

Appendix I

Applicable or Relevant and Appropriate Requirements

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA) requires that any regulations which specify a standard, requirement, criterion, or limitation under any Federal or State environmental law be identified and included with a site feasibility study. Compliance with these applicable or relevant and appropriate requirements (ARARS) is mandatory under CERCLA. The following tables represent the ARARS found for each Remedial Alternative at the CSMRI site including No Action, On-site, and Off-site Disposal to a licensed facility. These tables include a reference to the regulation, the standard specified in the regulation and a determination of whether a regulation or standard is Applicable or Relevant and Appropriate. Applicable requirements give standards which address a specific situation at a CERCLA site whereas relevant and appropriate requirements give standards which address problems or situations similar to a proposed response action or the conditions of the site of concern. These tables are broken into action, chemical, and location specific ARARS.

A majority of the information in these ARAR tables was established during the RAOA for the stockpile material, which were then adapted for the 2004 RIFS. Since then, this set of ARARs has been updated and clarified. Table I provides a summary table of ARARs.

Action-specific ARARS focus on those requirements applicable to the actions associated with each alternative defined. These requirements are items such as regulations governing excavation of impacted material, transportation of impacted material, and/or health and safety of site workers. Tables I-1, I-2, and I-3 list all action specific ARARS.

Chemical-specific ARARS list the requirements associated with each chemical defined as a constituent of concern at the CSMRI site. Tables I-4 thru I-7 list all chemical specific ARARS associated with soil. A separate table (Table I-6) lists the groundwater standards for both alternatives.

Location-specific ARARS list the requirements applicable to the site regardless of the actions taken or chemicals present. These requirements are items such as endangered species present, the location of the Site in a floodplain, and/or historical importance of the site. Tables I-8, I-9, and I-10 list all location specific ARARS.

Table I Applicable or Relevant and Appropriate Requirements – Supplements the ARARs provided in Section 6.

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
Clean Air Act (CAA)	42 U.S.C.A. §§ 7401 to 7671q (40 CFR 50 to 69)	Establishes requirements for air pollution prevention and control	Substantive portions of CAA may be relevant and appropriate to site excavation operations and on-site disposal.	Air	Excavation, on-site disposal	Potentially relevant or appropriate
CAA - National Emission Standards for Hazardous Air Pollutants (NESHAP)	40 CFR 61	Establishes standards for certain HAP emissions from some sources	To the extent the removal activities involve the emission of regulated constituents and activities similar to those addressed in these regulations, they may be relevant and appropriate.	Air	Excavation, on-site disposal	Potentially relevant or appropriate
CAA - Standards of Performance for New Stationary Sources	40 CFR 60	Establishes emission standards for new air emissions	If air pollution sources that are sufficiently similar to those sources covered by these regulations are part of the remedy, the regulations may be relevant and appropriate.	Air	Excavation, on-site disposal	Potentially relevant or appropriate
Colorado Air Quality Control Act	CRS 25-7-101, et seq.	Establishes Colorado requirements for air pollution prevention and control	Portions of Act potentially applicable or relevant and appropriate to site excavation operations and on-site disposal.	Air	Excavation, on-site disposal	Applicable or relevant or appropriate
Common Provision Regulations	5 CCR 1001-2 Section II	Conduct performance tests, emissions monitoring, and record keeping	Substantive requirements are applicable to air emission component of the remedy.	Air	Excavation, on-site disposal	Applicable
Regulation No. 1	5 CCR 1001-3 Regulation No. 1	Establishes emission control regulations for particulates, smoke, CO, sulfur oxides and fugitive particulate emissions.	See following for description of specific provisions.	Air	Excavation, on-site disposal	Applicable
Regulation No. 1	5 CCR 1001-3 Regulation No. 1, Section II.A.1	Comply with opacity limitations.	Less than 20% opacity emitted, specific sources may have other limitations.	Air	Excavation	No – applies to smoke

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Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
Regulation No. 1	5 CCR 1001-3 Regulation No. 1, Section III.D	Minimize fugitive particulate emissions.	Applicable to construction activities, storage and handling operations, haul roads and haul trucks, and tailings piles.	Air	Excavation, on site disposal	Applicable
Regulation No. 3	5 CCR 1001-5 Regulation No. 3, Part A Section II; Part B	Construction permit required if emissions exceed 5 TPY PM10 or 10 TPY of TSP. File APEN including estimation of emission rates if threshold exceeded 2 tons.	Substantive portions are potentially applicable to all sources including earthwork and existing sources unless specifically exempt.	Air	Excavation, on site disposal	Potentially applicable
Ambient Air Quality Standards	5 CCR 1001-14	Sets ambient standards for total suspended particulates.	Would be applicable if remedy would cause emission of regulated constituents that contribute to a NAAQS violation.	Air	Excavation, on site disposal	Potentially applicable
Jefferson County Health Department Environmental Health – Air Quality Control	NA	Fugitive Dust Control Plan	Plan for 25 acres or more of disturbance but individual plans from smaller sites that produce excessive dust possible.	Air	Excavation	Potentially relevant and appropriate
Occupational Safety and Health Act	29 USC 651-678 (29 CFR 1910.96, 1926)	Regulates worker health and safety.	Independently applicable. Requirements of this act apply to all response actions under the NCP.	NA	All operations	Yes, applicable
Radiation Control	CRS 25-11-101-305	Establishes Colorado requirements for radiation control and safety	Portions of Act applicable or relevant and appropriate to site excavation operations and land disposition.	All Media	Excavation, Land Disposition, Disposal	Yes, applicable or relevant and appropriate

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Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
Radiation Control	CRS 25-11-201, et seq., Part 2	Provides procedural requirements for disposal of classified waste at facilities required to be licensed for uranium mill, processing or disposal.	Not applicable or relevant or appropriate because no alternative includes disposal at such facilities in Colorado.	All Media	Excavation, Land Disposition, Disposal	No
Radiation Control - General Provisions	6 CCR 1007-1, Part 1	General provisions (including definitions) for 6 CCR 1007-1.	Provides information about the regulations.	All Media	Excavation, Land Disposition, Disposal	Yes, applicable or relevant and appropriate
Radiation Control – Licensing of Radioactive Material	6 CCR 1007-1, Part 3	Regulations concerning licensing of radioactive materials.	Relevant and appropriate to one off-site facility within the State (Deer Trail). None of the on-site affected materials requires a radioactive materials license.	All Media	Disposal	Potentially relevant and appropriate
Radiation Control – Standards for Protection Against Radiation	6 CCR 1007-1, Part 4	Establishes standards for protection against radiation hazards.	Substantive portions of license decommissioning standards for unrestricted uses and restricted uses are relevant and appropriate.	All Media	Excavation, Land Disposition, Disposal	Yes, relevant and appropriate
Radiation Control - Notices, Instructions, And Reports To Workers: Inspections	6 CCR 1007-1, Part 10	Notes, instructions, and reports to workers.	Substantive portions are relevant and appropriate.	All Media	Excavation, Land Disposition, Disposal	Yes, relevant and appropriate
Radiation Control – Transportation of Radioactive Material	6 CCR 1007-1, Part 17	Transportation of radioactive materials	Substantive portions are relevant and appropriate.	All Media	Transportation, Disposal	Yes, relevant and appropriate

Table I Applicable or Relevant and Appropriate Requirements – Supplements the ARARs provided in Section 6.

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
Radiation Control – Licensing Requirements Milling Facilities	6 CCR 1007-1, Part 18	Licensing requirements for milling facilities and disposition of products of milling operations for uranium, thorium and related materials.	Not applicable to on-site or off-site disposal facilities within the State. Soil cleanup criteria is potentially relevant and appropriate to achieve 5 pCi/g of Ra-226 above background within 15 cm below the surface averaged over areas of 100 square meters and 15 pCi/g of Ra-226 above background averaged over 15 cm thick layers more than 15 cm below the surface. Criterion 6.	All Media	Excavation, Land Disposition, Disposal	No - None of the alternatives includes disposal at a facility regulated by Part 18. Soil cleanup criteria is relevant and appropriate
Radiation Control – Licensing Requirements for Land Disposal of Low-Level Radioactive Waste	6 CCR 1007-1, Part 14	Establishes standards for the land disposal of low-level radioactive wastes	Not applicable or relevant and appropriate because on-site impacted materials are not low level radioactive wastes, nor like LLW.	All Media	Excavation, Land Disposition, Disposal	No
Colorado Environmental Covenant	C.R.S. §25-15-320	Requires an environmental covenant to ensure continuance of land use restriction if remedy is on-site with restricted uses.	For on-site remedies with restricted uses only	All Media		Applicable

Table I Applicable or Relevant and Appropriate Requirements – Supplements the ARARs provided in Section 6.

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
TENORM Guidance	Interim Policy and Guidance Pending Rulemaking for Control and Disposition of Technologically-Enhanced Naturally Occurring Radioactive Materials in Colorado, Rev. 2.1, Final Draft for Comment, February 2007	Guidance re: TENORM Materials	Provides sampling and disposal guidelines for TENORM	All Media		TBC
Atomic Energy Act of 1954, as amended, and Energy Reorganization Act of 1974, as amended.	42 U.S.C. 2011, et seq., 42 U.S.C. 5801, et seq.	Establishes requirements for radiation safety	Portions of these laws are potentially relevant and appropriate to site cleanup and/or land disposition.	All Media	Excavation, Land Disposition	Yes, relevant and appropriate
Nuclear Regulatory Standards for Protection Against Radiation – (10 CFR 20, 40)	10 CFR 20.1201-8;1301-2; 1402, 1403. 10 CFR 40.42	Establishes standards for protection of the public against radiation arising from the use of regulated materials.	Remedial alternatives need to limit external and internal exposure from releases to levels that do not exceed 100 mrem/y, or 2 mrem/h from external exposure in unrestricted areas. These requirements also establish criteria for closing NRC-licensed sites including a dose standard of 25 mrem/y and ALARA, or 100 mrem/y if institutional controls fail.	All Media	Excavation, Land Disposition, Disposal	Yes, relevant and appropriate

Table I Applicable or Relevant and Appropriate Requirements – Supplements the ARARs provided in Section 6.

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
Clean Water Act (CWA)	33 U.S.C.A. §§ 1251 to 1387 (40 CFR 104 to 135 & 33 CFR 320, 323, 328-330)	Establishes requirements for water pollution prevention and control	Portions of CWA relevant and appropriate to site operations.	Surface Water and potentially groundwater	Excavation, Land Disposition	Yes, relevant and appropriate
Standards for Fill or Excavation in Waters of the United States	33 CFR 320, 323, 328-330	Regulates construction / excavation activities in streams and floodplains for discharges of dredged or fill material into waters of the United States	Portions may be applicable, or relevant and appropriate for portion of Site that is in the Clear Creek flood plain.	Surface Water, Soil	Excavation, Land Disposition	Yes, applicable or relevant and appropriate
Storm Water Discharge Regulations	40 CFR 122.26	Regulates discharges of storm water including runoff water.	Storm-water discharge is covered by the general permit for discharge from small construction or industrial activity sites. Requires a general permit or a site specific discharge permit, Storm-Water Pollution Control Plan, and implementation of Best Management Practices.	Surface Water, Soil	Excavation, Land Disposition	Yes, relevant and appropriate
Safe Drinking Water Act (SDWA)	42 USCA §§ 300f to 300j-26 (40 CFR 141, 143)	Establishes requirements for protection of drinking water.	Portions of the SDWA may be relevant and appropriate to site excavation operations and / or land disposition.	Ground and Surface Water	Excavation, Land Disposition	Yes, relevant and appropriate
National Primary Drinking Water Regulations	40 CFR 141	Establishes primary numerical limits and goals for contaminants to drinking water from public water systems	Maximum Contamination Levels (MCLs) promulgated in 40 CFR 141 are typically used to define site compliance for off-site migration requirements. Improperly conducted excavation operations could affect local waterways.	Ground and Surface Water	Excavation, Land Disposition	Yes, relevant and appropriate
National Secondary Drinking Water Regulations	40 CFR 143	NSDWRs are non-federally enforceable guidelines for states to	NSDWRs are non-federally enforceable but may be of concern to public acceptance of drinking water.	Ground and Surface	Excavation, Land Disposition	Yes, relevant and appropriate

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Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
(NSDWRs)		control contaminants that may cause cosmetic effects or aesthetic effects in drinking water.		Water		
Colorado Water Quality Control Act	CRS 25-101 thru 703	Establishes Colorado requirements for water pollution prevention and control	Portions of Act may be applicable or relevant and appropriate to the site excavation operations and / or land disposition.	Ground and Surface Water	Excavation, Land Disposition	Yes, both
Basic Standards and Methodologies for Surface Water	5 CCR 1002-31 Regulation 31	Establishes basic standards, anti-degradation standard, and system for classifying state surface waters, and for assigning water quality standards.	Applicable or relevant and appropriate to component of remedy impacting surface water.	Surface Water	Excavation, Land Disposition	Yes, both
Classifications and Numeric Standards for South Platte River Basin tributaries, including Clear Creek	5 CCR 1002-38	Establishes classification and numeric standards to determine allowable concentrations. Discharges to surface waters must comply with basic, narrative, and numeric standards and control regulations to protect classified uses. Used in conjunction with basic	For any surface water discharge identified, compliance is required for Segments 11 and 14 of Clerk Creek Basin.	Surface Water	Excavation, Land Disposition	Yes, applicable

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Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
		standards and methodologies in Regulation 31.				
Basic Standards for Groundwater	5 CCR 1002-41	Establishes standards and water quality standards for groundwater classifications.	Must comply with substantive narrative and numerical limits.	Groundwater	Excavation, Land Disposition	Yes, applicable
State Discharge Permit Regulations	5 CCR 1002-61	Requires a permit for the discharge of pollutants from a point source into waters of the State, including storm water permits.	Must comply with substantive and administrative requirements.	Surface Water, Groundwater	Excavation, Land Disposition	Yes, applicable
Colorado Primary Drinking Water Regulations	5 CCR 1003-1	Establishes maximum numerical limits for contaminants (MCLs) to public drinking water systems.	MCLs are typically used to define site compliance at site boundaries or points of compliance. Improperly conducted excavation operations or on-site remedies could affect local water. Must comply with substantive requirements.	Ground and Surface Water	Excavation, Land Disposition	Yes, relevant and appropriate
Storm Sewer Discharge Regulations	5 CCR 1002-65 Regulation 65; CRS 25-8-205	Establishes permit requirements relating to discharges into storm sewers.	Storm sewer regulations are applicable to run-off of pollutants from the site to a storm sewer.	Surface Water	Excavation, Land Disposition	Yes, applicable
Solid Waste Disposal Act (SWDA)	42 U.S.C.A. §§ 6901 to 6992K	Establishes requirements for solid waste and hazardous waste definitions and disposal	Portions of the SWDA are relevant and appropriate for on-site or off-site disposal alternatives.	Soils, Groundwater, Surface Water, Air	Land Disposition, Disposal	Yes, relevant and appropriate

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Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
Guidelines For The Storage And Collection Of Residential, Commercial, And Institutional Solid Waste	40 CFR 243	Establishes minimum levels of performance guidelines and requirements for solid waste collection operations.	Potentially relevant and appropriate and TBC to on-site options and off-site disposal facilities. Explicitly excluded are mining, industrial, hazardous, construction, and demolition wastes.	Soils	Land Disposition, Disposal	Potentially relevant and appropriate and TBC
Hazardous Waste Management System	40 CFR 260	Provides definitions of terms, general standards applicable to other parts of hazardous waste regulations	Some portions relevant and appropriate for waste identification and generator provisions.	Soils and Groundwater	Land Disposition, Disposal	Yes, relevant and appropriate
Identification and Listing of Hazardous Waste	40 CFR 261	Identifies those solid wastes that are subject to regulation as hazardous wastes.	Relevant and appropriate for hazardous waste identification.	Soils and Groundwater	Land Disposition, Disposal	Yes, relevant and appropriate
Standards Applicable To Generation of Hazardous Wastes	40 CFR 262	Establishes standards to generators of hazardous wastes.	Not relevant and appropriate because affected materials are not hazardous wastes nor like hazardous wastes, except for hazardous waste identification process in 262.11 which is applicable.	Soils and Groundwater	Land Disposition, Disposal	No
Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities	40 CFR 264 and 265	Establishes standards for owners and operators of hazardous waste treatment, storage and disposal facilities.	Not relevant and appropriate because affected materials are not hazardous wastes.	Soils and Groundwater	Land Disposition, Disposal	No
Land Disposal	40 CFR 268	Identifies hazardous	Site material is solid waste, not hazardous waste.	Soils	Land	No, relevant

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Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
Restrictions		waste materials that cannot be disposed of in a solid waste landfill and defines the circumstances under which an otherwise prohibited waste may be disposed in a solid waste landfill.			Disposition, Disposal	and appropriate if wastes exceed characteristic threshold for hazardous waste, which they don't
Solid Wastes Disposal Sites and Facilities Act	CSR 30-20-100.5 to 120	Establishes requirements for solid waste disposal sites.	Portions of the Act are applicable for on-site and off-site disposal alternatives.	All	Land Disposition, Disposal	Yes, applicable
Solid Wastes Disposal Sites and Facilities Regulations	6 CCR 1007-2 Part I, Sections 1-4, and Parts II and III	Establishes minimum standards, closure requirements, site standards and engineering design standards for solid waste and hazardous waste disposal facilities.	Applicable to off-site disposal facilities within the State, and to on-site alternatives for solid wastes. The hazardous waste provisions (Parts II and III) are not applicable nor relevant and appropriate.	All	Land Disposition, Disposal	Applicable with respect to solid waste provisions only (Part I)
Land Disposal Restrictions	6 CCR 1007-3 Part 268	Identifies hazardous waste materials that cannot be disposed of in a solid waste landfill and defines the circumstances under which an otherwise prohibited waste may be land disposed.	Site material is solid waste, not hazardous waste.	Soils	Land Disposition, Disposal	Yes, applicable if wastes exceed characteristic threshold for hazardous waste, which they don't

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Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
Colorado Hazardous Waste Regulations, Waste Characterization	6 CCR 1007-3, Parts 260, 261, 262.11	Defines hazardous wastes, requires waste characterization.	Site materials are not hazardous wastes after application of hazardous waste identification requirements, so substantive requirements are not applicable.	All	Land Disposition, Disposal	Yes, portions are applicable and portions not applicable because affected materials are not hazardous wastes
Colorado Hazardous Waste Regulations	6 CCR 1007-3, Parts 264 and 265	Standards for owners and operators of hazardous waste treatment, storage, and disposal facilities.	Not applicable because affected materials are not hazardous wastes, nor relevant or appropriate because not like hazardous wastes.	All	Land Disposition, Disposal	No, materials at Site are not hazardous wastes, nor like hazardous waste
Endangered Species Habitat	U.S. Fish and Wildlife Service – Mountain –Prairie Region - Colorado	Lists endangered species in Colorado	Sufficient data is available, a detailed study is not required to determine if any endangered species are located on site.	NA	Land Disposition, Excavation	Yes, applicable.
100 Year Floodplain	City of Golden Colorado Municipal Code – Title 19	Requirements for obtaining permits associated with specific activities occurring in floodplain hazard areas	Affected soil to the east of the former settling pond is within the Clear Creek 100-year flood plain. State agencies not subject to local permit requirements.	Soil, Surface Water	Land Disposition, Disposal, Excavation	Yes, relevant and appropriate as to substantive requirements

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Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Comments	Media	Affected Operations	Applicable or Relevant and Appropriate
Sites of Historical Importance – National Historic Preservation Act	Colorado Office of Archaeology and Historic Preservation – Golden Colorado	Lists Registered Historical Sites in Golden Colorado	Two state historical sites are located near the Colorado School of Mines but not on the Site.	NA	Excavation, Land Disposition	No, because no historical sites are on the Site.

**Table I-1
Action Specific State and Federal Applicable or Relevant and Appropriate Requirements
No Action Alternative**

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
Colorado Hazardous Waste Regulations, Waste Characterization	6 CCR 1007-3, Parts 260, 261, 262.11	Defines hazardous wastes, requires waste characterization.	Applicable or relevant and appropriate.	Characterization required to determine if the soil contains characteristic or listed RCRA hazardous waste.	All
Colorado Hazardous Waste Regulations	6 CCR 1007-3, Part 264 and Part 265	Standards for owners and operators of hazardous waste treatment, storage, and disposal facilities. Requirements for managing hazardous waste based upon the mode of management, i.e., container storage, waste piles, impoundments, etc.	Not applicable, nor relevant or appropriate: wastes are not hazardous wastes nor like hazardous wastes.	Potentially applicable if RCRA hazardous wastes are present within the soil. Current data indicates that RCRA wastes are not present so these requirements are not applicable, nor relevant or appropriate because not like hazardous wastes.	All
Land Disposal Restrictions	40 CFR Part 268 6 CCR 1007-3 Part 268	Establishes treatment and prohibition standards for land disposal of selected hazardous wastes.	Potentially Applicable	Potentially applicable to off-site disposal if restricted RCRA wastes are encountered, but none are.	Soil
Radiation Control Act	CRS 25-11-101-305	Establishes state radiation control program.	Portions applicable or relevant and appropriate	Applicability depends on whether license is required or not.	All
Rules and Regulations Pertaining to Radiation Control	6 CCR 1007-1, Part 1	General provisions (including definitions) for 6 CCR 1007-1.	Portions applicable or relevant and appropriate		All Media
Radiation Control Act	CRS 25-11-201, et seq., Part 2	Provides procedural requirements for disposal of classified waste at facilities required to be licensed for uranium mill, processing or disposal.	No	Not applicable or relevant or appropriate because no alternative includes disposal at such facilities in Colorado.	All Media
	6 CCR 1007-1, Part 3	Regulations concerning licensing of radioactive materials.	No	On-site materials do not require a radioactive materials license.	All Media

**Table I-1
Action Specific State and Federal Applicable or Relevant and Appropriate Requirements
No Action Alternative**

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
	6 CCR 1007-1, Part 4	Establishes standards for protection against radiation hazards.	Relevant and Appropriate.	Substantive portions for cleanup are relevant and appropriate.	All Media
	6 CCR 1007-1, Part 10	Notes, instructions, and reports to workers.	Relevant and Appropriate.	Substantive portions are relevant and appropriate.	All Media
	6 CCR 1007-1, Part 14	Establishes standards for the land disposal of low-level radioactive wastes	No	Not applicable or relevant and appropriate because on-site impacted materials are not low level radioactive wastes, nor like LLW.	All Media
	6 CCR 1007-1, Part 17	Transportation of radioactive materials	No	Transportation not required for no action.	All Media
	6 CCR 1007-1, Part 18	Licensing and cleanup requirements for milling facilities and the disposition of products of milling operations for uranium, thorium and related materials.	Relevant and Appropriate.	Cleanup criteria relevant and appropriate to on-site issues.	All Media
Colorado Environmental Covenant	C.R.S. §25-15-320	Requires an environmental covenant to ensure continuance of land use restriction if remedy is on-site with restricted uses.	Applicable	For on-site remedies with restricted uses only	All Media

**Table I-1
Action Specific State and Federal Applicable or Relevant and Appropriate Requirements
No Action Alternative**

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
TENORM Guidance	Interim Policy and Guidance Pending Rulemaking for Control and Disposition of Technologically-Enhanced Naturally Occurring Radioactive Materials in Colorado, Rev. 2.1, Final Draft for Comment, February 2007	Guidance re: TENORM Materials	TBC	Provides sampling and disposal guidelines for TENORM	All Media
Solid Wastes Disposal Sites and Facilities Act	CRS 30-20-100.5 to 120	Establishes requirements for solid waste disposal sites.	Portions Applicable.		All
Solid Wastes Disposal Sites and Facilities Regulations	6 CCR 1007-2, Part I Sections 1-4, and Parts II and III	Establishes minimum standards, closure requirements, site standards and engineering design standards for solid waste disposal facilities.	Applicable for solid waste provisions. Hazardous waste provisions not applicable or relevant or appropriate.	Applicable to on-site disposal.	All
Clean Water Act	33 USC 1251 to 1387	Water pollution prevention.	Portions relevant and appropriate.		Surface Water
Standards for Fill or Excavation in Waters of the United States	33 CFR 320, 323, 328, and 330	Discharges or dredge or fill in waters of the U.S.	Substantive portions potentially relevant and appropriate or applicable.	Substantive portions potentially applicable or relevant and appropriate to fill and excavation in Clear Creek floodplain	Surface Water and Soil
Storm Water Discharge Regulations	40 CFR 122.25	Regulates discharges of storm water and runoff water.	Relevant and appropriate.	Storm water discharge is covered by the general permit for discharge from construction sites. Utilize Best Available Technology (BAT) and Best Conventional Pollutant Control Technology.	Surface Water and Soil

**Table I-1
Action Specific State and Federal Applicable or Relevant and Appropriate Requirements
No Action Alternative**

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
Colorado Water Quality Control Act	CRS 25-8-101-703	Water pollution prevention.	Applicable or relevant and appropriate.		Surface Water and Groundwater
Basic Standards and Methodologies for Surface Water	5 CCR 1002-31	Establishes basic standards, anti-degradation standard, system for classifying state waters.	Applicable or relevant and Appropriate.	Applicable or relevant or appropriate to component of remedy impacting surface water	Surface Water
Classifications and Numeric Standards, South Platte River Basin, et al.	5 CCR 1002-38	Used in conjunction with basic standards and methodologies in Regulation 31.	Applicable.	For any surface water discharge identified, compliance is required for Segment 11 and 14 of Clear Creek Basin.	Surface Water
State Discharge Permit Regulations	5 CCR 1002-61	Requires a permit for the discharge of pollutants from a point source into waters of the State, including storm water.	Applicable.	Must comply with substantive and administrative requirements.	Surface Water
Storm Sewer Discharge Regulations	5 CCR 1002-65	Establishes requirements relating to discharges into storm sewers.	Applicable.	Storm sewer regulations are applicable to run-off from the site.	Surface Water
Occupational Safety and Health Act	29 USC 651-678 29 CFR 1910.96 29 CFR 1926	Regulates worker health and safety.	Applicable.	Independently applicable. Requirements of this act apply to all response actions under the NCP.	All
Federal Register Vol 64 No. 264 page 68396 Table 3	64 FR 68396	Establishes individual radionuclide concentrations deemed compliant with 25 merm/y unrestricted release dose limit in 10 CFR 20.1402	TBC	These interim screening values may be relevant and appropriate if they are used as the soil clean-up criteria	soil

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Action Specific State and Federal Applicable or Relevant and Appropriate Requirements
No Action Alternative**

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
Nuclear Regulatory Standards for Protection Against Radiation – (10 CFR 20, 40)	10 CFR 20.1201-8;1301-2; 1402, 1403; 10 CFR 40.42.	Establishes standards for protection of the public against radiation arising from the use of regulated materials. Remedial alternatives need to limit external and internal exposure from releases to levels that do not exceed 100 mrem/y, or 2 mrem/h from external exposure in unrestricted areas. These requirements also establish criteria for closing NRC-licensed sites including a soil remediation standard of 25 mrem/y or 100 mrem/y if institutional controls fail.	Relevant and appropriate	This regulation establishes standards for protection of the public against radiation arising from the use of regulated materials and is relevant and appropriate. Radioactive material from sources not licensed by the NRC are not subject to these regulations, therefore, this standard is applicable because this site is under CERCLA jurisdiction	All
EPA Memorandum, Radiation Risk Assessment at CERCLA Sites: Q&A, OSWER Directive 9200.4-31P		This memorandum provides guidance on conducting risk assessments at radioactively contaminated CERCLA sites. EPA dose limits are to generally achieve risk levels in the 10-4 to 10-6 risk range	TBC	This memorandum is TBC, but is considered by the EPA to be more protective than NRC dose standards, and consistent with CERCLA's risk management requirements.	

**Table I-2
Action Specific State and Federal Applicable or Relevant and Appropriate Requirements
Onsite Alternatives**

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
Clean Air Act	40 CFR 50 to 69	Air pollution control	Relevant and appropriate		Air
New Source Performance Requirements	40 CFR 60	Establishes emission standards for new air emissions	Potentially relevant and appropriate	If temporary air pollution sources that are sufficiently similar to those sources covered by these regulations are part of the remedy, the regulations may be relevant and appropriate	Air
CAA - National Emission Standards for Hazardous Air Pollutants (NESHAP)	40 CFR 61	Establishes standards for certain HAP emissions from some sources	Potentially relevant or appropriate	To the extent the activities involve the emission of regulated constituents and activities similar to those addressed in these regulations, they may be relevant and appropriate.	Air
Colorado Air Quality Control Act	CRS 25-7-101, et seq.	Air pollution control	Applicable		Air
Common Provision Regulations	5 CCR 1001-2 Section II	Conduct performance tests, applicable emissions monitoring, and recordkeeping	Applicable	Substantive requirements are applicable to air emission component of the remedy	Air
Regulation No. 1	5 CCR 1001-3 Regulation No. 1	Establishes emission control regulations for particulates, smoke, carbon monoxide, sulfur oxides and fugitive particulate emissions.	Portions are Applicable	See below for description of specific provisions	Air
Regulation No. 1	5 CCR 1001-3 Regulation No. 1, Section II.A.1	Comply with opacity limitations.	Applicable	Less than 20% opacity emitted, specific sources may have other limitations.	Air
Regulation No. 1	5 CCR 1001-3 Regulation No. 1, Section III.D	Minimize fugitive particulate emissions.	Applicable	Applicable to construction activities, storage and handling operations, haul roads and haul trucks, and tailings piles. Relevant and appropriate to non-specific sources.	Air

**Table I-2
Action Specific State and Federal Applicable or Relevant and Appropriate Requirements
Onsite Alternatives**

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
Regulation No. 3	5 CCR 1001-5 Regulation No. 3, Part A Section II	File APEN including estimation of emission rates if 2 TPY exceeded.	Applicable	Substantive portions are applicable to all sources including earthwork and existing sources unless specifically exempt.	Air
Ambient Air Quality Standards	5 CCR 1001-14	Sets ambient standards for total suspended particulates, sulfur dioxide, oxidant, carbon monoxide, nitrogen dioxide.	Applicable	Would be applicable if remedy would cause emission of regulated constituents	Air
Colorado Hazardous Waste Regulations, Waste Characterization	6 CCR 1007-3, Parts 260, 261, 262.11	Defines hazardous wastes, requires waste characterization.	Applicable or relevant and appropriate	Characterization required to determine if the soil contains characteristic or listed RCRA waste.	All
Colorado Hazardous Waste Regulations, Waste Characterization	6 CCR 1007-3, Part 264 and Part 265	Standards for owners and operators of hazardous waste treatment, storage, and disposal facilities. Requirements for managing hazardous waste based upon the mode of management, i.e., container storage, waste piles, impoundments, etc.	Not applicable, not relevant and appropriate	Potentially applicable if RCRA hazardous wastes are present within the soil. Current data indicates that RCRA wastes are not present so these requirements are not applicable, nor relevant or appropriate because not like hazardous wastes.	All
Land Disposal Restrictions	40 CFR Part 268 6 CCR 1007-3 Part 268	Establishes treatment and prohibition standards for land disposal of selected hazardous wastes.	Not Applicable	Potentially applicable to off-site disposal if restricted RCRA wastes are encountered, which they were not.	Soil
Radiation Control	CRS 25-11-101-305	Radiation control.			
Rules and Regulations Pertaining to Radiation Control	6 CCR 1007-1, Part 1	General provisions (including definitions) for 6 CCR 1007-1.	Portions applicable or relevant and appropriate.		All Media

**Table I-2
Action Specific State and Federal Applicable or Relevant and Appropriate Requirements
Onsite Alternatives**

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
Radiation Control	CRS 25-11-201, et seq., Part 2	Provides procedural requirements for disposal of classified waste at facilities required to be licensed for uranium mill, processing or disposal.	No	Not applicable or relevant or appropriate because no alternative includes disposal at such facilities in Colorado.	All Media
	6 CCR 1007-1, Part 3	Regulations concerning licensing of radioactive materials.	Not applicable or relevant or appropriate	No license required for on-site disposal.	All Media
	6 CCR 1007-1, Part 4	Establishes standards for protection against radiation hazards.	Relevant and Appropriate.	Substantive cleanup portions are relevant and appropriate.	All Media
	6 CCR 1007-1, Part 10	Notes, instructions, and reports to workers.	Relevant and Appropriate.	Substantive portions are relevant and appropriate.	All Media
	6 CCR 1007-1, Part 14	Establishes standards for the land disposal of low-level radioactive wastes	No	Not applicable or relevant and appropriate because on-site impacted materials are not low level radioactive wastes, nor like LLW.	All Media
	6 CCR 1007-1, Part 17	Transportation of radioactive materials	Relevant and Appropriate.	Substantive portions are relevant and appropriate.	All Media
	6 CCR 1007-1, Part 18	Licensing and cleanup requirements for milling facilities and the disposition of products of milling operations for uranium, thorium and related materials.	Relevant and appropriate.	Substantive portions related to cleanup are relevant and appropriate.	All Media
Colorado Environmental Covenant	C.R.S. §25-15-320	Requires an environmental covenant to ensure continuance of land use restriction if remedy is on-site with restricted uses.	Applicable	For on-site remedies with restricted uses only	All Media

**Table I-2
Action Specific State and Federal Applicable or Relevant and Appropriate Requirements
Onsite Alternatives**

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
TENORM Guidance	Interim Policy and Guidance Pending Rulemaking for Control and Disposition of Technologically-Enhanced Naturally Occurring Radioactive Materials in Colorado, Rev. 2.1, Final Draft for Comment, February 2007	Guidance re: TENORM Materials	TBC	Provides sampling and disposal guidelines for TENORM	All Media
Solid Wastes Disposal Sites and Facilities Act	CRS 30-20-100.5 to 120	Establishes requirements for solid waste disposal sites.	Portions applicable.		All
Solid Wastes Disposal Sites and Facilities Regulations	6 CCR 1007-2, Part I, Sections 1-4, and Parts II and III	Establishes minimum standards, closure requirements, site standards and engineering design standards for solid waste disposal facilities.	Applicable for solid waste provisions. Hazardous waste provision not applicable or relevant or appropriate.	Potentially applicable to on-site disposal.	Soil
Clean Water Act	33 USC 1251 to 1387	Water pollution prevention	Portions relevant and appropriate.		Surface Water
Standards for Fill or Excavation in Waters of the United States	33 CFR 320, 323, 328, and 330	Discharges of dredge or fill in waters of the U.S.	Substantive portions potentially relevant and appropriate or applicable.	Substantive portions potentially applicable or relevant and appropriate to fill and excavation in Clear Creek floodplain.	Surface Water
Storm Water Discharge Regulations	40 CFR 122.25	Regulates discharges of storm water and runoff water.	Relevant and appropriate.	Storm water discharge is covered by the general permit for discharge from construction sites. Utilize Best Available Technology (BAT) and Best Conventional Pollutant Control Technology.	Surface Water and Soil

**Table I-2
Action Specific State and Federal Applicable or Relevant and Appropriate Requirements
Onsite Alternatives**

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
Colorado Water Quality Control Act	CRS 28-8-101-703	Water pollution prevention.	Applicable or relevant and appropriate.		Surface Water and Groundwater
Basic Standards and Methodologies for Surface Water	5 CCR 1002-31	Establishes basic standards, anti-degradation standard, system for classifying state waters.	Applicable or Relevant and Appropriate	Applicable or relevant or appropriate to component of remedy impacting surface water	Surface Water
Classifications and Numeric Standards, South Platte River Basin, et al.	5 CCR 1002-38	Used in conjunction with basic standards and methodologies (Section 3.1.0)	Applicable	For any surface water discharge identified, compliance is required for Segment 11 and 14 of Clear Creek Basin.	Surface Water
State Discharge Permit Regulations	5 CCR 1002-61	Requires a permit for the discharge of pollutants from a point source into waters of the State.	Applicable	Must comply with substantive and administrative requirements.	Surface Water
Storm Sewer Discharge Regulations	5 CCR 1002-65	Establishes requirements relating to discharges into storm sewers.	Applicable	Storm sewer regulations are applicable to run-off from the site.	Surface Water
Occupational Safety and Health Act	29 USC 651-678 29 CFR 1910.96 29 CFR 1926	Regulates worker health and safety.	Applicable	Independently applicable. Requirements of this act apply to all response actions under the NCP.	All
Federal Register Vol 64 No. 264 page 68396 Table 3	64 FR 68396, Dec. 7, 1999, NCR Supplemental Information to License Termination Rule	Establishes individual radionuclide concentrations deemed compliant with 25 merm/y unrestricted release dose limit in 10 CFR 20.1402 for surface soils, but not for sites with subsurface and groundwater contamination.	TBC	These interim screening values may be relevant and appropriate if they are used as the surface soil clean-up criteria with ALARA.	Surface soil

**Table I-2
Action Specific State and Federal Applicable or Relevant and Appropriate Requirements
Onsite Alternatives**

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
Nuclear Regulatory Standards for Protection Against Radiation – (10 CFR 20, 40)	10 CFR 20.1201-8;1301-2; 1402, 1403 10 CFR 40.42	Establishes standards for protection of the public against radiation arising from the use of regulated materials. Remedial alternatives need to limit external and internal exposure from releases to levels that do not exceed 100 mrem/y, or 2 mrem/h from external exposure in unrestricted areas. These requirements also establish criteria for closing NRC-licensed sites including a soil remediation standard of 25 mrem/y or 100 mrem/yr if institutional controls fail.	Relevant and appropriate	This regulation establishes standards for protection of the public against radiation arising from the use of regulated materials and is relevant and appropriate. Radioactive material from sources not licensed by the NRC are not subject to these regulations, therefore, this standard is not applicable.	All
EPA Memorandum, Radiation Risk Assessment at CERCLA Sites: Q&A, OSWER Directive 9200.4-31P		This memorandum provides guidance on conducting risk assessments at radioactively contaminated CERCLA sites. EPA dose limits are to generally achieve risk levels in the 10 ⁻⁴ to 10 ⁻⁶ risk range, which equates to 15 mrem/yr TEDE standard.	TBC	This memorandum is TBC, but is considered by the EPA to be more protective than NRC dose standards and consistent with NCP requirements.	All
Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) December 1999	NUREG-1575; EPA 402-R-97-016	Guidance for radiological surveys to demonstrate compliance with cleanup criteria.	TBC		All

TABLE I-3
Action-Specific State and Federal Applicable or Relevant and Appropriate Requirements
Compliance Evaluation for Off-Site Alternatives

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media	Method of Attainment
Clean Air Act	40 CFR 50 to 69	Air pollution control.	Relevant and appropriate			
New Source Performance Requirements	40 CFR 60	Establishes emission standards for new air emissions	Potentially relevant and appropriate	If temporary air pollution sources that are sufficiently similar to those sources covered by these regulations are part of the remedy, the regulations may be relevant and appropriate.	Air	None of the off-site RA alternatives will use new air emission sources that are sufficiently similar to those sources covered by the regulations. Therefore, this standard is not applicable or relevant and appropriate.
Colorado Air Quality Control Act	CRS 25-7-101-512					
Common Provision Regulations	5 CCR 1001-2, Section II	Conduct performance tests, applicable emissions monitoring, and recordkeeping	Applicable	Substantive requirements are applicable to air emission component of the remedy.	Air	Perimeter air monitoring as set forth in Section 4.1.3 will be a component of the off-site RA alternatives during construction. This monitoring satisfies the performance testing required by the Air Quality Control Division for stationary sources. The results of the perimeter air monitoring will be recorded and maintained on-site or at another suitable location.
Regulation No. 1	5 CCR 1001-3, Regulation No. 1	Establishes emission control regulations for particulates, smoke, carbon monoxide, sulfur oxides and fugitive particulate emissions.	Portions are Applicable	See below for description of specific provisions.	Air	See below for attainment of specific provisions.
Regulation No. 1	5 CCR 1001-3, Regulation No. 1, Section II.A.1	Comply with opacity limitations.	Applicable	Less than 20% opacity emitted, specific sources may have other limitations.	Air	None of the off-site RA alternatives include an air emissions source which would require monitoring for opacity limitations.
Regulation No. 1	5 CCR 1001-3, Regulation No. 1, Section III.D	Minimize fugitive particulate emissions.	Applicable, Relevant and Appropriate	Applicable to construction activities, storage and handling operations, haul roads and haul trucks, and tailings piles. Relevant and appropriate to non-specific sources.	Air	For all of the off-site RA alternatives, fugitive particulate emissions will be minimized during remediation by implementing the dust control procedures identified in Section 4.1.3. In addition, fugitive particulate emissions from storage and handling operations will be minimized by covering soil stockpiles with geotextile when not in use and implementing the dust control procedures set forth in Section 4.1.3.
Regulation No. 3	5 CCR 1001-5, Regulation No. 3, Part A Section II	File APEN including estimation of emission rates, if 2 TPY exceeded.	Applicable	Substantive portions are applicable to all sources including earthwork and existing sources unless specifically exempt.	Air	File APEN, if necessary.

TABLE I-3
Action-Specific State and Federal Applicable or Relevant and Appropriate Requirements
Compliance Evaluation for Off-Site Alternatives

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media	Method of Attainment
Ambient Air Quality Standards	5 CCR 1001-14	Sets ambient standards for total suspended particulates, sulfur dioxide, oxidant, carbon monoxide, nitrogen dioxide.	Applicable	Would be applicable if remedy would cause emission of regulated constituents.	Air	Emission of regulated constituents other than small amounts of total suspended particulates is not anticipated during the implementation of any of the off-site RA alternatives. Dust control measures set forth in Section 4.1.3 will be used to attain the requirements of this regulation.
Hazardous Materials Transportation Act	49 USC 1801 to 1813					
Transportation Regulations	49 CFR Parts 107, 171 to 174, and 177	Regulates transportation of hazardous materials. Part 173 is specific to Class 7 radioactive materials.	Not applicable or relevant and appropriate.	Wastes at Site are not Class 7 radioactive materials or like them.	Soils, Solids	N/A
Colorado Hazardous Waste Regulations, Waste Characterization	6 CCR 1007-3, Parts 260, 261, 262.11	Defines hazardous wastes, requires waste characterization.	Applicable or relevant and appropriate.	Characterization required to determine if the soil contains characteristic or listed RCRA waste.	Soils	Soils have already been adequately characterized for the presence of RCRA hazardous wastes. Additional characterization activities are not required to meet these regulations for any of the off-site RA alternatives.
Colorado Hazardous Waste Regulations, Waste Characterization	6 CCR 1003-3, Part 264 and Part 265	Standards for owners and operators of hazardous waste treatment, storage, and disposal facilities. Requirements for managing hazardous waste based upon the mode of management, i.e., container storage, waste piles, impoundments, etc.	Not applicable or relevant and appropriate.	Potentially applicable if RCRA hazardous wastes are present within the soil.	Soils	Current data indicates that RCRA hazardous wastes are not present so these requirements are not applicable to any of the off-site RA alternatives.
Land Disposal Restrictions	40 CFR Part 268 6 CCR 1007-3, Part 268	Establishes treatment and prohibition standards for land disposal of selected hazardous wastes.	No		Soil	No RCRA wastes have been encountered.
Radiation Control	CRS 25-11-101 to 305	Radiation control.				
Rules and Regulations Pertaining to Radiation Control	6 CCR 1007-1, Part 1, All Sections with emphasis on 1.5, 1.6., and 1.7	General provisions (including definitions, exemptions, recordkeeping, and inspections).	Portions applicable or relevant and appropriate		All Media	The pertinent requirements (primarily administrative) set forth in these regulations will be met for each of the off-site RA alternatives within the State.
	CRS 25-11-201, et seq., Part 2	Provides procedural requirements for disposal of classified waste at facilities required to be licensed for uranium mill, processing or disposal.	No	Not applicable or relevant or appropriate because no alternative includes disposal at such facilities in Colorado.	All Media	

TABLE I-3
Action-Specific State and Federal Applicable or Relevant and Appropriate Requirements
Compliance Evaluation for Off-Site Alternatives

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media	Method of Attainment
	6 CCR 1007-1, Part 3	Regulations concerning licensing of radioactive materials.	Portions relevant and appropriate	Relevant and appropriate to only one off-site disposal facility within the State (Clean Harbors).	All Media	Waste does not need a license.
	6 CCR 1007-1, Part 4	Establishes standards for protection against radiation hazards.	Relevant and Appropriate	Substantive cleanup portions are relevant and appropriate.	All Media	Substantive requirements of this standard will be met for each of the off-site alternatives including meeting permissible doses, levels, and concentration standards through the use of PPE, environmental monitoring, and dosimetry programs.
	6 CCR 1007-1, Part 10	Notes, instructions, and reports to workers.	Relevant and Appropriate	Substantive requirements are relevant and appropriate.	All Media	The pertinent requirements will be met for each of the off-site alternatives within the State.
	6 CCR 1007-1, Part 17	Transportation of radioactive materials	Relevant and Appropriate	Substantive portions are relevant and appropriate.	All Media	Packaging and transportation of radioactive materials will meet these standards for all of the off-site RA alternatives.
	6 CCR 1007-1, Part 18	Licensing requirements for milling facilities and the disposition of products of milling operations for uranium, thorium and related materials.	Not applicable or relevant and appropriate	Not applicable.	All Media	N/A to off-site alternatives.
Colorado Environmental Covenant	C.R.S. §25-15-320	Requires an environmental covenant to ensure continuance of land use restriction if remedy is on-site with restricted uses.	Applicable	For on-site remedies with restricted uses only	All Media	
TENORM Guidance	Interim Policy and Guidance Pending Rulemaking for Control and Disposition of Technologically-Enhanced Naturally Occurring Radioactive Materials in Colorado, Rev. 2.1, Final Draft for Comment, February 2007	Guidance re: TENORM Materials	TBC	Provides sampling and disposal guidelines for TENORM	All Media	
Solid Wastes Disposal Sites and Facilities Act	CRS 30-20-100.5 to 120	Solid waste disposal sites				
Solid Wastes Disposal Sites and Facilities Regulations	6 CCR 1007-2, Part I, Sections 1-4, Parts II and III	Establishes minimum standards, closure requirements, site standards and engineering design standards for solid waste disposal facilities.	Applicable for solid waste provisions.	Applicable to off-site disposal facilities within the State.	All Media	For off-site RA alternatives which include disposal at a licensed solid waste disposal facility within the State. Will consider only lawful facilities.
Clean Water Act	33 USC 1251 to 1376	Water pollution prevention.				

TABLE I-3
Action-Specific State and Federal Applicable or Relevant and Appropriate Requirements
Compliance Evaluation for Off-Site Alternatives

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media	Method of Attainment
Standards for Fill or Excavation in Waters of the United States	33 CFR 320, 323, 328, and 330		Applicable or relevant and appropriate		Surface Water	None of the off-site RA alternatives will include fills or excavations.
Storm Water Discharge Regulations	40 CFR 122.28	Regulates discharges of storm water and runoff water.	Applicable	Storm water discharge is covered by the General Permit for Discharge from Construction Sites. Utilize Best Available Technology (BAT) and Best Conventional Pollutant Control Technology.	Surface Water	For all of the off-site RA alternatives, storm water discharge is covered by the General Permit for Discharge from Construction Sites. The substantive requirements of the general permit will be met by implementing storm water controls such as berms, silt fences, and retention basins as necessary to reduce the pollutants in storm water discharges for each of the off-site RA alternatives.
Colorado Water Quality Control Act	CRS 25-8-101-703	Water pollution prevention.	Applicable or relevant and appropriate			
Basic Standards and Methodologies for Surface Water	5 CCR 1002-31	Establishes basic standards, anti-degradation standard, system for classifying state waters.	Applicable or Relevant and Appropriate	Applicable or relevant and appropriate to component of remedy impacting surface water.	Surface Water	The substantive requirements of the section will be met by implementing storm water controls such as berms, silt fences, and retention basins as necessary to reduce the pollutants in storm water discharges for each of the off-site RA alternatives.
Classifications and Numeric Standards, South Platte River Basin, et al.	5 CCR 1002-38	Used in conjunction with basic standards and methodologies (Section 3.1.0)	Applicable	For any surface water discharge identified, compliance is required for Segments 11 and 14 of Clear Creek Basin.	Surface Water	The substantive requirements of the section will be met by implementing storm water controls such as berms, silt fences, and retention basins as necessary to reduce the pollutants in storm water discharges for each of the off-site RA alternatives.
State Discharge Permit Regulations	5 CCR 1002-61	Requires a permit for the discharge of pollutants from a point source into waters of the State.	Potentially Applicable	Must comply with substantive requirements.	Surface Water	The substantive requirements of the section will be met by implementing storm water controls such as berms, silt fences, and retention basins as necessary to reduce the pollutants in storm water discharges for each of the off-site RA alternatives.
Storm Sewer Discharge Regulations	5 CCR 1002-65	Establishes requirements relating to discharges into storm sewers.	Applicable	Storm sewer regulations are applicable to run-off from the site.	Surface Water	The substantive requirements of the section will be met by implementing storm water controls such as berms, silt fences, and retention basins as necessary to reduce the pollutants in storm water discharges for each of the off-site RA alternatives.
Occupational Safety and Health Act	29 USC 651-678 29 CFR 1910.96 29 CFR 1926	Regulates worker health and safety.	Applicable	Independently applicable. Requirements of this act apply to all response actions under the NCP.	All	The Safety, Health and Emergency Response Plan sets forth the health and safety program to be implemented during the RA. Adherence to this plan satisfies these standards.

TABLE I-3
Action-Specific State and Federal Applicable or Relevant and Appropriate Requirements
Compliance Evaluation for Off-Site Alternatives

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media	Method of Attainment
Federal Register Vol 64 No. 264 page 68396 Table 3	64 FR 68396	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402	TBC	These interim screening values may be relevant and appropriate if they are used as the soil clean-up criteria	soil	Perform dose modeling on site conditions to determine if individual radionuclide concentrations meet 25 mrem/yr and ALARA.
Primary Drinking Water Regulations	5 CCR 1003-1	Establishes drinking water standards for community water systems	Relevant and appropriate	Groundwater at Site not a community water system, but contributes to Clear Creek that is a source of drinking water	Groundwater	Substantive requirements will be met at points of compliance
Nuclear Regulatory Standards for Protection Against Radiation – (10 CFR 20, 40)	10 CFR 20.1201-8;1301-2; 1402, 1403; 10 CFR 40.42	Establishes standards for protection of the public against radiation arising from the use of regulated materials. Remedial alternatives need to limit external and internal exposure from releases to levels that do not exceed 100 mrem/y, or 2 mrem/h from external exposure in unrestricted areas. These requirements also establish criteria for closing NRC-licensed sites including a soil remediation standard of 25 mrem/y and 100 mrem/y if institutional controls fail.	Relevant and appropriate	This regulation establishes standards for protection of the public against radiation arising from the use of regulated materials and is relevant and appropriate. Radioactive material from sources not licensed by the NRC are not subject to these regulations, therefore, this standard is not applicable. No facility accepting site wastes will have an NRC license.	Soil	Confirmation sampling to show compliance with DCGLs.
EPA Memorandum, Radiation Risk Assessment at CERCLA Sites: Q&A, OSWER Directive 9200.4-31P		This memorandum provides guidance on conducting risk assessments at radioactively contaminated CERCLA sites. EPA dose limits are to generally achieve risk levels in the 10-4 to 10-6 risk range	TBC	This memorandum in TBC, but is considered by the EPA to be more protective than NRC dose standards, and consistent with NCP requirements.		Confirmation sampling to show compliance with DCGLs.
Multi-Agency Radiation Survey and Site Investigation (MARSSIM) December 1999	NUREG-1575 EPA 402-R-97-016	Guidance for radiological surveys to demonstrate compliance with cleanup criteria	TBC		All	MARSSIM was followed.

TABLE I-4
Chemical Specific State and Federal Applicable or Relevant and Appropriate Requirements
No Action Alternative

Standard Requirement, Criteria or Limitation	Description or Requirements	Citation	Applicable or Relevant and Appropriate	Comments	Media
Radium-226	Less than or equal to 5 pCi/g Ra-226 above background within 15 cm of the surface averaged over 100 square meter area. Less than or equal to 15 pCi/g above background within subsequent 15 cm layers of soil averaged over 100 square meter area.	40 CFR 192.12(a); 6 CCR 1007-1, Part 18, Criterion 6.	Relevant and Appropriate	Standard for clean-up of land at inactive uranium processing sites.	Soils
Radium- 226	7.0E-01 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils
Radium- 228	4.7E-00 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils
Uranium- 234	1.3E-01 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils

TABLE I-4
Chemical Specific State and Federal Applicable or Relevant and Appropriate Requirements
No Action Alternative

Standard Requirement, Criteria or Limitation	Description or Requirements	Citation	Applicable or Relevant and Appropriate	Comments	Media
Uranium- 234	1.4E-01 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils
Thorium- 230	1.8E-00 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils
Thorium- 232	1.1E-00 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils
Thorium-230	Clean-up level calculated using initial Ra-226 concentration and assuming period for Th-230 ingrowth; depth of backfill may be considered.	Generic protocol for excavation of Th-230, DOE, January 15, 1989	TBC	DOE standard modified by EPA's January 16, 1992 letter. To be considered for excavation of clay liner under the waste pile.	Soils
Radon Decay Products	Objectives of remedial action to achieve an annual average not to exceed 0.02 WL. In any case, not to exceed 0.03 WL.	40 CFR 192.12(b)(1)	Relevant and Appropriate	Standard for clean-up of inactive uranium processing sites. Relevant and appropriate if occupied or habitable buildings planned for site.	Air

TABLE I-4
 Chemical Specific State and Federal Applicable or Relevant and Appropriate Requirements
 No Action Alternative

Standard Requirement, Criteria or Limitation	Description or Requirements	Citation	Applicable or Relevant and Appropriate	Comments	Media
Radiation	Gamma radiation shall not exceed background levels by more than 20 microR per hour.	40 CFR 192.12(b)(2)	Relevant and Appropriate	Standard for clean-up of inactive uranium processing sites. Relevant and appropriate if occupied or habitable buildings planned for site.	Soils
Radiation	Standards for protection against radiation.	10 CFR 20 6 CCR 1007-1 Part 4	Relevant and Appropriate	Substantive portions are relevant and appropriate.	All Media
Radiation Dose	25 mrem/y TEDE above background plus ALARA	10 CFR 20.1402; 6 CCR 1007-1, 4.61.2	Relevant and Appropriate	For unrestricted use cleanup.	All
Radiation Dose	25 mrem/y TEDE above background plus ALARA, plus 100 mrem/y TEDE if institutional controls fail.	10 CFR 20.1403; 6 CCR 1007-1, 4.61.3	Relevant and Appropriate	For restricted use cleanup.	All
Radiation Dose	15 mrem/yr TEDE above background	EPA Memo, OSWER Directive 9200.4-31P, Radiation Risk Assessment at CERCLA Sites	TBC	For CERCLA compliant cleanup	All
Radiation Dose	10^{-4} - 10^{-6} cancer risk	40 CFR 430(e)(2)	Applicable	For CERCLA compliant cleanup	All
Radiation Dose	ICRP Publication 30 provides recommended Annual Limits on Intake and Derived Air Concentrations designed to limit the intake of radioactive materials by workers.	ICRP 30	TBC	To the extent that workers may have radioactive material intakes due to the presence of site wastes, this international guidance is to be considered.	All Media
Radiation Dose	Federal Guidance Report No. 11 provides Annual Limits on Intake and Derived Air Concentrations to be implemented by federal agencies to limit the intake of radioactive materials by workers.	Federal Guidance Report No. 11	TBC	To the extent that workers may have radioactive material intakes due to the presence of site wastes, this Federal guidance is to be considered.	All Media

TABLE I-4
Chemical Specific State and Federal Applicable or Relevant and Appropriate Requirements
No Action Alternative

Standard Requirement, Criteria or Limitation	Description or Requirements	Citation	Applicable or Relevant and Appropriate	Comments	Media
Air Pollutants	National Emission Standards for Hazardous Air Pollutants (NESHAP)	40 CFR 61	Relevant and Appropriate	To the extent the remedial activities involve the emission of regulated constituents and activities similar to those addressed in these regulations, they may be relevant and appropriate.	Air
Arsenic	Less than 0.39 mg/kg	Colorado Department of Public Health and Environment, Hazardous Materials and Waste Division – Proposed Soil Remediation Objectives Policy Document; Table 1 Soil Cleanup Values, updated draft values.	TBC	Represents most conservative state cleanup standard for Residential/Unrestricted Landuse	Soil
Lead (inorganic)	Less than 400 mg/kg	Colorado Department of Public Health and Environment, Hazardous Materials and Waste Division – Proposed Soil Remediation Objectives Policy Document; Table 1 Soil Cleanup Values, updated draft values.	TBC	Represents most conservative state cleanup standard for Residential/Unrestricted Landuse	Soil
Mercury (compounds) Mercury (elemental)	Less than 23 mg/kg 1.1 mg/kg	Colorado Department of Public Health and Environment, Hazardous Materials and Waste Division – Proposed Soil Remediation Objectives Policy Document; Table 1 Soil Cleanup Values, updated draft values.	TBC	Represents most conservative state cleanup standard for Residential/Unrestricted Landuse	Soil
Vanadium	550 mg/kg	EPA Region 9 Proposed Soil Standard	TBC		Soil

TABLE I-4
Chemical Specific State and Federal Applicable or Relevant and Appropriate Requirements
No Action Alternative

Standard Requirement, Criteria or Limitation	Description or Requirements	Citation	Applicable or Relevant and Appropriate	Comments	Media
Molybdenum	390 mg/kg	EPA Region 9 Proposed Soil Standard	TBC		Soil

TABLE I-5
Chemical-Specific State and Federal Applicable or Relevant and Appropriate Requirements
On-Site Alternatives

Contaminant	Standard	Citation	Applicable or Relevant and Appropriate or TBC	Comments	Media
Radium-226	Less than or equal to 5 pCi/g above background within 15 cm of the surface averaged over 100 square meter area. Less than or equal to 15 pCi/g above background within subsequent 15 cm layers of soil averaged over 100 square meter area.	40 CFR 192.12(a) 6 CCR 1007-1, Part 18, Criterion 6.	Relevant and Appropriate	Standard for clean-up of land at inactive uranium processing sites.	Soils
Radium- 226	7.0E-01 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils
Radium- 228	4.7E-00 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils

TABLE I-5
 Chemical-Specific State and Federal Applicable or Relevant and Appropriate Requirements
 On-Site Alternatives

Contaminant	Standard	Citation	Applicable or Relevant and Appropriate or TBC	Comments	Media
Uranium- 234	1.3E-01 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils
Uranium- 234	1.4E-01 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils
Thorium- 230	1.8E-00 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils
Thorium- 232	1.1E-00 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils
Radon Decay Products	Objectives of remedial action to achieve an annual average not to exceed 0.02 WL. In any case, not to exceed 0.03 WL.	40 CFR 192.12(b)(1)	Relevant and Appropriate	Standard for clean-up of inactive uranium processing sites. Relevant and appropriate if occupied or habitable buildings planned for site.	Air
Radiation	Gamma radiation shall not exceed background levels by more than 20 microR per hour.	40 CFR 192.12(b)(2)	Relevant and Appropriate	Standard for clean-up of inactive uranium processing sites. Relevant and appropriate if occupied or habitable buildings planned for site.	Soils

TABLE I-5
Chemical-Specific State and Federal Applicable or Relevant and Appropriate Requirements
On-Site Alternatives

Contaminant	Standard	Citation	Applicable or Relevant and Appropriate or TBC	Comments	Media
Radiation	Standards for protection against radiation.	10 CFR 20 6 CCR 1007-1 Part 4	Relevant and Appropriate	Substantive portions are relevant and appropriate.	All Media
Radiation Dose	25 mrem/y TEDE above background plus ALARA	10 CFR 20.1402; 6 CCR 1007-1, 4.61.2	Relevant and Appropriate	For unrestricted use cleanup.	All
Radiation Dose	25 mrem/y TEDE above background plus ALARA, plus 100 mrem/y TEDE if institutional controls fail.	10 CFR 20.1403; 6 CCR 1007-1, 4.61.3	Relevant and Appropriate	For restricted use cleanup.	All
Radiation Dose	15 mrem/yr TEDE above background	EPA Memo, OSWER Directive 9200.4-31P, Radiation Risk Assessment at CERCLA Sites	TBC	For CERCLA compliant cleanup	All
Radiation Dose	10^{-4} - 10^{-6} cancer risk	40 CFR 430(e)(2)	Applicable	For CERCLA compliant cleanup	All
Radiation Dose	ICRP Publication 30 provides recommended Annual Limits on Intake and Derived Air Concentrations designed to limit the intake of radioactive materials by workers.	ICRP 30	TBC	To the extent that workers may have radioactive material intakes due to the presence of site wastes, this international guidance is to be considered.	All Media
Radiation Dose	Federal Guidance Report No. 11 provides Annual Limits on Intake and Derived Air Concentrations to be implemented by federal agencies to limit the intake of radioactive materials by workers.	Federal Guidance Report No. 11	TBC	To the extent that workers may have radioactive material intakes due to the presence of site wastes, this Federal guidance is to be considered.	All Media
Air Pollutants	National Emission Standards for Hazardous Air Pollutants (NESHAP)	40 CFR 61	Relevant and Appropriate	To the extent the remedial activities involve the emission of regulated constituents and activities similar to those addressed in these regulations, they may be relevant and appropriate.	Air

TABLE I-5
 Chemical-Specific State and Federal Applicable or Relevant and Appropriate Requirements
 On-Site Alternatives

Contaminant	Standard	Citation	Applicable or Relevant and Appropriate or TBC	Comments	Media
Arsenic	Less than 0.39 mg/kg	Colorado Department of Public Health and Environment, Hazardous Materials and Waste Division – Proposed Soil Remediation Objectives Policy Document; Table 1 Soil Cleanup Values, updated draft values.	TBC	Represents most conservative state cleanup standard for Residential/Unrestricted Landuse	Soil
Lead (inorganic)	Less than 400 mg/kg	Colorado Department of Public Health and Environment, Hazardous Materials and Waste Division – Proposed Soil Remediation Objectives Policy Document; Table 1 Soil Cleanup Values, updated draft values.	TBC	Represents most conservative state cleanup standard for Residential/Unrestricted Landuse	Soil

TABLE I-5
Chemical-Specific State and Federal Applicable or Relevant and Appropriate Requirements
On-Site Alternatives

Contaminant	Standard	Citation	Applicable or Relevant and Appropriate or TBC	Comments	Media
Mercury (compounds) Mercury (elemental)	Less than 23 mg/kg 1.1 mg/kg	Colorado Department of Public Health and Environment, Hazardous Materials and Waste Division – Proposed Soil Remediation Objectives Policy Document; Table 1 Soil Cleanup Values, updated draft values.	TBC	Represents most conservative state cleanup standard for Residential/Unrestricted Landuse	Soil

TABLE I-6
Chemical-Specific State and Federal ARARs for Groundwater
Compliance Evaluations On-site Alternatives

Contaminant	Standard	Applicable or R&A	Comments	Method of Attainment
Ra-226 and Ra-228	5 pCi/l	Applicable	Statewide standard ¹ (also MCL)	Sampling performed for likely chemicals on a screening basis and then confirmation sampling/monitoring for chemicals of concern.
Th-230 and Th-232	60 pCi/l	Applicable	Statewide standard ¹	
Gross Alpha	15 pCi/l ²	Applicable	Statewide standard ¹ (also MCL)	
Beta/Photon Emitters	4 mrem/year ³	Applicable	Statewide standard ¹ (also MCL)	
Total Uranium	30 µg/l	R&A	5 CCR 1003-1 (MCL) MCLG = Zero	
Trichloroethylene	0.005 mg/l	Applicable	Statewide standard ¹ (also MCL)	
Tetrachloroethylene	0.005 mg/l	Applicable	Statewide standard ¹ (also MCL)	
Arsenic	0.01 mg/l	Applicable	MCL MCLG = Zero	

¹ 5 CCR 1002-41 Section 3.11.0. This is the GW standard 5 CCR 1002-41; primary drinking water standard is found at 5 CCR 1003-1.

² Excludes contributions from radon and uranium

³ Applicable only to man-made radionuclides

TABLE I-6
 Chemical-Specific State and Federal ARARs for Groundwater
Compliance Evaluations On-site Alternatives

Contaminant	Standard	Applicable or R&A	Comments	Method of Attainment
Barium	2.0 mg/l	Applicable	MCL, Statewide standard	
Cadmium	0.005 mg/l	Applicable	Human health standard ¹ , MCL	
Cyanide (Free)	0.20 mg/l	R&A	Human health standard ¹ , MCL	
Chromium	0.1 MG/L	Applicable	MCL, Statewide standard	
Fluoride	2.0 mg/l	R&A	Agricultural standard ¹	
Lead	0.015 mg/l	Applicable	Statewide Standard, Action Level	
Mercury	0.002 mg/l	Applicable	MCL, Statewide standard	
Nitrate	10.0 mg/l	R&A	MCL	
Nitrite	1.0 mg/l	R&A	Human health standard ¹ , MCL	
Selenium	0.05 mg/l	Applicable	MCL, Statewide standard	
Silver	0.05 mg/l	Applicable	Statewide standard	
Chloride	250 mg/l	R&A	Secondary drinking water ¹	
Copper	0.2 mg/l	R&A	Agricultural standard ¹	
Iron	0.3 mg/l	R&A	Secondary drinking water ¹	
Manganese	0.05 mg/l	R&A	Secondary drinking water ¹	
Sulfate	250 mg/l	R&A	Secondary drinking water ¹	
Zinc	2.0 mg/l	Applicable	Agricultural standard ¹	
Aluminum	5.0 mg/l	R&A	Agricultural standard ¹	
Beryllium	0.004 mg/l	R&A	Agricultural standard ¹ , MCL	
Cobalt	0.05 mg/l	R&A	Agricultural standard ¹	
Molybdenum	0.10 mg/l	R&A	40 CFR 192 standard	
Nickel	0.20 mg/l	R&A	Agricultural standard ¹	
Vanadium	0.1 mg/l	R&A	Agricultural standard ¹	

TABLE I-7
Chemical-Specific State and Federal Applicable or Relevant and Appropriate Requirements
Compliance Evaluation for Off-Site Alternatives

Contaminant	Standard	Citation	Applicable or Relevant and Appropriate or TBC	Comments	Media	Method of Attainment
Radium-226	Less than or equal to 5 pCi/g above background within 15 cm of the surface averaged over 100 square meter area. Less than or equal to 15 pCi/g above background within subsequent 15 cm layers of soil averaged over 100 square meter area.	40 CFR 192.12(a) 6 CR 1007-1, Part 18, Criterion 18	Relevant and Appropriate	Standard for clean-up of land at inactive uranium processing sites.	Soils	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.
Thorium-230	Clean-up level calculated using initial Ra-226 concentration and assuming period for Th-230 ingrowth; depth of backfill may be considered.	Generic protocol for excavation of Th-230, DOE, January 15, 1989	TBC	DOE standard modified by EPA's January 16, 1992 letter. To be considered for excavation of clay liner under the waste pile.	Soils	Confirmatory sampling will be performed to meet standard from Federal Register Vol 64 No. 264 page 68396 Table 3
Radium- 226	7.0E-01 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.
Radium- 228	4.7E-00 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.
Uranium- 234	1.3E-01 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.
Uranium- 234	1.4E-01 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.
Thorium- 230	1.8E-00 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.

TABLE I-7
Chemical-Specific State and Federal Applicable or Relevant and Appropriate Requirements
Compliance Evaluation for Off-Site Alternatives

Contaminant	Standard	Citation	Applicable or Relevant and Appropriate or TBC	Comments	Media	Method of Attainment
Thorium- 232	1.1E-00 pCi/g	Federal Register Vol 64 No. 264 page 68396 Table 3	TBC	Establishes individual radionuclide concentrations deemed compliant with 25 mrem/y unrestricted release dose limit in 10 CFR 20.1402. These interim screening values may be relevant if they are used as the soil clean-up criteria	Soils	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.
Radon Decay Products	Objectives of remedial action to achieve an annual average not to exceed 0.02 WL. In any case, not to exceed 0.03 WL.	40 CFR 192.12(b)(1)	Relevant and Appropriate	Standard for clean-up of inactive uranium processing sites. Relevant and appropriate if occupied or habitable buildings planned for site.	Air	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.
Radiation	Gamma radiation shall not exceed background levels by more than 20 microR per hour.	40 CFR 192.12(b)(2)	Relevant and Appropriate	Standard for clean-up of inactive uranium processing sites. Relevant and appropriate if occupied or habitable buildings planned for site.	Soils	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.
Radiation	Standards for protection against radiation.	10 CFR 20 6 CCR 1007-1 Part 4	Relevant and applicable	Substantive cleanup portions are relevant and appropriate.	All Media	Requirements of this standard will be met on-site for each of the off-site RA alternatives including meeting permissible doses, levels, and concentration standards through the use of PPE, environmental monitoring, and dosimetry programs.
Radiation Dose	25 mrem/y TEDE above background plus ALARA	10 CFR 20.1402; 6 CCR 1007-1, 4.61.2	Relevant and Appropriate	For unrestricted use cleanup.	All	Sampling to meet DCGLs
Radiation Dose	25 mrem/y TEDE above background plus ALARA, plus 100 mrem/y TEDE if institutional controls fail.	10 CFR 20.1403; 6 CCR 1007-1, 4.61.3	Relevant and Appropriate	For restricted use cleanup.	All	Sampling and Institutional controls
Radiation Dose	15 mrem/yr TEDE above background	EPA Memo, OSWER Directive 9200.4-31P, Radiation Risk Assessment at CERCLA Sites	TBC	For CERCLA compliant cleanup	All	Sampling to meet DCGLs
Radiation Dose	10 ⁻⁴ - 10 ⁻⁶ cancer risk	40 CFR 430(e)(2)	Applicable	For CERCLA compliant cleanup	All	Sampling to meet DCGLs and institutional controls, if necessary.
Radiation Dose	ICRP Publication 30 provides recommended Annual Limits on Intake and Derived Air Concentrations designed to limit the intake of radioactive materials by workers.	ICRP 30	TBC	To the extent that workers may have radioactive material intakes due to the presence of site wastes, this international guidance is to be considered.	All Media	The appropriate selection of respiratory protection procedures will meet the criteria set forth in this guidance for all of the off-site RA alternatives.
Radiation Dose	Federal Guidance Report No. 11 provides Annual Limits on Intake and Derived Air Concentrations to be implemented by federal agencies to limit the intake of radioactive materials by workers.	Federal Guidance Report No. 11	TBC	To the extent that workers may have radioactive material intakes due to the presence of site wastes, this Federal guidance is to be considered.	All Media	The appropriate selection of respiratory protection procedures will meet the criteria set forth in this guidance for all of the off-site RA alternatives.

TABLE I-7
Chemical-Specific State and Federal Applicable or Relevant and Appropriate Requirements
Compliance Evaluation for Off-Site Alternatives

Contaminant	Standard	Citation	Applicable or Relevant and Appropriate or TBC	Comments	Media	Method of Attainment
Air Pollutants	National Emission Standards for Hazardous Air Pollutants (NESHAP)	40 CFR 61	Relevant and Appropriate	To the extent the remedial activities involve the emission of regulated constituents and activities similar to those addressed in these regulations, they may be relevant and appropriate.	Air	Perimeter air monitoring (including radionuclides) and dust control measures as set forth in Section 4.1.3 will be a component of all of the off-site RA alternatives to ensure that the potentially relevant and appropriate NESHAPs are being met.
Arsenic	Less than 0.39 mg/kg	Colorado Department of Public Health and Environment, Hazardous Materials and Waste Division – Proposed Soil Remediation Objectives Policy Document; Table 1 Soil Cleanup Values, updated draft values	TBC	Represents most conservative state cleanup standard for Residential/Unrestricted Landuse	Soil	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.
Lead (inorganic)	Less than 400 mg/kg	Colorado Department of Public Health and Environment, Hazardous Materials and Waste Division – Proposed Soil Remediation Objectives Policy Document; Table 1 Soil Cleanup Values, updated draft values	TBC	Represents most conservative state cleanup standard for Residential/Unrestricted Landuse	Soil	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.
Mercury (compounds) Mercury (elemental)	Less than 23 mg/kg 1.1 mg/kg	Colorado Department of Public Health and Environment, Hazardous Materials and Waste Division – Proposed Soil Remediation Objectives Policy Document; Table 1 Soil Cleanup Values, updated draft values	TBC	Represents most conservative state cleanup standard for Residential/Unrestricted Landuse	Soil	Confirmatory sampling will be performed to ensure that this standard is attained on-site for each off-site RA alternative.

TABLE I-8
 Location Specific State and Federal Applicable or Relevant and Appropriate Requirements
No Action Alternative

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
Endangered Species Habitat	U.S. Fish and Wildlife Service – Mountain – Prairie Region - Colorado	Lists endangered species in Colorado	Applicable	None found on-site.	All
100 Year Floodplain	City of Golden Colorado Municipal Code – Title 19	Requirements for obtaining permits associated with specific activities occurring in floodplain hazard areas	Relevant and Appropriate.	Affected soils left onsite may lie in floodplain of Clear Creek. Substantive requirements only.	Soils/ Water
Sites of Historical Importance	Colorado Office of Archaeology and Historic Preservation – Golden Colorado	Lists Registered Historical Sites in Golden Colorado	Relevant and Appropriate	Two state historical sites are located near the Colorado School of Mines but not on the actual property.	All

TABLE I-9
Location-Specific Applicable or Relevant and Appropriate Requirements
Off-Site Remedial Action Alternatives

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media
Endangered Species Habitat	U.S. Fish and Wildlife Service – Mountain – Prairie Region - Colorado	Lists endangered species in Colorado.	Applicable	None found on-site	All
100 Year Floodplain	City of Golden Colorado Municipal Code – Title 19	Requirements for obtaining permits associated with specific activities occurring in floodplain hazard areas.	Relevant and Appropriate.	Permits may need to be obtained for offsite removal of materials residing in Clear Creek floodplain. Portion of site is located in the 100 year floodplain of Clear Creek. Substantive requirements only.	Soils/ Water
Sites of Historical Importance	Colorado Office of Archaeology and Historic Preservation – Golden Colorado	Lists Registered Historical Sites in Golden Colorado.	Relevant and Appropriate	Two state historical sites are located near the Colorado School of Mines but not on the actual property, therefore RA will not occur on historical site.	All

TABLE I-10
Location-Specific State and Federal Applicable or Relevant and Appropriate Requirements
Compliance Evaluation for Off-Site Alternatives

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media	Method of Attainment
Endangered Species Habitat	U.S. Fish and Wildlife Service – Mountain –Prairie Region - Colorado	Lists endangered species in Colorado	Applicable		All	Perform study to determine whether endangered species habitat exists onsite. None found on-site.

TABLE I-10
 Location-Specific State and Federal Applicable or Relevant and Appropriate Requirements
 Compliance Evaluation for Off-Site Alternatives

Standard Requirement, Criteria or Limitation	Citation	Description or Requirements	Applicable or Relevant and Appropriate	Comments	Media	Method of Attainment
100 Year Floodplain	City of Golden Colorado Municipal Code – Title 19	Requirements for obtaining permits associated with specific activities occurring in floodplain hazard areas	Relevant and Appropriate.	Permits may need to be obtained for offsite removal of materials residing in Clear Creek floodplain. Portion of site is located in the 100 year floodplain of Clear Creek.	Soils/ Water	Maintain site controls in accordance with specified regulations, substantive requirements only. Off-site facilities are not located in Golden.
Sites of Historical Importance	Colorado Office of Archaeology and Historic Preservation – Golden Colorado	Lists Registered Historical Sites in Golden Colorado	Relevant and Appropriate	Two state historical sites are located near the Colorado School of Mines but not on the actual property, therefore RA will not occur on Historical Site		No historical sites are located on off-site facility being considered.