide No. 6A. (2nd ed.) Obtaining a Soil and Debris Treatability Variance for Remedial Actions. Fact Sheet OSWER/9347.3-06FS.

1990b (August) Guidance on Remedial Actions for Superfund Sites with PCB Contamination EPA/540/G-90/007.

1989 (July) Superfund LDR Guide No. 5: Determining When Land Disposal Restrictions (LDRs) Are Applicable to CERCLA Response Actions. (Fact Sheet [Final]). EPA/9347.3-05/FS.

1988 (August 8) CERCLA Compliance with Other Laws Manual. Part 1. Interim Final (Draft Report) (EPA 540/G-89/006); OSWER/9234.1-01.

OSWER (Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency)

1989a (December) Superfund LDR Guide No. 7. Determining When Land Disposal Restrictions (LDRs) Are Relevant and Appropriate to CERCLA Response Actions (Fact Sheet). OSWER/9347.3-08FS.

1989b (August) CERCLA Compliance with Other Laws Manual, Interim Final OSWER Directive 9234.1-02. EPA/540/G-89/009.

R.L. Stollar & Associates Incorporated

1989a (October) Comprehensive Monitoring Program, Surface Water Final Technical Plan, Version 3.1.1. RTIC 90110R01.

1989b (June) Comprehensive Monitoring Program, Groundwater Final Technical Plan, Version 3.2 RTIC 89213R02.

USATHAMA (U.S. Army Toxic and Hazardous Materials Agency)

1988 (September) U.S. Army Toxic and Hazardous Materials Agency Analyte Summary. Version 4.

A.7.0 Tables

Table A-1 List of Rocky Mountain Arsenal Target Constituents Addressed by the Groundwater Monitoring Program[1]

Group name/constituent	Group name/constituent
Agent degradation products	Volatile aromatic organic compounds
thiodiglycol	benzene
isopropyl methylphosphonic acid	ethylbenzene
	toluene
Metals	m-xylene
cadmium	o- and p-xylene
chromium	
copper	Organophosporous compounds
lead	diisopropyl methylphosphonate
zinc	dimethyl methylphosphonate
Organochlorine pesticides	Organophosphorous pesticides
2,2'bis(p-chlorophenyl)-1,1-dichloroethylene	atrazine
2,2'bis(p-chlorophenyl)-1,1,1-trichloroethane	malathion
aldrin	parathion
chlordane	supona
dieldrin	vapona
endrin	
hexachlorocyclopentadiene	Volatile halogenated organic compounds
isodrin	1,3-dichlorobenzene
	1,1-dichloroethane
Organosulfur compounds	1,2-dichloroethane
1,4-oxathiane	1,1-dichloroethylene
benzothiazole	1,2-dichloroethylene (cis and trans isomers)
p-chlorophenylmethyl sulfide	1,1,1-trichloroethane
p-chlorophenylmethyl sulfone	1,1,2-trichlorethane
p-chlorophenylmethyl sulfoxide	carbon tetrachloride
dimethyl disulfide	chlorobenzene
dithiane	chloroform
	methylene chloride
	tetrachloroethylene
	trichloroethylene

Table A-1 List of Rocky Mountain Arsenal Target Constituents Addressed by the Groundwater Monitoring Program[1]

Group name/constituent	Group name/constituent
Volatile hydrocarbon compounds	Anions
bicyclo[2,2,1]hepta-2,5-diene	chloride
dicyclopentadiene	sulfate
methylisobutyl ketone	fluoride
Arsenic	Cations
Mercury	calcium
Cyanide	magnesium
	sodium
Dibromochloropropane	potassium
Cyanazine	
n-Nitrosodimethylamine	Nitrite/Nitrate

[1] This list does not include the GC/MS analyses that are performed on 10% of the samples for quality assurance/quality control purposes.

Table A-2 List of Rocky Mountain Arsenal Target Constituents Addressed by the Surface Water Monitoring Program[1]

Group name/constituent	Group name/constituent
Agent degradation products	Volatile aromatic organic compounds
thiodiglycol	benzene
isopropyl methylphosphonic acid	ethylbenzene
	toluene
Metals	m-xylene
cadmium	o- and p-xylene
chromium	
copper	Organophosphorous compounds
lead	diisopropyl methylphosphonate
zinc	dimethyl methylphosphonate
Organochlorine pesticides	Organophosphorous pesticides
2,2'bis(p-chlorophenyl)-1,1-dichloroethylene	atrazine
2,2'bis(p-chlorophenyl)-1,1,1-trichloroethane	malathion
aldrin	parathion
chlordane	supona
dieldrin	vapona
endrin	
hexachlorocyclopentadiene	Volatile halogenated organic compounds
isodrin	1,1-dichloroethane
	1,2-dichloroethane
Organosulfur compounds	1,1-dichloroethylene
1,4-oxathiane	1,2-dichloroethylene (cis and trans isomers)
Benzothiazole	1,1,1-trichloroethane
p-chlorophenylmethyl sulfide	1,1,2-trichlorethane
p-chlorophenylmethyl sulfone	carbon tetrachloride
p-chlorophenylmethyl sulfoxide	chlorobenzene
dimethyl disulfide	chloroform
dithiane	methylene chloride
	tetrachloroethylene
	trichloroethylene

Table A-2 List of Rocky Mountain Arsenal Target Constituents Addressed by the Surface Water Monitoring Program[1]

Group name/constituent	Group name/constituent
Volatile hydrocarbon compounds	Anions
bicyclo[2,2,1]hepta-2,5-diene	chloride
dicyclopentadiene	sulfate
methylisobutyl ketone	fluoride
Arsenic	Cations
Mercury	calcium
Cyanide	magnesium
	sodium
Dibromochloropropane	potassium
n-Nitrosodimethylamine	Nitrite/Nitrate

[1] This list does not include the GC/MS analyses that are performed on 10% of the samples for quality assurance/quality control purposes.

Table A-3 ARARs for Groundwater for Northwest Boundary Containment System

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
Arsenic (total)	AsTOT	50*	N	Y	Y	µg/l		40 CFR 141.11, Federal primary MCL
		50*	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Chloroform	CHCL3	6	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Dieldrin	DLDRN	0.002	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
		0.1**	N	Y	Y	µg/l		5 CCR 1002-2, State Discharge Permit System PQLs (referenced in CBSG Table A)
Diisopropylmethyl phosphonate	DIMP	8	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Endrin	ENDRN	2	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		0.2	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Trichloroethylene	TRCLE	5*	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		5*	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard

* The containment system remediation goal for this parameter (identified in Section 9 of the ROD) is more stringent than the ARAR and is listed in Table A-7 as a TBC.

** PQL Detection levels for Gas Chromatography/Mass Spectrometry.

µg/l Indicates micrograms per liter.

Table A-4 ARARs for Groundwater for Irondale Containment System

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
Dibromochloropropane	DBCP	0.2	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		0.2	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Trichloroethylene	TRCLE	5	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		5	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard

µg/l Indicates micrograms per liter.

Table A-5 ARARs for Groundwater for North Boundary of Rocky Mountain Arsenal

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
1,2-Dichloroethane	12DCLE	5	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		0.4*	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
		1**	N	Y	Y	µg/l		5 CCR 1002-2, State Discharge Permit System PQLs (referenced in CBSG Table A)
1,2-Dichloroethylene	12DCE	70	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		70	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Aldrin	ALDRN	0.002	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
		0.1**	N	Y	Y	µg/l		5 CCR 1002-2, State Discharge Permit System PQLs (referenced in CBSG Table A)
Arsenic (total)	AsTOT	50+	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		50+	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Atrazine	ATZ	3*	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCLG
		3	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Benzene	C6H6	5+	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		5+	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Carbon Tetrachloride	CCL4	5	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		0.3	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
		1**	N	Y	Y	µg/l		5 CCR 1002-2, State Discharge Permit System PQLs (referenced in CBSG Table A)

+ Containment System Remedial Goal for this parameter (identified in Section 9 of the ROD) is more stringent than the ARAR and is listed in Table A-7 as a TBC.
* Asterisk indicates concentration below the lowest USAEC Certified Reporting Limit.
** PQL Detection levels for Gas Chromatography/Mass Spectrometry.
µg/l Indicates micrograms per liter.

Table A-5 ARARs for Groundwater for North Boundary of Rocky Mountain Arsenal

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
Chloride	Cl	250,000	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Chloroform	CHCL3	6	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Dibromochloropropane	DBCP	0.2	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		0.2	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Dieldrin	DLDRN	0.002	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
		0.1**	N	Y	Y	µg/l		5 CCR 1002-2, State Discharge Permit System PQLs (referenced in CBSG Table A)
Diisopropylmethyl phosphonate	DIMP	8	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Endrin	ENDRN	2	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCLG
		0.2	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Fluoride	F	4,000	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCLG
		2,000	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Methylene Chloride	CH2CL2	5	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		5	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Sulfate	SO4	250,000	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Tetrachloroethylene	TCLEE	5	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		5	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Trichloroethylene	TRCLE	5+	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL

+ Containment System Remedial Goal for this parameter (identified in Section 9 of the ROD) is more stringent than the ARAR and is listed in Table A-7 as a TBC.
* Asterisk indicates concentration below the lowest USAEC Certified Reporting Limit.
** PQL Detection levels for Gas Chromatography/Mass Spectrometry.
µg/l Indicates micrograms per liter.

Table A-5 ARARs for Groundwater for North Boundary of Rocky Mountain Arsenal

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
		5+	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Toluene	MEC6H5	1,000	N	Y	Y	µg/l		40 CFR 141.50, Federal primary MCLG
		1,000	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Xylenes	XYLEN	10,000+	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard

+ Containment System Remedial Goal for this parameter (identified in Section 9 of the ROD) is more stringent than the ARAR and is listed in Table A-7 as a TBC.
* Asterisk indicates concentration below the lowest USAEC Certified Reporting Limit.
** PQL Detection levels for Gas Chromatography/Mass Spectrometry.
µg/l Indicates micrograms per liter.

Table A-6 ARARs for Groundwater at Basin A Neck IRA Treatment System

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
1,2-Dichloroethane	12DCLE	5	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		0.4*	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
		1**	N	Y	Y	µg/l		5 CCR 1002-2, State Discharge Permit System PQLs (referenced in CBSG Table A)
1,1-Dichloroethylene	11DCE	7	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCLG
		7	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
1,1,1-Trichloroethane	111TCE	200	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCLG
		200	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Arsenic (Total)	AsTOT	50	N	Y	Y	µg/l		40 CFR 141.11, Federal primary MCL
		50	N	Y	Y	µg/l		5 CCR 1003-1, Colorado Groundwater Standard
Atrazine	ATZ	3	N	Y	Y	µg/l		40 CFR 141.50, Federal primary MCLG
		3	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Benzene	C6H6	5	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		5	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Carbon Tetrachloride	CCL4	5	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		0.3	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
		1**	N	Y	Y	µg/l		5 CCR 1002-2, State Discharge Permit System PQLs (referenced in CBSG Table A)
Chlorobenzene	CLC6H5	100	N	Y	Y	µg/l		40 CFR 141.50, Federal primary MCLG
		100	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Chloroform	CHCL3	6	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Dichlorodiphenyltrichloroethane	DDT	0.1	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard

* Asterisk indicates concentration below the lowest USAEC Certified Reporting Limit.
** PQL Detection levels for Gas Chromatography/Mass Spectrometry
µg/l Indicates micrograms per liter.

Table A-6 ARARs for Groundwater at Basin A Neck IRA Treatment System

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
Dieldrin	DLDRN	0.002	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
		0.1**	N	Y	Y	µg/l		5 CCR 1002-2, State Discharge Permit System PQLs (referenced in CBSG Table A)
Endrin	ENDRN	2	N	Y	Y	µg/l		40 CFR 141.50, Federal primary MCLG
		0.2	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Hexachlorocyclopentadiene	CL6CP	50	N	Y	Y	µg/l		40 CFR 141.50, Federal primary MCLG
		50	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Mercury	Hg	2	N	Y	Y	µg/l		40 CFR 141.51, Federal primary MCLG
		2	N	Y	Y	µg/l		5 CCR 1003-1, Colorado primary drinking water standard
Tetrachloroethylene	TCLEE	5	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		5	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard
Trichloroethylene	TRCLE	5	N	Y	Y	µg/l		40 CFR 141.61, Federal primary MCL
		5	N	Y	Y	µg/l		5 CCR 1002-8, Colorado Groundwater Standard

* Asterisk indicates concentration below the lowest USAEC Certified Reporting Limit.
** PQL Detection levels for Gas Chromatography/Mass Spectrometry
µg/l Indicates micrograms per liter.

Table A-7 TBCs for Groundwater

Parameter	Abbrev	Conc	Units	Hrd	Source
Arsenic	AsTOT	2.35*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)
Benzene	C6H6	3*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)
Isopropyl Methylphosphonic acid	IMPA	700	µg/l		EPA Lifetime Health Advisory, 1992
N-nitrosodimethylamine	NDMA	0.0007*	µg/l		Risk-based level, Integrated Risk Information System (EPA 1995)
Methylisobutyl Ketone	MIBK	2000	µg/l		Proposed Corrective Action Rule, 55 FR 30798, Appendix A, July 27, 1990
Parathion	PRTHN	200	µg/l		Proposed Corrective Action Rule, 55 FR 30798, Appendix A, July 27, 1990
Trichloroethylene	TRCLE	3*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)
Isodrin	ISODR	0.06*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)
Dicyclopentadiene	DCPD	46*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)
1,4-Oxathiane	OXAT	160*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)
Dithiane	DITH	18*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)
Chlorophyenylmethyl sulfide	CPMS	30*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)
Chlorophyenylmethyl sulfone	CPMSO2	36*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)
Chlorophyenylmethyl Sulfoxide	CPMSO	36*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)
Malathion	MLTHN	100*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)
Xylenes	XYLEN	1000*	µg/l		Health-based value from off-post ROD (Harding Lawson Associates 1995)

* Containment System Remediation Goals identified Section 9 of the ROD.
µg/l Indicates micrograms per liter.

Table A-8 ARARs for Surface Water

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
1,1,1-Trichloroethane	111TCE	18,400	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
1,1,2-Trichloroethane	112TCE	9,400	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
1,1,2-Trichloroethane	112TCE	18,000	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		9,400	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
1,2-Dichloroethane	12DCLE	20,000	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		20,000	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life
		118,000	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Dichloroethylenes	DCE	11,600	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
Aldrin	ALDRN	3	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		1.5	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Arsenic (V)	AsV	48	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		150	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life
Arsenic (V)	AsV	850	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		360	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Benzene	C6H6	5,300	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		5,300	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Cadmium	Cd	4.3	N	Y	Y	µg/l	550+ mg/l	Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		4.3	N	Y	Y	µg/l	550+ mg/l	State Surface Water Standard, chronic toxicity to freshwater aquatic life
Carbon Tetrachloride	CCL4	35,200	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		35,200	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Chlordane	CLDAN	1.2	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Chloroform	CHCL3	1,240	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		1,240	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life

\+ Hardness value based on one-tailed 95% upper tolerance calculation of data in the RMA Environmental Database.
* Asterisk indicates concentration below the lowest USAEC Certified Reporting Limit.
µg/l Indicates micrograms per liter.

Table A-8 ARARs for Surface Water

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
Chloroform	CHCL3	28,900	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		28,900	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Chromium (III)	CrIII	836	N	Y	Y	µg/l	550+ mg/l	Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		836	N	Y	Y	µg/l	550+ mg/l	State Surface Water Standard, chronic toxicity to freshwater aquatic life
Chromium (III)	CrIII	7,015	N	Y	Y	µg/l	550+ mg/l	Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		7,015	N	Y	Y	µg/l	550+ mg/l	State Surface Water Standard, acute toxicity to freshwater aquatic life
Chromium (VI)	CrVI	11	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		11	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life
Chromium (VI)	CrVI	16	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		16	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Copper	Cu	51	N	Y	Y	µg/l	550+ mg/l	Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		51	N	Y	Y	µg/l	550+ mg/l	State Surface Water Standard, chronic toxicity to freshwater aquatic life
Copper	Cu	88	N	Y	Y	µg/l	550+ mg/l	Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		88	N	Y	Y	µg/l	550+ mg/l	State Surface Water Standard, acute toxicity to freshwater aquatic life
Cyanide (Free)	CYNF	5.2	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
Cyanide (Free)	CYFN	22	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		5	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
DDT (Total)	PPDDT	*0.001	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		0.001	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life
		0.1	N	Y	Y	µg/l		State Discharge Permit System PQLs [5 CCR 1002-2: 6.9.2(13) Table 1]
DDT (Total)	PPDDT	*1.1	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		0.55	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life

\+ Hardness value based on one-tailed 95% upper tolerance calculation of data in the RMA Environmental Database.

* Asterisk indicates concentration below the lowest USAEC Certified Reporting Limit.

µg/l Indicates micrograms per liter.

Table A-8 ARARs for Surface Water

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
DDE	PPDDE	1,050	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		1,050	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Dieldrin	DLDRN	*0.0019	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		0.0019	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life
		0.1	N	Y	Y	µg/l		State Discharge Permit System PQLs [5 CCR 1002-2: 6.9.2(13) Tables]
Dieldrin	DLDRN	*2.5	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		1.3	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Endrin	ENDRN	*0.0023	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		0.0023	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life
		0.1	N	Y	Y	µg/l		State Discharge Permit System PQLs [5 CCR 1002-2: 6.9.2(13) Tables]
Endrin	ENDRN	*0.18	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		0.09	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Ethylbenzene	ETCGH5	32,000	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Fluoride	F	2,000	N	Y	Y	µg/l		State Surface Water Standard, 5 CCR 100, Table 2 Health based stds
Hexachlorocyclopentadiene	CL6CP	*5.2	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		5	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life
Hexachlorocyclopentadiene	CL6CP	*7	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		7	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Lead	Pb	27.9	N	Y	Y	µg/l	550+ mg/l	Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		43.6	N	Y	Y	µg/l	550+ mg/l	State Surface Water Standard, chronic toxicity to freshwater aquatic life
Lead	Pb	715	N	Y	Y	µg/l	550+ mg/l	Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		1,504	N	Y	Y	µg/l	550+ mg/l	State Surface Water Standard, acute toxicity to freshwater aquatic life

\+ Hardness value based on one-tailed 95% upper tolerance calculation of data in the RMA Environmental Database.
* Asterisk indicates concentration below the lowest USAEC Certified Reporting Limit.
µg/l Indicates micrograms per liter.

Table A-8 ARARs for Surface Water

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
Malathion	MLTHN	*0.1	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		0.1	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life
		0.2	N	Y	Y	µg/l		State Discharge Permit System PQLs [5 CCR 1002-2: 6.9.2(13) Tables]
Mercury	Hg	0.012	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		0.1	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life
Mercury	Hg	2.4	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		2.4	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Parathion	PRTHN	*0.013	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
Parathion	PRTHN	*0.065	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
Tetrachloroethylene	TCLEE	840	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		840	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life
Tetrachloroethylene	TCLEE	5,280	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		5,280	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Toluene	MEC6H5	17,500	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		17,500	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Trichloroethylene	TRCLE	21,900	N	Y	Y	µg/l		Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		21,900	N	Y	Y	µg/l		State Surface Water Standard, chronic toxicity to freshwater aquatic life
Trichloroethylene	TRCLE	45,000	N	Y	Y	µg/l		Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		45,000	N	Y	Y	µg/l		State Surface Water Standard, acute toxicity to freshwater aquatic life
Zinc	Zn	439	N	Y	Y	µg/l	550⁺ mg/l	Federal Water Quality Criteria, chronic toxicity to freshwater aquatic life
		449	N	Y	Y	µg/l	550⁺ mg/l	State Surface Water Standard, chronic toxicity to freshwater aquatic life
Zinc	Zn	485	N	Y	Y	µg/l	550⁺ mg/l	Federal Water Quality Criteria, acute toxicity to freshwater aquatic life
		496	N	Y	Y	µg/l	550⁺ mg/l	State Surface Water Standard, acute toxicity to freshwater aquatic life

⁺ Hardness value based on one-tailed 95% upper tolerance calculation of data in the RMA Environmental Database.
* Asterisk indicates concentration below the lowest USAEC Certified Reporting Limit.
µg/l Indicates micrograms per liter.

Table A-8 ARARs for Surface Water

Parameter	Abbrev	Conc	App	Rel	Apr	Units	Hrd	Source
Diisopropylmethyl Phosphonate	DIMP	8	N	Y	Y	µg/l		State Surface Water Standard, Human Health Based Water Supply

• Hardness value based on one-tailed 95% upper tolerance calculation of data in the RMA Environmental Database.
* Asterisk indicates concentration below the lowest USAEC Certified Reporting Limit.
µg/l Indicates micrograms per liter.

Table A-9 TBCs for Surface Water

Parameter	Abbrev	Conc	App	Hrd	Source
Ethylbenzene	ETC6H5	4000	µg/l		Proposed Corrective Action Rule, 55 FR 30798, Appendix A, July 27, 1990
		680	µg/l		EPA Integrated Risk Information System
Methylene chloride	CH2CL2	*5	µg/l		Proposed Corrective Action Rule, 55 FR 30798, Appendix A, July 27, 1990
Methylisobutyl ketone	MIBK	2000	µg/l		Proposed Corrective Action Rule, 55 FR 30798, Appendix A, July 27, 1990
n-Nitrosodimethylamine	NNDMEA	0.007	µg/l		EPA Integrated Risk Information System
		10.0	µg/l		5 CCR 1002-2, State Discharge Permit System PQLs [5 CCR 1002-2 Section 6.9.2(13) Table 1]
Xylenes (Total)	XYLEN	70000	µg/l		Proposed Corrective Action Rule, 55 FR 30798, Appendix A, July 27, 1990

* Asterisk indicates concentration below the lowest USAEC Certified Reporting Limit.
µg/l Indicates micrograms per liter.

Table A-10 TBCs for Soil and Sediments

Chemical Compound	RCRA Proposed Corrective Action Rule Levels (ppm)[2]
VHOs	
1,2-Dichloroethane	8
1,1-Dichloroethylene	10
1,1,2,2-Tetrachloroethane	40
1,1,1-Trichloroethane	7,000
1,1,2-Trichloroethane	100
Carbon tetrachloride	5
Chlorobenzene	2,000
Chloroform	100
Methylene chloride	90
Tetrachloroethylene	10
Trichloroethylene	60
Toluene	20,000
VAO	
Ethylbenzene	8,000
Xylenes	200,000
SHOs	
Hexachlorocyclopentadiene	600
OCPs	
Aldrin	0.04
Chlordane	0.5
DDE	2
DDT	2
Dieldrin	0.04-9.03[3]
Endrin	20–4.03[3]
Parathion	500
Arsenic	80
Mercury	20
PCBs	50*
ICP Metals	
Cadmium	40
Chromium (VI)	400

1 The following COCs currently do not have proposed RCRA Corrective Action Rule Levels:
Benzene
Chloroacetic acid
Dibromochloropropane
Dicyclopentadiene
Isodrin
Lead

2 Source: EPA proposed Corrective Action Rule for solid waste management units (55 FR 30798; July 1990)

3 Source: EPA proposed Water Quality Criteria for the Protection of Benthic Organisms for Dieldrin and Endrin (these are only applicable to lake sediments and not to soils)

* Based on TSCA regulatory threshold value and not RCRA Subpart 5 standards

ICP Indicates inductively coupled plasma.
OCP Indicates organochlorine pesticide.
SHO Indicates semivolatile halogenated organic.
VAO Indicates volatile aromatic organic.
VHO Indicates volatile halogenated organic.

Table A-11 Location-Specific ARARs and TBCs

Location	Citation	Requirements
Areas prone to surface movement	40 CFR 264.18(a) 6 CCR 1007-3, 264.18(a)	New treatment facilities, storage facilities, or hazardous waste disposal facilities should not be within 200 ft of a fault. Facilities should not be located in areas prone to earthquakes, floods, fire, or other disasters that could cause a breakdown of the public water system.
Within 100-year floodplain	40 CFR 257.3-1(a) 40 CFR 264.18(b) 6 CCR 1007-3, 264.18(b) Executive Order 11988 40 CFR 6.302 (b) 40 CFR 6, Appendix A, Section 3(a), 3(b)(1), & 3(b)(4) 44 FR 43239 (July 24, 1979)	Facilities should be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood. Floodplain management requirements exist to avoid adverse impacts associated with the occupancy and modification of floodplains.
Wetlands	42 U.S.C. Section 1344 40 CFR Parts 230, Subpart H 33 CFR 320-330 Executive Order 11990 40 CFR 6.302 (a) 40 CFR 6, Appendix A, Section 3(a) & 3(c)	The discharge of dredged or fill material into the waters of the United States is prohibited without a permit. Protection of wetlands is required to avoid adverse impacts associated with the destruction and modification of wetlands.
Area affecting stream or river	16 USC Part 661-663 40 CFR 6.302 (e) and (g) 16 USC 1274 et. seq.	Fish or wildlife resources that may be affected by actions resulting in control or structural modification of any natural stream or body of water should be protected. Federal agencies taking such actions must consult with the U.S. Fish and Wildlife Service. The Wild and Scenic Rivers Act established requirements for water resource projects affecting wild, scenic or recreational rivers in the National Wild and Scenic Rivers system.
Historically or culturally significant properties owned or controlled by a federal agency	16 USC 470 aa et. seq. 36 CFR 800 44 FR 6068	The National Historic Preservation Act identifies procedures for protection of Historically and Culturally Significant Properties, including Colorado's delegated responsibilities under the act.

Location	Citation	Requirements
Prehistoric, historic, or archeological sites owned or controlled by a federal agency	36 CFR 60 36 CFR 63 Proposed 36 CFR 66 36 CFR 296 43 CFR 3 43 CFR 7	Department of Interior regulations for determining site eligibility for the National Register of Historic Places and standards for data recovery should be complied with.
Historical, prehistorical and archeological resources and State Register of Historic Places Act	CRS § 24-80-401 et. seq. CRS §24-80.1-101 et. seq.	Consultation with the Colorado Historic Society, the State Archeologist, and State Register of Historic Places is required before an action is taken.
Cultural resource owned or controlled by a federal agency	35 FR 8921	Executive Order 11593: Any federal agency controlling culturally significant resources is the designated leader in the preservation of those resources. This order ensures that all culturally significant resources located on an agency's property are protected. The federal agencies are responsible for identifying, evaluating, and nominating (where appropriate) to the National Register of Historic Places all culturally significant resources found on their land.
Archeological or historic site owned or controlled by a federal agency	16 USC 469 et. seq.	The Archeological and Historic Preservation Act of 1974 requires that a federal agency notifies the Secretary of Interior of any agency project that will destroy a significant archeological site. The Secretary of the notifying agency may support data recovery programs to preserve the resource.
Historically significant property owned and managed by the U.S. Army	Army Regulation 420 32 CFR 650.181 to 193 Technical Manual 5-801-1 Technical Note 78-17 32 CFR 229	U.S. Department of the Army has procedures and standards for preserving historically significant properties and procedures for implementing the Archeological Resources Protection Act. Department of the Army Regulations 420 prescribe Army policy procedures and responsibilities for compliance with the National Historic Preservation Act of 1966, as amended, for maintaining the preservation of historically significant sites, the hiring of qualified personnel to manage the sites, and the conduct of state-of-the-art standards for preservation, personnel, and projects for accomplishment of the historic preservation program. This regulation also requires that each installation prepare a historic preservation plan or have documentation on file indicating that no resources appropriate for such management planning exist.

Location	Citation	Requirements
Archeological resources on U.S. Department of the Army installations	16 USC 470 aa et. seq.	The Archeological Resources Protection Act of 1979 establishes criminal and civil penalties for anyone damaging archeological resources. This act also allows the Secretary of the Army to issue excavation permits for archeological resources.
Prehistoric, historic, or archeological sites owned or controlled by the U.S. Army	16 USC 470a 36 CFR 800	The National Historic Preservation Act of 1966 requires the Secretary of the Interior to inventory, evaluate, and nominate (where appropriate) significant properties to the National Register of Historic Places.
	43 CFR 3	Preservation of American Antiquities: Provides for the protection of historic or prehistoric remains of any object of any antiquity on federal lands.
	43 CFR 7 36 CFR 296	Protection of Archeological Resources: Provides for the protection of archeological resources located on public lands.
Prehistoric, historic, or archeological sites owned or controlled by the U.S. Army	Executive Order No. 11593, May 13, 1971, 36 FR 8921, Section 2(b).	According to Executive Order No. 11593, each federal agency shall exercise caution to ensure that any such property that might qualify for inclusion is not inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly.
	16 USC 470 aa et. seq. 36 CFR 60.6	Based on the historical and field inventory information, the significance of all identified sites should be evaluated following criteria set forth in 36 CFR 60.6 and in accordance with the Preservation Office before conducting any ground-altering activity with guidelines from the Colorado State Historic Preservation Office. The act also requires the Army agency to consult with the Advisory Council on Historic issues that may affect those significant properties. A federal agency should take into account the effect of the project on any National Register-listed or eligible property and is directed to complete an appropriate data recovery program before such a site is damaged or destroyed.
National Historic Landmark Program	36 CFR 65	The National Historic Landmark Program was established to identify and designate National Historic Landmarks and encourage the long range preservation of nationally significant properties that illustrate or commemorate the history and prehistory of the United States.

Location	Citation	Requirements
Colorado Requirements for Siting of Hazardous Waste Disposal Site	6 CCR 1007-2, Part 2	State siting requirements control the location, design, and design performance of hazardous waste disposal sites. Such disposal sites must be located and designed in a manner that ensures long-term protection of human health and the environment. Disposal sites must be designed to prevent adverse effects on: • Groundwater • Surface water • Air quality • Public health and the environment
National Wildlife Refuge System Administration Act	16 USC 668dd et. Seq. 50 CFR 25	The National Wildlife Refuge Administration Act prohibits the taking or possessing any fish, bird, mammal, or other wild vertebrate or invertebrate animals or part or nest or egg thereof within any such area; or enter, use, or otherwise occupy any such area for any purpose; unless such activities are performed by persons authorized to manage such area or unless such activities are permitted.

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
	29 CFR 1926 Subpart P	29 CFR 1926 Subpart P provides guidelines for workers engaged in activities related to construction and utilization of trenches and ditches.

Action	Citation	Requirements
	AR-385-10 AR 385-64 AMC-R 395-100 DAA Pam 40-8 [TBC] FM 3-21 [TBC] TM 10-277 [TBC] Army Corps of Engineers (ACOE) Guidance on Safety Concepts for UXO [TBC]	If unexploded ordnance (UXO) is encountered during excavation, workers must comply with the substantive requirements of AMCR 385-100, AR 385-10, AR 385-64, as well as guidance provided in DA Pam 40-8, FM 3-21, TM 10-277 and ACOE guidance for UXO regarding health and safety of workers associated with ammunition, explosives, and chemical agents.
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. In addition to the chemicals listed in Table A-46, excavation at Basin F is expected to encounter ammonia. The ammonia fumes will be neutralized using an acidified scrubber that utilizes hydrochloric acid. Worker exposure standards for these chemicals are as follows: Ammonia: ACGIH-TWA = 25 ppm, 17 mg/m^3; Short-Term Exposure Limit (STEL) = 35 ppm, 24 mg/m^3; NIOSH-REL = 25 ppm, 18 mg/m^3; STEL = 35 ppm, 27 mg/m^3; OSHA-Permissible Exposure Limit (PEL) = 50 ppm, 35 mg/m^3 Hydrogen Chloride: ACGIH-ceiling = 5 ppm, 7.5 mg/m3; NIOSH-ceiling = 5 ppm, 7 mg/m3; OSHA-ceiling = 5 ppm, 7 mg/m3 If chemical agent is encountered during excavation, workers must comply with the chemical-specific exposure guidelines for chemical agents and breakdown products outlined in Table A-28 of this document.

Action	Citation	Requirements
		(OSHA regulations and other health and safety requirements are actually independently applicable requirements, not ARARs and TBCs. ACGIH and NIOSH values are provided as guidelines.)
Air Emission Control		
Particulate emissions during excavation and backfill	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3 5 CCR 1001-2, Section II	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. In addition, no off-site transport of particulate matter is allowed. A fugitive dust control measure will be written into the workplan in consultation with the state for the remedial activity. Estimated emissions from the proposed remedial activity per Colorado Air Pollution Emission Notice (APEN) requirements.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs. Excavation and backfill of soils could potentially cause emission of hazardous air pollutants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	Volatile organic compound (VOC) regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.

Action	Citation	Requirements
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Air emissions from diesel-powered vehicles associated with excavation and backfill operations	5 CCR 1001-15, Regulation 12	Colorado Diesel-Powered Vehicle Emission Standards for Visible Pollutants apply to motor vehicles intended, designed, and manufactured primarily for use in carrying passengers or cargo on roads, streets, and highways, and state as follows: 1) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing 7,500 pounds and less, empty weight, any air contaminant, for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 2) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, any air contaminant, for a period greater than (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 35% opacity, with the exception of subpart "C". 3) No person shall emit or cause to be emitted into the atmosphere from any naturally aspirated (non-turbocharged) diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, operated above 7,000 ft (mean sea level) any air contaminant for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity.

Action	Citation	Requirements
		4) Any diesel-powered motor vehicle exceeding these requirements shall be exempt for a period of 10 minutes if the emissions are a direct result of a cold engine start-up and provided the vehicle is in a stationary position. 5) These standards shall apply to motor vehicles intended, designed, and manufactured primarily for travel or use in transporting persons, property, auxiliary equipment, and/or cargo over roads, streets, and highways.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Excavation and backfilling of soils must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the Automobile Inspection and Readjustment (AIR) Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as applicable). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Smoke and opacity	5 CCR 1001-3, Regulation 1, Sect II.A	Excavation and backfilling of soils must be conducted in a manner that will not allow or cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Waste Characterization		
Asbestos waste storage management	6 CCR 1007-2, Part B, Section 5.4	Asbestos waste will be managed according to applicable substantive requirements for asbestos storage.

Action	Citation	Requirements
Asbestos waste handling management	40 CFR 61, Subpart M	Prevent discharge of visible emissions during collection, processing, packaging, or transporting any asbestos-containing wastes; deposit asbestos-containing waste as possible at disposal site; mark transport vehicle appropriately during loading and unloading operations.
	5 CCR 10001-10, Regulation Part B, Section 8.B.III.c.8	Asbestos waste will be managed according to applicable substantive requirements for asbestos handling, transportation, and storage.
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Wastes generated during soil excavation activities must be characterized and evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR 261

Action	Citation	Requirements
		• Determine whether the waste is identified in 40 CFR 261 by testing the waste according to specified test methods or by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes.

Action	Citation	Requirements
		5) "Inert material", which includes solids that are not soluble in water and therefore non-putrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation.
		If present, only small quantities of industrial, community, commercial, and special wastes are expected from soil excavation at RMA.
		No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
Waste Management		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	If soil excavation at RMA generates hazardous wastes, the wastes must be treated, stored or disposed in accordance with RCRA regulations, including LDRs-UTS (if placement occurs).
	6 CCR 1007-3 Parts detailed below	Some of the Colorado standards for owners and operators of hazardous waste treatment, storage, and disposal facilities are more stringent than the equivalent federal regulations. The standards that are more stringent are detailed below.
	Part 264.13 6 CCR 1007-3 Sect 264.13	General waste analysis requirements
	Part 264.90 6 CCR 1007-3 Sect 264.90	Groundwater Monitoring Standards

Action	Citation	Requirements
	Part 264.97 (g)(3) 6 CCR 1007-3 Sect 264.97(g)(3)	General groundwater monitoring requirements
	Part 264.98 (c) 6 CCR 1007-3 Sect 264.98(c)	Groundwater detection monitoring program
	Part 264.99 (C)(3)(i)(iii) 6 CCR 1007-3 Sect 264.99(C)(3)(i)(iii)	Groundwater compliance monitoring program
	Part 264.100 (e)(2) 6 CCR 1007-3 Sect 264.100(e)(2)	Corrective action program
	Part 264.171-173 6 CCR 1007-3 Sect 264.171-173	Applicability of the requirements of containers
	Part 264.101 (c)(1) 6 CCR 1007-3 Sect 264.101(c)(1)	Corrective action for solid waste management units
	Part 264.190 (c) 6 CCR 1007-3 Sect 264.190(c)	Applicability of the requirements for tanks or tank systems
	Part 264.251 (c) & (d) 6 CCR 1007-3 Sect 264.251(c) & (d)	Design and operating requirements for waste piles
	Part 264.273 (c) & (d) 6 CCR 1007-3 Sect 264.273(c) & (d)	Design and operating requirements for land treatment
	Part 264.312 (b) 6 CCR 1007-3 Sect 264.312(b)	Special requirements for ignitable and reactive wastes in landfills
	Part 264.314 (a) 6 CCR 1007-3 Sect 264.314(a)	Special requirements for bulk and containerized liquids in landfills
	Part 264.314(f) 6 CCR 1007-3 Sect 264.314(f)	Liquid waste prohibition

Action	Citation	Requirements
	Part 264.340 (a)(1) & (2) 6 CCR 1007-3 Sect 264.340(a)(1) & (2)	Applicability of incinerator requirements
	Part 264.16 (a)(1) 6 CCR 1007-3 Sect 264.16(a)(1)	Personnel training
	Part 264.31 (a) 6 CCR 1007-3 Sect 264.31(a)	Facility design and operation requirements
	Part 264.51 (a) 6 CCR 1007-3 Sect 264.51(a)	Purpose and implementation of contingency plans
	Part 264.52 (a) 6 CCR 1007-3 Sect 264.52(a)	Content of contingency plans
	Part 264 Subpart cc [TBC] 6 CCR 1007-3 Part 264 Subpart cc	Air emission standards for tanks
Treatment and disposal of hazardous debris	40 CFR 268.45 6 CCR 1007-3, Part 268.45	Hazardous debris generated during soil excavation activities must be treated using specific technologies to extract, destroy, or immobilize hazardous constituents on or in the debris if placement occurs. In certain cases, after treatment the debris may no longer be subject to RCRA Subtitle C regulation.
Management of Remediation Wastes	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.

Action	Citation	Requirements
Temporary Units (TU)	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Groundwater Injection		
Reinjection of treated groundwater	RCRA Section 3020 (b) OSWER Directive 9234.1-06 [TBC] 40 CFR 124, 144, 146, 147 (Subpart G), and 148	Reinjection of treated groundwater must be managed in accordance with the guidelines in OSWER Directive 9234.1-06. Wells must be constructed and installed and managed in compliance with the substantive requirements of 40 CFR 124, 144, 146, 147 (Subpart G), and 148.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Dredged Material Management		
Discharge of Dredged Materials	40 CFR 230 Subpart B	Dredging operations in wetland areas must be managed in accordance with the applicable requirements based on the impacts resulting from specific dredged material discharges associated with sediment removal activities.
Certification of Federal Licenses and Permits (401 Certification)	33 USC Section 1341 Section 401 of Clean Water Act	Provides for state review of facility operations for the purposes of assuring that applicable effluent limitations or other limitations or other applicable water quality requirements will not be violated.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones: b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period. c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above). d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Waste Characterization		
Solid waste determination		Drums, debris, and equipment from structures that stockpiled must be evaluated to determine whether it may be recycled or reused or whether it is a solid waste.
	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 (a) 6 CCR 1007-3 Sect 261.4(a) 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31	A solid waste is any discarded material that is not excluded by 40 CFR 261.4 (a) or that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Solid wastes including drums, debris, and equipment from structures that are temporarily stored in stockpiles must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261

Action	Citation	Requirements
		• Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods or by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes.

Action	Citation	Requirements
		5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, and commercial wastes are expected from sstockpiles at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
<u>Waste Management</u>		
Asbestos waste storage management	6 CCR 1007-2, Part B, Section 5.4	Asbestos waste will be managed according to applicable substantive requirements for asbestos storage.
Asbestos waste handling management	40 CFR 61, Subpart M	Prevent discharge of visible emissions during collection, processing, packaging, or transporting any asbestos-containing wastes; deposit asbestos-containing waste as possible at disposal site; mark transport vehicle appropriately during loading and unloading operations.
	5 CCR 1001-8, Regulation Part B, Section 8.B.III.c.8	Asbestos waste will be managed according to applicable substantive requirements for asbestos handling, transportation, and storage.

Action	Citation	Requirements
PCB storage	40 CFR 761.65	Storage facilities must be constructed with adequate roofs, walls; have impervious floors with curbs (no floor drains expansion joints or other openings); be located above 100 year floodplain (applies to PCBs at concentrations of 50 ppm or greater) Temporary storage (<30 days) of PCB containers containing non-liquid PCBs, such as contaminated soil, rags, debris need not comply with above requirements. Containers must be dated when they are placed in storage. All storage areas must be properly marked and stored articles must be checked for leaks every 30 days.
PCB decontamination standards	40 CFR 761.79	PCB containers to be decontaminated by triple rinsing of internal surfaces with solvent containing <50 ppm PCB.
Treatment, storage, or disposal of hazardous wastes in waste piles	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	Wastes stored in stockpiles that are determined to be RCRA hazardous wastes must be stored, treated, and disposed in compliance with all substantive requirements of Part 264 as indicated in Exhibit 1-3 of the CERCLA Compliance with Other Laws Manual including 40 CFR Part 264 Subpart 6 and LDRs-UTS if placement occurs.
Treatment and disposal of hazardous debris	40 CFR 268.45 6 CCR 1007-3, Part 268.45	Hazardous debris must be treated using specific technologies to extract, destroy, or immobilize hazardous constituents on or in the debris. In certain cases after treatment, the debris may no longer be subject to RCRA Subtitle C Regulation. [Refer to Table A-20 for citations and requirements relevant to both on-post and off-post solid waste landfills.]
Design and operating requirements for waste piles that contain hazardous wastes	40 CFR 264.251 6 CCR 1007-3 Sect 264.251	Waste piles that contain hazardous wastes must:

Action	Citation	Requirements
		• Have a liner that is designed, constructed, and installed to prevent migration of wastes out of the pile into adjacent soil, groundwater, or surface water. • Be constructed with materials to prevent failure, physical contact with the waste, and that will endure stress of installation and daily operation. • Be placed on a foundation that provides support to prevent failure of the liner. • Be installed to cover all surrounding earth likely to be in contact with the waste or leachate. • Have a leachate collection system. • Have a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-year storm. • Have a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm. • Be covered or managed properly if the pile contains any particulate matter which may be subject to wind dispersal.
	6 CCR 1007-3	Colorado regulations are more stringent than federal requirements by requiring that run-on and run-off control systems are designed and operated to collect and control the water volume resulting from a 24-hour, 100-year storm.
Incompatible wastes in waste piles	40 CFR 264.257 6 CCR 1007-3 Sect 264.257 40 CFR 264.17 (b) 6 CCR 1007-3 Sect 264.17(b)	Incompatible wastes must not be placed in the same pile unless 40 CFR 264.17 (b) is complied with. Incompatible wastes must be separated from other materials.
Closure and post-closure care of waste piles	40 CFR 264.258 6 CCR 1007-3 Sect 264.258	At closure, the owner or operator must remove or decontaminate all waste residues and manage them as hazardous wastes.

Action	Citation	Requirements
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following:

Action	Citation	Requirements
		• Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)
<u>Stormwater Management</u>		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
<u>Air Emissions</u>		
Standard for asbestos waste disposal	40 CFR 61 Subpart M	Prevent discharge of visible emissions during collection, processing, packaging, or transporting any asbestos-containing waste; deposit asbestos-containing waste as soon as possible at disposal site; mark transport vehicles appropriately during loading and unloading operations.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that:

a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sould levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120(b) to (j)	29 CFR 1910.120(b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under the RCRA and the CERCLA. Specific provisions include the following: • Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, the ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)

Action	Citation	Requirements
Demolition		
Air emissions during demolition	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3 5 CCR 1001-2, Section II	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. In addition, no off-site transport of particulate emissions is allowed. A fugitive dust control measure will be written into the work plan in consultation with the state for the remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Standard for asbestos waste disposal	40 CFR 61 Subpart M	Prevent discharge of visible emissions during collection, processing, packaging, or transporting any asbestos-containing wastes; deposit asbestos-containing waste as soon as possible at disposal site; mark transport vehicle appropriately during loading and unloading operations.
Emission control for opacity	5 CCR 1001-3 Regulation 1, Section II	Demolition of structures shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs. Demolition of structures could potentially cause emission of hazardous air pollutants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.

Action	Citation	Requirements
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Air emissions from diesel-powered vehicles associated with demolition	5 CCR 1001-15, Regulation 12	Colorado Diesel-Powered Vehicle Emission Standards for Visible Pollutants apply to motor vehicles intended, designed, and manufactured primarily for use in carrying passengers or cargo on roads, streets, and highways, and state as follows: 1) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing 7,500 pounds and less, empty weight, any air contaminant, for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 2) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, any air contaminant, for a period greater than (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 35% opacity, with the exception of subpart "C". 3) No person shall emit or cause to be emitted into the atmosphere from any naturally aspirated (non-turbocharged) diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, operated above 7,000 ft (mean sea level) any air contaminant for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity.

Action	Citation	Requirements
		4) Any diesel-powered motor vehicle exceeding these requirements shall be exempt for a period of 10 minutes if the emissions are a direct result of a cold engine start-up and provided the vehicle is in a stationary position. 5) These standards shall apply to motor vehicles intended, designed, and manufactured primarily for travel or use in transporting persons, property, auxiliary equipment, and/or cargo over roads, streets, and highways.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Demolition of structures must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as applicable). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
<u>Waste Characterization</u>		
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR 261 6 CCR 1007-3 Part 261	Wastes generated during the demolition of structures must be characterized. Solid wastes must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used

Action	Citation	Requirements
Solid waste determination		Drums, debris, and equipment from structures that stockpiled must be evaluated to determine whether it may be recycled or reused or whether it is a solid waste.
	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 (a) 6 CCR 1007-3 Sect 261.4(a) 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31	A solid waste is any discarded material that is not excluded by 40 CFR 261.4 (a) or that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Solid waste classification	6 CCR 1007-3, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes.

Action	Citation	Requirements
		2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor mounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, and commercial wastes are expected from slurry wall installation at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.

Action	Citation	Requirements
Waste Management		
Asbestos waste storage management	6 CCR 1007-2, Part B, Section 5.4	Asbestos waste will be managed according to applicable substantive requirements for asbestos storage.
Asbestos waste handling management	40 CFR 61, Subpart M	Prevent discharge of visible emissions during collection, processing, packaging, or transporting any asbestos-containing wastes; deposit asbestos-containing waste as possible at disposal site; mark transport vehicle appropriately during loading and unloading operations.
	5 CCR 1001-10, Regulation Part B, Section 8.B.III.c.8	Asbestos waste will be managed according to applicable substantive requirements for asbestos handling, transportation, and storage.
PCB storage	40 CFR 761.65	Storage facilities must be constructed with adequate roofs, walls; have impervious floors with curbs (no floor drains expansion joints or other openings); be located above 100 year floodplain (applies to PCBs at concentrations of 50 ppm or greater) Temporary storage (<30 days) of PCB containers containing non-liquid PCBs, such as contaminated soil, rags, debris need not comply with above requirements. Containers must be dated when they are placed in storage. All storage areas must be properly marked and stored articles must be checked for leaks every 30 days.
PCB decontamination standards	40 CFR 761.79	PCB containers to be decontaminated by triple rinsing of internal surfaces with solvent containing <50 ppm PCB.
Treatment, storage, or disposal of hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264	If structure demolition at RMA generates hazardous wastes, the wastes must be treated and stores in accordance with RCRA regulations.

Action	Citation	Requirements
	40 CFR Part 264 Subpart L 6 CCR 1007-3 Subpart L 40 CFR Part 268 6 CCR 1007-3 Part 268	Wastes stored in stockpiles that are determined to be RCRA hazardous wastes must be stored, treated, and disposed in compliance with RCRA regulations, including LDRs-UTS if placement occurs.
	40 CFR Part 264 Subpart I 6 CCR 1007-3 Part 264 Subpart I	Applicability of substantive requirements for containers.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed in Appendix A, Table A-12.
Treatment and disposal of hazardous debris	40 CFR 268.45 6 CCR 1007-3 Sect 268.45	Hazardous debris encountered during slurry wall installation must be treated using specific technologies to extract, destroy, or immobilize hazardous constituents on or in the debris. In certain cases after treatment, the debris may no longer be subject to RCRA Subtitle C regulation.
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.

Action	Citation	Requirements
On-post land disposal of hazardous wastes	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268 EPA/540/G-89/006 [TBC]	Based upon a determination of whether the disposal technique constitutes placement, LDRs-UTS may be applicable. If placement occurs, the on-site disposal facility must comply with the substantive requirements of 40 CFR 264 (6 CCR 1007.3 Part 264) and 40 CFR Part 268 (6 CCR 1007-3 Part 268).
Stormwater Management		
Discharge of stormwater to on-post surface water	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sould levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones: Zone / 7:00 a.m. to next 7:00 p.m. / 7:00 p.m. to next 7:00 a.m. Residential / 55 db(A) / 50 db(A) Commercial / 60 db(A) / 55 db(A) Light Industrial / 70 db(A) / 65 db(A) Industrial / 80 db(A) / 75 db(A) b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

Action	Citation	Requirements
		c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above). d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour. f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
	29 CFR 1926 Subpart P	29 CFR 1926 Subpart P provides guidelines for workers engaged in activities related to construction and utilization of trenches and ditches.
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46.

Action	Citation	Requirements
		(OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are presented as guidelines.)
Air Emissions		
Air emissions during trench construction	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3 5 CCR 1001-2, Section II	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. No off-site transport of particulate matter allowed. A fugitive dust control measure will be written into the work plan in consultation with the state for each remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3 Regulation 1, Section II	Trench construction shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs. Trench construction could cause volatization of some organic and metal contaminants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements.

Action	Citation	Requirements
		Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use area—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Air emissions from diesel-powered vehicles associated with trench construction	5 CCR 1001-15, Regulation 12	Colorado Diesel-Powered Vehicle Emission Standards for Visible Pollutants apply to motor vehicles intended, designed, and manufactured primarily for use in carrying passengers or cargo on roads, streets, and highways, and state as follows: 1) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing 7,500 pounds and less, empty weight, any air contaminant, for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 2) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, any air contaminant, for a period greater than (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 35% opacity, with the exception of subpart "C".

Action	Citation	Requirements
		3) No person shall emit or cause to be emitted into the atmosphere from any naturally aspirated (non-turbocharged) diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, operated above 7,000 ft (mean sea level) any air contaminant for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 4) Any diesel-powered motor vehicle exceeding these requirements shall be exempt for a period of 10 minutes if the emissions are a direct result of a cold engine start-up and provided the vehicle is in a stationary position. 5) These standards shall apply to motor vehicles intended, designed, and manufactured primarily for travel or use in transporting persons, property, auxiliary equipment, and/or cargo over roads, streets, and highways.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Trench construction must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as applicable). The visibility standard applies only during hours when the hourly average humidity is less than 70%.

Action	Citation	Requirements
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones: b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period. c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

Action	Citation	Requirements
		d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour. f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable requirements, not ARARs and TBCs. ACGIH and NIOSH values are presented as guidelines.)

Action	Citation	Requirements
Construction of Caps/Covers		
Design/installation of caps/covers	Final Covers on Hazardous Waste Landfills and Surface Impoundments EPA/530/SW-89/047 [TBC]	Caps and covers must be designed and installed to prevent wind dispersal of hazardous wastes. They should be designed, constructed, and installed as specified in EPA/530/SW-89/047.
Air Emission Control		
Particulate emissions during cap/cover installation	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. Excavation and backfilling of soils conducted in a manner that will not allow or cause the emission in excess of 20% opacity. In addition, no off-site transport of particulate matter is allowed. A fugitive dust control measure will be written into the work plan in consultation with the state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1; Section II	Installation of caps/covers shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. Installation of caps/covers could potentially cause emission of hazardous air pollutants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.

Action	Citation	Requirements
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Air emissions from diesel-powered vehicles associated with installation of caps/covers	5 CCR 1001-15, Regulation 12	Colorado Diesel-Powered Vehicle Emission Standards for Visible Pollutants apply to motor vehicles intended, designed, and manufactured primarily for use in carrying passengers or cargo on roads, streets, and highways, and state as follows: 1) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing 7,500 pounds and less, empty weight, any air contaminant, for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 2) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, any air contaminant, for a period greater than (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 35% opacity, with the exception of subpart "C".

Action	Citation	Requirements
		3) No person shall emit or cause to be emitted into the atmosphere from any naturally aspirated (non-turbocharged) diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, operated above 7,000 ft (mean sea level) any air contaminant for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 4) Any diesel-powered motor vehicle exceeding these requirements shall be exempt for a period of 10 minutes if the emissions are a direct result of a cold engine start-up and provided the vehicle is in a stationary position. 5) These standards shall apply to motor vehicles intended, designed, and manufactured primarily for travel or use in transporting persons, property, auxiliary equipment, and/or cargo over roads, streets, and highways.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Installation of caps/covers must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
<u>Stormwater Management</u>		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Action	Citation	Requirements
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

Action	Citation	Requirements
		b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period. c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above). d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour. f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations land emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
	29 CFR 1926 Subpart P	29 CFR 1926 Subpart P provides guidelines for workers engaged in activities related to construction and utilization of trenches and ditches.
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46.

Action	Citation	Requirements
		In addition to the chemicals listed in Table A-46, workers installing the concrete liners will be exposed to Portland cement dust. Worker exposure standards for Portland cement are the following: Portland cement — ACGIH-TWA = 10 mg/m^3* NIOSH-REL = 10 mg/m^3 (total), 5 mg/m^3 (resp) OSHA-TWA = 15 mg/m^3 (total), 5 mg/m^3 (resp) * value is for total dust containing no asbestos land less than 1% crystalline silica (OSHA regulations and other health and safety requirements are actually independently applicable requirements, not ARARs and TBCs. ACGIH and NIOSH values are presented as guidelines.)
Air Emission Control		
Particulate emissions during installation of concrete liners	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. Mixing of concrete material must be conducted in a manner that will not allow or reuse emissions into the atmosphere of any air pollutant in excess of 20% opacity. In addition, no off-site transport of particulate matter is allowed. A fugitive dust control measure will be written in the work plan in consultation with the state for this remediation activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Construction of concrete liners shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.

Action	Citation	Requirements
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. Concrete liner installation could potentially cause emission of hazardous air pollutants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Concrete liner installation must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
<u>Stormwater Management</u>		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
	29 CFR 1926 Subpart P	29 CFR 1926 Subpart P provides guidelines for workers engaged in activities related to construction and utilization of trenches and ditches.
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46.

Action	Citation	Requirements
		(OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)
Air Emissions		
Air emissions during slurry wall construction	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3 5 CCR 1001-2, Section II	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. Slurry wall construction must be conducted in such a manner that will not allow or cause emissions into the atmosphere of any air pollutants in excess of 20% opacity. In addition, no off-site transport of particulate matter is allowed. A fugitive dust control measure will be written in the work plan in consultation with the state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Slurry walls shall not cause the emission into the atmosphere of any air pollutant which is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs. Slurry wall construction could cause volatization of some organic and/or metal contaminants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements.

Action	Citation	Requirements
		Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Air emissions from diesel-powered vehicles associated with slurry wall construction	5 CCR 1001-15, Regulation 12	Colorado Diesel-Powered Vehicle Emission Standards for Visible Pollutants apply to motor vehicles intended, designed, and manufactured primarily for use in carrying passengers or cargo on roads, streets, and highways, and state as follows: 1) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing 7,500 pounds and less, empty weight, any air contaminant, for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 2) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, any air contaminant, for a period greater than (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 35% opacity, with the exception of subpart "C".

Action	Citation	Requirements
		3) No person shall emit or cause to be emitted into the atmosphere from any naturally aspirated (non-turbocharged) diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, operated above 7,000 ft (mean sea level) any air contaminant for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 4) Any diesel-powered motor vehicle exceeding these requirements shall be exempt for a period of 10 minutes if the emissions are a direct result of a cold engine start-up and provided the vehicle is in a stationary position. 5) These standards shall apply to motor vehicles intended, designed, and manufactured primarily for travel or use in transporting persons, property, auxiliary equipment, and/or cargo over roads, streets, and highways.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Slurry wall construction must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as applicable). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
<u>Waste Characterization</u>		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities:

Action	Citation	Requirements
	6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	• Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 CCR 1007-3 Part 261	Wastes generated during slurry wall construction must be characterized. Solid wastes must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following:

Action	Citation	Requirements
		1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, and commercial wastes are expected from slurry wall installation at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.

Action	Citation	Requirements
Waste Management		
Treatment, storage, or disposal of hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264	If slurry wall construction at RMA generates hazardous wastes, the wastes must be treated and stored in accordance with RCRA regulations.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed in Appendix A, Table A-12.
On-post land disposal of hazardous wastes	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268 EPA/540/G-89/006 [TBC]	Based upon a determination of whether the disposal technique constitutes placement, LDRs-UTS may be applicable. If placement occurs, the on-site disposal facility must comply with the substantive requirements of 40 CFR 264 (6 CCR 1007-3, Part 264) and 40 CFR 268 (6 CCR 1007-8, Part 268).
Treatment and disposal of hazardous debris	40 CFR 268.45 6 CCR 1007-3, Part 268.45	Hazardous debris encountered during slurry wall installation must be treated using specific technologies to extract, destroy, or immobilize hazardous constituents on or in the debris. In certain cases after treatment, the debris may no longer be subject to RCRA Subtitle C regulation.
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.

Action	Citation	Requirements
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones: b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

Action	Citation	Requirements
		c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above). d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour. f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable requirements, not ARARs and TBCs. ACGIH and NIOSH values are provided as guidelines.)

Action	Citation	Requirements
Landfill Design/Operation		
On-post hazardous waste landfill design/operation	40 CFR 264 6 CCR 1007-3 Part 264 40 CFR 268 6 CCR 1007-3 Part 268	On-post hazardous waste landfills shall be designed and operated in compliance with the applicable substantive requirements of 40 CFR 264 (6 CCR 1007-3, Part 264), including Subparts A, B, C, D, F, G, I, J, and N. If the landfill is located outside the AOC from which the hazardous waste was derived or is not in a designated CAMU, placement has occurred and the landfill must comply with LDRs-UTS in 40 CFR 268 (6 CCR 1007-3, Part 268).
Off-post hazardous waste landfill operation	40 CFR 264 6 CCR 1007-3 Part 264 OSWER Directive 9834.11	Off-post hazardous waste landfills shall be RCRA-permitted facilities and shall operate in compliance with all requirements of 40 CFR 264. The facilities shall also be in compliance with OSWER Directive 9834.11 regarding off-site disposal of hazardous waste from CERCLA sites. All RCRA requirements such as manifesting and LDRs-UTS will apply to all off-site shipments of hazardous waste, including any hazardous waste debris.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
TCSA-PCB design standards	40 CFR 761 Subpart D	On-post hazardous waste landfills shall be designed and operated in compliance with applicable substantive requirements of 40 CFR 761 Subpart D.
Waste Management		
Asbestos waste disposal management	6 CCR 1007-2, Part B, Section 5.0	On-Post hazardous waste landfill shall be designed and operated in compliance with applicable substantive requirements for asbestos waste disposal sites.
Asbestos waste storage management	6 CCR 1007-2, Part B, Section 5.4	Asbestos waste will be managed according to applicable substantive requirements for asbestos storage.

Action	Citation	Requirements
	5 CCR 10001-10, Regulation Part B, Section 8.B.III.c.8	Asbestos waste will be managed according to applicable substantive requirements for asbestos handling, transportation, and storage.
Asbestos waste handling management	40 CFR 61, Subpart M	Prevent discharge of visible emissions during collection, processing, packaging, or transporting any asbestos-containing wastes; deposit asbestos-containing waste as possible at disposal site; mark transport vehicle appropriately during loading and unloading operations.
PCB storage	40 CFR 761.65	Storage facilities must be constructed with adequate roofs, walls; have impervious floors with curbs (no floor drains expansion joints or other openings); be located above 100 year floodplain (applies to PCBs at concentrations of 50 ppm or greater) Temporary storage (<30 days) of PCB containers containing non-liquid PCBs, such as contaminated soil, rags, debris need not comply with above requirements. Containers must be dated when they are placed in storage. All storage areas must be properly marked and stored articles must be checked for leaks every 30 days.
PCB chemical waste landfilling standards	40 CFR 761.75	Landfill must be located in thick, relatively impermeable soil formation or on soil with high clay and silt content, synthetic membranes must be used when these conditions cannot be met. In addition, other structural requirements include avoidance of location in a floodplain; required run-on/run-off structures if below the 100 year floodplain, and ground/surface water monitoring for specified parameters. The landfill must include a leachate monitoring system. PCB wastes must be segregated from wastes not chemically compatible with PCBs.

Action	Citation	Requirements
PCB decontamination standards	40 CFR 761.79	PCB containers to be decontaminated by triple rinsing of internal surfaces with solvent containing <50 ppm PCB.
Treatment, storage, or disposal of hazardous wastes in containers and tanks	40 CFR 264 Subpart I 6 CCR 1007-3 Part 264 Subpart I	Applicability of the substantive requirements for containers.
	40 CFR 264 Subpart J 6 CCR 1007-3 Part 264 Subpart J	Applicability of the substantive requirement for tanks or tank systems.
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.

Action	Citation	Requirements
Air Emission Control		
Emission of particulates	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. No off-site transport of particulate matter is allowed. A fugitive dust control measure will be written into the work plan in consultation with the state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements will be necessary.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	On-post landfilling shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. On-post landfilling may cause emission of hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO Emissions	42 USC Section 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate.

Action	Citation	Requirements
Air Emissions		
Standard for asbestos waste disposal	40 CFR 61 Subpart M	Prevent discharge of visible emissions during collection, processing, packaging, or transporting any asbestos-containing waste; deposit asbestos-containing waste as soon as possible at disposal site; mark transport vehicles appropriately during loading and unloading operations.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	On-post landfilling must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.

Action	Citation	Requirements
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Wastewater Treatment/Disposal	40 CFR 262 6 CCR 1007-3, Part 262 40 CFR 264 6 CCR 1007-3, Part 264	Wastewater that is determined to be a hazardous waste must be treated in accordance with the provisions of RCRA.
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones: Zone / 7:00 a.m. to next 7:00 p.m. / 7:00 p.m. to next 7:00 a.m. Residential / 55 db(A) / 50 db(A) Commercial / 60 db(A) / 55 db(A) Light Industrial / 70 db(A) / 65 db(A) Industrial / 80 db(A) / 75 db(A) b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period. c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

Action	Citation	Requirements
		d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour. f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b)-(j)	29 CFR 1910.120 (b) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. In addition to the compounds listed in Table 1, off gases from the rotary kiln incinerators may contain gaseous hydrogen chloride, hydrogen bromide, and hydrogen fluoride. These gases will be removed during further treatment of the off gases, including a caustic quench system using sodium hydroxide. The worker exposure standards for these compounds are as follows:

Action	Citation	Requirements
		Hydrogen bromide: ACGIH-Ceiling = 3 ppm, 9.9 mg/m^3 NIOSH- Ceiling = 3 ppm, 10 mg/m^3 OSHA- PEL = 3 ppm, 10 mg/m^3 Hydrogen chloride: ACGIH- Ceiling = 5 ppm, 7.5 mg/m^3 NIOSH- Ceiling = 5 ppm, 7 mg/m^3 OSHA- Ceiling = 5 ppm, 7 mg/m^3 Hydrogen fluoride: ACGIH- Ceiling = 3 ppm, 2.6 mg/m^3 NIOSH-REL = 3 ppm, 2.5 mg/m^3 15-min ceiling = 6 ppm, 5 mg/m^3 OSHA-PEL = 3 ppm Sodium hydroxide: ACGIH- Ceiling = 2 mg/m^3 NIOSH- Ceiling = 2 mg/m^3 OSHA-PEL = 2 mg/m^3 (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are presented as guidelines.)
<u>Thermal Desorption Unit Operation</u>		
Determination of operational readiness	40 CFR 270.19 6 CCR 1007-3 Sect 270.19 40 CFR 270.62 (b) 6 CCR 1007-3 Sect 270.62(b)	Although permit applications are not necessary for RMA remedial actions, the operational readiness information will be provided in CERCLA documents leading to incineration alternatives.
Operation of thermal desorption unit	40 CFR 264 6 CCR 1007-3 Part 264	The thermal desorption unit shall be operated to comply with substantive requirements of 40 CFR 264, including, but not limited to the following Subpart O requirements: • Stack emission • Monitoring • Inspections

Action	Citation	Requirements
		• Testing of the emergency waste feed cutoff system
	6 CCR 1007-3	Colorado incinerator regulations are broader in scope than the federal regulations. The Colorado regulations include boilers and industrial furnaces as regulated units under Subpart O.
<u>Waste Characterization</u>		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Thermal desorption of soils will generate salt cake, metal fines, and other solids. These wastes and all others generated must be characterized and evaluated according to the following methods to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261

Action	Citation	Requirements
		• Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Part 1, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain the following five solid waste categories: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation.

Action	Citation	Requirements
		If present, only small quantities of industrial, community, commercial, and special wastes are expected from thermal desorption of soils at RMA.
		No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
Waste Management		
PCB storage	40 CFR 761.65	Storage facilities must be constructed with adequate roofs, walls; have impervious floors with curbs (no floor drains expansion joints or other openings); be located above 100 year floodplain (applies to PCBs at concentrations of 50 ppm or greater)
		Temporary storage (<30 days) of PCB containers containing non-liquid PCBs, such as contaminated soil, rags, debris need not comply with above requirements.
		Containers must be dated when they are placed in storage.
		All storage areas must be properly marked and stored articles must be checked for leaks every 30 days.
PCB incineration standards	40 CFR 761.70	Incineration requirements for non-liquid PCB apply to PCB concentrations >50 ppm and include specified dwell times; combustion efficiency of 99.9999%; process record/monitoring requirements; automatic shut-off standards; a maximum mass air emission of 0.001 g PCB per kg of PCB entering the incinerator.
PCB decontamination standards	40 CFR 761.79	PCB containers to be decontaminated by triple rinsing of internal surfaces with solvent containing <50 ppm PCB.
Treatment, storage, or disposal of hazardous wastes	40 CFR Part 264 6 CCR 1007-3 Part 264	Wastes that are determined to be RCRA hazardous wastes must be stored and treated, in compliance with RCRA regulations.

Action	Citation	Requirements
On-post land disposal of hazardous wastes	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268 EPA/540/G-89/005 [TBC]	Based upon a determination of whether the disposal technique constitutes placement, LDRs-UTS may be applicable. If placement does occur, the disposal facility must comply with the substantive requirements of 40 CFR Part 264 (6 CCR 1007-3, Part 264) and 40 CFR Part 268 (6 CCR 1007-3, Part 268).
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
<u>Management of Remediation Wastes</u>		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
<u>Air Emissions</u>		
Emission of Particulates	40 CFR 60 Subpart E 5 CCR 1001-8, Regulation 6, Part B (VII)	The thermal desorption unit shall operate in compliance with substantive requirements of 40 CFR 60 Subpart E and the corresponding state requirements. In addition, no off-site transport of particulate matter is allowed.

Action	Citation	Requirements
Performance testing	5 CCR 1001-2 Section II-C	Performance tests shall be conducted and reduced in accordance with applicable reference test materials.
	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control measure will be written into the work plan in consultation with the state for this remedial action.
		Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
	5 CCR 1001-3, Regulation 1, Section III.B	Performance standards regarding particulate matter (<.10 gram of particulate matter per standard cubic foot) and performance testing in accordance with Appendix A of Air Quality Control Commission Regulation 6.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Thermal desorption of soils shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. Thermal desorption will cause volatization of some organic and/or metal contaminants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements.
	42 USC Section 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate.

Action	Citation	Requirements
		Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO Emissions	42 USC Section 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Thermal desorption of soils must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air

Action	Citation	Requirements
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones: b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period. c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

Action	Citation	Requirements
		d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour. f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. In addition to the compounds listed in Table A-46 will be removed during further treatment of the off gases, including a caustic quench system using sodium hydroxide. The worker exposure standards for these compounds are as follows:

Action	Citation	Requirements
		Hydrogen bromide ACGIH-Ceiling = 3 ppm, 9.9 mg/m^3 NIOSH- Ceiling = 3 ppm, 10 mg/m^3 OSHA-PEL = 3 ppm, 10 mg/m^3 Hydrogen chloride ACGIH- Ceiling = 5 ppm, 7.5 mg/m^3 NIOSH- Ceiling = 5 ppm, 7 mg/m^3 OSHA- Ceiling = 5 ppm, 7 mg/m^3 Hydrogen fluoride ACGIH- Ceiling = 3 ppm, 2.6 mg/m^3 NIOSH-REL = 3 ppm, 2.5 mg/m^3 15-min ceiling = 6 ppm, 5 mg/m^3 OSHA-PEL = 3 ppm Sodium hydroxide ACGIH- Ceiling = 2 mg/m^3 NIOSH- Ceiling = 2 mg/m^3 OSHA-PEL = 2 mg/m^3 If chemical agent is incinerated on post, the agent must be managed to comply with the exposure standards shown in Table A-28 of this document. OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.
<u>Operation of Incinerators</u>		
Determination of operation readiness	40 CFR 270.19] 6 CCR 1007.3 Sect 270.19 40 CFR 270.62 (b) 6 CCR 1007-3 Sect 270.62(b)	Although permit applications are not necessary for RMA remedial actions, operational readiness information will be provided in CERCLA documents leading to incineration alternatives.

Action	Citation	Requirements
Incinerator operations	40 CFR 264 6 CCR 1007-3 Part 264	On-post rotary-kiln incinerators must be operated in compliance with all substantive requirements of Part 264 including, but not limited to the following Subpart O requirements: • Waste-specific performance standards • Stack emission standards • Monitoring Off-post incinerators must be RCRA-permitted and comply with all requirements of 40 CFR 264 Subpart 0.
	6 CCR 1007-3	Colorado incinerator regulations are broader in scope than the federal regulations. The Colorado regulations include boilers and industrial furnaces as regulated units under Subpart 0.
<u>Waste Characterization</u>		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike

Action	Citation	Requirements
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Incineration/pyrolysis of soils will generate oversize soil, debris, metallic waste, ash, and salt cake. These wastes and all others generated must be characterized and evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain the following five solid waste categories: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes means all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes," which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes.

Action	Citation	Requirements
		5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, commercial, and special wastes are expected from incineration/pyrolysis of soils at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
<u>Waste Management</u>		
PCB storage	40 CFR 761.65	Storage facilities must be constructed with adequate roofs, walls; have impervious floors with curbs (no floor drains expansion joints or other openings); be located above 100 year floodplain (applies to PCBs at concentrations of 50 ppm or greater) Temporary storage (<30 days) of PCB containers containing non-liquid PCBs, such as contaminated soil, rags, debris need not comply with above requirements. Containers must be dated when they are placed in storage. All storage areas must be properly marked and stored articles must be checked for leaks every 30 days.

Action	Citation	Requirements
PCB incineration standards	40 CFR 761.70	Incineration requirements for non-liquid PCB apply to PCB concentrations >50 ppm and include specified dwell times; combustion efficiency of 99.9999%; process record/monitoring requirements; automatic shut-off standards; a maximum mass air emission of 0.001 g PCB per kg of PCB entering the incinerator.
PCB decontamination standards	40 CFR 761.79	PCB containers to be decontaminated by triple rinsing of internal surfaces with solvent containing <50 ppm PCB.
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268 EPA/540/G-89/006 [TBC]	Wastes that are determined to be RCRA hazardous wastes must be stored, treated, and disposed in compliance with RCRA regulations. If the soil is treated in a central incineration/pyrolysis facility at RMA that is outside the AOC from which the soil came, any waste returned to the AOC after treatment will be subject to LDRs-UTS since placement of the waste will have occurred.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Treatment of UXO containing chemical agent	AMC-R 385-131	UXO shall be incinerated as described in AMC-R 385-131 to a 5X level of decontamination so that it can be released from DOD control.
Treatment and disposal of hazardous debris	40 CFR 268.45 6 CCR 1007-3, Part 268.45	Hazardous debris generated during incineration/pyrolysis activities must be treated using specific technologies to extract, destroy, or immobilize hazardous constituents on or in the debris if placement occurs. In certain cases, after treatment the debris may no longer be subject to RCRA Subtitle C regulation.

Action	Citation	Requirements
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Air Emissions		
Emission of particulates	40 CFR 60 Subpart E 5 CCR 1001-8, Regulation 6, Part B (VII)	Incineration/pyrolysis activities must operate in compliance with the particulate emission standards for incinerators in 40 CFR 60 Subpart E and the corresponding state requirements.
	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control measure will be written in the work plan in consultation with the state for the remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Incineration/pyrolysis operations shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.

Action	Citation	Requirements
Performance Testing	5 CCR 1001-2 Section II	Performance tests shall be conducted and reduced in accordance with applicable reference test methods.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. Incineration/pyrolysis will cause volatization of some organic and/or metals contaminants.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO emissions	42 USC Section 7502-7503 5 CCR 1001-5, Regulation 3	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.

Action	Citation	Requirements
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Incineration /pyrolysis operations must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Emission of particulates	5 CCR 1001-3, Regulation 1, Sect III.B	Performance standards regarding particulate matter (<0.1 grams of particulate matter per dry standard cubic foot) and performance testing in accordance with Appendix A or Air Quality Control Commission Regulation No. 6.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that:

a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Table A-22 Action-Specific ARARs and TBCs for Off-Post Incineration of Structural Materials

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)

Table A-22 Action-Specific ARARs and TBCs for Off-Post Incineration of Structural Materials

Action	Citation	Requirements
Off-Post Incinerator		
Incinerator facility operations	40 CFR 264 6 CCR 1007-3 Part 264 OSWER Directive 9834.11 [TBC]	The off-post facility must have a RCRA permit to operate under the requirements of 40 CFR 264 including Subpart O. The facility should also be approved under the conditions of OSWER Directive 9834.11 for off-site disposal of hazardous wastes from a CERCLA site.
	6 CCR 1007-3	Colorado incinerator regulations are broader in scope than the federal regulations. The Colorado regulations include boilers and industrial furnaces as regulated units under Subpart 0.
Air Emissions		
Emission of Particulates	5 CCR 1001-3, Regulation 1, Sect III.B	Performance standards regarding particulate matter (<0.1 gram of particulate matter per dry standard cubic foot) and performance testing in accordance with Appendix A of Air Quality Control Commission Regulation No. 6.
Waste Management		
Off-site disposal of hazardous waste	40 CFR Part 268 6 CCR 1007-3 Part 268	All off-site shipments of hazardous waste to approved TSDF must be accompanied by required LDR certifications and analysis.
Off-site shipment of hazardous waste	40 CFR Part 262 6 CCR 1007-3 Part 262	Any shipments of hazardous waste off-site must be in compliance with generator standards such as manifests, packaging/labeling, and placarding requirements.

Table A-23 Action-Specific ARARs and TBCs for Soil Heating

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46.

Action	Citation	Requirements
		In addition to the chemicals listed in Table A-46, the Enhanced Surface Soil Vacuum Extraction Process (ESSVEP) generates hydrochloric acid vapors in the off gases. Worker exposure standards for hydrogen chloride are as follows: Hydrogen chloride (ceiling) — ACGIH-TWA = 5 ppm, 7.5 mg/m^3 NIOSH-REL = 5 ppm, 7 mg/m^3 (ceiling) OSHA-PEL = 5 ppm, 7 mg/m^3 (ceiling) (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)
<u>Waste Characterization</u>		
Solid Waste Determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike

Action	Citation	Requirements
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Soil heating will generate wastewater, off gases, and possibly spent carbon. These wastes and all others generated must be characterized and evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes.

Action	Citation	Requirements
		4) "Special wastes," which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, and commercial wastes are expected from soil heating operations at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
<u>Waste Management</u>		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	Wastes that are determined to be RCRA hazardous wastes must be stored, treated, and disposed in compliance with RCRA regulations, including LDRs-UTS if placement has occurred.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.

Action	Citation	Requirements
Wastewater	40 CFR Part 122 40 CFR Part 125 40 CFR Part 129	Any wastewater generated during soil heating will be routed to the on-post RMA wastewater treatment plant if it is not hazardous waste and will not interrupt the existing treatment system. If wastewater is routed to the on-post treatment plant, it must be treated in accordance with NPDES requirements.
Management of Remediation Wastes		
Corrective action management units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.

Action	Citation	Requirements
Air Emissions		
Emission of particulates	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3 5 CCR 1001-2, Section II	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control measure will be written into the work plan in consultation with state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Soil heating operations shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs. Soil heating will cause volatization of some organic and/or metal contaminants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air

Action	Citation	Requirements
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO emissions	42 USC Section 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Soil heating must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as applicable). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
<u>Stormwater Management</u>		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. In addition to the chemicals listed in Table A-46, ethylene glycol will be used as a coolant in the vitrification process. Worker exposure standards for this chemical are as follows: Ethylene glycol ACGIH-TWA = 50 ppm, 127 mg/m^3 (ceiling)

Action	Citation	Requirements
		(OSHA regulations and other safety and health requirements are actually independently applicable requirements, not ARARs and TBCs. ACGIH and NIOSH values are provided as guidelines.)
Air Emissions		
Emission of particulates	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control measure will be written into the work plan in consultation with state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	In situ vitrification of soils shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. In-situ vitrification of soils may cause volatilization of some contaminants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.

Action	Citation	Requirements
PM_{10}/CO emissions	42 USC Section 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	In situ vitrification must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Air emissions from diesel-powered vehicles associated with in-situ vitrification	5 CCR 1001-15, Regulation 12	Colorado Diesel–Powered Vehicle Emission Standards for Visible Pollutants apply to motor vehicles intended, designed, and manufactured primarily for use in carrying passengers or cargo on roads, streets, and highways, and state as follows: 1) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing 7,500 pounds and less, empty weight, any air contaminant, for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity.

Action	Citation	Requirements
		2) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, any air contaminant, for a period greater than (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 35% opacity, with the exception of subpart "C". 3) No person shall emit or cause to be emitted into the atmosphere from any naturally aspirated (non-turbocharged) diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, operated above 7,000 ft (mean sea level) any air contaminant for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 4) Any diesel-powered motor vehicle exceeding these requirements shall be exempt for a period of 10 minutes if the emissions are a direct result of a cold engine start-up and provided the vehicle is in a stationary position. 5) These standards shall apply to motor vehicles intended, designed, and manufactured primarily for travel or use in transporting persons, property, auxiliary equipment, and/or cargo over roads, streets, and highways.
<u>Waste Characterization</u>		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated

Action	Citation	Requirements
		• Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike.
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	In situ vitrification will generate grubbed vegetation and debris. These wastes and all others generated must be characterized and evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR 261 • Determine whether the waste is identified in 40 CFR 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys.

Action	Citation	Requirements
		3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, commercial, and special wastes are expected from in situ vitrification at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
<u>Waste Management</u>		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268 EPA/540/G-89/006 [TBC]	Wastes that are determined to be RCRA hazardous wastes must be stored, treated, and disposed in compliance with RCRA regulations, including LDRs-UTS if placement occurs.

Action	Citation	Requirements
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Treatment and disposal of hazardous debris	40 CFR 268.45 6 CCR 1007-3, Part 268.45	Hazardous debris generated during in situ vitrification activities must be treated using specific technologies to extract, destroy, or immobilize hazardous constituents on or in the debris. In certain cases after treatment, the debris may no longer be subject to RCRA Subtitle C regulation.
<u>Management of Remediation Wastes</u>		
Corrective action management units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
<u>Stormwater Management</u>		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones: b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period. c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above). d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120(b) to (j)	29 CFR 1910.120(b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)

Action	Citation	Requirements
Waste Characterization		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 CR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike.
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Wastes generated during structure decontamination activities must be characterized. Solid wastes must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR 261 • Determine whether the waste is identified in 40 CFR 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain the following five solid waste categories:

Action	Citation	Requirements
		1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, and commercial wastes are expected from hot gas decontamination at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.

Action	Citation	Requirements
Waste Management		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	Wastes that are determined to be RCRA hazardous wastes must be stored, treated, and disposed in compliance with RCRA regulations, including LDRs-UTS if placement occurs.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Wastewater	40 CFR Part 122 40 CFR Part 125 40 CFR Part 129	Any wastewater generated during hot gas decontamination of structures will be routed to the on-post RMA wastewater treatment plant if it is not hazardous waste and will not interrupt the existing treatment system. If wastewater is routed to the on-post treatment plant, it must be treated in accordance with NPDES requirements.
Management of Remediation Wastes		
Corrective action management units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.

Action	Citation	Requirements
Air Emission Control		
Particulate emissions	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3 5 CCR 1001-2, Section II	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control measure will be written into the work plan with state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements will be necessary.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Hot gas decontamination operations shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emissions regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs. Decontamination of structures could potentially cause emission of hazardous air pollutants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.

Action	Citation	Requirements
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO emissions	42 USC 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Hot gas decontamination of structures must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as applicable). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Table A-26 Action-Specific ARARs and TBCs for UXO Demilitarization/Chemical Agent Decontamination

Action	Citation	Requirements
Detonation of UXO Containing High Explosives		
UXO detonation	AR 75-15	High explosives will be detonated in compliance with the substantive requirements of AR 7515 regarding demilitarization of class V materials.
On-post detonation of UXO	40 CFR 264 6 CCR 1007-3 Part 264 40 CFR Part 264 Subpart X 6 CCR 1007-3 Part 264 Subpart X	On-post detonation of UXO must comply with the substantive requirements of Part 264 including the environmental performance standards described in 40 CFR 264.601 (6 CCR 1007-3, Section 264.601) and substantive portions of the monitoring, analysis, reporting, and corrective action requirements of 40 CFR 264.602 (6 CCR 1007-3, Section 264.602).
Off-post detonation of UXO	40 CFR 264 Subpart X 6 CCR 1007-3 Part 264 Subpart X	Off-post facilities used for detonation of UXO must be RCRA-permitted units that have been permitted under 40 CFR 264 Subpart X.
Chemical Agent Decontamination		
Agent decontamination	AR 385-61	Decontamination of chemical agent-contaminated material will comply with the requirements of AR 385-61 and AR 50-6.
Worker Protection		
Health and safety protection	AR 95-15 AR 385-10 AR 385-61 AR 385-64 AMC-R 385-100 DA PAM 385-61 Technical Manual (TM) 10-277 [TBC] AR 50-6	Workers shall comply with the substantive requirements of AMC-R 385-100, AR 385-10, AR 385-61, and AR 385-64.

Action	Citation	Requirements
	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. In addition to the chemicals listed in Table A-46, workers involved in the demilitarization of HE- or agent-filled UXO will be exposed to several unique chemicals. Worker exposure standards for explosives are as follows:

Action	Citation	Requirements
		Aluminum (Pyro powder) ACGIH-TWA = 5 mg/m^3 (Pyro-powder) OSHA-PEL = 15 mg/m^3 total, 5 mg/m^3 resp (ASAL) Lead Azide (Colloidal - as Pb)* Nitroglycerin ACGIH-TWA = 0.05 ppm, 0.46 mg/m^3 (skin) NIOSH-REL = 0.1 ppm (skin) OSHA-Ceiling = 0.2 ppm, 2 mg/m^3 (15 min ceiling) * Source: Hazardous Component Safety Data Sheet (ARRADCOM Form 29) Picric Acid ACGIH-TWA = 0.1 mg/m^3 NIOSH-REL = 0.1 mg/m^3, STEL = 0.3 mg/m^3 (skin) OSHA-PEL = 0.1 mg/m^3 (8 hr TWA - skin) RDX (Cyclonite) ACGIH-TWA = 1.5 mg/m^3 (skin) Tetryl ACGIH-TWA = 1.5 mg/m^3 NIOSH-REL = 1.5 mg/m^3 (skin) OSHA - PEL = 1.5 mg/m^3 (8 hr TWA - skin) 2,4,6-Trinitrotoluene (TNT) ACGIH-TWA = 0.5 mg/m^3 (skin) NIOSH-REL = 0.5 mg/m^3 (skin) OSHA-PEL = 1.5 mg/m^3 * Source: Hazardous Component Safety Data Sheet (ARRAD COM Form 29)

Action	Citation	Requirements
		Worker exposure standards for chemical agents and their breakdown products are found in Table A-47 of this document. (OSHA regulations and other health and safety requirements are actually independently applicable requirements, not ARARs and TBCs. ACGIH and NIOSH values are provided as guidelines.)
Air Emissions		
Emission of particulates	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control program will be written into the work plan in consultation with the state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. UXO demilitarization could potentially cause emission of hazardous air pollutants.
	42 USC Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.

Action	Citation	Requirements
PM_{10}/CO emissions	42 USC Section 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Demilitarization of UXO must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that:

a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. In addition to the chemicals listed in Table A-46, soil solidification/stabilization will use Portland cement and possibly calcium silicate, calcium hydroxide, and calcium oxide. Worker exposure limits for these compounds are provided below:

Action	Citation	Requirements		
		Calcium hydroxide	ACGIH-TWA	= 5 mg/m^3
			OSHA-TWA	= 15 mg/m^3 (total dust), 5 mg/m^3 (resp)
		Calcium oxide	ACGIH-TWA	= 2 mg/m^3
			NIOSH-REL	= 2 mg/m^3
			OSHA-PEL	= 5 mg/m^3
		Calcium silicate	ACGIH-TWA	= 10 mg/m^3*
			OSHA-PEL	= 15 mg/m^3 (total dust), 5 mg/m^3 (resp)
		Portland cement*	ACGIH-TWA	= 10 mg/m^3
			NIOSH-REL	= 10 mg/m^3 (total), 5 mg/m^3 (resp)
			OSHA-TWA	= 15 mg/m^3 (total), 5 mg/m^3 (resp)

* values are for total dust containing no asbestos and less than 1% crystalline silica

(OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)

Action	Citation	Requirements
Waste Characterization		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 CCR 1007-3 Part 261	Direct soil solidification/stabilization will generate oversize soil debris and metallic wastes. These wastes and all others generated must be characterized and evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded form regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used

Action	Citation	Requirements
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories, which include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, commercial, and special wastes are expected from direct solidification/stabilization at RMA.

Action	Citation	Requirements
		No special testing requirements are specified for solid wastes. The management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
Waste Management		
Treatment and storage of hazardous wastes	40 CFR Part 264 6 CCR 1007-3 Part 264	Wastes that are determined to be RCRA hazardous wastes must be stored and treated in compliance with RCRA regulations, including the tank requirements in 40 CFR 264 Subpart J.
On-post land disposal of hazardous wastes	40 CFR Part 264 6 CCR 1007-3 Part 264 EPA/540/G-89/006 [TBC] 40 CFR Part 268 6 CCR 1007-3 Part 268	Based upon a determination of whether the disposal technique constitutes placement, the LDRs-UTS may be applicable. If placement does occur, the disposal facility must comply with the substantive requirements of 40 CFR Part 264 (6 CCR 1007-3 Part 264) and 40 CFR Part 268 (6 CCR 1007-3 Part 268).
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.

Action	Citation	Requirements
Air Emissions		
Emission of Particulates	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control program will be written into the work plan in consultation with the state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Direct solidification/stabilization of soils shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. Direct solidification/stabilization of soils could potentially cause emission of hazardous air pollutants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Direct soil solidification/stabilization must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.

Action	Citation	Requirements
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones: b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period. c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above). d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. In addition to the chemicals listed in Table A-46, soil solidification/stabilization will use Portland cement and possibly calcium silicate, calcium hydroxide, and calcium oxide. Worker exposure limits for these compounds are provided below:

Action	Citation	Requirements
		Calcium hydroxide: ACGIH-TWA = 5 mg/m^3; OSHA-TWA = 15 mg/m^3 (total dust), 5 mg/m^3 (resp)
		Calcium oxide: ACGIH-TWA = 2 mg/m^3; NIOSH-REL = 2 mg/m^3; OSHA-PEL = 5 mg/m^3
		Calcium silicate*: ACGIH-TWA = 10 mg/m^3; OSHA-PEL = 15 mg/m^3 (total dust), 5 mg/m^3 (resp)
		Portland cement*: ACGIH-TWA = 10 mg/m^3; NIOSH-REL = 10 mg/m^3 (total), 5 mg/m^3 (resp); OSHA-TWA = 15 mg/m^3 (total), 5 mg/m^3 (resp)
		* values are for total dust containing no asbestos and less than 1% crystalline silica
		(OSHA regulations and other health and safety requirements are actually independently applicable requirements, not ARARs and TBCs. ACGIH and NIOSH values are provided as guidelines.)
<u>Waste Characterization</u> Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated

Action	Citation	Requirements
		• Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of Hazardous Waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Wastes generated during pipe plugging activities must be characterized. Solid wastes must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR 261 • Determine whether the waste is identified in 40 CFR 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
<u>Air Emissions</u>		
Emission Particulates	5 CCR 1001-3, Regulation 1 Section III (D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control program will be written into the work plan in consultation with the state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	In situ solidification/stabilization of soils shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.

Action	Citation	Requirements
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. Direct solidification/stabilization of soils could potentially cause emission of hazardous air pollutants.
	42 USC Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	In situ soil solidification/stabilization must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.

Action	Citation	Requirements
Odor emission	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

Action	Citation	Requirements
		b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period. c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above). d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour. f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		(These regulations are commonly considered location-specific ARARs, but may impact the remedial actions taken. They are included in this table for the convenience of the reader.)
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	20 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46.

Action	Citation	Requirements
		(OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)
Air Emissions		
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirments. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO emissions	42 USC Section 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air

Action	Citation	Requirements
		2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
<u>Waste Characterization</u>		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Biological reactor treatment of groundwater at RMA will create wastes consisting of spent biomass, iron and manganese precipitates, suspended solids, and recovered dicyclopentadiene (DCPD). These and all other wastes generated in this process must be evaluated according to the following method to determine if the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261

Action	Citation	Requirements
		• Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes.

Action	Citation	Requirements
		5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. Only small quantities of industrial, community, and commercial wastes, along with inert material, are expected to be generated during biological reactor treatment of groundwater at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
Waste Management		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	Wastes from biological reactor treatment of groundwater that are determined to be RCRA hazardous wastes must be treated, stored, and disposed in compliance with RCRA regulations, including LDRs-UTS if placement occurs, and with task requirements in 40 CFR 264 Subpart J.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.

Action	Citation	Requirements
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Reinjection of treated groundwater	RCRA Section 3020 (b) OSWER Directive 9234.1-06 [TBC]	Reinjection of treated groundwater must be managed in accordance with the guidelines in OSWER Directive 9234.1-06. Wells must be constructed and installed and managed according to the requirements of 40 CFR 124, 144, 146, 147 (Subpart G) and 148.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that:

a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sould levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR Part 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	20 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. In addition to the chemicals in Table A-46, the ultraviolet (UV)/ozone treatment will potentially utilize hydrogen peroxide and ozone. The worker exposure standards for these compounds are given below:

Action	Citation	Requirements
		Hydrogen peroxide ACGIH-TWA = 1 ppm, 1.4 mg/m^3 NIOSH-REL = 1 ppm, 1.4 mg/m^3 OSHA-PEL = 1 ppm, 1.4 mg/m^3 Ozone ACGIH-Ceiling = 0.1 ppm, 0.20 mg/m^3 NIOSH-Ceiling = 0.1 ppm, 0.20 mg/m^3 OSHA-PEL = 0.1 ppm, 0.2 mg/m^3 (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)
Air Emissions		
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO emissions	42 USC Section 7502-7503 5 CCR 1001-5, Regulation 3	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs.

Action	Citation	Requirements
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
<u>Waste Characterization</u>		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike

Action	Citation	Requirements
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	UV/ozone treatment of groundwater will create wastes consisting primarily of inorganic sludges. These and all other wastes generated in this process must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes.

Action	Citation	Requirements
		4) "Special wastes," which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. Only small quantities of industrial, community, and commercial wastes, along with inert material, are expected to be generated during UV/ozone treatment of groundwater. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
<u>Waste Management</u>		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	Wastes from UV/ozone treatment that are determined to be RCRA hazardous wastes must be treated, stored, and disposed in compliance with RCRA regulations, including land disposal restrictions LDRs-UTS if placement occurs.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.

Action	Citation	Requirements
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Reinjection of treated groundwater	RCRA Section 3020 (b) OSWER Directive 9234.1-06 [TBC] 40 CCR 124, 144, 146, 147 (Subpart G), and 148	Reinjection of treated groundwater must be managed in accordance with the guidelines in OSWER Directive 9234.1-06. Wells must be constructed and installed and managed according to the substantive requirements of 40 CFR 124, 144, 146, 147 (Subpart G), and 148.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that:

a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Table A-31 Action-Specific ARARs and TBCs for Solvent Extraction

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46.
Air Emissions		
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. Solvent extraction could potentially cause emission of hazardous air pollutants.

Action	Citation	Requirements
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO emissions	42 USC Section 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Solvent extraction must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.

Action	Citation	Requirements
Emission of Particulates	5 CCR 1001-3, Regulation 1, Section III(D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control program will be written into the work plan in consultation with the state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Odor Emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Management of Remediation Wastes		
Waste Management	40 CFR 264 Subpart J 6 CCR 1007-3 Part 164 Subpart J	Applicability of the substantive requirements for tanks.
Correction Action Management Units	40 CFR 264 Subpart S 6 CCR 1007-3 Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.

Action	Citation	Requirements
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Wastewater		
Discharge of liquid wastes	40 CFR Part 122 40 CFR Part 125 40 CFR Part 129	Any wastewater generated during solvent extraction will be routed to the on-post RMA wastewater treatment plant if it is not hazardous waste and will not interrupt the existing treatment system. If wastewater is routed to the on-post treatment plant, it must be treated in accordance with NPDES requirements.
	40 CFR Part 262 6 CCR 1007-3 Part 262 40 CFR Part 264 6 CCR 1007-3 Part 264	Wastewater that is determined to be hazardous must be treated in accordance with provisions of the RCRA.
Waste Management		
Treatment, storage, or disposal of hazardous wastes	40 CFR Part 264, Subpart aa, bb, and cc 6 CCR 1007-3 Part 264, Subpart aa, bb, and cc	Wastes that are determined to be RCRA hazardous wastes must be stored and treated, in compliance with RCRA air emission regulations.
	40 CFR 264, Subpart J 6 CCR 1007-3 Sect 264, Subpart J	Applicability of all substantive requirements for tanks or tank systems.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that:

a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)

Action	Citation	Requirements
Air Emissions		
Emissions of particulates	5 CCR 1001-3, Regulation 1, Sect III.D 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control measure will be written into the work plan in consultation with the state for the remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use ares—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Emission control for opacity	5 CCR 1001-3, Regulation 1, Sect II	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.

Action	Citation	Requirements
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8	Emission of listed hazardous air pollutants is controlled by NESHAPs. Vacuum dusting could potentially cause emission of hazardous air polutants.
Waste Characterization		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Wastes generated during pipe plugging activities must be characterized. Solid wastes must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR 261

Action	Citation	Requirements
		• Determine whether the waste is identified in 40 CFR 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes.

Action	Citation	Requirements
		5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, special, and commercial wastes are expected from pipe plugging activities at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
<u>Waste Management</u>		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	If pipe plugging in structures at RMA generates hazardous wastes, the wastes must be treated, stored or disposed in accordance with RCRA regulations, including LDRs-UTS if placement occurs.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Treatment and disposal of hazardous debris	40 CFR 268.45 6 CCR 1007-3, Part 268.45	Hazardous debris generated during pipe plugging activities may be treated using specific technologies to extract, destroy, or immobilize hazardous constituents on or in the debris. In certain cases, after treatment the debris may no longer be subject to RCRA Subtitle C regulation.

Action	Citation	Requirements
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sould levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120(b) to (j)	29 CFR 1910.120(b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)

Action	Citation	Requirements
Air Emissions		
Emission of Particulates	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control program will be written into the work plan in consultation with the state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Vacuum dusting shall not cause the emission into the atmosphere of any air pollutant which is in excess of 20% opacity.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Vacuum dusting must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. Vacuum dusting could potentially cause emission of hazardous air pollutants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.

Action	Citation	Requirements
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Waste Management		
PCB storage	40 CFR 761.65	Storage facilities must be constructed with adequate roofs, walls; have impervious floors with curbs (no floor drains expansion joints or other openings); be located above 100 year floodplain (applies to PCBs at concentrations of 50 ppm or greater) Temporary storage (<30 days) of PCB containers containing non-liquid PCBs, such as contaminated soil, rags, debris need not comply with above requirements. Containers must be dated when they are placed in storage. All storage areas must be properly marked and stored articles must be checked for leaks every 30 days.

Action	Citation	Requirements
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 160.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 161.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Vacuum dusting of structures at RMA will create wastes consisting of filters with dust particles and debris. These wastes and all other solid wastes generated in this process must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used

Action	Citation	Requirements
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation.

Action	Citation	Requirements
		If present, only small quantities of industrial, community, and commercial wastes are expected from vacuum dusting of structures at RMA.
		No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	Vacuum dusting wastes that are determined to be RCRA hazardous wastes must be stored, treated, and disposed in compliance with RCRA regulations, including land disposal restrictions LDRs if placement occurs.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs-UTS and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs-UTS are not triggered.

Action	Citation	Requirements
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

Action	Citation	Requirements
		c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above). d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour. f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines)

Action	Citation	Requirements
Air Emissions		
Emission of Particulates	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3 5 CCR 1001-2, Section II	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control program will be written into the work plan in consultation with the state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Steam cleaning of structures shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR 61	Emission of certain hazardous air pollutants is controlled by NESHAPs. Steam cleaning may cause volatization of some contaminants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado Odor Emission Regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air

Action	Citation	Requirements
Air emissions from diesel-powered vehicles associated with construction or demolition	5 CCR 1001-15, Regulation 12	Colorado Diesel-Powered Vehicle Emission Standards for Visible Pollutants apply to motor vehicles intended, designed, and manufactured primarily for use in carrying passengers or cargo on roads, streets, and highways, and state as follows: 1) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing 7,500 pounds and less, empty weight, any air contaminant, for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 2) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, any air contaminant, for a period greater than (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 35% opacity, with the exception of subpart "C". 3) No person shall emit or cause to be emitted into the atmosphere from any naturally aspirated (non-turbocharged) diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, operated above 7,000 ft (mean sea level) any air contaminant for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 4) Any diesel-powered motor vehicle exceeding these requirements shall be exempt for a period of 10 minutes if the emissions are a direct result of a cold engine start-up and provided the vehicle is in a stationary position. 5) These standards shall apply to motor vehicles intended, designed, and manufactured primarily for travel or use in transporting persons, property, auxiliary equipment, and/or cargo over roads, streets, and highways.

Action	Citation	Requirements
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Steam cleaning must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of Federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as applicable). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements.
	42 USC 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control disposal of VOCs by evaporation or spilling unless reasonably available control technologies are utilized.
<u>Waste Management</u>		
PCB storage	40 CFR 761.65	Storage facilities must be constructed with adequate roofs, walls; have impervious floors with curbs (no floor drains expansion joints or other openings); be located above 100 year floodplain (applies to PCBs at concentrations of 50 ppm or greater) Temporary storage (<30 days) of PCB containers containing non-liquid PCBs, such as contaminated soil, rags, debris need not comply with above requirements.

Action	Citation	Requirements
		Containers must be dated when they are placed in storage. All storage areas must be properly marked and stored articles must be checked for leaks every 30 days.
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Steam cleaning will generate wastewater from condensate and potential spent filter media. These wastes and all others generated must be characterized. The wastes must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261

Action	Citation	Requirements
		• Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes" which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes.

Action	Citation	Requirements
		5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, and commercial wastes, along with inert material are expected from steam cleaning of structures at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
Wastewater	40 CFR Part 122 40 CFR Part 125 40 CFR Part 129	Any wastewater generated during steam cleaning will be routed to the on-post RMA wastewater treatment plant if it is not hazardous waste and will not interrupt the existing treatment system. If wastewater is routed to the on-post treatment plant, it must be treated in accordance with NPDES requirements.
	40 CFR Part 262 6 CCR 1007-3 Part 262 40 CFR Part 264 6 CCR 1007-3 Part 264	Wastewater that is determined to be hazardous must be treated in accordance with provisions of the RCRA.
Treatment, storage or disposal of hazardous wastes	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	Wastes that are determined to be RCRA hazardous wastes, such as spent filter media from steam cleaning, must be stored, treated, and disposed in compliance with RCRA regulations, including LDRs if placement occurs.

Action	Citation	Requirements
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that:

a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Action	Citation	Requirements
		4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, and commercial wastes are expected from sand blasting of structures at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
Treatment, storage, or disposal of hazardous wastes	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 168	Wastes that are determined to be RCRA hazardous wastes, such as spent filter media, abrasives and debris, must be stored, treated, and disposed in compliance with RCRA regulations, including LDRs.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.

Action	Citation	Requirements
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Sand blasting structures at RMA will create wastes that consist of dust, abrasives such as sand or pellets, debris, and possibly used filters. These wastes and all other solid wastes generated in this process must be evaluated according to the following process to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes.

Action	Citation	Requirements
	5 CCR 1001-10, Regulation Part B, Section 8.B.III.c.8	Asbestos waste will be managed according to applicable substantive requirements for asbestos handling, transportation, and storage.
PCB storage	40 CFR 761.65	Storage facilities must be constructed with adequate roofs, walls; have impervious floors with curbs (no floor drains expansion joints or other openings); be located above 100 year floodplain (applies to PCBs at concentrations of 50 ppm or greater) Temporary storage (<30 days) of PCB containers containing non-liquid PCBs, such as contaminated soil, rags, debris need not comply with above requirements. Containers must be dated when they are placed in storage. All storage areas must be properly marked and stored articles must be checked for leaks every 30 days.
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently waste-like

Action	Citation	Requirements
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Sand blasting must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standards for the AIR Program area is a standard visual range of 32 miles. The averaging time is four hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as applicable). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO emissions	42 USC 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate.
<u>Waste Management</u>		
Asbestos waste storage management	6 CCR 1007-2, Part B, Section 5.4	Asbestos waste will be managed according to applicable substantive requirements for asbestos storage.
Asbestos waste handling management	40 CFR 61, Subpart M	Prevent discharge of visible emissions during collection, processing, packaging, or transporting any asbestos-containing wastes; deposit asbestos-containing waste as possible at disposal site; mark transport vehicle appropriately during loading and unloading operations.

Action	Citation	Requirements
Air Emissions		
Emission of particulates	5 CCR 1001-3, Regulation 1, Section III (D)(2)(j) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control program will be written into the work plan in consultation with the state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Sand blasting shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR 61	Emission of certain hazardous air pollutants is controlled by NESHAPs. Sand blasting could potentially cause emission of hazardous air pollutants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air.

Table A-35 Action-Specific ARARs and TBCs for Sand Blasting

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones: b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period. c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above). d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)

Action	Citation	Requirements
Air emissions during salvage	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3 5 CCR 1001-2 Section II	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control program will be written into the work plan in consultation with the state for this remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Salvage of structures shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs. Salvage of structures could potentially cause emission of hazardous air pollutants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air

Action	Citation	Requirements
Air emissions from diesel-powered vehicles associated with salvage	5 CCR 1001-15, Regulation 12	Colorado Diesel-Powered Vehicle Emission Standards for Visible Pollutants apply to motor vehicles intended, designed, and manufactured primarily for use in carrying passengers or cargo on roads, streets, and highways, and state as follows: 1) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing 7,500 pounds and less, empty weight, any air contaminant, for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 2) No person shall emit or cause to be emitted into the atmosphere from any diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, any air contaminant, for a period greater than (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 35% opacity, with the exception of subpart "C". 3) No person shall emit or cause to be emitted into the atmosphere from any naturally aspirated (non-turbocharged) diesel-powered motor vehicle weighing more than 7,500 pounds, empty weight, operated above 7,000 ft (mean sea level) any air contaminant for a period greater than five (5) consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity. 4) Any diesel-powered motor vehicle exceeding these requirements shall be exempt for a period of 10 minutes if the emissions are a direct result of a cold engine start-up and provided the vehicle is in a stationary position. 5) These standards shall apply to motor vehicles intended, designed, and manufactured primarily for travel or use in transporting persons, property, auxiliary equipment, and/or cargo over roads, streets, and highways.

Action	Citation	Requirements
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Salvage of structures must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as applicable). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO emissions	42 USC 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate.

Action	Citation	Requirements
Waste Characterization		
Solid waste determination	40 CFR 260 6 CCR 107-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Wastes generated during structure salvage activities must be characterized. Solid wastes must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR 261 • Determine whether the waste is identified in 40 CFR 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used

Action	Citation	Requirements
Solid waste classification	6 CCR 1007-2, Section I	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation.

Action	Citation	Requirements
		If present, only small quantities of industrial, community, and commercial wastes are expected from structure salvage activities at RMA.
		No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
Waste Management		
Asbestos waste storage management	6 CCR 1007-2, Part B, Section 5.4	Asbestos waste will be managed according to applicable substantive requirements for asbestos storage.
Asbestos waste handling management	40 CFR 61, Subpart M	Prevent discharge of visible emissions during collection, processing, packaging, or transporting any asbestos-containing wastes; deposit asbestos-containing waste as possible at disposal site; mark transport vehicle appropriately during loading and unloading operations.
	5 CCR 10001-10, Regulation Part B, Section 8.B.III.c.8	Asbestos waste will be managed according to applicable substantive requirements for asbestos handling, transportation, and storage.
PCB storage	40 CFR 761.65	Storage facilities must be constructed with adequate roofs, walls; have impervious floors with curbs (no floor drains expansion joints or other openings); be located above 100 year floodplain (applies to PCBs at concentrations of 50 ppm or greater)
		Temporary storage (<30 days) of PCB containers containing non-liquid PCBs, such as contaminated soil, rags, debris need not comply with above requirements.
		Containers must be dated when they are placed in storage.
		All storage areas must be properly marked and stored articles must be checked for leaks every 30 days.

Action	Citation	Requirements
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	If demolition of structures at RMA generates hazardous wastes, the wastes must be treated, stored, or disposed in accordance with RCRA regulations, including LDRs.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Treatment and disposal of hazardous debris	40 CFR 268.45 6 CCR 1007-3, Part 268.45	Hazardous debris generated during structure salvage activities must be treated using specific technologies to extract, destroy, or immobilize hazardous constituents on or in the debris. In certain cases, after treatment the debris may no longer be subject to RCRA Subtitle C regulation.
<u>Management of Remediation Wastes</u>		
Corrective action management units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.

Action	Citation	Requirements
Tanks and Containers		
Residues of hazardous waste in empty containers	40 CFR 261.7 6 CCR 1007-3 Sect 261.7	A container or inner liner removed from a container that has held any hazardous waste is empty if: 1) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container (e.g., pouring, pumping, and aspirating), and 2) No more than one inch of residue remains on the bottom of the container or inner liner, or 3) a) No more than 3% by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gallons in size, or b) No more than 0.3% by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110 gallons in size. A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric. A container or an inner liner removed from a container that has held an acute hazardous waste listed in 40 CFR 261.31, 261.32, or 261.33(e) is empty if: 1) The container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate, or 2) The container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal, or

Action	Citation	Requirements
		3) In the case of a lined container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed. Any hazardous waste remaining in an empty container or an inner liner removed from an empty container is not considered a hazardous waste and is not subject to the RCRA regulations. Any hazardous waste in a container or inner liner removed from a container that is not empty is subject to RCRA hazardous waste regulations.
Closure of tanks and tank systems	40 CFR 264.197(a) 6 CCR 1007-3 Sect 264.197(a) 40 CFR 261.3(d) 6 CCR 1007-3 Sect 261.3(d) 40 CFR 264.310 6 CCR 1007-3 Sect 264.310	At closure of a tank system, all waste residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with wastes must be removed, decontaminated, and managed as hazardous wastes unless 40 CFR 261.3(d) applies (i.e., unless residues and contaminated materials are not hazardous wastes). If the owner or operator demonstrates that not all soils can be practically removed or decontaminated as required, then the tank system must be closed in accordance with requirements that apply to landfills.
	40 CFR 264.198(a) 6 CCR 1007-3 Sect 264.198(a) 40 CFR 264.176 6 CCR 1007-3 Sect 264.176	Ignitable or reactive waste should not be placed in tank systems unless the waste is treated, rendered, or mixed before or immediately after placement in the tank system, or unless the waste is stored or treated in such a way that it is protected from any material or condition that may cause the waste to ignite or react.
	40 CFR 264.198(b) 6 CCR 1007-3 Sect 264.198(b) NFPA Flammable and Combustible Liquids Code 1990 [TBC]	Facilities where ignitable or reactive waste is stored or treated in a tank should comply with requirements for the maintenance of protective distances between the waste management area and any public ways, streets, alleys, or an adjoining property line that can be built upon as provided in Tables 2–1 through 2–6 of the 1990 National Fire Protection Association (NFPA) Flammable and Combustible Liquids Code.

Action	Citation	Requirements
	40 CFR 264.199 6 CCR 1007-3 Sect 264.199 40 CFR 264.17 6 CCR 1007-3 Sect 264.17	Incompatible wastes, or incompatible wastes and materials, must not be placed in the same tank system unless 40 CFR 264.17 is complied with.
		Hazardous waste must not be placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless 40 CFR 264.17 is complied with.
	40 CFR 265.201(d) 6 CCR 1007-3 Sect 265.201(d)	Generators that accumulate between 100 and 1,000 kg/mo of hazardous waste in tanks must, upon closure, remove all hazardous wastes from tanks, control equipment, and discharge confinement structures.
	40 CFR 265.201(e) (1) 6 CCR 1007-3 Sect 265.201(e)(1)	Generators of between 100 and 1,000 kg/mo of hazardous waste must not place ignitable or reactive waste in tanks unless the waste is treated before or immediately after placement in a tank or the waste is stored or treated in such a way that it is protected from any material or condition that may cause the waste to ignite or react. Ignitable or reactive waste must not be placed in the tank unless the tank is used solely for emergencies.
	40 CFR 265.201(e) (2) 6 CCR 1007-3 Sect 265.201(e)(2) NFPA Flammable and Combustible Liquids Code 1990 [TBC]	Facilities where ignitable or reactive wastes are treated or stored in covered tanks are required to comply with the buffer zone requirements for tanks contained in Tables 2–1 through 2–6 of the 1990 NFPA Flammable and Combustible Liquids Code.
	40 CFR 264.111(a) and (b) 6 CCR 1007-3 Sect 264.111(a),(b)	A facility must be closed in a manner that minimizes the need for further maintenance and controls, minimizes, or eliminates to the extent necessary to protect human health and the environment post closure escape of hazardous wastes, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the groundwater or surface waters or to the atmosphere.

Action	Citation	Requirements
	40 CFR 264.197 6 CCR 1007-3 Sect 264.197 40 CFR 264 Subpart G 6 CCR 1007-3 Part 264 Subpart G	The closure plan and closure activities for tank systems must meet all of the substantive requirements provided in 40 CFR 264 Subpart G and 40 CFR 264.197.
Wastewater Treatment/Disposal		
Discharge of wastewater to the treatment plant	40 CFR Part 122 40 CFR Part 125 40 CFR Part 129	Any wastewater generated during cleanup or remedial actions will be directed to the on-post RMA wastewater treatment plant and treated in accordance with NPDES requirements.
	40 CFR Part 262 6 CCR 1007-3 Part 262 40 CFR Part 264 6 CCR 1007-3 Part 264	Wastewater that is determined to be a hazardous waste must be treated in accordance with the provisions of RCRA.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with stormwater management requirements.
Decontamination and Disposal Standards for Chemical Agents	AMC-R 385-131 [TBC]	Army regulations provide standards for decontamination of items exposed to chemical agents. Material, equipment, and clothing that has been decontaminated to the 3X level may be landfilled in a RCRA-approved hazardous waste landfill. Items may not be released from government control until they have been decontaminated to the 5X level.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that:

a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	20 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46.

Action	Citation	Requirements
		(OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)
Air Emissions		
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO Emissions	42 USC Section 7502-7503 5 CCR 1001-5, Regulation 3	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that measured in excess of the following limits:

Action	Citation	Requirements
		1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Air stripper emissions	OSWER Directive 9355.0-28 June 15, 1989 [TBC]	"Control of Air Emissions from Superfund Air Strippers at Superfund Groundwater Sites"
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Air stripping of VOCs from groundwater shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Visibility protection	40 CFR 51.300-307	Air stripping from groundwater must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307 (8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as applicable). The visibility standard applies only during hours when the hourly average humidity is less than 70%.
<u>Waste Characterization</u>		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities:

Action	Citation	Requirements
	6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	• Abandoned material may be – disposed of – burned or incinerated – accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled materials which is – used in a manner constituting disposal – burned for energy recovery – reclaimed – speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Air stripping of VOCs from groundwater will create wastes consisting of sludges and spent filters. These and all other wastes generated in this process must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories, which include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes.

Action	Citation	Requirements
		2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, and commercial wastes, and inert material are expected from air stripping treatment of groundwater at RMA. No special testing requirements are specified for solid wastes. The management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.

Action	Citation	Requirements
Waste Management		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	Wastes from air stripping treatment of groundwater that are determined to be RCRA hazardous wastes must be treated, stored, and disposed in compliance with RCRA regulations, including LDRs if placement occurs, and tank requirements in 40 CFR 264 Subpart J.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.

Action	Citation	Requirements
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Reinjection of treated groundwater	RCRA Section 3020 (b) OSWER Directive 9234.1-06 [TBC] 40 CFR 124, 144, 146, 147 (Subpart G), and 148	Reinjection of treated groundwater must be managed in accordance with the guidelines in OSWER Directive 9234.1-06. Wells must be constructed and installed and managed according to the substantive requirements of 40 CFR 124, 144, 146, 147 (Subpart G), and 148.
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

Action	Citation	Requirements
		c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above). d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour. f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	20 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and the NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)

Action	Citation	Requirements
Air Emissions		
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO Emissions	42 USC Section 7502-7503 5 CCR 1001-5, Regulation 3	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air

Action	Citation	Requirements
Waste Characterization		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be – disposed of – burned or incinerated – accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Abandoned material may be – disposed of – burned or incinerated – accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled materials which is – used in a manner constituting disposal – burned for energy recovery – reclaimed – speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Groundwater treatment at RMA using granular activated carbon (GAC) adsorption will create wastes consisting of spent carbon and carbon fines. These and all other wastes generated in this process must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261

Action	Citation	Requirements
		• Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes, resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids including those that the Colorado Department of Health may identify by regulation.

Action	Citation	Requirements
		If present, only small quantities of industrial, community, and commercial wastes and inert material are expected from GAC treatment of groundwater at RMA. No special testing requirements are specified for solid waste. The management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
<u>Waste Management</u>		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	Wastes from GAC water treatment that are determined to be RCRA hazardous wastes must be treated, stored, and disposed in compliance with RCRA regulations, including LDRs-UTS if placement occurs, and tank requirements in 40 CFR 264 Subpart J.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
<u>Management of Remediation Wastes</u>		
Corrective action management units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.

Action	Citation	Requirements
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Reinjection of treated groundwater	RCRA Section 3020 (b) OSWER Directive 9234.1-06 [TBC] 40 CFR 124, 144, 146, 147 (Subpart G), and 148	Reinjection of treated groundwater must be managed in accordance with the guidelines in OSWER Directive 9234.1-06. Wells must be constructed and installed and managed according to the substantive requirements of 40 CFR 124, 144, 146, 147 (Subpart G) and 148.
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that: a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

Action	Citation	Requirements
		b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period. c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above). d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project. e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour. f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	20 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and the NIOSH are outlined in Table A-46. Chemical oxidation treatment of groundwater uses ozone and may use hydrogen peroxide to oxidize organic contaminants. The worker exposure standards for these compounds are given below.

Action	Citation	Requirements
		Hydrogen peroxide ACGIH-TWA = 1 ppm, 1.4 mg/m^3 NIOSH-REL = 1 ppm, 1.4 mg/m^3 OSHA-PEL = 1 ppm, 1.4 mg/m^3 Ozone ACGIH-Ceiling = 0.1 ppm , 0.20 mg/m^3 NIOSH-Ceiling = 0.1 ppm , 0.20 mg/m^3 OSHA-PEL = 0.1 ppm, 0.2 mg/m^3 (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)
Air Emissions		
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO emissions	42 USC Section 7502-7503 5 CCR 1001-5, Regulation 3	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate. Estimated emissions from the proposed remedial activities per Colorado APEN requirements.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs.

Action	Citation	Requirements
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Chemical oxidation of organic compounds from groundwater shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.
Visibility protection	40 CFR 51.300-307	Chemical oxidation of organic compounds from a groundwater must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307 (8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as applicable). The visibility standard applies only during hours when the hourly average humidity is less than 70%.

Action	Citation	Requirements
Waste Characterization		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be – disposed of – burned or incinerated – accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled materials which is – used in a manner constituting disposal – burned for energy recovery – reclaimed – speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.4 40 CFR Part 261 6 CCR 1007-3 Part 261	Chemical oxidation of organic compounds will create wastes consisting primarily of sludges. This and all other wastes generated in this process must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used

Action	Citation	Requirements
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories, which include the following: 1) "Industrial wastes," which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes," which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, and commercial wastes, and inert material are expected from chemical oxidation treatment of groundwater at RMA.

Action	Citation	Requirements
		No special testing requirements are specified for solid wastes. The management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
Waste Management		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	Wastes from chemical oxidation of organic compounds in groundwater that are determined to be RCRA hazardous wastes must be treated, stored, and disposed in compliance with RCRA regulations, including LDRs if placement occurs, and tank requirements in 40 CFR 264 Subpart J.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.

Action	Citation	Requirements
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Reinjection of treated groundwater	RCRA Section 3020 (b) OSWER Directive 9234.1-06 [TBC] 40 CFR 124, 144, 146, 147 (Subpart G), and 148	Reinjection of treated groundwater must be managed in accordance with the guidelines in OSWER Directive 9234.1-06. Wells must be constructed and installed and managed according to the substantive requirements of 40 CFR 124, 144, 146, 147 (Subpart G) and 148.

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites. A key concern in granular activated alumina (GAA) adsorption treatment of groundwater is the handling of corrosives (acids and caustics) used in GAA treatment and regeneration.
	29 CFR 1910.120 (b) to (j)	20 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on–site workers • Site characterization and analysis • Site control • On–site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 29 CFR 1910.1000	Chemical–specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. A key concern in GAA treatment is the handling of corrosives used for pH adjustment in GAA treatment and regeneration. The principal corrosives used in GAA process are sulfuric acid and sodium hydroxide. In addition, calcium hydroxide may be used to precipitate iron and hardness prior to treatment. The worker exposure standards for these compounds are given below:

Action	Citation	Requirements
		Sodium hydroxide ACGIH-Ceiling = 2 mg/m^3 NIOSH-Ceiling = 2 mg/m^3 (15-min) OSHA-Ceiling = 2 mg/m^3 = 2 mg/m^3 Sulfuric acid ACGIH-TWA = 1 mg/m^3; STEL = 3 mg/m^3 NIOSH-REL = 1 mg/m^3 OSHA-PEL = 1 mg/m^3 Calcium hydroxide ACGIH-TWA = 5 mg/m^3 OSHA-TWA = 15 mg/m^3 (total dust), 5 mg/m^3 (resp) (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are provided as guidelines.)
<u>Air Emissions</u>		
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment for ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.

Action	Citation	Requirements
PM_{10}/CO Emissions	42 USC Section 7502-7503 5 CCR 1001-5, Regulation 3	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of certain hazardous air pollutants is controlled by NESHAPs.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
<u>Waste Characterization</u>		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be – disposed of – burned or incinerated – accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned or incinerated

Action	Citation	Requirements
		• Recycled materials which is – used in a manner constituting disposal – burned for energy recovery – reclaimed – speculatively accumulated • Waste-like material is material that is considered inherently wastelike
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	GAA adsorption will create wastes consisting primarily of regeneration sludge. This and all other wastes generated in this process must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories, which include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys.

Action	Citation	Requirements
		3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes. 5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, and commercial wastes, and inert material are expected from GAA treatment of groundwater at RMA. No special testing requirements are specified for solid wastes. The management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
<u>Waste Management</u>		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	Wastes from GAA adsorption that are determined to be RCRA hazardous wastes must be treated, stored, and disposed in compliance with RCRA regulations, including LDRs-UTS if placement occurs, and tank requirements in 40 CFR 264 Subpart J.

Action	Citation	Requirements
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Reinjection of treated groundwater	RCRA Section 3020 (b) OSWER Directive 9234.1-06 [TBC] 40 CFR 124, 144, 146, 147 (Subpart G), and 148	Reinjection of treated groundwater must be managed in accordance with the guidelines in OSWER Directive 9234.1-06. Wells must be constructed and installed and managed according to the substantive requirements of 40 CFR 124, 144, 146, 147 (Subpart G) and 148.

Table A-41 Action-Specific ARARs and TBCs for On-Post Transportation of Wastes

Action	Citation	Requirements
Transportation of Hazardous Waste		
On-post transportation		All on-post shipments of hazardous waste may be required to meet the provisions of 5 CCR 1001, 40 CFR Parts 52 and 81, and AR 50-6 including, but not limited to the following:
	5 CCR 1001-15, Regulation 12	1) Transportation of wastes in diesel-powered vehicles may be subject to state opacity and visibility standards.
	5 CCR 1001-4, Regulation 2	2) Loading, unloading, or transportation of wastes may cause odors or emissions from contaminants that exceed state odor limitations.
	5 CCR 1001-3, Regulation 1 Section III (D) (2) 5 CCR 1001-5, Regulation 3	3) Transportation on unpaved roadways may be subject to state requirements to reduce particulate emissions resulting from the use of the roadway.
	AR 50-6 Chapter 4 [TBC]	5) This regulation describes procedures to be followed during the transportation of Chemical Surety Materials.
Air Emissions		
Emission of hazardous pollutants	5 CCR 1001-10, Regulation 8	Emission of listed hazardous air pollutants is controlled by NESHAPs. On-Post transportation will cause volatilization of some contaminants.

Action	Citation	Requirements
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
PM_{10}/CO Emissions	42 USC Section 7502-7503 5 CCR 1001-5, Regulation 3	New or modified major stationary sources in nonattainment area are required to comply with the lowest achievable emission rate. Estimated emissions from proposed remedial activity per Colorado APEN requirements. A fugitive dust control measure will be written into the work plan in consultation with the state for the remedial activity.
<u>Waste Management</u>		
Asbestos waste storage management	6 CCR 1007-2, Part B, Section 5.4	Asbestos waste will be managed according to applicable substantive requirements for asbestos storage.
Asbestos waste handling management	40 CFR 61, Subpart M	Prevent discharge of visible emissions during collection, processing, packaging, or transporting any asbestos-containing wastes; deposit asbestos-containing waste as possible at disposal site; mark transport vehicle appropriately during loading and unloading operations.
	5 CCR 1001-10, Regulation Part B, Section 8.B.III.c.8	Asbestos waste will be managed according to applicable substantive requirements for asbestos handling, transportation, and storage.

Action	Citation	Requirements
PCB storage	40 CFR 761.65	Storage facilities must be constructed with adequate roofs, walls; have impervious floors with curbs (no floor drains expansion joints or other openings); be located above 100 year floodplain (applies to PCBs at concentrations of 50 ppm or greater) Temporary storage (<30 days) of PCB containers containing non-liquid PCBs, such as contaminated soil, rags, debris need not comply with above requirements. Containers must be dated when they are placed in storage. All storage areas must be properly marked and stored articles must be checked for leaks every 30 days.
PCB incineration standards	40 CFR 761.70	Incineration requirements for non-liquid PCB apply to PCB concentrations >50 ppm and include specified dwell times; combustion efficiency of 99.9999%; process record/monitoring requirements; automatic shut-off standards; a maximum mass air emission of 0.001 g PCB per kg of PCB entering the incinerator.
PCB chemical waste landfilling standards	40 CFR 761.75	Landfill must be located in thick, relatively impermeable soil formation or on soil with high clay and silt content, synthetic membranes must be used when these conditions cannot be met. In addition, other structural requirements include avoidance of location in a floodplain; required run-on/run-off structures if below the 100 year floodplain, and ground/surface water monitoring for specified parameters. The landfill must include a leachate monitoring system. PCB wastes must be segregated from wastes not chemically compatible with PCBs.
PCB decontamination standards	40 CFR 761.79	PCB containers to be decontaminated by triple rinsing of internal surfaces with solvent containing <50 ppm PCB.

Action	Citation	Requirements
Access Restrictions		
Access controls	40 CFR 264.14 6 CCR 1007-3 Sect 264.14	Access controls will be provided that will prevent unknowing entry and minimize unauthorized entry of persons or livestock onto active portions of RMA. These may include 24-hour surveillance or a barrier (either natural or artificial) and a means of controlling access.
Land Use/Deed Restrictions		
Land use and deed restrictions for former hazardous waste disposal units	40 CFR 264.119 6 CCR 1007-3 Sect 264.119	If RMA ceases to be federal government property, a notation on the deed must indicate that ht eland was previously used to manage hazardous wastes and its use is restricted under 40 CFR 264 Subpart G regulations. A record of the type, location, and quantity of hazardous waste managed at each disposal unit must also be supplied to the local zoning authority or through authority over local land use.
Monitoring		
Groundwater monitoring	40 CFR 264 Subpart F 6 CCR 1007-3 Part 264 Subpart F 2 CCR 402-2, Rule 10RCRA Groundwater Monitoring TEGD [TBC]	Groundwater monitoring will be conducted for the presence of hazardous constituents in the groundwater downgradient from solid water management units. Monitoring wells should be constructed and installed according to the requirements of 2 CCR 402-2, Rule 10 and the guidance in the RCRA Groundwater Monitoring Technical Enforcement Guidance Document (TEGD).
	6 CCR 1007-3	Colorado groundwater regulations specify requirements for determining background groundwater quality.

Action	Citation	Requirements
Air Emissions		
Emission of particulates	5 CCR 1001-3, Regulation 1, Sect III(D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. A fugitive dust control program will be written into the work plan in consultation with the state for this remedial activity. Estimated emission from the proposed remedial activity per Colorado APEN Requirements.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air

Action	Citation	Requirements
Monitoring		
Groundwater monitoring	40 CFR 264 Subpart F 6 CCR 1007-3 Part 264 Subpart F 2 CCR 402-2, Rule 10 RCRA Groundwater Monitoring TEGD [TBC]	Groundwater monitoring will be conducted for the presence of hazardous constituents in the groundwater downgradient from solid waste management units. Monitoring wells should be constructed and installed according to the requirements of 2 CCR 402-2, Rule 10 and the guidance in the RCRA Groundwater Monitoring TEGD.
	6 CCR 1007-3	Colorado groundwater regulations specify requirements for determining background groundwater quality.
Air Emissions		
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use ares—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Emissions of hazardous air pollutants	5 CCR 1001-10, Regulation 8	Emission of listed hazardous air pollutants is controlled by NESHAPs. Soil flushing will cause volatization of some contaminants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
APEN	5 CCR 1001-5, Regulation 3	Estimated emissions from the proposed remedial activity per Colorado APEN requirements

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b) to (j)	29 CFR 1910.120 (b) through (j) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. In addition to the chemicals listed in Table A-46, peroxide/hypochlorite treatment involves the use of hydrogen peroxide and sodium hypochlorite. Hypochlorite the treatment is neutralized using hydrochloric acid. Worker exposure standards for these chemicals are:

Action	Citation	Requirements
		Hydrogen peroxide ACGIH-TWA = 1 ppm, 1.4 mg/m^3 NIOSH-REL = 1 ppm, 1.4 mg/m^3 OSHA-PEL = 1 ppm 1.4 mg/m^3 Sodium hypochlorite ACGIH-TWA = 0.1 ppm (ceiling), 0.20 mg/m^3 (ceiling) NIOSH-REL = 0.1 ppm (ceiling), 0.20 mg/m^3 (ceiling) OSHA-PEL = 0.1 ppm, 0.2 mg/m^3 STEL = 0.3 ppm, 0.6 mg/m^3 (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGHI and NIOSH values are provided as guidelines.)
<u>Air Emissions</u>		
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. Soil flushing will cause volatization of some contaminants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.

Action	Citation	Requirements
PM_{10}/CO Emissions	42 USC Section 7502-7503 5 CCR 1001-5, Regulation 3	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate. Estimated emissions from proposed remedial activities per Colorado APEN requirements.
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado Odor Emission Regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
<u>Waste Characterization</u>		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be – disposed of – burned or incinerated – accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled materials which is – used in a manner constituting disposal – burned for energy recovery – reclaimed – speculatively accumulated • Waste-like material is material that is considered inherently wastelike

Action	Citation	Requirements
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Wastes generated during soil excavation activities must be characterized. Solid wastes must be evaluated according to the following method to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR 261 • Determine whether the waste is identified in 40 CFR 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain five solid waste categories. The waste categories include the following: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes.

Action	Citation	Requirements
		5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, commercial, and special wastes are expected from peroxide/hypochlorite treatment of debris at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
<u>Waste Management</u>		
Treatment, storage, or disposal of RCRA hazardous waste	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268	If peroxide/hypochlorite treatment at RMA generates hazardous wastes, the wastes must be treated, stored, or disposed in accordance with RCRA regulations, including LDRs.
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.
Treatment, storage, or disposal of RCRA hazardous wastes in containers	40 CFR 264, Subpart I, Subpart J 6 CCR 1007-3, Part 264 Subpart I, Subpart J	Applicability of the substantive requirements for containers and tanks.
Treatment and disposal of hazardous debris	40 CFR 268.45 6 CCR 1007-3, Part 268.45	Hazardous debris treated with peroxide or hypochlorite must be treated to extract, destroy, or immobilize hazardous constituents on or in the debris. In certain cases after treatment, the debris may no longer be subject to RCRA Subtitle C regulation.

Action	Citation	Requirements
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.
Wastewater Treatment/Disposal		
Discharge of wastewater to the treatment plant	40 CFR 262 6 CCR 1007-3 Part 262 40 CFR 264 6 CCR 1007-3 Part 264	Wastewater that is determined to be a hazardous waste must be treated in accordance with the provisions of RCRA.

Action	Citation	Requirements
Noise abatement	Colorado Revised Statute, Section 25-12-103	The Colorado Noise Abatement Statute provides that:

a. "Applicable activities shall be conducted in a manner so any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Noise is defined to be a public nuisance if sound levels radiating from a property line at a distance of twenty-five ft or more exceed the sound levels established for the following time periods and zones:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

b. In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in Requirement a (above) may be increased by ten decibels for a period of not to exceed fifteen minutes in any one-hour period.

c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five decibels less than those listed in Requirement a (above).

d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.

e. For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

Action	Citation	Requirements
		f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurements."

Table A-45 Action-Specific ARARs and TBCs for Soil Drying

Action	Citation	Requirements
Worker Protection		
Health and safety protection	29 CFR Part 1910	29 CFR 1910 provides guidelines for workers engaged in activities requiring protective health and safety measures regulated by OSHA. Requirements provided in 29 CFR 1910.120 apply specifically to the handling of hazardous waste/materials at uncontrolled hazardous waste sites.
	29 CFR 1910.120 (b)-(j)	29 CFR 1910.120 (b) provides guidelines for workers involved in hazardous waste operations and emergency response actions on sites regulated under RCRA and CERCLA. Specific provisions include the following: • Health and safety program participation required by all on-site workers • Site characterization and analysis • Site control • On-site training • Medical surveillance • Engineering controls • Work practices • Personal protective equipment • Emergency response plan • Drum handling • Sanitation • Air monitoring
Worker exposure	ACGIH 1991-1992 [TBC] NIOSH 1990 [TBC] 29 CFR 1910.1000	Chemical-specific worker exposure guidelines established by OSHA, ACGIH, and NIOSH are outlined in Table A-46. (OSHA regulations and other health and safety requirements are actually independently applicable regulatory requirements, not ARARs or TBCs. ACGIH and NIOSH values are presented as guidelines.)

Action	Citation	Requirements
Soil Dryer Unit Operation		
Determination of operational readiness	40 CFR 270.19 6 CCR 1007-3 Sect 270.19 40 CFR 270.62 (b) 6 CCR 1007-3 Sect 270.62(b)	Although permit applications are not necessary for RMA remedial actions, the operational readiness information will be provided in CERCLA documents leading to incineration alternatives.
Operation of Miscellaneous Unit	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR 264 Subpart X 6 CCR 1007-3 Part 264 Subpart X	The soil drying unit shall be operated to comply with the substantive requirements of Part 264 including the miscellaneous regulation in 40 CFR 264 Subpart (40 CFR 260.30, Part 264 Subpart X) environmental performance standards.
Waste Characterization		
Solid waste determination	40 CFR 260 6 CCR 1007-3 Part 260 40 CFR 260.30-31 6 CCR 1007-3 Sect 260.30-31 40 CFR 261.2 6 CCR 1007-3 Sect 261.2 40 CFR 261.4 6 CCR 1007-3 Sect 261.4	A solid waste is any discarded material that is not excluded by a variance granted under 40 CFR 260.30 and 260.31. Discarded material includes abandoned, recycled, and waste-like materials. These materials may have any of the following qualities: • Abandoned material may be - disposed of - burned or incinerated - accumulated, stored, or treated before or in lieu of being abandoned by being disposed, burned, or incinerated • Recycled material which is - used in a manner constituting disposal - burned for energy recovery - reclaimed - speculatively accumulated • Waste-like material is material that is considered inherently wastelike

Action	Citation	Requirements
Determination of hazardous waste	40 CFR 262.11 6 CCR 1007-3 Sect 262.11 40 CFR Part 261 6 CCR 1007-3 Part 261	Soil-generated waste must be characterized and evaluated according to the following methods to determine whether the waste is hazardous: • Determine whether the waste is excluded from regulation under 40 CFR 261.4 • Determine whether the waste is listed under 40 CFR Part 261 • Determine whether the waste is identified in 40 CFR Part 261 by testing the waste according to specified test methods and by applying knowledge of the hazardous characteristics of the waste in light of the materials or the process used
Solid waste classification	6 CCR 1007-2, Part 1, Section 1	If a generator of wastes has determined that the wastes do not meet the criteria for hazardous wastes, they are classified as solid wastes. The Colorado solid waste rules contain the following five solid waste categories: 1) "Industrial wastes", which includes all solid wastes resulting from the manufacture of products or goods by mechanical or chemical processes. 2) "Community wastes", which includes all solid wastes generated by the noncommercial and nonindustrial activities of private individuals of the community including solid wastes from streets, sidewalks, and alleys. 3) "Commercial wastes", which includes all solid wastes generated by stores, hotels, markets, offices, restaurants, and other nonmanufacturing activities, with the exclusion of community and industrial wastes. 4) "Special wastes", which includes any solid waste that requires special handling or disposal procedures. Special wastes may include, but are not limited to, asbestos, bulk tires, or other bulk materials, sludges, and biomedical wastes.

Action	Citation	Requirements
		5) "Inert material", which includes solids that are not soluble in water and therefore nonputrescible, together with such minor amounts and types of other materials that do not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete that has been in a hardened state for at least 60 days, masonry, asphalt-paving fragments, and other inert solids, including those that the Colorado Department of Health may identify by regulation. If present, only small quantities of industrial, community, commercial, and special wastes are expected from thermal desorption of soils at RMA. No special testing requirements are specified for solid wastes; the management and disposal rules are strictly oriented toward imposing minimum engineering and technology requirements.
<u>Waste Management</u>		
Treatment, storage, or disposal of hazardous wastes	40 CFR Part 264 6 CCR 1007-3 Part 264	Wastes that are determined to be RCRA hazardous wastes must be stored and treated, in compliance with RCRA regulations.
On-post land disposal of hazardous wastes	40 CFR Part 264 6 CCR 1007-3 Part 264 40 CFR Part 268 6 CCR 1007-3 Part 268 EPA/540/G-89/005 [TBC]	Based upon a determination of whether the disposal technique constitutes placement, LDRs-UTS may be applicable. If placement does occur, the disposal facility must comply with the substantive requirements of 40 CFR Part 264 (6 CCR 1007-3 Part 264) and 40 CFR Part 268 (6 CCR 1007-3 Part 268).
	6 CCR 1007-3	Some of the Colorado standards for owners and operators of hazardous waste management, storage, and disposal facilities are more stringent than the equivalent federal regulations. These standards are detailed on Appendix A, Table A-12.

Action	Citation	Requirements
Management of Remediation Wastes		
Corrective Action Management Units	40 CFR 264, Subpart S 6 CCR 1007-3, Part 264 Subpart S	The CAMU regulations allow for exceptions from otherwise generally applicable LDRs and minimum technology requirements for remediation wastes managed at CAMUs. These regulations provide flexibility and allow for expedition of remedial decisions in the management of remediation wastes. One or more CAMUs may be designated at a facility. Placement of hazardous remediation wastes into or within the CAMU does not constitute land disposal of hazardous wastes so the LDRs are not triggered.
Temporary Units	6 CCR 1007-3 Sect 264.553 40 CFR 264.553	Design, operating, or closure standards for temporary tanks and container storage areas may be replaced by alternative requirements. The TU must be located within the facility boundary, used only for the treatment/storage of remediation waste, and will be limited to one year of operation with a one year extension upon approval by the regulatory authority.
Air Emissions		
Emission of Particulates	5 CCR 1001-3, Regulation 1, Section III (D) 5 CCR 1001-5, Regulation 3	Colorado air pollution regulations require owners or operators of sources that emit fugitive particulates to minimize emissions through use of all available practical methods to reduce, prevent, and control emissions. In addition no off-site transport of particulate matter is allowed. A fugitive dust control measure will be written in the work plan in consultation with the state for the remedial activity. Estimated emissions from the proposed remedial activity per Colorado APEN requirements.
Emission control for opacity	5 CCR 1001-3, Regulation 1, Section II	Soil drying of soils shall not cause the emission into the atmosphere of any air pollutant that is in excess of 20% opacity.

Action	Citation	Requirements
Emission of hazardous air pollutants	5 CCR 1001-10, Regulation 8 40 CFR Part 61	Emission of listed hazardous air pollutants is controlled by NESHAPs. Soil drying will cause volatization of some contaminants.
	42 USCS Section 7412	National standards for site remediation sources that emit hazardous air pollutants are scheduled for promulgation by the year 2000. Standards will be developed for 189 listed hazardous air pollutants.
Volatile organic chemical emissions	5 CCR 1001-9, Regulation 7	VOC regulations apply to ozone nonattainment areas. The air quality control area for RMA is currently nonattainment of ozone. Storage and transfer of VOCs and petroleum liquids are controlled by these requirements.
	42 USC Section 7502-7503	New or modified major stationary sources in a nonattainment area are required to comply with the lowest achievable emission rate. Disposal of VOCs is regulated for all areas, including ozone nonattainment. The regulations control the disposal of VOCs by evaporation or spilling unless reasonable available control technologies are utilized.
Visibility protection	40 CFR 51.300-307 40 CFR 52.26-29	Soil drying must be conducted in a manner that does not cause adverse impacts on visibility. Visibility impairment interferes with the management, protection, preservation, or enjoyment of federal Class I areas.
	5 CCR 1001-14 CRS Section 42-4-307(8)	The Colorado Ambient Air Quality Standard for the AIR Program area is a standard visual range of 32 miles. The averaging time is 4 hours. The standard applies during an 8-hour period from 8:00 a.m. to 4:00 p.m. each day (Mountain Standard Time or Mountain Daylight Time, as appropriate). The visibility standard applies only during hours when the hourly average humidity is less than 70%.

Action	Citation	Requirements
Odor emissions	5 CCR 1001-4, Regulation 2	Colorado odor emission regulations require that no person shall allow emission of odorous air contaminants that result in detectable odors that are measured in excess of the following limits: 1) For residential and commercial areas—odors detected after the odorous air has been diluted with seven more volumes of odor-free air 2) For all other land use areas—odors detected after the odorous air has been diluted with 15 more volumes of odor-free air
Stormwater Management		
Discharge of stormwater to on-post surface waters	40 CFR Parts 122-125	Stormwater runoff, snow melt runoff, and surface runoff and drainage associated with industrial activity (as defined in 40 CFR 122) from RMA remedial actions that disturb 5 acres or more and that discharge to surface waters shall be conducted in compliance with the stormwater management regulations.

Chemical Name	Exposure Standards
Aldrin	ACGIH-TWA= 0.25 mg/m3 (skin) NIOSH-REL=0.25 mg/m3 (skin) OSHA-PEL=0.25 mg/m3 (8 hr TWA) (skin)
Arsenic (organic)	ACGIH-TWA=0.1 mg/m3 OSHA-PEL=10.0 :g/m3 (8 hr TWA)
Asbestos	ACGIH-TLV Amosite=0.5 fibers/cm3 Chrysolite=2 fibers/cm3 Crosidolite-0.2 fibers/cm3 Other Forms=2 fibers/cm3 NIOSH-REL=0.1 fibers/cm3 OSHA-REL=0.2 fibers/cm3 (8 hr TWA) OSHA action level=0.1 fibers/cm3
Atrazine	ACGIH-TWA=5 mg/m3
Benzene	ACGIH-TWA=0.1 ppm, 0.3 mg/m3 skin, Suspected human carcinogen NIOSH-REL=0.1 ppm, STEL=1 ppm (15 min) OSHA-PEL=1.0 ppm (8 hr TWA), STEL=5.0 ppm (15 min ceiling).
Cadmium	ACGIH-TWA*=0.01 mg/m3 (total), 0.002 mg/m3 (resp), Suspected human carcinogen NIOSH-REL-Reduce exposure to lowest feasible concentration OSHA-PEL fume=0.1 mg/m3 (8 hr TWA), 0.3 mg/m3 (ceiling) OSHA-PEL dust=0.2 mg/m3 (8 hr TWA), 0.6 mg/m3 (ceiling)
Caprolactam (vapor)	ACGIH-TWA*=5 ppm, 23 mg/m3; STEL=10 ppm, 46 mg/m3
Carbon Tetrachloride	ACGIH-TWA=5 ppm, 31 mg/m3 (skin); STEL=10 ppm, 63 mg/m3, Suspected human carcinogen NIOSH-STEL=2 ppm (60 min), 12.6 mg/m3 OSHA-PEL=10 ppm, 8 hr TWA; 25 ppm (ceiling); 200 ppm (peak concentration, max duration 5 min/in any 4 hrs.)
Chlordane	ACGIH-TWA=0.5 mg/m3 (skin) NIOSH-REL=0.5 mg/m3 (skin) OSHA-PEL=0.5 mg/m3 (8 hr TWA) (skin)

Chemical Name	Exposure Standards
Chlorobenzene	ACGIH-TWA=10 ppm, 46 mg/m3 OSHA-PEL=75 ppm, 350 mg/m3, (8 hr TWA)
Chloroform	ACGIH-TWA=10 ppm, 49 mg/m3, Suspected human carcinogen NIOSH-STEL=2 ppm, 9.78 mg/m3 (60 min) OSHA-Ceiling=50 ppm, 240 mg/m3
Chromium (Cr-metal; compounds)	ACGIH-TWA=0.5 mg/m3 [metal, Cr(II) and Cr (III) compounds] 0.01 mg/m3 [CrVI compounds] Insoluble, NOC 0.05 mg/m3 [Cr(VI) compounds], Human carcinogen for water-insoluble compounds NIOSH-REL= 1 :g/m3 (10 hr TWA) [carcinogenic Cr(VI) compounds]; 0.5 mg/m3 [metal, Cr(II) and Cr(III) compounds] OSHA-PEL= 1 mg/m3 (8 hr TWA) [metal and insoluble salts]; 0.5 mg/m3 (8 hr TWA) [soluble salts];
Copper	ACGIH-TWA fume=0.2 mg/m3 ACGIH-TWA dust =1 mg/m3 NIOSH-REL fume 0.1 mg/m3 (10 hr TWA) NIOSH-REL dust=1 mg/m3 (10 hr TWA) OSHA-PEL fume=0.1 mg/m3 (8 hr TWA) OSHA-PEL dust =1 mg/m3 (8 hr TWA)
Cyanides (as CN)	ACGIH-Ceiling=5 mg/m3 (skin); TWA=4.7 mg/m3 NIOSH-Ceiling=4.7 ppm, 5 mg/m3 (10 min) OSHA-PEL=5 mg/m3 (8 hr TWA)
Dibutyl Phthalate	ACGIH-TWA=5 mg/m3 NIOSH-REL=5 mg/m3 (10 hr TWA) OSHA-PEL=5 mg/m3 (8 hr TWA)
1, 2-Dibromo-3-chloropropane (DBCP)	OSHA-PEL=1ppb (8 hr TWA)
1,1-Dichloroethane	ACGIH-TWA*= 100 ppm, 405 mg/m3 NIOSH-REL=100 ppm, 400 mg/m3 OSHA-PEL=100 ppm, 400 mg/m3 (8 hr TWA)

Chemical Name	Exposure Standards
1,2-Dichloroethane	ACGIH-TWA=10 ppm, 40 mg/m3 OSHA-PEL=50 ppm (8 hr TWA); 100 ppm (ceiling); 200 ppm (maximum concentration)
1,1-Dichloroethylene	ACGIH-TWA=5 ppm, 20 mg/m3; STEL=20 ppm, 79 mg/m3
1,2-Dichloroethylene (Trans)	ACGIH-TWA=200 ppm, 793 mg/m3 NIOSH-REL=200 ppm, 740 mg/m3 (10 hr TWA) OSHA-PEL=200 ppm, 790 mg/m3 (8 hr TWA)
Dichlorvos (Vapona) DDVP	ACGIH-TWA=0.1 ppm, 0.90 mg/m3 (skin) NIOSH-REL=1 mg/m3 (10 hr TWA) (skin) OSHA-PEL=1 mg/m3 (8 hr TWA) (skin)
DDT	ACGIH-TWA=1 mg/m3 NIOSH-REL=0.5 mg/m3 OSHA-PEL=1 mg/m3 (8 hr TWA) (skin)
Dicyclopentadiene	ACGIH-TWA=5 ppm, 27 mg/m3 OSHA-TWA=5 ppm, 30 mg/m3 (8 hr TWA)
Dieldrin	ACGIH-TWA=0.25 mg/m3 (skin) NIOSH-REL=0.25 mg/m3 OSHA-PEL=0.25 mg/m3 (skin)
Diethyl Phthalate	ACGIH-TWA=5 mg/m3
1,1-Dimethylhydrazine	ACGIH-TWA=0.01 ppm, 0.025 mg/m3(skin)Suspected human carcinogen NIOSH-Ceiling=0.06 ppm, 0.15 mg/m3 (120 min) OSHA-PEL=0.5 ppm, 1 mg/m3
Endrin	ACGIH-TWA=0.1 mg/m3 (skin) NISOH-REL=0.1 mg/m3 (10 hr TWA) (skin) OSHA-PEL=0.1 mg/m3 (8 hr TWA) (skin)

Chemical Name	Exposure Standards
Ethyl Benzene	ACGIH-TWA=100 ppm, 434 mg/m3; STEL=125 ppm, 543 mg/m3 NISOH-REL=100 ppm, 435 mg/m3 (10 hr TWA); STEL-125 ppm, 545 mg/m3 OSHA-PEL=100 ppm, 435 mg/m3 (8 hr TWA)
Fluoride (as F)	ACGIH-TWA=2.5 mg/m3 NIOSH-REL=2.5 mg/m3 (10 hr TWA) OSHA-PEL=2.5 mg/m3 (8 hr TWA)
Hexachlorobutadiene	ACGIH-TWA=0.02 ppm 0.21 mg/m3, Suspected human carcinogen
Hexachlorocyclopentadiene	ACGIH-TWA=0.01 ppm, 0.11 mg/m3 OSHA PEL=0.01 ppm, 0.1 mg/m3 NIOSH-REL=0.01 ppm, 0.013mg/m3
Hydrazine	ACGIH-TWA*=0.1 ppm, 0.13 mg/m3 (skin), Suspected human carcinogen NIOSH-Ceiling=0.03 ppm, 0.04 mg/m3 (120 min ceiling) OSHA-PEL=1 ppm, 1.3 mg/m3 (8-hr TWA)
4-Hydroxy-4-methyl-2-pentanone	ACGIH-TWA=50 ppm, 238 mg/m3
Lead (dust & fumes)	ACGIH-TWA=0.05 mg/m3 NIOSH-REL (inorganic) 0.1 mg /m3 (10 hr TWA); OSHA-PEL=50 :g/m3
Magnesium (as Mg Oxide fumes)	ACGIH-TWA=10 mg/m3 OSHA-PEL= 15 mg/m3 (8 hr TWA) (resp)
Malathion	ACGIH-TWA=10 mg/m3 (skin) NIOSH-REL=10 mg/m3 (10 hr TWA) OSHA-PEL=15 mg/m3 (8 hr TWA)
Mercury (as Hg) (inorganic)	ACGIH- TWA vapor=0.025 mg/m3 (skin) NIOSH-REL vapor=0.05 mg/m3 (10 hour TWA) (skin) OSHA-Ceiling=0.1mg/m3 (skin)

Chemical Name	Exposure Standards
Methylene Chloride	ACGIH-TWA=50 ppm, 174 mg/m3, Suspected human carcinogen NIOSH-REL=Reduce exposure to lowest feasible limit OSHA-PEL=500 ppm (8 hr TWA); 1000 ppm (ceiling); 2000 ppm, (peak concentration, maximum duration 5 min/2 hr)
Methylisobutyl Ketone (Hexone)	ACGIH-TWA=50 ppm, 205 mg/m3; STEL=75 ppm, 307 mg/m3 NIOSH-REL=50 ppm, 205 mg/m3, (10 hr TWA); STEL=75 ppm, 300 mg/m3 OSHA-PEL=100 ppm, 410 mg/m3 (8 hr TWA)
Parathion	ACGIH-TWA=0.1 mg/m3 (skin) NIOSH-REL=0.05 mg/m3 (10 hr TWA) (skin) OSHA-PEL=0.1 mg/m3 (8 hr TWA) (skin)
PCB (42% chlorine)	ACGIH=1.0 mg/m3 (skin) NIOSH=0.001 mg/m3 OSHA=1 mg/m3 (skin)
PCB (54% chlorine)	ACGIH=0.5 mg/m3 (skin) NIOSH=0.001 mg/m3 OSHA=0.5 mg/m3 (skin)
Pentachlorophenol	ACGIH-TWA=0.5 mg/m3 (skin) NIOSH-REL=0.5 mg/m3 (10 hr TWA) (skin) OSHA-PEL=0.5 mg/m3, (8 hr TWA) (skin)
Phenol	ACGIH-TWA=5 ppm, 19 mg/m3 (skin) NIOSH-REL=5 ppm, 19 mg/m3 (10 hr TWA); Ceiling=15.6 ppm, 60 mg/m3 (15 min) (skin) OSHA-PEL=5 ppm, 19 mg/m3 (8 hr TWA) (skin)
1,1,2,2-Tetrachloroethane	ACGIH-TWA=1 ppm, 6.9 mg/m3 (skin) NIOSH-REL=1 ppm, 7mg/m3 (10 hr TWA) (skin) OSHA-PEL=5 ppm, 35 mg/m3 (8 hr TWA) (skin)

Chemical Name	Exposure Standards
Tetrachloroethylene (Perchloroethylene)	ACGIH-TWA=25 ppm, 170 mg/m3; STEL=100 ppm, 685 mg/m3 NIOSH-REL=Minimize workplace exposure concentrations; limit number of workers exposed OSHA-PEL=100 ppm (8 hr TWA); 200 ppm (ceiling); 300 ppm (peak concentration, maximum duration 5 min/2 hrs)
Toluene	ACGIH-TWA*=50 ppm, 188 mg/m3 NIOSH-REL=100 ppm, 375 mg/m3 (10 hr TWA); STEL=150 ppm, 560 mg/m3 (15 min) OSHA-PEL=200 ppm (8 hr TWA); 300 ppm (ceiling); 500 ppm (peak concentration-for 10 minutes)
1,2,4-Trichlorobenzene	ACGIH-Ceiling=5 ppm, 37 mg/m3
1,1,1-Trichloroethane (Methyl chloroform)	ACGIH-TWA=350 ppm, 1910 mg/m3; STEL=450 ppm, 2460 mg/m3 NISOH-Ceiling-350 ppm, 1900 mg/m3 (15 min ceiling) OSHA-PEL=350 ppm, 1900 mg/m3 (8 hr TWA)
1, 1, 2-Trichloroethane	ACGIH-TWA=10 ppm, 55 mg/m3 (skin) OSHA-PEL=10 ppm, 45 mg/m3 (8 hr TWA) (skin)
Trichloroethylene	ACGIH-TWA=50 ppm, 269 mg/m3; STEL=100 ppm, 537 mg/m3 NIOSH-REL=25 ppm (10 hr TWA) OSHA-PEL=100 ppm (8 hr TWA); 200 (ceiling); 300 ppm (peak concentration, maximum duration 5 min/2 hrs)
Trimethyl Benzene	ACGIH-TWA=25 ppm, 123 mg/m3
Xylene - o,m,p	ACGIH-TWA=100 ppm, 434 mg/m3; STEL=150 ppm, 651 mg/m3 NIOSH-REL=100 ppm, 434 mg/m3 (10 hr TWA); STEL-150 ppm, 655 mg/m3 (15 min ceiling) OSHA-PEL=100 ppm, 435 mg/m3
Xylene - M (“,” diamine)	ACGIH-Ceiling=0.1 mg/m3 (skin)
Zinc (as zinc oxide)	ACGIH-TWA dust=10 mg/m3 - containing no asbestos and <1% crystalline silica ACGIH-TWA fume=5 mg/m3; STEL=10 mg/m3 NIOSH-REL fume=5 mg/m3 (10 hr TWA), STEL=10 mg/m3 (15 min ceiling) OSHA-PEL dust=15 mg/m3; 5 mg/m3 (resp) OSHA-PEL fume=5 mg/m3 (8 hr TWA)

Notes:

ACGIH	American Conference of Governmental Industrial Hygienists
OSHA	Occupational Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health (NIOSH-TWA is the time-weighted concentration for a 10-hour day and a 40-hour work week)
STEL	Short-Term Exposure Limit
TWA	Time Weighted Average
PEL	Permissible Exposure Limit
MAX	Maximum Peak Above the Ceiling
REL	Recommended Exposure Limit
resp	respirable
hr	hour(s)
min	minute(s)
ppm	parts per million
mg/kg	milligrams per kilogram
mg/m^3	milligrams per cubic meter
$\mu g/m^3$	micrograms per cubic meter
	proposed change
**	change is proposed, not quantified
+	all forms except alkyl vapor

Table A-47 Worker Air Exposure Standards for Chemical Agent Constituents*

Chemical Name	Exposure Standards		Source	Associated Agent
Acetic Acid	ACGIH-TWA	= 10 ppm, 25 mg/m^3	SDP	GB
	ACGIH-STEL	= 15 ppm, 37 mg/m^3		
	NIOSH-REL	= 10 ppm, 25 mg/m^3		
	NIOSH-STEL	= 15 ppm, 37 mg/m^3		
	OSHA-PEL	= 10 ppm, 25 mg/m^3 (8 hr TWA)		
Acetylene	ACGIH -TWA	= simple asphyxiant	HP, ICP	L
Acetylene chloride [acetylene monochloride]	Animal toxicity data only[3]		ICP	L
Acetylene Dichloride** [1,2-dichloroethylene]	ACGIH-TWA	= 200 ppm, 793 mg/m^3	ICP	HL, L
	NIOSH-REL	= 200 ppm, 790 mg/m^3		
	OSHA-PEL	= 200 ppm, 790 mg/m^3		
Adamsite (DM) [10 chloro-5,10-dihydrophenarsazine]	LCt_{50}[1]	= 11000-44000 mg-min/m^3 (inhal)	A	DM
	ICt_{50}[1]	= 370 mg-min/m^3 (inhal)		
Ammonia	ACGIH-TWA	= 25 ppm, 17 mg/m^3	SDP	GB
	ACGIH-STEL	= 35 ppm, 24 mg/m^3		
	NIOSH-REL	= 25 ppm, 18 mg/m^3		
	NIOSH-STEL	= 35 ppm, 27 mg/m^3		
	OSHA-PEL	= 50 ppm, 35 mg/m^3		
Arsenic (Inorganic Compounds as As - including arsenous oxide, arsenic oxychloride, arsenic trichloride, arsenic trioxide, sodium arsenite)	ACGIH-TWA	= 0.01 mg/m^3	HP, CP, ICP	HL, L
	NIOSH-Ceiling	= 0.002 mg/m^3 (15 min ceiling)		
	OSHA-PEL	= 10 µg/m^3 (8 hr TWA)		
Bis(2-chlorovinyl)chloroarsine	Animal toxicity data only[3]		–	L
Calcium Chloride	Animal toxicity data only[3]		DP	HD
Calcium Sulfate	ACGIH-TWA	= 10 mg/m^3***	DP	HD
	OSHA-PEL	= 15 mg/m^3 (8 hr TWA - total dust)		
		= 5 mg/m^3 (8 hrs TWA - rf)		

Chemical Name	Exposure Standards		Source	Associated Agent
Carbon Dioxide	ACGIH-TWA	= 5000 ppm, 9000 mg/m^3	CP, DP	CG, GB, HD, HL
	ACGIH-STEL	= 30000 ppm, 54000 mg/m^3		
	NIOSH-REL	= 5000 ppm, 9000 mg/m^3		
	NIOSH-STEL	= 30000 ppm, 54000 mg/m^3		
	OSHA-PEL	= 5000 ppm, 9000 mg/m^3 (8 hr TWA)		
Chlorine	ACGIH-TWA	= 0.5 ppm, 1.5 mg/m^3	CP	HL, L
	ACGIH-STEL	= 1 ppm, 2.9 mg/m^3		
	NIOSH-REL	= 0.5 ppm, 1.5 mg/m^3		
	NIOSH-STEL	= 1 ppm, 3 mg/m^3		
	OSHA-Ceiling	= 1 ppm, 3 mg/m^3		
Chloroacetic Acid	Animal toxicity data only[3]		–	HD
Chloroform**	ACGIH-TWA	= 10 ppm, 49 mg/m^3	DP, ICP, SDP	GB, HD
	NIOSH-STEL	= 2 ppm, 9.78 mg/m^3 (60 min)		
	OSHA-Ceiling	= 50 ppm, 240 mg/m^3		
1,2-Dichloroethane** {ethylene dichloride]	ACGIH-TWA	=10 ppm, 40 mg/m^3	ICP	HD
	OSHA-PEL	= 50 ppm (8 hr TWA); 100 ppm (ceiling); 200 ppm (5 mins/3 hr)		
	NIOSH-REL	=1 ppm, 4 mg/m^3		
	NIOSH-STEL	= 2 ppm, 8 mg/m^3		
	MPC	= 200 ppm		
Diethyldisulfide	Animal toxicity data only[3]		ICP	HD
Diisopropylcarbodiimide (DIPC)	Animal toxicity data only[3]		AS	GB
Distilled Mustard (HD) [2,2-dichloro-diethyl sulfide; bis(2-chloro-ethyl) sulfide]	LCt_{50}[1]	= 1500 mg-min/m^3 (inhal)	A	HD
		= 10000 mg-min/m^3 (s/m-vapor)		
		= 7.0 gm/70 kg man (s/m-liquid)		
	ICt_{50}[1]	= 200 mg-min/m^3 (eye injury)		
		= 2000 mg-min/m^3 (s/m @ 70°-80°F)****		
	MPC	= 2 mg-min/m^3 (eye)		
		= 5 mg min/m^3 (s/m)		

Chemical Name	Exposure Standards		Source	Associated Agent
Distilled Mustard (continued)	PEL[2]	= 0.003 mg/m^3 uw (8 hr TWA)		
	Ceiling[2]	= 0.003 mg/m^3 (uw)		
		= 0.003 mg/m^3 (naw/gp)		
	SEL[2]	= 0.003 mg/m^3 (1 hr TWA)		
	AEL[4]	= 0.003 mg/m^3		
Ethanethiol [ethyl mercaptan]	ACGIH-TWA	= 0.5 ppm, 1.3 mg/m^3	ICP	HD
	NIOSH-Ceiling	= 0.5 ppm, 1.3 mg/m^3 (15 min ceiling)		
	OSHA- Ceiling	= 10 ppm, 25 mg/m^3		
Ethyl Chloride [chloroethane]	ACGIH-TWA	= 1000 ppm, 2640 mg/m^3	ICP	HD
	OSHA-PEL	= 1000 ppm, 2600 mg/m^3 (8 hr TWA)		
Fluoride (Inorganic Compounds - including calcium fluoride and sodium fluoride)	ACGIH-TWA	= 2.5 mg/m^3	DP	GB
	NIOSH-REL	= 2.5 mg/m^3		
	OSHA-PEL	= 2.5 mg/m^3 (8 hr TWA)		
GB	AEL[4]	= 0.0001 mg/m^3 (8hr TWA)		
	AEL[4]	= 0.2 mg/m^3 (any period)		
H	AEL[4]	= 0.003 mg/m^3		
HT	AEL[4]	= 0.003 mg/m^3		
Hydrogen Chloride	ACGIH- Ceiling	= 5 ppm, 7.5 mg/m^3	HP, CP	CG, HD, HL, L
	NIOSH- Ceiling	= 5 ppm, 7 mg/m^3		
	OSHA- Ceiling	= 5 ppm, 7 mg/m^3		
Hydrogen Fluoride	ACGIH- Ceiling	= 3 ppm, 2.6 mg/m^3	CP, HP	GB
	NIOSH-REL	= 3 ppm, 2.5 mg/m^3		
	NIOSH-Ceiling	= 6 ppm, 5 mg/m^3 (15 min)		
	OSHA-PEL	= 3 ppm, (8 hr TWA)		
Hydrogen Sulfide	ACGIH-TWA	= 10 ppm, 14 mg/m^3	ICP	HD
	ACGIH-STEL	= 15 ppm, 21 mg/m^3		
	NIOSH- Ceiling	= 10 ppm, 15 mg/m^3 (10 min)		
	OSHA- Ceiling	= 20 ppm		
	OSHA-MPC	= 50 ppm (10 min OT)		

Chemical Name	Exposure Standards		Source	Associated Agent
Isopropyl Alcohol	ACGIH-TWA	= 400 ppm, 983 mg/m^3	HP	GB
	ACGIH-STEL	= 500 ppm, 1230 mg/m^3		
	NIOSH-REL	= 400 ppm, 980 mg/m^3		
	NIOSH-STEL	= 500 ppm, 1225 mg/m^3		
	OSHA-PEL	= 400 ppm, 980 mg/m^3 (8 hr TWA)		
Lewisite (L) [dichloro(2-chlorovinyl)arsine]	LCt_{50}[1]	= 1200-1500 mg-min/m^3 (inhal)	A	HL, L
		= 100000 mg-min/m^3 (s/m)		
	ICt_{50}[1]	< 300 mg-min/m^3 (eye injury-vapor)		
		> 1500 mg-min/m^3 (s/m)		
	Ceiling[2]	= 0.0001 mg/m^3 (uw)		
		= 0.0001 mg/m^3 (naw/gp)		
	SEL[2]	= 0.0001 mg/m3 (1 hr TWA)		
Mercury Alkyl Compounds (including dimethyl mercury and methyl mercury salts)	ACGIH-TWA	= 0.01 mg/m^3	–	HL, L
	ACGIH-STEL	= 0.03 mg/m^3		
	NIOSH-REL	= 0.01 mg/m^3 (skin)		
	NIOSH-STEL	= 0.03 mg/m^3 (skin)		
	OSHA- Ceiling	= 0.01 mg/m^3		
Methyl Chloride [chloromethane]	ACGIH-TWA	= 50 ppm, 103 mg/m^3 (skin)	ICP	L
	ACGIH-STEL	= 100 ppm, 207 mg/m^3 (skin)		
	NIOSH-REL	= reduce to lowest feasible concentration		
	OSHA-PEL	= 100 ppm (8 hr TWA)		
	OSHA-Ceiling	= 200 ppm		
	OSHA-MPC	= 300 ppm (5 min/3 hr)		
Methylene Chloride**	ACGIH-TWA	= 50 ppm, 174 mg/m^3	ICP	HD
	NIOSH-REL	= reduce to lowest feasible concentration		
	OSHA-PEL	= 500 ppm, 1765 mg/m^3 (8 hr TWA)		
	OSHA-Ceiling	= 1000 ppm, 3530 mg/m^3		
	OSHA-MPC	= 2000 ppm, 7060 mg/m^3 (5 min/2 hrs)		
Mustard-Lewisite Mixture	LCt_{50}[1]	= 1500 mg-min/m^3 (inhal)	A	HL
		> 10000 mg-min/m^3 (s/m)		
	ICt_{50}[1]	= 200 mg-min/m^3 (eye injury)		
		= 1500-2000 mg-min/m^3 (s/m)		

Chemical Name	Exposure Standards		Source	Associated Agent
Phosphoric Acid [orthophosphoric acid]	ACGIH-TWA	= 1 mg/m^3	ICP	GB
	ACGIH-STEL	= 3 mg/m^3		
	NIOSH-REL	= 1 mg/m^3		
	NIOSH-STEL	= 3 mg/m^3		
	OSHA-PEL	= 1 mg/m^3 (8 hr TWA)		
Phosphorus Pentoxide [POX, phosphoric anhydride]	Animal toxicity data only[3]		CP	GB
Sarin (GB) [isopropyl methylphosphono fluoridate; methyisopropo oxyfluoro-phosphine oxide]	LCt_{50}[1] (resp)	= 100 mg-min/m^3 (resting)	A	GB
		= 70 mg-min/m^3 (mild activity)		
	ICt_{50}[1] (resp)	= 75 mg-min/m^3 (resting)		
		= 35 mg-min/m^3 (mild activity)		
	TWA[2]	= 0.0001 mg/m^3 (uw - 8 hr TWA)		
		= 0.000003 mg/m^3 (naw/gw - 72 hr TWA)		
	Ceiling[2]	= 0.0001 mg/m^3 (naw/gw)		
	SEL[2]	= 0.0003 mg/m^3 (1 hr TWA)		
Sulfur	Eye irritation[3]	= 6 ppm	ICP	HD
Sulfur Dioxide	ACGIH-TWA	= 2 ppm, 5.2 mg/m^3	CP	HD
	ACGIH-STEL	= 5 ppm, 13 mg/m^3		
	NIOSH-REL	= 2 ppm, 5 mg/m^3		
	NIOSH-STEL	= 5 ppm, 10 mg/m^3		
	OSHA-PEL	= 5 ppm, 13 mg/m^3 (8 hr TWA)		
1,1,1,2-Tetrachloroethane	Animal toxicity data only[3]		ICP	HD
1,1,2,2-Tetrachloroethane** [acetylene tetrachloride]	ACGIH-TWA	= 1 ppm, 6.9 mg/m^3	ICP	HD
	NIOSH-REL	= 1 ppm, 7 mg/m^3 (skin)		
	OSHA-PEL	= 5 ppm, 35 mg/m^3 (8 hr TWA - skin)		
beta-Thiodiglycol [thiodiethylene glycol]	Animal toxicity data only[3]		DP, HP	HD, HL
Tributylamine (TBA)	Animal toxicity data only[3]		AS	GB

Table A-47 Worker Air Exposure Standards for Chemical Agent Constituents*

Chemical Name	Exposure Standards		Source	Associated Agent
1,1,1-Trichloroethane** [methyl chloroform]	ACGIH-TWA	= 350 ppm, 1910 mg/m^3	ICP	HD
	ACGIH-STEL	= 450 ppm, 2460 mg/m^3		
	OSHA-PEL	= 350 ppm, 1900 mg/m^3 (8 hr TWA)		
	NIOSH-Ceiling	= 350 ppm, 1900 mg/m^3 - 15 min		
1,1,2-Trichloroethane*	ACGIH-TWA	= 10 ppm, 55 mg/m^3 (skin)	ICP	HD
	OSHA-PEL	= 10 ppm, 45 mg/m^3 (8 hr TWA - skin)		
Vinyl Chloride* [chloroethylene; ethylene monochloride]	ACGIH-TWA	= 5 ppm, 13 mg/m^3	ICP	L
	NIOSH-REL	= Lowest reliably detectable concentration		
	OSHA-PEL	= 1 ppm, 2.6 mg/m^3 (8 hr TWA)		
	OSHA-Ceiling	= 5 ppm, 13 mg/m^3 (15 min)		
	AEL	= 0.00001 mg/m^3 (TWA)		
VX	AEL	= 0.02 mg/m^3 (any period)		

Note: Also follow all monitoring and detection and other standards in AMC-R 385-131, Safety Regulation for Chemical Agents H, HD, HT, GB, and VX.

* The values presented in this table are commonly considered chemical-specific ARARs or independently applicable requirements. They are provided for completeness and the convenience of the reader.

** Exposure information appears in DSA
*** Value is for total dust containing no asbestos and less than 1% silica
**** Skin absorption increases above 80°F (e.g., ICt_{50} = 1000 mg-min/m^3 at 90°F)
1 Reference: Chemical Agent Data Sheets, Volume 1, Edgewood Arsenal Special Report EO-SR-74001, December 1974 [TBC]
2 Reference: AR 385-64 [ARAR] and DA Pamphlet 40-8 [TBC]
3 Reference: N.I. Sax, Dangerous Properties of Industrial Materials, 6th Ed., 1984
4 Reference: AMC-R 385-131, Safety Regulation for Chemical Agent, H, HD, HT, GB, and VX

A	Agent	H	Mustard
ACGIH	American Conference of Governmental Industrial Hygienists	HD	Distilled mustard
		HL	Mustard-Lewisite mixture
AEL	Airborne Exposure Limit	HP	Hydrolysis product
AS	Agent stabilizer	hr	Hour
CG	Phosgene	HT	Mustard
CP	Combustion product	ICP	Incomplete combustion product
DIPC	Diisopropylcarbodiimide	ICt_{50}	Median incapacitating dose
DM	Adamsite	L	Lewisite
DP	Decontamination product	LCt_{50}	Median lethal dose
GB	Sarin	MAX	Maximum peak above the ceiling

VX	Nerve Agent
mg-min/m^3	Milligrams per minute per cubic meter
mg/m^3	Milligrams per cubic meter
min	Minutes
MPC	Maximum peak concentration
naw/gp	Non-agent worker/general population
NIOSH	National Institute for Occupational Safety and Health (NIOSH-TWA is the time-weighted concentration for a 10-hour day and a 40-hour work week)
OSHA	Occupational Safety and Health Administration
OT	One time exposure if no other measurable exposure occurs
PEL	Permissible exposure limit
ppm	Parts per million
REL	Recommended exposure limit
resp	Respirable
rf	Respirable fraction
s/m	Skin exposure/masked worker
SDP	Stabilizer decontamination product
SEL	Source emission limit
STEL	Short-term exposure limit
TBA	Tributylamine
TWA	Time weighted average
uw	Unmasked worker

Table A-48 Standards Pertaining to Air Emissions from Potential Remedial Actions

Parameter	Concentration	Units	Standard	Citation
Asbestos	NA	NA	No visible emissions allowed unless specified alternative waste management procedures followed.	40 CFR 61 Subpart M 5 CCR 1001-10 Regulation 8, Part B
Benzene (Fugitive Emission)	10,000	ppm	Machine reading indicates leak; Readings of less than 500 ppm above background are not considered action events; Colorado Air Pollution Control Regulations; National Emission Standard.	5 CCR 1001 Regulation 8, Section VIII 40 CFR 61.110
Beryllium	10	grams	Over a 24 hour period; National Emission Standard; Colorado Air Pollution Control Regulations	40 CFR 61.32 5 CCR 1001 Regulation 8, Section III
Beryllium	.01	$\mu g/m^3$	30 day average, at least 3 years of data available; National Emission Standard; Colorado Air Pollution Control Regulations	40 CFR 61.32 5 CCR 1001 Regulation 8, Part A
Hydrogen Sulfide	142	$\mu g/m^3$	1 hour average; Colorado Air Pollution Control Regulations.	5 CCR 1001-10 Regulation 8, Part C, Section II
Lead	1.5	$\mu g/m^3$	Average over one month period; Colorado Air Pollution Control Regulations.	5 CCR 1001-10 Regulation 8, Part C, Section I
Mercury (from Sludge Incineration)	1,600	grams/day	Monitor emissions at least once a year by EPA Method 105; Below Federal limit of 3,200 grams/day; Colorado Air Pollution Control Regulations; National Emission Standard.	5 CCR 1001 Regulation 8, Part A 40 CFR 61.52
Odor	7	Volume	Residential commercial areas, dilution with volumes of odor-free air; Colorado Air Pollution Regulations.	5 CCR 1001 Regulation 2
Odor	15	Volume	All other land use areas, dilution with volumes of odor-free air; Colorado Air Pollution Control Regulations.	5 CCR 1001 Regulation 2

Parameter	Concentration	Units	Standard	Citation
Opacity	20%	---	No operation with emissions exceeding 20% opacity; Colorado Air Pollution Control Regulations. Fugitive dust measures will be written into the project work plans in consultation with the state. Nuisance guidelines and "no off-property" transport guidelines apply to certain sources of fugitive particulate matter emissions.	5 CCR 1001 Regulation 1, Section II
Ambient Air Quality Standards	Lead - 1.5	$\mu g/m^3$ (max. arithmetic mean average over a calendar quarter)	Sources cannot cause or contribute to an exceedance of a national or Colorado Ambient Air Quality Standard.	5 CCR 1001-5, Regulation 3 5 CCR 1001-14
	TSP 75 & 260	$\mu g/m^3$ (primary std-annual (geometric mean), 24-hr)	Sources cannot cause or contribute to an exceedance of a national or Colorado Ambient Air Quality Standard.	5 CCR 1001-14
	PM - 150 & 50	$\mu g/m^3$ (24 hr average concentration & annual arithmetic mean, respectively)	Sources cannot cause or contribute to an exceedance of a national or Colorado Ambient Air Quality Standard.	5 CCR 1001-14
	Ozone - 235	$\mu g/m^3$ (1 hr averaging time)	Sources cannot cause or contribute to an exceedance of a national or Colorado Ambient Air Quality Standard.	5 CCR 1001-14

Table A-48 Standards Pertaining to Air Emissions from Potential Remedial Actions

Parameter	Concentration	Units	Standard	Citation
	CO - 10 & 40	mg/m^3 (8 hr and 1 hr averaging time, respectively)	Sources cannot cause or contribute to an exceedance of a national or Colorado Ambient Air Quality Standard.	5 CCR 1001-14
	NO_2 - 100	$\mu g/m^3$ (annual average)	Sources cannot cause or contribute to an exceedance of a national or Colorado Ambient Air Quality Standard.	5 CCR 1001-14
	SO_2 - 700	$\mu g/m^3$ (3 hr max once in any 12 month period)	Sources cannot cause or contribute to an exceedance of a national or Colorado Ambient Air Quality Standard.	5 CCR 1001-14
	--10, 50, and 300	Incremental stds for Category II $\mu g/m^3$ (annual arithmetic mean, 24-hour maximum, and 3-hour maximum)	Sources cannot cause or contribute to an exceedance of a national or Colorado Ambient Air Quality Standard.	5 CCR 1001-14
	-- 80, 365, 1300	$\mu g/m^3$ (annual mean , 24 hr second maximum, and secondary 3 hr second maximum)	Sources cannot cause or contribute to an exceedance of a national secondary ambient air quality standard.	40 CFR 50.4 and 50.5

ppm parts per million
$\mu g/m^3$ micrograms per cubic meter
mg/m^3 milligrams per cubic meter

Appendix B

Agreement in Principle Regarding a Water Supply Between the Army, Shell, and SACWSD

AGREEMENT IN PRINCIPLE REGARDING A WATER SUPPLY BETWEEN SOUTH ADAMS COUNTY WATER AND SANITATION DISTRICT (SACWSD), THE ARMY AND SHELL OIL COMPANY

1. PAYMENT BY THE ARMY AND SHELL WILL BE IN THREE ANNUAL INSTALLMENTS, $16 MILLION, $16 MILLION, AND $16.8 MILLION. THE FIRST PAYMENT TO BE MADE WITHIN 90 DAYS OF 1 OCTOBER 1996. SUBJECT TO THE AVAILABILITY OF FUNDS.

2. PAYMENT OF THE ABOVE SUM IS CONDITIONED ON ADHERENCE TO THE FOLLOWING TERMS. OTHER TERMS AND CONDITIONS WILL BE THE SUBJECT OF FURTHER NEGOTIATION.

A. PAYMENTS WILL BE HELD IN TRUST FOR SACWSD. TRUSTEE TO BE CHOSEN BY THE ARMY & SHELL WITH SACWSD CONCURRENCE. ANY INTEREST THAT ACCRUES MUST BE RETURNED TO THE ARMY AND SHELL.

B. SACWSD MUST HOOK UP OWNERS OF DOMESTIC WELLS IN THE DIMP FOOTPRINT WHO CONSENT TO BE INCLUDED IN THE SOUTH ADAMS COUNTY WATER AND SANITATION DISTRICT AND WHO CONSENT TO BE HOOKED UP; AND SUCH HOOK UPS WILL BE COMPLETED NOT LATER THAN THE 24TH MONTH AFTER THE DATE OF THE INITIAL PAYMENT FOR THOSE WHO CONSENT BY THE 20TH MONTH AFTER THE INITIAL PAYMENT. THOSE WHO REQUEST TO BE HOOKED UP AFTER THE 20TH MONTH WILL BE HOOKED UP WITHIN A REASONABLE TIME. AS NOTED IN G, BELOW, SACWSD WILL NOT BE RESPONSIBLE FOR HOOKING UP MORE THAN 130 HOMES. SACWSD ALSO IS NOT RESPONSIBLE FOR EXTENDING THE MAIN WATER DISTRIBUTION SYSTEM BEYOND THE DIMP FOOTPRINT AS FINALLY DETERMINED IN THE ON-POST ROD. THE MAIN WATER DISTRIBUTION SYSTEM FOR THE HENDERSON AREA (12" DIAMETER PIPE SYSTEM) WILL BE COMPLETED BY THE 24TH MONTH AFTER THE INITIAL PAYMENT. SACWSD WILL RECEIVE FROM THE TRUST ACCOUNT $3,950 FOR EACH HOME CONNECTED IN THE NEW SERVICE AREA AND $2,265 FOR EACH HOME CONNECTED IN THE OLD SERVICE AREA, UP TO A TOTAL OF 130 HOMES. ATTACHED IS THE MAP THAT SHOWS THE LATEST DIMP PLUME WHICH IS TO BE UPDATED PRIOR TO THE FINALIZATION OF THE ON-POST ROD.

C. SACWSD MUST CONTRACT FOR WATER RIGHTS OR SUPPLY BY NOT LATER THAN SIX MONTHS AFTER THE DATE OF THE FINAL PAYMENT.

D. PAYMENTS FROM THE TRUST TO SACWSD MUST BE TIED DIRECTLY TO THE ACQUISITION AND DELIVERY OF 4000 ACRE FEET OF

WATER AND THE HOOK UP OF WELL OWNERS IN THE HENDERSON AREA. ALL EXPENDITURES BY SACWSD PAID FROM THE TRUST ACCOUNT WILL BE SUBJECT TO AUDIT BY THE ARMY AND SHELL. UP TO $43 MILLION MAY BE SPENT ACQUIRING AND DELIVERING THE 4000 ACRE FEET OF WATER AND UP TO $4.65 MILLION MAY BE SPENT ON HOOK UPS IN THE HENDERSON AREA. THE REMAINING $1.15 MILLION IS TO OFFSET INFLATION OR CONTINGENCIES. ANY EXPENDITURES CHALLENGED BY THE ARMY, SHELL, OR THE TRUSTEE WILL BE SUBMITTED TO THE ALTERNATIVE DISPUTE RESOLUTION (ADR) METHOD DESCRIBED IN E, BELOW.

E. AN INDEPENDENT QUALIFIED AGENT, WHO IS A SENIOR WATER RESOURCE EXPERT WITH EXPERIENCE IN ACQUIRING AND DELIVERING WATER, WILL BE SELECTED BY SACWSD, WITH THE CONCURRENCE OF THE ARMY AND SHELL, TO DIRECT THE SELECTION, ACQUISITION, AND IMPLEMENTATION OF A WATER SUPPLY ON BEHALF OF SACWSD THAT CAN BE OPERATIONAL BY 1 OCTOBER 2004. THE TERMS OF THE AGENCY WILL BE AGREED UPON SACWSD, THE ARMY AND SHELL. THE ARMY AND SHELL WILL CONCUR WITH THE DESIGN OF AND SUBSEQUENT BID PACKAGES FOR THE WATER DELIVERY SYSTEM. THE CONSTRUCTION FIRM OR FIRMS TO CONSTRUCT THE PROJECT OR PROJECTS WILL BE SELECTED BY COMPETITIVE BID BASED ON A SOLICITATION PROCESS CONCURRED IN BY THE ARMY AND SHELL. THE COSTS ASSOCIATED WITH IMPLEMENTING THIS SECTION WILL BE PAID FROM THE TRUST ACCOUNT. ANY DISAGREEMENT ARISING REGARDING THE IMPLEMENTATION OF THIS SECTION WILL BE SUBMITTED TO A FORM OF ADR CONSISTING OF SUBMISSION OF THE DISPUTE TO THREE WATER RESOURCE EXPERTS; ONE SELECTED BY THE ARMY AND SHELL; ONE SELECTED BY SACWSD; AND ONE SELECTED BY THE INDEPENDENT AGENT OR BY THE AGREEMENT OF THE TWO SIDES IF THERE IS NO INDEPENDENT AGENT. THE COST OF ADR WILL BE BORNE BY THE PARTIES WITH EACH SIDE PAYING FOR ITS EXPERT AND EACH SIDE PAYING 50% OF THE COST OF THE EXPERT FOR THE INDEPENDENT AGENT.

F. ALL FUNDS REMAINING IN THE TRUST ACCOUNT AT THE COMPLETION OF THE WATER PROJECT OR ON 1 OCTOBER 2004, WHICHEVER OCCURS FIRST, WILL REVERT TO THE ARMY AND SHELL. REVERSION INCLUDES ANY SAVINGS REALIZED BY SACWSD FROM COST SHARING PROJECTS WITH OTHER ENTITIES. REVERSION MAY BE DELAYED WHERE UNKNOWN OR UNEXPECTED CONDITIONS OR CIRCUMSTANCES PREVENT COMPLETION OF THE PROJECT BY 1 OCTOBER 2004. WHETHER, AND FOR HOW LONG, REVERSION SHOULD BE DELAYED WILL BE SUBJECT TO THE METHOD OF ADR DESCRIBED IN E, ABOVE.

G. SACWSD AGREES TO SATISFY THE OBLIGATIONS CONTAINED IN ITEMS 16 AND 17 OF THE AGREEMENT ON A CONCEPTUAL REMEDY FOR THE CLEAN UP OF ROCKY MOUNTAIN ARSENAL. THE PAYMENTS TO SACWSD WILL CONSTITUTE COMPLETE SATISFACTION OF THE ARMY AND SHELL'S OBLIGATIONS CONTAINED IN ITEMS 16 AND 17 AND COMPLETE SATISFACTION OF ALL COSTS ASSOCIATED WITH THE TERMS AND CONDITIONS NECESSARY TO EXECUTE THESE OBLIGATIONS. ALL COSTS NECESSARY TO EXECUTE THE REQUIREMENTS OF THIS AGREEMENT, UNLESS OTHERWISE EXPRESSLY STATED, WILL BE PAID OUT OF THE TRUST ACCOUNT. SACWSD WILL NOT BE RESPONSIBLE FOR MONITORING REQUIREMENTS TO BE PERFORMED BY THE ARMY AND SHELL IN ACCORDANCE WITH ITEM 17 AND SACWSD WILL NOT BE RESPONSIBLE FOR HOOKING UP MORE THAN THE FIRST 130 WELL OWNERS. ANY ADDITIONAL HOOK UPS REQUIRED UNDER THE TERMS OF ITEM 17 WILL BE THE RESPONSIBILITY OF THE ARMY AND SHELL.

H. SACWSD WAIVES AND RELEASES THE ARMY AND SHELL FROM ALL RESPONSE COSTS AND CLAIMS FOR DAMAGES FOR ALL RMA CONTAMINANTS AND POLLUTANTS IN THE SACWSD WATER THAT ARE KNOWN OR DETECTED PRIOR TO, OR AT THE TIME OF, THE SIGNING OF THE ON-POST RECORD OF DECISION (ROD). PAYMENT OF RESPONSE COSTS, IF ANY, OWED TO SACWSD AT THE TIME OF THE SIGNING OF THE ON-POST ROD WILL BE DETERMINED BY AGREEMENT OF THE PARTIES PRIOR TO SIGNING THE FINAL AGREEMENT CONTEMPLATED BY THIS AGREEMENT IN PRINCIPLE..

I. ANY REUSABLE RETURN FLOWS ASSOCIATED WITH ANY WATER SOURCE ACQUIRED WILL BE MADE AVAILABLE TO SACWSD FOR REPLACEMENT OF DEPLETIONS UNDER ITS EXISTING AUGMENTATION PLAN FOR THE FIRST THREE YEARS FOLLOWING THE INITIAL DELIVERY OF WATER FROM THE NEW WATER SOURCE IN ANNUAL AMOUNTS TO BE DETERMINED ACCORDING TO REASONABLE NEED, OTHERWISE RETURN FLOWS ASSOCIATED WITH THE NEW WATER SOURCE, AND ANY WATER UNUSED BY SACWSD FROM THE WATER SOURCE ITSELF, SHALL BE MADE AVAILABLE AT ARMY AND SHELL EXPENSE FOR THE REMEDIATION OF RMA FOR NOT LESS THAN 10 YEARS, IN ANNUAL AMOUNTS TO BE DETERMINED ACCORDING TO REASONABLE NEED. THE FINAL PERIOD TO BE AGREED UPON. AFTER REMEDIATION, ALL RETURN FLOWS WILL RETURN TO THE USE OF SACWSD. EACH PARTY WILL BE RESPONSIBLE FOR ANY NECESSARY APPROVALS. DISPUTES ARISING OVER THE IMPLEMENTATION OF THIS SECTION WILL BE SUBMITTED TO ADR AS DESCRIBED IN E, ABOVE.

J. SACWSD WILL WARRANT AND OTHERWISE DEMONSTRATE IT IS AUTHORIZED AND QUALIFIED TO ENTER INTO THIS AGREEMENT, ACQUIRE

AND PROVIDE WATER AND HOOK UP WELL OWNERS, SUBJECT TO THOSE WELL OWNERS' CONSENT TO INCLUSION WITHIN THE DISTRICT. SACWSD WILL BE RESPONSIBLE FOR PERMITTING, ADJUDICATION, AND OTHER REQUIREMENTS OF STATE AND FEDERAL LAW.

K. PARTICIPATION BY THE ARMY AND SHELL, OR BY THEIR REPRESENTATIVES, IN OVERSIGHT IN NO WAY CONSTITUTES AN EXPRESS OR IMPLIED WARRANTY OR REPRESENTATION REGARDING THE ADEQUACY, SUITABILITY, OR LEGALITY OF SACWSD OR THE INDEPENDENT AGENT'S ACTIONS TO OBTAIN OR PROVIDE WATER.

L. ALL PARTIES RESERVE ANY RIGHTS THEY MAY HAVE REGARDING NONPERFORMANCE BY THE OTHER PARTIES.

M. THIS AGREEMENT IS SUBJECT TO COMPLIANCE WITH ALL APPLICABLE LAWS AND WILL BECOME EFFECTIVE AND BINDING WHEN INCORPORATED BY REFERENCE IN THE ON-POST ROD.

N. THE AMOUNT AGREED UPON IS SUBJECT TO APPROPRIATE CREDITS FOR ANY ARMY AND SHELL CONTRIBUTIONS TO WATER OR INFRASTRUCTURE, SUBJECT TO SACWSD APPROVAL. APPROVAL WILL NOT BE WITHHELD UNREASONABLY. DISPUTES WILL BE SUBMITTED TO THE METHOD OF ADR DESCRIBED IN E, ABOVE.

O. ALL PARTIES WILL PUBLICLY SUPPORT THIS AGREEMENT.

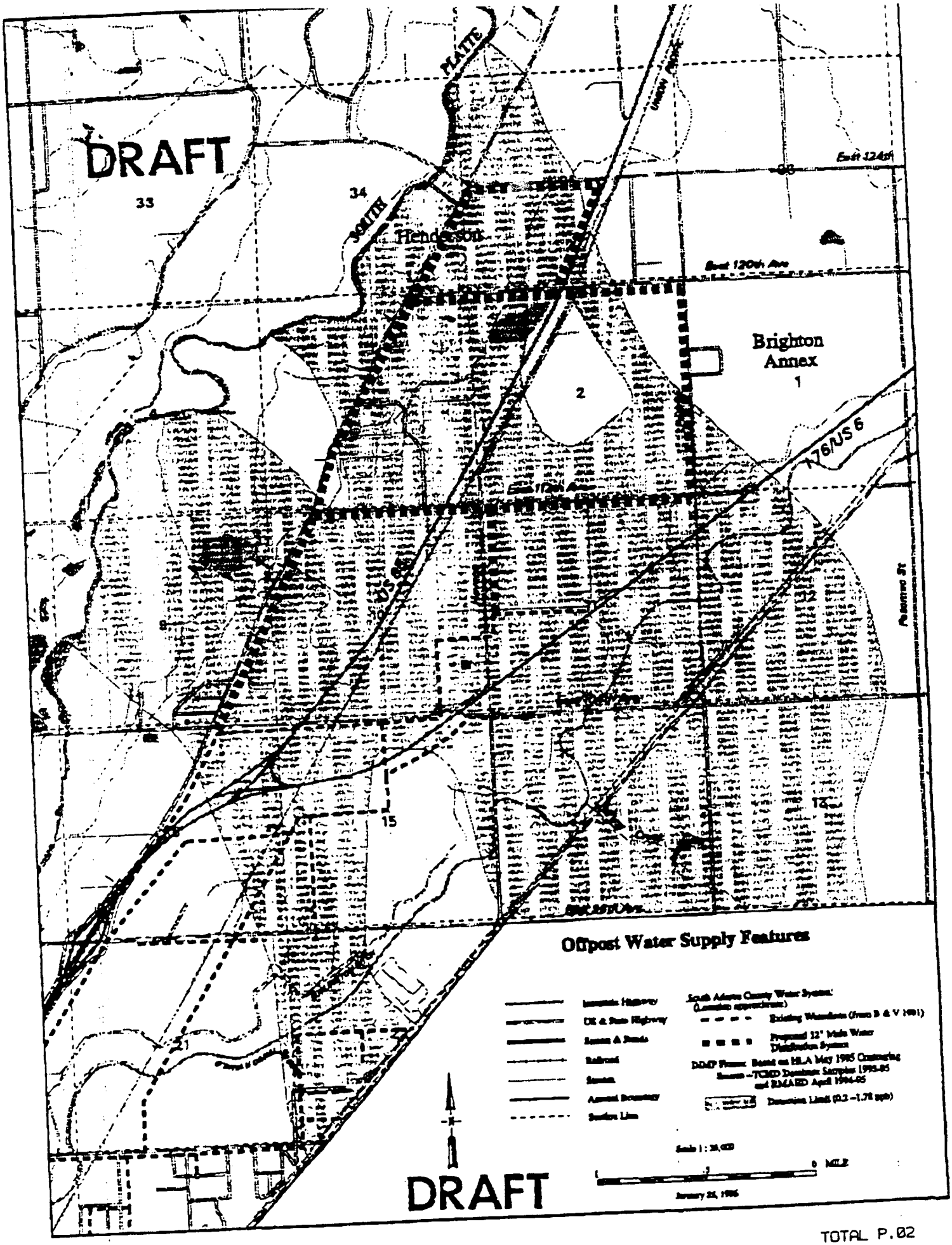
P. ALL O&M COSTS ASSOCIATED WITH THE ACQUISITION AND DELIVERY OF WATER AND WITH THE HOOK UP OF WELL OWNERS WILL BE SACWSD'S RESPONSIBILITY. THE ARMY WILL SUPPORT ANY NECESSARY AMENDMENTS TO ALLOW THE KLEIN FUND ALSO TO BE USED FOR O&M COSTS FOR THE NEW WATER SYSTEM.

Q. QUARTERLY PROGRESS REPORTS WILL BE MADE BY SACWSD, OR ITS REPRESENTATIVE, TO THE RMA COUNCIL.

R. THE ARMY OR SHELL WILL PAY, IF NECESSARY, WITHIN 30 DAYS AFTER SIGNATURE OF THE ROD, A SUM NOT TO EXCEED $1 MILLION TO PURCHASE AN OPTION ON WATER AGREED TO BY SACWSD, THE ARMY AND SHELL. THIS SUM WILL BE CREDITED AGAINST THE FIRST ANNUAL PAYMENT UNDER SECTION 1, ABOVE.

version 10 - 26/01/96

01/26/96 FRI 13:56 FAX 703 6962940 US ARMY ENVIR LAW DIV → RMA COUNSEL 005


DRAFT
33
34
PLATTE
SOUTH
Henderson
East 124th
East 120th Ave
Brighton Annex
1
2
176/US 6
Roberts St
15
Offpost Water Supply Features
Interstate Highway
DE & State Highway
Streets & Roads
Railroad
Streams
Annexed Boundary
Section Line
South Adams County Water System (Location approximate)
Existing Waterlines (from B & V 1991)
Proposed 12" Main Water Distribution System
DDMP Plume: Based on HLA May 1995 Contouring Sources -TCMD Database Samples 1993-95 and RMAFB April 1994-95
Detection Limit (0.3 - 1.78 ppb)
Scale 1 : 38,000
0
MILE
January 24, 1996
DRAFT

TOTAL P.02