

Appendix D
General Discussion of
Applicable or Relevant and Appropriate Requirements
At Superfund Mining Sites

Appendix D: General Discussion of Applicable or Relevant and Appropriate Requirements at Superfund Mining Sites

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Appendix D

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D.1 INTRODUCTION AND ORGANIZATION OF THE APPENDIX

Throughout any remedial action at an abandoned mining and mineral processing site, the site manager must consider compliance with applicable or relevant and appropriate requirements (ARARs in CERCLA jargon). ARARs are state, local, and federal standards that are directly applicable or may be considered relevant and appropriate to the circumstances on the site. These standards are an inherent part of the scoping process, but will affect the long-term remediation, especially in the setting of cleanup standards as well as in meeting other land use regulations (e.g., regulation pertaining to wetlands and water resources, floodplains, endangered and threatened species/critical habitats, coastal zones, cultural resources, wild and scenic rivers, wilderness areas, and significant agricultural lands). The site manager must be aware of all potential ARARs and constantly considering other federal state, and local laws, regulations, and policies that will impact the actions at the site.

This appendix is organized in a statute-by-statute format providing information on the ARARs that have typically been selected at Superfund mining sites. It should be noted that the ARARs presented in this section may or may not apply on a site-specific basis and there may be additional laws and regulations that need to be considered on an individual site basis. Users of this handbook are strongly encouraged to refer to the pertinent CERCLA ARARs guidance documents for additional information and guidance. The structure of each section may vary according to the nature of the regulatory program under each statute, but the section will generally provide the following information:

- The nature and structure of the regulatory program and circumstances/conditions/actions that trigger the regulatory requirements;
- The potential applicability or relevance and appropriateness of a requirement for mining sites;
- A summary of the standards promulgated under the regulatory program; and
- Examples of how the statute/regulation may be an ARAR at a Superfund mining site.

Several types of ARARs are not included in this appendix because, although they may be significant at some sites, they do not appear to be issues at the majority of mine waste sites. For example, PCBs may be found at some historic mine sites, but are not a threat at most sites. In addition, EPA has published other guidance that specifically addresses these types of ARAR issues.

D.2 RESOURCE CONSERVATION AND RECOVERY ACT

Many Superfund mining site managers will be required to analyze whether the requirements of the Resource Conservation and Recovery Act (RCRA) are ARARs. RCRA ARAR determinations require knowledge of the nature of the wastes found at these sites and the types of actions that have been or will be taken at the sites (e.g., capping, removal, treatment). RCRA Subtitle D (which regulates "solid wastes" that are not hazardous wastes under RCRA - see definitions below) and Subtitle C (which regulates hazardous waste) are the RCRA requirements that are most likely to be applicable or relevant and appropriate.

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D.2.1 Prerequisites for Applicability of RCRA Requirements. Either Subtitle C or Subtitle D of RCRA will be *applicable* if:

- The wastes at the site are solid wastes; and
- The wastes will be actively managed.¹

If these two conditions are met, the wastes are subject to *at least* RCRA Subtitle D. Subtitle C (in lieu of Subtitle D) will be applicable if these solid wastes are "*hazardous wastes*" and they are actively managed. **The determination of whether a solid waste is hazardous is key to determining which RCRA requirements are applicable.** Where RCRA Subtitle D or C standards are not applicable, they may be relevant and appropriate. This determination is based on the nature of the wastes, a comparison of the objectives of the Superfund action, and the circumstances and purposes of the RCRA requirements.

Definitions of RCRA "Solid" and "Hazardous" Waste

Solid Waste

In 40 CFR 261.2 solid waste is defined as any discarded (i.e., abandoned, recycled, or inherently wastelike) material. The regulations also provide that certain materials are excluded from the definition of solid waste. The excluded materials that may be present at Superfund mining sites include: source, special nuclear, or byproduct material (as defined by the Atomic Energy Act of 1954) and materials subjected to in-situ mining techniques that are not removed from the ground as part of the extraction process (40 CFR 261.4). No RCRA regulations (i.e., those of either Subtitle C or D) will be applicable or relevant and appropriate to these excluded wastes.

The definition of solid waste includes wastes from the extraction, beneficiation, or processing of ores and minerals. These wastes will be subject to RCRA Subtitle D, unless they are subject to regulation under RCRA Subtitle C. (See Highlight D-1 for more information.)

Hazardous Waste

RCRA hazardous wastes are regulated by Subtitle C. A RCRA solid waste is hazardous if it:

- Is not excluded from regulation under Subtitle C; and
- Exhibits the characteristic of ignitability, corrosivity, reactivity, or toxicity; or
- Is listed in 40 CFR 261 Subpart D; or
- Is a mixture of a solid waste and a listed hazardous waste or a mixture of a solid waste and a characteristic waste that exhibits the characteristic;² or
- Is a solid waste generated during the treatment, storage, or disposal of a *listed* hazardous waste, or is derived from a characteristic waste *and* exhibits a characteristic; or
- Is a listed or characteristic waste contained in a non-solid waste matrix.

¹ "Active management" includes generation, transport, recycling, treatment, storage, and disposal. See below for more detail.

² EPA has proposed revisions to the "mixture" and "derived-from" rules. EPA will publish a fact sheet discussing these revisions once they are promulgated.

Several types of mining wastes are excluded from regulation as hazardous wastes under the mining waste ("Bevill") exclusion (see Highlight D-1 for details). Based on a 1986 Report to Congress, EPA determined that all solid wastes from the *extraction* or *beneficiation* of ores and minerals are covered by the exclusion, and therefore are regulated only by Subtitle D, and *never* by Subtitle C. Most mineral processing wastes were removed from the exclusion by two rulemakings (54 FR 36592 and 55 FR 2322), and these wastes are now potentially subject to Subtitle C (see Highlight D-2 for definitions of "extraction," "beneficiation," and "mineral processing"). Only 20 mineral processing wastes are now covered by the Bevill exclusion. On May 20, 1991, EPA made a final determination not to regulate these 20 wastes. These wastes are not subject to Subtitle C, but they are subject to Subtitle D.

Therefore, mineral processing wastes not included in the 20 under study are *not* covered by the Bevill exclusion and are subject to Subtitle C regulation, if they meet one of the criteria for being hazardous discussed above. The criteria most commonly found in mineral processing wastes that could lead to a determination that they are hazardous are the characteristics of toxicity and corrosivity. Mineral processing wastes will seldom, if ever, be ignitable or reactive.

One important remaining issue is whether treatment residuals from excluded mining and mineral processing wastes are themselves excluded under Bevill, or whether they are subject to Subtitle C regulation if they exhibit a characteristic. This issue has not been explicitly addressed and will require consultation with appropriate legal staff.

A mineral processing waste may also be considered hazardous if it is a listed RCRA hazardous waste. There are six listed mineral processing wastes. However, because five of these listings were remanded, only the listing for K088 (spent potliners from primary aluminum reduction) may be enforceable.³

**Highlight D-1:
The Mining Waste ("Bevill") Exclusion**

Under 40 CFR 261.4(b)(7), "solid waste from the extraction, beneficiation and processing of ores and minerals (including coal), including phosphate rock and overburden from the mining of uranium ore" is excluded from the definition of hazardous waste, and therefore is not subject to Subtitle C requirements. These wastes are excluded because implementation of Subtitle C requirements would be unnecessary, technically infeasible, or economically impracticable due to the types of waste and conditions commonly found at mining sites. These types and conditions include high volumes of waste with low toxicity and highly mobile constituents, large areas of contamination, and the arid climate in which many mining sites are located.

Although most mining wastes are still excluded from regulation as hazardous waste (e.g., all extraction and beneficiation wastes), revisions to EPA's interpretation of the Bevill exclusion have resulted in the removal of all but 20 mineral processing wastes from the exclusion. The wastes removed from the exclusion are now subject to regulation under Subtitle C. For a complete discussion of the mining waste exclusion and the wastes covered, see *Superfund Guide to RCRA Management Requirements for Mineral Processing Wastes*, 9347.3-12aFS, August 1991.

³ The five other mineral processing wastes (K064, K065, K066, K090, and K091) were listed following their removal from the mining waste exclusion, but these listings were remanded by a July 1990 Federal Court of Appeals ruling (*AMC v. EPA*, 31 *ERC* 1935). Thus, the listings for these wastes may not be currently enforceable. These five wastes are still subject to Subtitle C requirements if they exhibit a characteristic.

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**Highlight D-2:
Definitions of Extraction, Beneficiation, and Mineral Processing**

Extraction is the process of mining and removing ores and minerals from the ground.

Beneficiation is defined as crushing; grinding; washing; dissolution; crystallization; filtration; sorting; sizing; drying; sintering; pelletizing; briquetting; calcining to remove water and/or carbon dioxide; roasting, autoclaving, and/or chlorination in preparation for leaching (except where the roasting (and/or autoclaving and/or chlorination)/leaching sequence produces a final or intermediate product that does not undergo further beneficiation or processing); gravity concentration; magnetic separation; electrostatic separation; floatation; ion exchange; solvent extraction; electrowinning; precipitation; amalgamation; and heap, dump, vat, tank, and *in situ* leaching. (40 CFR 261.4(b)(7))

Mineral processing operations are operations that:

- Follow beneficiation of an ore or mineral (if applicable);
- Serve to remove the desired product from an ore or mineral, or enhance the characteristics of ores or minerals or beneficiated ores or minerals;
- Use mineral-value feedstocks that are comprised of less than 50 percent scrap materials;
- Produce either a final mineral product or an intermediate to the final product; *and*
- Do not combine the product with another material that is not an ore or mineral, or beneficiated ore or mineral (e.g., alloying), do not involve fabrication or other manufacturing activities, and do not involve further processing of a marketable product of mineral processing. (A listing of criteria is provided in the preamble to the September 1, 1989 rulemaking, 54 FR 36592.)

Hazardous mineral processing wastes are currently subject to all Subtitle C requirements *except* the land disposal restrictions (LDRs), because EPA has not yet set treatment standards for these wastes. Once the Agency sets treatment standards, these wastes will be subject to the LDRs.

Active Management

For RCRA regulations to be applicable requirements, a solid or hazardous waste must be actively managed. Active management includes generation, transport, recycling, treatment, storage, and disposal. Definitions of these activities are provided below and in the RCRA regulations.

Generation is defined as the act or process of producing hazardous waste or of causing a hazardous waste to become subject to regulation.

Transportation is defined as the movement of hazardous waste by air, rail, highway, or water.

Recycle is defined as the use, reuse, or reclamation of a material.

Treatment is defined as any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

Storage is defined as the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere.

Disposal is defined as the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters. (40 CFR 261.10)

In addition, several requirements (e.g., the land disposal restrictions, closure requirements) are triggered by the land disposal or placement of the wastes. EPA defines placement as actions that occur when wastes are:

- Consolidated from different areas of contamination (AOCs) into a single AOC;
- Moved outside of an AOC and returned to the same or a different AOC; or
- Excavated from an AOC, placed in a separate unit, such as an incinerator or tank that is within the AOC, and redeposited into the same AOC.

Equally important, EPA has determined that placement does not occur when wastes are:

- Treated in-situ, including in-situ stabilization and in-situ land treatment (as long as the treatment is not preceded or followed by movement of wastes that constitutes placement);
- Capped in place, including grading prior to capping;
- Consolidated within the AOC; and
- Processed within the AOC (but not in a separate unit, such as a tank) to improve its structural stability for closure or for movement of equipment over the area.

RCRA Subtitle C is not automatically applicable to mining wastes that are left in place by response activities (e.g., wastes in slag piles, impoundments) and that are not managed. However, if the wastes prove to be hazardous, it often is an indication that some type of active management will be necessary as part of the remedy.

D.2.2 Relevance and Appropriateness of RCRA Requirements.

- RCRA Subtitle C requirements will generally not be relevant and appropriate for those wastes for which EPA has specifically determined that Subtitle C regulation is not warranted (i.e., wastes covered by the Bevill exclusion). As noted earlier, most mineral processing wastes are subject to RCRA Subtitle C. However, the NCP provides that if site circumstances differ significantly from those that caused EPA to decide that Subtitle C regulation is not warranted, Subtitle C may be relevant and appropriate. (See 40 CFR 300). (The circumstances that caused EPA to decide that Subtitle C regulation is not warranted for wastes covered by the Bevill exclusion include: the diversity from one mining site to another; the large quantities of waste found at individual mining sites, and the high aggregate waste quantities for all mining sites; the relatively low toxicity of mining wastes; and the high costs associated with regulating mining wastes under Subtitle C.)
- The NCP states that circumstances in which Subtitle C may be relevant and appropriate include sites containing low volumes of waste or wastes with high toxicity or highly mobile constituents, location of the site in an area of heavy precipitation (which could increase the leaching potential), or relatively small areas

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of contamination at the site. (See the preamble to the National Contingency Plan, 55 FR 8743 and 8763 and the *Superfund Guide to RCRA Management Requirements for Mineral Processing Wastes*, OSWER Publication No. 9347.3-12aFS, August 1991 for more information on the relevance and appropriateness of RCRA Subtitle C requirements.)

- If Subtitle D requirements are not applicable to the action, it is unlikely that they will be relevant and appropriate.

Even when not all parts of a Subtitle C requirement are ARARs, certain parts of the requirement may be evaluated to be relevant and appropriate. Where a site manager determines that RCRA requirements or parts of requirements are ARARs for a site, remedial actions must comply with these standards. RCRA closure requirements are often likely to be ARARs at mining sites. In particular, where soil cleanup is part of the remedy, movement of the soil containing RCRA hazardous waste across a unit boundary will make the closure requirements for either clean closure or closure in place applicable or relevant and appropriate to the unit into which the waste is placed. Where closure requirements are determined not to be applicable, hybrid closure (i.e., a combination of landfill and clean closure options) may be relevant and appropriate for these sites. Hybrid closure is particularly appropriate where contamination remaining at the site has low mobility and low toxicity. These conditions are often found at sites where mining waste is present.

[For a complete discussion on determining if RCRA requirements are ARARs, see the *CERCLA Compliance with Other Laws Manual, Part I and II, Interim Final*, (August 1988 and August 1989, respectively).]

D.2.3 State RCRA Requirements as ARARS. The RCRA Subtitle D program is a wholly state-managed program.⁴ In most states (i.e., authorized states), the Subtitle C program is also administered by the state in lieu of federal regulation. That is, state authorities are used to issue the permits and enforce regulations for hazardous waste treatment, storage, and disposal (TSD) facilities. Until a state receives authorization, RCRA regulations are administered and enforced under federal jurisdiction. Site managers should determine if the state in which the mining site is located has an authorized RCRA program, and if state requirements are ARARs.

To be authorized under Subtitle C, state programs must be equivalent to federal programs, consistent with federal and other approved state programs, and must provide adequate enforcement of compliance with federal regulations. (See 40 CFR Part 271.) state programs may always contain elements that are more stringent than federal regulations. When federal regulations are promulgated under RCRA, there are two types of circumstances that may arise that are relevant to evaluating whether the requirements are ARARs. For regulations promulgated under authorities prior to the Hazardous and Solid Waste Amendments of 1984 (HSWA), the regulations are not enforceable as federal law in states with authorized RCRA programs until the state program adopts those regulations (a process that the state generally must do within two years, although states may do so sooner or may adopt the requirement under state law or regulations prior to official authorization).⁵ Examples of these include wastes

⁴ EPA has promulgated criteria for design and operation of Subtitle D landfills. Additional Subtitle D requirements may also be promulgated; however, under RCRA reauthorization, States may acquire the authority to issue their own criteria.

⁵ Many States incorporate Federal RCRA changes by referencing Federal regulations in State regulations and then submitting a formal authorization request.

that were excluded originally under the Bevill exclusion, but since were studied by Reports to Congress. For regulations promulgated under HSWA authorities, EPA enforces the regulations in all states. If an authorized state adopts these regulations, the state assumes enforcement authority.

In determining if state RCRA requirements are ARARs, site managers do not need to determine if the state regulations are promulgated, enforceable, or more stringent than federal regulations (the normal criteria for evaluating whether state requirements are ARARs - see *CERCLA Compliance with Other Laws Manual*, Part II, Chapter 7). If the state has an authorized RCRA Subtitle C program, its requirements are ARARs because of the process states must go through to become authorized, which evaluates these criteria.

D.2.4 RCRA Standards. Once a site manager has determined that a site meets the conditions discussed above, the following standards should be examined as potential ARARs.

Subtitle D Standards

The Subtitle D program regulates the management of nonhazardous solid waste and is administered by the states. Under RCRA, states must develop solid waste management plans that prohibit waste disposal in open dumps and that provide for the closing or upgrading of all existing dumps. These plans must be "consistent with the minimum requirements" for approved state programs. In 40 CFR Part 257, EPA establishes criteria for determining which solid waste disposal facilities and practices pose a potential threat to human health and the environment. Currently promulgated criteria include restrictions on contamination of surface and groundwater, releases to air, and safety considerations. Criteria for municipal solid waste landfills can be found at 40 CFR Part 258. This section addresses location restrictions, operating criteria, design criteria, groundwater monitoring and corrective actions, closure and post-closure care, and financial responsibility criteria at municipal solid waste landfills receiving waste after October 9, 1991. It should be noted that most states have primacy for solid waste programs. These programs may differ and should be reviewed to determine the applicability to mine waste (e.g., Utah solid waste regulations and ground-water protection regulations as applied to mine waste).

Subtitle C Standards

The Subtitle C program regulates the generation, transportation, treatment, storage, and disposal of RCRA hazardous waste. The following are the primary types of RCRA requirements that may be ARARs for mining sites, including the basis for the requirement and specific standards that must be met.

40 CFR Part 264 Subpart F: Groundwater Protection Requirements

Where aquifers are potentially contaminated by mining sites, 40 CFR Part 264 Subpart F requirements could be ARARs. These may include:

- The Regional Administrator must set groundwater protection standards and concentration limits for Appendix VIII and IX hazardous constituents once they are detected in the groundwater at a hazardous waste disposal facility.
- Concentration limits are based on:
 - The background level of each constituent in the groundwater at the time the limit is specified in the permit;
 - Maximum concentration limits for 14 specified hazardous constituents if background levels are below these standards; or
 - An "alternate concentration limit" that can be set by the Regional Administrator if it is determined that a less stringent standard will protect public health and the environment.

40 CFR Part 264 Subpart J: Tank Design and Operating Requirements

RCRA defines a tank as "a stationary device, designed to contain an accumulation of hazardous waste which is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support." This definition can include a wide variety of structures that can be used to store mining wastes. Specific requirements for tanks include:

- The owner or operator must obtain a written assessment of the structural integrity and acceptability of existing tanks systems and designs for new tank systems, reviewed by an independent, qualified, registered professional engineer.
- All new tank systems must be enclosed in a full secondary containment system that encompasses the body of the tank and all ancillary equipment and can prevent any migration of wastes into the soil. This secondary containment system must be equipped with a leak detection system capable of detecting releases within 24 hours of release.
- Facilities with existing tank systems must install secondary containment systems within specified times based on age and waste type.
- Owners or operators may seek from the Regional Administrator both technology-based and risk-based variances from secondary containment requirements, based on either: (1) a demonstration of no migration of hazardous waste constituents beyond the zone of engineering control; or (2) a demonstration of no substantial present or potential hazard to human health and the environment.
- Annual leak tests must be conducted on non-enterable underground tanks until such time as an adequate secondary containment system could be installed. Either an annual leak test or other type of adequate inspection must also be conducted on enterable types of tanks that do not have secondary containment.

- Inspection requirements have been upgraded to include regular inspection of cathodic protection systems and daily inspection of entire tank systems for leaks, cracks, corrosion, and erosion that may lead to releases.
- The owner or operator must remove a tank from which there has been a leak, spill or which is judged unfit to use. The owner or operator must then determine the cause of the problem, remove all waste from the tank, contain visible releases, notify appropriate parties as required by other laws (i.e., CERCLA reportable quantity requirements), and certify the integrity of the tank before further use.
- Closure requirements include removing waste, residues, and contaminated liners, disposing of them as hazardous waste, and conforming with Subparts G and H (including post-closure of tank if necessary).
- The owner or operator must also comply with general operating requirements and with special requirements for ignitable, reactive, or incompatible wastes.

40 CFR Part 264 Subpart K: Surface Impoundment Design and Operating Requirements

Impoundments are a common type of unit into which mining wastes are disposed during active operations. When included as part of a Superfund site, the following requirements may be ARARs:

- Each new surface impoundment, each replacement of an existing surface impoundment unit, and each lateral expansion of an existing surface impoundment unit must have two or more liners and a leachate collection system between the liners. [The Regional Administrator may approve an alternative liner design.]
- Owners or operators must comply with groundwater monitoring requirements under 40 CFR 264 Subpart F, including corrective action, if necessary.
- Impoundments must be removed from service if the liquid level suddenly drops or the dike leaks.
- A surface impoundment may be closed by removing and decontaminating all hazardous wastes, residues, liners, and subsoils. If all hazardous wastes cannot be removed or decontaminated, the facility must be capped and post-closure care provided. An owner or operator may also close the impoundment as a disposal facility (i.e., solidify all remaining wastes, cap the facility, and comply with Part 264 post-closure requirements).

40 CFR Part 264 Subpart L: Waste Pile Design and Operating Requirements

Waste piles are a common type of unit into which mining wastes are disposed during active operations. A pile is defined as "any non-containerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage." When included as part of a Superfund site, the following requirements may be ARARs:

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Waste pile owners and operators must:

- Install a liner under each pile that prevents any migration of waste out of the pile into the adjacent subsurface soil or ground or surface water at any time during the active life of the pile.
- Provide a leachate collection and removal system.
- Provide a run-on control system and a run-off management system.
- Comply with Subpart F groundwater protection requirements.
- Inspect liners during construction and inspect the wastes at least weekly thereafter.
- Close the facility by removing or decontaminating all wastes, residues, and contaminated subsoils (or comply with the closure and post-closure requirements applicable to landfills if removal or decontamination of all contaminated subsoils proves impossible).

40 CFR Part 264 Subpart M: Land Treatment Requirements

Owners or operators of facilities that dispose of hazardous waste by land application must:

- Establish a treatment program that demonstrates to the Regional Administrator's satisfaction that all hazardous constituents placed in the treatment zone will be degraded, transformed, or immobilized within that zone.
- Conduct a monitoring program to detect contaminants moving in the unsaturated zone (the subsurface above the water table).
- Continue all operations during closure and post-closure to maximize the degradation, transformation, or immobilization of hazardous constituents.

40 CFR Part 264 Subpart N: Landfills

A landfill is defined as "a disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, or a cave." Landfills, which are often used at Superfund sites for hazardous waste disposal, must meet the following requirements:

- New landfills, new landfills at an existing facility, replacements of existing landfill units, and lateral expansions of existing landfill units must have two or more liners and a leachate collection system above and between the liners.
- A landfill must have run-on/run-off control systems and control wind dispersal of particulates as necessary.
- A landfill must comply with Subpart F groundwater protection requirements.
- Owners or operators of landfills must close each cell of the landfill with a final cover and institute specified post-closure monitoring and maintenance programs.
- Disposal of bulk or non-containerized liquid hazardous waste and non-hazardous liquids in a landfill is prohibited.

40 CFR Part 264 Subpart X: Standards for Miscellaneous Treatment Units

A miscellaneous unit is defined as a "hazardous waste management unit where hazardous waste is treated, stored, or disposed of and that is not a container, tank, surface impoundment, pile, land treatment unit, landfill, incinerator, boiler, industrial furnace, underground injection well with appropriate technical standards under 40 CFR part 146, containment building, corrective action management unit, or unit eligible for a research, development, and demonstration permit under §270.65." A miscellaneous unit must be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment. Permits for these units will contain design and operating requirements, detection and monitoring requirements, and requirements for releases of hazardous waste or hazardous constituents from the unit. Disposal units must be maintained during post-closure to ensure protection of human health and the environment.

40 CFR Part 268: Land Disposal Restrictions (LDRs)

These requirements regulate placement of hazardous waste in landfills, surface impoundments, waste piles, injection wells, land treatment facilities, salt dome formations, salt bed formations, or underground mines or caves. At this time, no mining wastes are subject to the LDRs. The LDRs will be applicable for wastes removed from the mining waste exclusion, once the Agency sets treatment standards for these wastes. For a detailed discussion of the LDRs at CERCLA sites, see *Superfund Compliance with the LDRs*, OSWER Directive No. 9347.3, the LDR Guide fact sheet series (OSWER #9347.3-01FS - 9347.3-08FS), and *Superfund Guide to RCRA Management Requirements for Mineral Processing Wastes*, OSWER #9347.3-12FS, January 1991.

40 CFR Part 264 Subpart G, 265, 270: Closure Requirements

See Highlight D-5 and *RCRA ARARs: Focus on Closure Requirements*, OSWER #9234.2-04FS, October 1989.

**Highlight D-5:
RCRA as ARARs: Two Example Sites**

A former aluminum processing facility site listed on the NPL contains areas of contamination resulting from treatment, storage, and disposal at the site, including a landfill near the aluminum reduction building. Significant waste types in the landfill include metallic wastes and spent cathode waste materials containing arsenic. Wastes containing arsenic have been found to exhibit the toxicity characteristic, and listed waste K088 (spent potliners from primary aluminum reduction) has been discovered at the site. Because these processing wastes are not covered by the mining waste exclusion, RCRA Subtitle C requirements are applicable for this site. The RCRA LDRs do not apply to these wastes, but other Subtitle C requirements (e.g., disposal in a regulated Subtitle C unit) will apply. In addition, other RCRA requirements, such as design and closure requirements, may apply to actions at this site.

At the *Celtor Chemical* site in California, where sulfide ore was processed for copper, zinc, and precious metal extraction, soil and surface water are contaminated with cadmium, heavy metals, and arsenic. RCRA landfill and surface impoundment closure requirements were considered relevant and appropriate for this site. Consolidation of wastes and capping or encapsulation with long-term groundwater monitoring may have met these requirements, but it was uncertain if interceptor trenches and subsurface drains would be able to prevent all subsurface water from entering the waste management area. Because of this uncertainty, the site manager chose clean closure (i.e., removal of the wastes to site-specific action levels that were protective of human health and the environment).

D.3 STATUTES AND REGULATIONS GOVERNING RADIOACTIVE WASTES⁶

D.3.1 Regulatory Program Structure. Radioactive wastes are regulated primarily by three agencies: EPA, the Nuclear Regulatory Commission (NRC), and the Department of Energy (DOE). When radioactive contaminants are present at a site, site managers should evaluate the standards set by the appropriate agencies as potential ARARs. **As discussed below, the requirements set by the NRC and DOE will be *applicable only at sites within their respective jurisdictions*.** (The NRC's jurisdiction includes non-DOE sites; DOE's jurisdiction includes DOE-controlled sites only.) Therefore, the requirements of these agencies may only be relevant and appropriate at most Superfund sites. EPA standards for radioactive waste will be applicable to response actions only under certain circumstances; in most cases, however, they will be only relevant and appropriate, because the standards were not intended to regulate inactive Superfund mining sites. The scope of each agency's program is described below:

- EPA's authorities to set standards for radioactive waste are based on several statutes, including the Atomic Energy Act, the Clean Air Act, the Uranium Mill Tailings Radiation Control Act, and RCRA. The requirements consist mainly of radiation standards for activities involving radioactive materials at certain types of facilities (e.g., nuclear power plants, active uranium mines, DOE facilities). The materials regulated are source, byproduct, special nuclear, and naturally occurring and accelerator-produced radioactive material (NARM), which include natural uranium and thorium, uranium and thorium mill tailings, enriched uranium, and naturally occurring radionuclides other than thorium and uranium, such as radium or wastes from mineral extraction industries. EPA's standards established under the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA) regulate management of uranium and/or thorium mill tailings at certain inactive uranium processing sites and licensed commercial uranium or thorium processing sites. In addition, RCRA hazardous waste regulations may apply to hazardous wastes containing radioactive contaminants.
- NRC licenses the possession and use of source, byproduct, and special nuclear material at certain facilities. (NARM is not regulated by NRC standards.) NRC's regulatory program controls the nuclear material operations of the licensees. In addition, 29 states have entered into agreements with the NRC, under which the states adopt the NRC's regulatory authority over source, byproduct, and small quantities of special nuclear material. These state-implemented regulations are potential ARARs.
- DOE regulates radioactive wastes through internal orders that establish requirements for radiation protection and radioactive waste management. These requirements apply only to facilities within DOE's jurisdiction, such as national laboratories and certain inactive sites associated with the Formerly Utilized Sites Remedial Action Program (FUSRAP), the Uranium Mill Tailings Remedial Action Program (UMTRAP), the Grand Junction Remedial Action Program (GJAP), and the Surplus Facilities Management Program (SFMP). Because DOE orders are developed for internal DOE use, they are not promulgated regulations and are not potential ARARs for Superfund sites, unless the site is under DOE jurisdiction.

⁶ The authority for regulating radioactive wastes is derived from several statutes and regulations. This section discusses the regulatory program formed by these laws.

However, where the DOE orders are more stringent or cover areas not addressed by existing ARARs, they may be considered for Superfund actions as "to-be-considered (TBC)" information.

In determining which of the requirements listed above are potential ARARs for a mining site with radioactive contamination, site managers should consider three factors:

- The type of wastes at the site and the operations that occurred at the site to generate the waste;
- The agency that has jurisdiction over the site; and
- The regulations that establish standards that are most protective, or (if relevant and appropriate) most appropriate given site conditions.

Highlight D-6 summarizes the potential ARARs for various radioactive waste types and agency jurisdictions.

D.3.2 EPA Program. EPA regulations for radioactive wastes include those promulgated under the Clean Air Act (40 CFR Part 61), the Safe Drinking Water Act (40 CFR Part 141), the Atomic Energy Act (40 CFR Part 190), UMTRCA (40 CFR Part 192), and in 40 CFR Part 440. These standards may be ARARs for both EPA sites as well as sites that are not under EPA jurisdiction (e.g., DOE and NRC sites).

40 CFR Part 61: National Emissions Standards for Hazardous Air Pollutants (NESHAPs)

The standards in 40 CFR Part 61, established under the authority of the Clean Air Act, regulate radionuclide emissions to the air from various sources (i.e., active underground uranium mines, certain DOE facilities, certain NRC-licensed facilities and non-DOE federal facilities, and active NRC-licensed uranium mill tailings sites). Each source is addressed in a different Subpart. As explained below, most of the Subparts will only be relevant and appropriate to the cleanup of Superfund mining sites.

Subpart B: Standards for Active Underground Uranium Mines

- An owner or operator of an underground uranium mine shall install and maintain bulkheads (air-restraining barriers) to control radon-222 and radon-222 decay products from abandoned and temporarily abandoned areas of the mine.

Because Subpart B standards regulate *active* mines, they are unlikely to be applicable to Superfund cleanup actions. However, they may be relevant and appropriate if the response occurs at an underground uranium mine, or a site where radon-222 or radon-222 decay products are present.

Subpart H: Standards for DOE Facilities

- Emissions of radionuclides to air from all facilities owned or operated by DOE (except facilities regulated under 40 CFR Part 61 Subpart B, 191, or 192) shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr.
- Doses from radon-222 and its respective decay products are excluded from these limits.

D-14 Appendix D: General Discussion of Applicable or Relevant and Appropriate Requirements at Superfund Mining Sites

Highlight D-6: Radioactive Waste Regulations as ARARs			
Waste Type	Standard	Summary	Potential Applicability (for sites under all agency jurisdictions, unless otherwise noted)
Radon	• 40 CFR Part 61 Subpart B	Clean Air Act NESHAPs; Standards for active underground uranium mines	Relevant and appropriate only
	• 40 CFR Part 192 Subparts A - E	UMTRCA standards	Relevant and appropriate only
Radionuclides	• 40 CFR Part 61 Subpart H	Clean Air Act NESHAPs; Radionuclide emission standards for DOE facilities	Applicable for DOE sites, relevant and appropriate for EPA sites
	Subpart I	Clean Air Act NESHAPs; Radionuclide emission standards for NRC and non-DOE federal facilities	Applicable for NRC-licensed sites and non-DOE federal sites, relevant and appropriate for EPA sites
	• 40 CFR Part 141	SDWA Maximum Contaminant Levels	Applicable
	• 40 CFR Part 190	Radiation dose limits for nuclear power operations	Relevant and appropriate
Uranium mill tailings	• 40 CFR Part 61 Subpart W	Clean Air Act NESHAPs; Tailings impoundments disposal standards for active NRC-licensed uranium mill tailings sites	Relevant and appropriate only
	• 40 CFR Part 192 Subparts A - C	UMTRCA standards for designated inactive uranium processing sites	Relevant and appropriate only
	Subparts D and E	UMTRCA standards for active commercial licensed uranium or thorium processing sites	Applicable for active commercial processing sites licensed by NRC or state; otherwise, relevant and appropriate
Uranium, radium, and vanadium ores	• 40 CFR Part 440 Subpart C	Radionuclide concentration limits for surface water discharges of radioactive waste	Possibly applicable, probably relevant and appropriate
Byproduct, source, and special nuclear material	• 10 CFR Parts 30, 40, & 70	NRC licensing requirements for possession and use of byproduct, source, and special nuclear material, respectively	Applicable for NRC-licensed sites, relevant and appropriate for non-licensed sites

Highlight D-6: Radioactive Waste Regulations as ARARs			
Waste Type	Standard	Summary	Potential Applicability (for sites under all agency jurisdictions, unless otherwise noted)
Ore-processing residues containing > 5 pCi/g radium	<ul style="list-style-type: none"> 40 CFR Part 192 Subparts A - E 	UMTRCA standards	Relevant and appropriate only
Mixed radioactive and hazardous waste	<ul style="list-style-type: none"> RCRA Subtitle C 	RCRA requirements for management of hazardous waste (for hazardous components of mixed waste)	Applicable
All radiation sources	<ul style="list-style-type: none"> 10 CFR Part 20 	NRC standards for protection against radiation	Applicable for NRC sites, relevant and appropriate for EPA and DOE sites
	<ul style="list-style-type: none"> 10 CFR Part 61 	NRC licensing requirements for land disposal of radioactive waste	Potentially applicable for NRC sites, relevant and appropriate for EPA sites
	<ul style="list-style-type: none"> DOE Internal orders 	DOE requirements for radiation protection and radioactive waste management	Applicable for DOE sites, To-Be-Considered for sites under other agency jurisdiction

D-16 Appendix D: General Discussion of Applicable or Relevant and Appropriate Requirements at Superfund Mining Sites

Subpart H standards are potentially applicable at sites with airborne emissions of radionuclides, where DOE is the lead agency. Where EPA is the lead agency, these requirements may be relevant and appropriate.

Subpart I: Standards for NRC-Licensed Facilities and Non-DOE Federal (e.g., DOD) Facilities

- Emissions of radionuclides including iodine to the ambient air from facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr. Emissions of iodine to the ambient air from facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 3 mrem/yr.
- Doses from radon-222 and its respective decay products are excluded from these limits.

Subpart I standards are potentially applicable at sites with NRC- (or state-) licensed or non-DOE federal sites with airborne emissions of radionuclides. Where EPA is the lead agency, these requirements may be relevant and appropriate.

Subpart W: Standards for NRC-Licensed Uranium Mill Tailings Sites During Their Operational Period

- Phased or continuous disposal is required for all new tailings impoundments at licensed uranium mill sites during their operational period.

Because they regulate *active* uranium mill tailings sites, Subpart W standards are unlikely to be applicable to Superfund cleanup actions. However, they may be relevant and appropriate if the response occurs at a uranium mill site.

40 CFR Part 141: Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs)

Maximum Contaminant Levels (MCLs) have been set for radionuclides in the form of radioactivity concentration limits for certain alpha-emitting radionuclides in drinking water and as an annual dose limit for the ingestion of certain beta/gamma-emitting radionuclides. The standards are:

Radionuclide	MCL
Gross alpha particle activity	15 pCi/l 4 mrem/yr
Gross beta particle activity	5 pCi/l
Radium 226 and 228 (total)	

For remedial actions addressing ground or surface waters that are potential sources of drinking water and that are contaminated with radionuclides, MCLs may be relevant and appropriate.

40 CFR Part 190: Environmental Radiation Protection Standards for Nuclear Power Operations (including uranium mill sites)

Applicability

These standards apply to normal operations and planned discharges from nuclear power operations (i.e., uranium milling, production of uranium hexafluoride, uranium enrichment, uranium fuel fabrication, operations of nuclear power plants using uranium fuel, and reprocessing of spent fuel), not cleanup actions such as those conducted under CERCLA. Therefore, they will not be applicable for Superfund mining sites. However, they may be relevant and appropriate to releases of radionuclides and radiation during the cleanup of radioactively contaminated sites. The standards address releases to all media and all potential exposure pathways, but do not apply to doses caused by radon and its daughters.

Standards

- Operations within the uranium fuel cycle (e.g., uranium milling, uranium enrichment) shall be conducted in a manner that limits the annual dose received by any member of the public to 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other organ.

40 CFR Part 192: Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings

UMTRCA standards govern the stabilization, disposal, and control of uranium and thorium mill tailings. Site managers at CERCLA mining sites should consider these standards as potential ARARs if:

- The site is an active commercial uranium or thorium processing site licensed by the NRC or a state;
- Uranium or thorium mill tailings are present (excluding inactive sites designated under UMTRCA - see below for further information);
- Radium or radon gas contamination is present; or
- Materials other than, but similar to, uranium or thorium mill tailings (i.e., radium components of copper, zinc, aluminum, and other ore-processing residues, contaminated soil, or any other waste containing more than 5 picocuries/gram of radium) are present.

Applicability

UMTRCA standards, which are promulgated in 40 CFR Part 192 Subparts A - E, regulate two categories of uranium and thorium processing sites:

- Subparts A, B, and C govern 24 inactive uranium processing sites designated for remediation by DOE under UMTRCA. These Subparts cover releases of radon from mill tailings and cleanup of residual radioactive material from land and buildings, and include supplemental standards.
- Subparts D and E regulate active commercial uranium or thorium processing sites licensed by the NRC or a state. The standards include requirements for general design, operation and closure of the sites.

D-18 Appendix D: General Discussion of Applicable or Relevant and Appropriate Requirements at Superfund Mining Sites

Subparts A, B, and C are never applicable at CERCLA mining sites, because releases of source, byproduct, or special nuclear material (i.e., natural uranium and uranium mill tailings) *at the 24 designated sites covered by these standards* are excluded from CERCLA response actions by CERCLA section 101(22)(C). Instead, DOE conducts cleanup actions at these sites under the authority of UMTRCA, Title I, section 102. However, Subparts A, B, and C may be *relevant and appropriate* at CERCLA sites if:

- Uranium or thorium mill tailings are present, but the site is not one of the 24 inactive sites designated under UMTRCA;
- The site contains materials other than, but similar to, uranium or thorium mill tailings (i.e., radium components of copper, zinc, aluminum, and other ore-processing residues, contaminated soil, or any other waste containing more than 5 picocuries/gram of radium); or
- Radon decay products or gamma radiation are present.

Site managers should be aware, however, that the radon level standards will only be relevant and appropriate if the elevated radon levels are caused by human activity, because CERCLA section 104(a)(3)(A) and (B) prohibits Superfund response to releases of a naturally occurring substance "in its unaltered form" (such as naturally occurring radon).

Subparts D and E may be applicable for Superfund actions at licensed commercial uranium or thorium processing sites. They may be relevant and appropriate for sites with wastes similar to uranium mill tailings or with radon contamination. In addition, some of these standards have been incorporated into other radioactive waste regulations and may be applicable to sites covered by those regulations. For example, the NRC adopted the standards in Subpart D in the Uranium Mill Tailings Regulations at 10 CFR Part 40, Appendix A (discussed later in this section), and therefore these standards may be applicable to sites licensed to possess source material.

Standards for Inactive Uranium Processing Sites

Subpart A: Standards for the Control of Residual Radioactive Materials From Inactive Uranium Processing Sites

Performance standards for long-term effectiveness of remedial actions for controlling radioactive releases: (40 CFR 192.02(a)). Control of residual radioactive materials and their listed constituents shall be designed to be effective for up to one thousand years, to the extent possible, and, in any case, for at least 200 years.

Design requirements for remedial actions for controlling releases of radon-222: (40 CFR 192.02(b)). Remedial actions to stabilize or isolate uranium mill tailings should provide reasonable assurance that releases of radon-222 from residual radioactive material to the atmosphere will not:

- Exceed an average (i.e., average over the entire surface of the disposal site and over at least one year) release rate of 20 pCi/m²/sec; or
- Increase the annual average concentration of radon-222 in air at or above any location outside the disposal site by more than one-half pCi/l.

Subpart B: Standards for Cleanup of Land and Buildings Contaminated with Residual Radioactive Materials from Uranium Processing Sites

Concentration limits for cleanup of radium-226 in land at a processing site: (40 CFR 192.12 (a)). Remedial action shall be conducted so as to provide reasonable assurance that, *as a result of residual radioactive materials from any designated processing site*, the concentration of radium-226 in land averaged over any area of 100 m² does not exceed the background level by more than:

- 5 pCi/g, averaged over the first 15 cm of soil below the surface; and
- 15 pCi/g, averaged over 15 cm thick layers of soil more than 15 cm below the surface.

Concentration limits for cleanup of radon decay products and gamma radiation in habitable or occupied buildings at a processing site: (40 CFR 192.12(b)). Remedial action shall be conducted so as to provide reasonable assurance that, *as a result of residual radioactive materials from any designated processing site*, in any occupied or habitable building:

- The objective of remedial action shall be, and reasonable effort shall be made to achieve, an annual average (or equivalent) radon decay product not to exceed 0.02 WL. In any case, the radon decay product concentration (including background) shall not exceed 0.03 WL; and
- The level of gamma radiation shall not exceed the background level by more than 20 microrentgens/hour.

Subpart C: Supplemental Standards That May Be Applied if Certain Circumstances Exist At a Site

Criteria for applying supplemental standards: (40 CFR 192.21). Supplemental standards may be applied if *any* of the following circumstances exists:

- Remedial actions would pose a clear and present risk of injury to workers or to members of the public notwithstanding reasonable measures to avoid or reduce risk;
- Remedial actions would create environmental harm that is long-term, manifest, and grossly disproportionate to health benefits that may reasonably be anticipated;
- The estimated costs of cleaning up land are unreasonably high relative to the long-term benefits, and the residual radioactive materials do not pose a clear present or future hazard;
- The cost of cleaning up a building is clearly unreasonable high relative to the benefits;
- There is no known remedial action; or
- Radionuclides other than radium-226 and its decay products are present in significant quantities and concentrations.

- The groundwater meets one of the following criteria: (1) the concentration of total dissolved solids is in excess of 10,000 mg/l, or (2) widespread, ambient contamination not due to activities involving residual radioactive materials from a designated processing sites exists that cannot be cleaned up using treatment methods reasonably employed in public water systems, or (3) the quantity of water reasonably available for sustained continuous use is less than 150 gallons per day.

Supplemental Standards (40 CFR 192.22). On a site-specific basis, supplemental standards may be applied in lieu of the standards of Subparts A and B, if any of the criteria listed above applies. The implementing agency must select and perform remedial actions that come as close to meeting the otherwise applicable standard as is reasonable. If radionuclides other than radium-226 and its decay products are present in significant quantities and concentrations, this residual radioactivity must be reduced to levels that are as low as is reasonably achievable (ALARA) and conform to the standards of Subparts A and B to the maximum extent practicable. The implementing agency may make general determinations concerning remedial actions under this section that will apply to all locations with specified characteristics, or they may make a determination for a specific location. In certain situations the implementing agencies shall apply any remedial actions for the restoration of contamination of groundwater by residual radioactive materials that is required to assure, at a minimum, protection of human health and the environment. The implementing agencies may also need to ensure that current and reasonably projected uses of the affected groundwater are preserved.

Standards for Licensed Commercial Uranium or Thorium Processing Sites

Subpart D (for uranium) and Subpart E (for thorium): Standards for Management of Uranium and Thorium Byproduct Materials (i.e., mill tailings)

The standards of these Subparts apply to management of uranium and thorium byproduct materials during and following processing of uranium ores, as well as to restoration of disposal sites following the use of such sites under section 84 of the Atomic Energy Act (AEA).

The standards (see 40 CFR 192.32 - 192.33) incorporate the general design, construction, operation, closure, and corrective action requirements of RCRA. The standards supplement the groundwater protection standards under RCRA by adding molybdenum and uranium to the list of hazardous constituents in 40 CFR 264.93 and by specifying concentration limits for radioactivity.

Implementation of UMTRCA Standards

Site managers may find large amounts of wastes for which UMTRCA standards are ARARs in waste piles at mining sites or in disposal areas near mining sites. Because many of the sites for which these standards are relevant and appropriate have been abandoned for many years, contamination may have migrated to areas surrounding disposal sites. For example, wind may have blown contaminated material to other locations, or contaminated soil may have been used as fill or foundation for buildings and residential areas nearby. **UMTRCA standards may be relevant and appropriate for wastes in these areas as well as for the original mining or mineral processing site.**

CERCLA response actions for which Subparts A and B are relevant and appropriate must bring the levels of the affected wastes below those specified in the standards. Actions for

which Subparts D and E are ARARs must meet the requirements given in those sections. Remedies required to meet the standards of 40 CFR 192 may include excavation and of contaminated material, capping, installation of radon reduction systems (if buildings are contaminated with radon gas due to the mining wastes), and institutional controls.

**Highlight D-7:
UMTRCA Standards (40 CFR Part 192) as ARARs:
Two Example Sites**

The *Montclair/West Orange Radium* site in New Jersey is a residential neighborhood contaminated with radioactive waste materials suspected to have originated from radium processing or utilization facilities located nearby. Radium-contaminated soil was used for fill and mixed with cement for sidewalks and foundations. The primary contaminant of concern is radium-226, which decays to radon gas. The requirements of 40 CFR Part 192 Subpart B, cleanup standards for land and buildings contaminated with uranium mill tailings, are relevant and appropriate for this site.

The *Monticello Vicinity Properties* site in Utah is a federally owned, abandoned vanadium and uranium mill site in a primarily residential area. The site, as part of the Surplus Facilities Management Program, is designated for remedial action by DOE. It is also included on the NPL and therefore must comply with CERCLA requirements to meet ARARs. Approximately 100,000 yd³ of contaminated construction debris and wind-blown deposited contamination is estimated to be within the site. The primary contaminants of concern are thorium-230, radium-226, and radon-222 contained in vanadium and uranium mill tailings in the construction debris. Although the mill site is located on federal government property and is not subject to UMTRCA, the standards promulgated in 40 CFR Part 192 Subparts A, B, and C are relevant and appropriate for remediation of the vicinity properties. Therefore, the stabilization, disposal, and control requirements of these Subparts must be met.

40 CFR Part 440 Subpart C: Guidelines and New Source Performance Standards for Ore Mining and Dressing Point Source Category Effluent Limitations

Applicability

Radionuclide concentration limits in 40 CFR Part 440 are applicable to discharges from certain kinds of mines and mills. They may be relevant and appropriate to CERCLA actions involving discharges to surface waters of radioactively contaminated waste from other kinds of sites. These standards are more stringent than the NRC's concentration limits for discharges of uranium and radium (10 CFR Part 20). Therefore, when both 40 CFR Part 440 and 10 CFR Part 20 are ARARs for a site, the concentration limits in 40 CFR Part 440 will take precedence.

Standards

- Radionuclide concentration limits for liquid effluents from facilities that extract and process uranium, radium, and vanadium ore.

RCRA Subtitle C: Regulations for the Management of Mixed Hazardous Waste

Source, byproduct, and special nuclear material are excluded from the definition of solid waste under RCRA. These wastes are regulated by the NRC and DOE. However, if a waste is a mixture of RCRA hazardous waste and source, byproduct, or special nuclear material, RCRA may apply to the non-radioactive component of that waste. The radioactive component is regulated under the Atomic Energy Act. [See the section on the applicability of RCRA for more information on RCRA requirements.]

D.3.3 NRC Program. NRC regulations for radioactive wastes include those found in 10 CFR Parts 20, 61, 30, 40, and 70. They may be applicable to sites licensed by the NRC to possess and use source, byproduct, and special nuclear material, and they may be relevant and appropriate for non-licensed sites.

10 CFR Part 20: Standards for Protection Against Radiation

Applicability

These standards are potentially applicable to CERCLA actions at NRC-licensed facilities. They may also be relevant and appropriate to CERCLA actions at radioactively contaminated sites not licensed by the NRC.

Standards

Permissible dose levels, radioactivity concentration limits for effluents, precautionary procedures, and waste disposal requirements for NRC licensees.

- Protection of workers in restricted areas: a variety of radiation exposure limits, including dose limit of 1.25 rem/quarter to whole body. (10 CFR Part 20 Subparts C and G)
- Protection of the public: Radiation exposure is limited to
 - whole body dose of 0.1 rem/year
 - 0.002 rem/hour
 - the dose limits in 40 CFR Part 190 for environmental radiation standards. (10 CFR 20.1301)
- Discharge to air and water: Discharges must meet radionuclide-specific concentration limits in 10 CFR Part 20, Appendix B.
- Waste treatment and disposal: Include concentration limits for disposal into sewers and for incineration. (10 CFR Part 20, Appendix B)

10 CFR Part 61: Licensing Requirements for Land Disposal of Radioactive Waste

Applicability

Because these standards regulate new NRC-licensed land disposal facilities, they are not applicable to previously closed low-level waste disposal sites, including existing CERCLA sites containing low-level radioactive waste. The performance objectives and technical requirements of 10 CFR Part 61 may be relevant and appropriate to existing CERCLA sites containing low-level radioactive waste, if the waste will be left on site permanently. However, radioactive wastes at CERCLA sites often fall outside the definition of wastes covered by Part 61, particularly when naturally occurring and accelerator-produced radioactive material (NARM) is involved.

10 CFR Parts 30, 40, and 70: Licensing Requirements for Possession and Use of Byproduct, Source, and Special Nuclear Material

Applicability

In 10 CFR Parts 30, 40, and 70, licensing requirements are described for the possession and use of byproduct, source, and special nuclear material, respectively. These parts may be applicable to CERCLA actions at sites licensed under the respective parts. They may be relevant and appropriate for other, non-licensed sites that contain radioactive contamination.

Highlight D-8: NRC Requirements at CERCLA Mining Sites: Example Sites

The *United Nuclear, NM* site is an inactive state-licensed uranium mill facility. Off-site migration of radionuclides and chemical constituents from uranium milling byproduct materials into the groundwater is a principal threat at the site. Some of the primary contaminants of concern are radioactive substances including radium-226/228 and gross alpha. The NRC has adopted the standards at 40 CFR Part 192 Subpart D, which set groundwater limits for combined radium-226 and radium-228 and for gross alpha (excluding radon and uranium), into its regulations at 10 CFR Part 40, Appendix A. Because the site is licensed by the NRC, 10 CFR Part 40 requirements are applicable.

The *Homestake Mining Company* site in New Mexico, which consists of a uranium processing mill and two tailings embankments, was found to have elevated radon levels. In New Mexico, the NRC has jurisdiction over uranium mills, and the NRC issued the Homestake Mining Company a radioactive materials license. Two NRC regulations were identified as ARARs for this site: 10 CFR Part 20 and 10 CFR Part 40 Appendix A. The 10 CFR Part 20 requirements, which are standards for protection against radiation, are considered relevant and appropriate. The 10 CFR Part 40 Appendix A requirements are applicable for this site, because they apply to mill closure and address the cleanup and removal of Ra-226 in soil. **(Note: At this site, no action was taken, because the radon was determined to be a result of natural soil concentrations.)**

Highlight D-9: DOE Requirements at CERCLA Mining Sites: Example Site

The *Monticello Vicinity Properties* site in Utah, which contains thorium, radium, and radon contamination in uranium mill tailings, is a designated site under DOE's Surplus Facilities Management Program. It is also listed on the NPL and therefore must comply with CERCLA requirements. Because the properties are a DOE site, remedial actions must also comply with the DOE internal orders on radioactive wastes. DOE hot spot criteria from these internal orders were found to be applicable for actions at this site.

D.3.4 DOE Program. As explained above, DOE's requirements for radioactive wastes are contained in a series of internal orders that apply only to cleanups at DOE facilities. However, the requirements are potential "To-Be-Considered" information for non-DOE sites. The most important DOE order is DOE 5400.5 "Radiation Protection of the Public and the Environment," which includes standards and requirements to protect the public from risk from radiation, concentration guides for liquids discharged to surface waters, and guidelines for residual radioactive material at certain DOE sites. DOE Order 5400.11 establishes similar requirements for workers.

D.4 CLEAN WATER ACT

D.4.1 Regulatory Program. The Clean Water Act (CWA) regulates the discharge of any pollutant or combination of pollutants to waters of the U.S. from any point source. The substantive and/or administrative elements of CWA requirements are potential ARARs for CERCLA mining response (and other) actions that include an action resulting in:

- Direct discharges to surface water or oceans;
- Indirect discharges to a publicly owned treatment works (POTW);
- Storm water discharges; or
- Discharge of dredged or fill material into the waters of the U.S. (including wetlands).

These regulated discharges commonly occur at Superfund mining sites in the form of channeled runoff, treated wastewater discharge, and storm water runoff. In addition, many Superfund mining sites have uncontrolled discharges that are the source of much contamination and contaminant migration. The CWA-based standards also may be appropriate for discharges that are causing the contamination (e.g., mine drainage).

Various types of ambient and technology-based standards have been promulgated under the CWA to control discharges of pollutants to waters of the U.S. These include:

- **Technology-based Standards.** All direct dischargers must meet these standards. Requirements include, for conventional pollutants, application of the best conventional pollutant control technology (BCT), and for toxic and nonconventional pollutants, the best available technology economically achievable (BAT). (See Highlight D-10 for a description of the three categories of pollutants.) Technology-based standards are determined through the use of effluent limitation guidelines. There are no effluent guidelines for CERCLA sites. Therefore, technology-based treatment standards are determined on a site-specific basis using best professional judgment. Effluent discharge limits are then derived from the levels of performance of a treatment technology applied to a wastewater discharge.

**Highlight D-10:
Categories of CWA Pollutants**

The following are descriptions of the regulatory classes of pollutants regulated under the CWA:

- **Toxic pollutants.** The 126 individual priority toxic pollutants contained in 65 toxic compounds or classes of compounds (including organic pollutants and metals) adopted by EPA pursuant to the CWA section 307(a)(1);
- **Conventional pollutants.** The pollutants classified as biochemical oxygen demanding (BOD), total suspended solids (TSS), fecal coliform, oil and grease, and pH pursuant to the CWA section 304(a)(4); and
- **Nonconventional pollutants.** Any pollutant not identified as either conventional or toxic in accordance with 40 CFR 122.21(m)(2).

- **Federal Water Quality Criteria (FWQC).** FWQC are *nonenforceable* guidance established by EPA for evaluating toxic effects on human health and aquatic organisms. FWQC are used or considered by states in setting their water quality standards (WQS). In addition, they can be used as a baseline indicator of environmental risk at Superfund sites.

- **State Water Quality Standards (WQS).** Under CWA section 303, states must develop water quality standards. State WQSs may be numeric or narrative. They consist of designated uses (e.g., fishing, swimming, drinking water) for waters and criteria for pollutants set at levels that are protective of those uses.

D.4.2 Direct Discharge Requirements. Activities at mine sites that may trigger *direct* discharge requirements include:

- Discharge of mine water to a stream;
- Discharge of waters to a wetland or from a wetland to a river;
- Channeling site runoff directly to a surface water body via a ditch, culvert, storm sewer, or other means;
- On-site waste treatment in which wastewater is discharged directly into a surface water body in the area of contamination or in very close proximity to this area via pipe, ditch, conduit, or other means of "discrete conveyance;" and
- Off-site waste treatment in which wastes from the site are piped or otherwise discharged through a point source to an off-site surface water.

On-site direct discharges must meet technology-based standards (for conventional pollutants) and result in ambient standards that do not exceed state water quality standards or FWQC (for priority pollutants).⁷ Off-site direct discharges must meet these substantive requirements as well as administrative requirements such as obtaining a permit from the state authority, reporting, and public participation requirements. (See Highlight D-11 for more detail on administrative requirements associated with NPDES program.)

The substantive requirements of the NPDES program include the federal water quality criteria and state water quality standards introduced above. State water quality standards are generally the applicable cleanup standards for surface water and discharges into surface waters. Because FWQC are not enforceable, EPA has determined in previous guidance that they are never applicable for CERCLA actions.⁸ However, these criteria may be relevant and appropriate for Superfund actions involving direct discharges to surface water. Under CERCLA section 121, site managers must determine if a FWQC is relevant and appropriate "under the circumstances of the release or threatened release" based on:

- The state-designated or potential use of the water;
- The environmental media affected;
- The purpose of the criteria; and
- The latest available information.

⁷ For CWA permitting purposes, "on-site" means the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action.

⁸ CERCLA Compliance With Other Laws Manual, Part I, Draft, August 8, 1988, OSWER Directive 9234.1-01.

**Highlight D-11:
Administrative Requirements of the NPDES Program**

- **Certification.** CWA section 401 requires that any applicant for a federal license or permit to conduct an operation that may result in any discharge to navigable waters shall provide to the licensing/permitting agency a certification from the state that the discharge will comply with applicable provisions of CWA sections 301, 302, 303, 306, and 307.
- **Permit Application Requirements.** A discharge from a CERCLA site is considered a "new discharge" for regulatory purposes under the NPDES program. NPDES regulations (40 CFR 122.29) require that applications for permits for new discharges be made 180 days before discharges actually begin. The information required in a permit application will be collected during the RI/FS. States with NPDES authority may have slightly different permit application requirements for new discharges. The NPDES regulations require that pollution control equipment must be installed before the new discharge begins, and compliance must be achieved within the shortest feasible time, not to exceed 90 days. The substantive requirements of a permit must be achieved by CERCLA action even though CERCLA actions are not subject to permitting requirements.
- **Reporting Requirements.** The NPDES permit program requires dischargers to maintain records and to report periodically on the amount and nature of pollutants in the wastewaters discharged (40 CFR 122.44 and 122.48). Reports that are typically required include emergency reports (required in cases of noncompliance that are serious in nature) and discharge monitoring reports (routine monitoring reports).
- **Public Participation.** CERCLA site managers should also be aware that NPDES discharge limitations and requirements developed for a CERCLA site are subject to public participation requirements in 40 CFR 124.10, including public notice and public comment.

FWQC for protection of *human health* identify protective levels for two routes of exposure: (1) ingestion of contaminated drinking water and contaminated fish; and (2) ingestion of contaminated fish alone. For example, an FWQC reflecting drinking the water could be relevant and appropriate for waters designated as a public water supply; the criterion that reflects fish consumption and drinking the water should generally be used as the relevant and appropriate standard if fishing is also included in the state's designated use. If the state has designated a water body for recreation, a FWQC reflecting fish consumption alone may be relevant and appropriate if fishing is included in that designation. Generally, FWQC are not relevant and appropriate for other uses, such as industrial or agricultural use, because exposures assumed when setting FWQC are not likely to occur. FWQC may be relevant and appropriate for selecting cleanup levels for groundwater, if they are adjusted to reflect only exposure from drinking the water.

Although FWQC may often be ARARs, if a state has promulgated a WQS for the pollutants and water body at the site, the state standard would generally be the ARAR rather than the FWQC, because the state standards essentially represent a site-specific adaptation of the federal criteria.

If a promulgated MCL for a pollutant exists (see the Safe Drinking Water Act section of this appendix) and the water is a designated or potential drinking water supply, the MCL may supersede the FWQC as the cleanup standard for that pollutant. state drinking water standards also may be potential ARARs in this situation.

FWQC may also be used as the baseline against which to assess whether site conditions pose an environmental risk. The criteria for the protection of aquatic life can be compared to the ambient concentrations of a chemical as one measure of whether it is necessary to take actions to reduce contaminant levels. These "exceedances" of FWQC, however, may not fully reflect environmental risks, and should be used only after consultation with environmental risk experts.

Antidegradation Policy (40 CFR 131.12)

State antidegradation requirements vary widely in their scope and drafting. However, as a general rule, they are anti-pollution requirements (not cleanup requirements) designed to prevent further degradation of the surface water or groundwater. Antidegradation requirements typically accomplish their purpose in one of two ways: (1) by prohibiting or limiting discharges that potentially degrade the surface water or groundwater (typically action-specific requirements); or (2) by requiring maintenance of the surface-water or groundwater quality consistent with current uses.

Under the Clean Water Act, every state is required to classify all of the waters within its boundaries according to their intended use. As required by EPA regulation, all states have established *surface-water* antidegradation regulations. These requirements may be potential ARARs for CERCLA remediations involving discharges to surface water. Although not specifically required by EPA, the majority of states have also established some form of *groundwater* antidegradation provisions. These states may have enacted specific groundwater antidegradation statutes, or they may include groundwater protection provisions within general environmental statutes. These state provisions for groundwater may constitute potential ARARs for CERCLA remediations that have an impact upon the groundwater (e.g., groundwater reinjection or soil flushing).

State antidegradation requirements are often expressed as general goals. These requirements may be potential ARARs if they are: (1) directive in nature and intent; and (2) established through a promulgated statute or regulation that is legally enforceable. At a Superfund site, antidegradation requirements are generally action-specific requirements that may apply during the course of and at the completion of the Agency response action. They apply prospectively, and generally obligate the Agency only to prevent **further** degradation of the water during and at completion of the response action (not prior to it). Although anti-degradation requirements are not cleanup laws, in some limited cases they may, as relevant and appropriate requirements, be appropriate for establishing a cleanup level for past contamination.

Administrative Requirements

Certification (CWA section 401)

- Any applicant for a federal license or permit to conduct an operation that may result in any discharge to navigable waters shall provide to the licensing/permitting agency a certification from the state that the discharge will comply with applicable provisions of CWA sections 301, 302, 303, 306, and 307.

Permit Application Requirements (40 CFR 122.21 and 122.29)

A discharge from a CERCLA site is considered a "new discharge" under the NPDES program. Although CERCLA actions are not subject to the permitting requirements the substantive requirements of the permit must be achieved as discussed in Highlight D-12.

- Applications for permits for new discharges must be made at least 180 days before discharges actually begin.

D-28 Appendix D: General Discussion of Applicable or Relevant and Appropriate Requirements at Superfund Mining Sites

- The information required in a permit application will be collected during the RI/FS.
- Pollution control equipment must be installed before the new discharge begins, and compliance must be achieved within the shortest feasible time, not to exceed 90 days.

(States with NPDES authority may have slightly different permit application requirements.)

**Highlight D-12:
CWA Direct Discharge Requirements as ARARs: Example Site**

At the *California Gulch* site in Colorado, tunnel discharge has resulted in cadmium, copper, lead, and zinc contamination in surface water. The selected remedy for the site will include discharge of treated effluent into surface water of the California Gulch. Aquatic life in both the California Gulch and the Arkansas River are potential receptors of contamination. The affected waters are designated for "cold water aquatic life," secondary contact recreation, and agriculture. Based on evaluation of the existing and potential uses of the waters, the environmental media affected, the purposes of the criteria, and the latest information available, EPA determined that water quality criteria for acute and chronic toxicity to freshwater aquatic life are relevant and appropriate. Certain state of Colorado water quality standards are also ARARs for the discharge of treated effluent. Finally, Colorado's antidegradation standard, which requires that existing uses be maintained and that no further water quality degradation occur that would interfere with or become injurious to existing uses is applicable.

One component of the selected remedy for the California Gulch site involves the construction of an interim treatment facility on site. Because the facility will be located on site, no permit is required. However, the facility must comply with appropriate substantive direct discharge requirements.

Reporting Requirements (40 CFR Part 122)

- Dischargers must maintain records and report periodically on the amount and nature of pollutants in the wastewaters discharged. Generally, Superfund would meet these requirements through monitoring that is conducted based on the selected remedy.

Public Participation (40 CFR 124.10)

- NPDES discharge limitations and requirements developed for a CERCLA site are subject to public participation requirements, including public notice and public comment.

D.4.3 Indirect Discharge Requirements.

Applicability

Indirect discharge means the discharge of a waste to a publicly owned treatment works (POTW), which in turn generally discharges the treated wastewater to receiving waters. Requirements for indirect discharges include pretreatment standards and the use of control measures such as permits or orders.

Indirect discharges are always considered an off-site activity. Therefore, CERCLA actions always must comply with both the substantive and administrative requirements for indirect discharges. Pretreatment standards for indirect discharges will generally be applicable for CERCLA activities. However, where pretreatment standards specify quantities or concentrations of pollutants or pollutant properties that may be discharged to a POTW by users in specific industrial categories, these standards are not applicable, because CERCLA

actions do not fit into any of these categories. However, these standards may be relevant and appropriate if the consideration underlying the standard (e.g., type and concentration of pollutant, type of industrial process that produced the waste) are sufficiently similar to the conditions found at the site.

Standards

Pretreatment Standards (CWA section 307(b), 40 CFR Part 403)

- Pollutants introduced into POTWs by a non-domestic source shall not cause pass through (i.e., a discharge that exits the POTW in concentrations or quantities that cause a violation of the POTW's NPDES permit) or interference (i.e., a discharge that inhibits or disrupts a POTW, its treatment processes or operations, or its sludge processes, thereby causing either a violation of the POTW's NPDES permit or prevention of sewage sludge use or disposal in compliance with various statutory provisions and regulations).
- Pollutants may not be introduced to a POTW if they:
 - Create a fire or explosion hazard in the sewers or treatment works;
 - Will cause corrosive structural damage to the POTW (pollutants with a pH lower than 5.0);
 - Obstruct flow in the sewer system resulting in interference;
 - Are discharged at a flow rate and/or concentration that will result in interference;
 - Increase the temperature of wastewater entering the treatment plant so as to inhibit biological activity resulting in interference (in no case shall the temperature of the POTW increase to above 104°F (40°C));
 - Include petroleum oil, certain non-biodegradable oils, or products of mineral oil origin in amounts that cause interference or pass through;
 - Result in toxic gases, vapors, or fumes within the POTW that may cause acute worker health and safety problems; or
 - Are hauled to any location at the POTW except designated discharge points.
- Some POTWs must develop and enforce specific effluent limitations to implement the prohibitions specified above.
- POTWs may enforce local prohibitions on wastes with objectionable color, noxious or malodorous liquids, wastes that may volatilize in the POTW, radioactive wastes, and other types of wastes that are incompatible with POTW operations.

The national pretreatment standards also specify quantities or concentrations of pollutants or pollutant properties that may be discharged to a POTW by existing or new industrial users in specific industrial subcategories. These categorical standards are not applicable requirements because CERCLA cleanup actions do not presently fit within any industrial category for which such standards exist. However, they may be relevant and appropriate if the considerations underlying the categorical standard (e.g., type and concentration of pollutant, type of industrial process that produced the waste) are sufficiently similar to the conditions of the hazardous substance found at the site.

POTW Control Mechanisms (CWA section 403.8(f)(1)(iii))

Control mechanisms (e.g., permits or orders) must be used to regulate indirect discharges to POTWs. POTWs have the authority to limit or reject wastewater discharges and to require dischargers to comply with control mechanisms such as permits or orders. These permits or orders contain applicable pretreatment standards including local discharge prohibitions and numerical discharge limits. In addition to incorporating pretreatment limitations and requirements, the control mechanisms may also include: (1) monitoring and reporting requirements to ensure continued compliance with applicable pretreatment standards; (2) spill prevention programs to prevent the accidental discharge of pollutants to POTWs (e.g., spill notification requirements); and (3) other requirements.

D.4.4 Storm Water Requirements. EPA promulgated the first of several regulations that establishes a permitting process and discharge regulations for storm water on November 16, 1990. Storm water is defined under these regulations as "storm water runoff, snow melt runoff, and surface runoff and drainage" (40 CFR 122.26(b)(13)). Under these regulations, the following discharges are subject to storm water requirements:

- Discharges associated with an industrial activity (further outlined at 40 CFR 122.26(b)(14)).
- Discharges from municipal separate storm sewer systems serving more than 100,000 people.
- Case-by-case designations: permit may be required if the Director determines that a discharge contributes to a violation of a water quality standard or is a significant contributor of pollutants to the waters of the U.S.

Under storm water requirements, dischargers must obtain a permit, under which the amount of pollutants in storm water discharged into surface waters (or conveyances leading to surface waters) will be regulated. "Storm water discharge[s] associated with industrial activity" (which are the regulated storm water discharges most likely to be found at a Superfund mining site) are discharges from any conveyance used for collecting and conveying storm water and directly related to manufacturing, processing or raw materials storage areas at an industrial plant. Permits for these discharges must cover areas:

- Directly related to an industrial process, (e.g., industrial plant yards, immediate access roads and rail lines, material handling sites, refuse sites, sites used for the application or disposal of process wastewaters, sites used for the storage and maintenance of material handling equipment, known sites that are presently or have been used in the past for residual treatment, storage, or disposal, shipping and receiving areas, manufacturing buildings, storage areas (including tank farms) for raw materials and intermediate and finished products).
- Where industrial activity has taken place in the past and significant materials remain and are exposed to storm water.
- That are facilities related to the mineral industry, including certain active and inactive mining operations.
- That are RCRA Subtitle C facilities that contribute to storm water discharges.

A permit application is required for *mining activities* when discharges of storm water runoff from mining operations come into contact with any overburden, raw material, intermediate product, finished product, byproduct, or waste product located on the site. Determination of whether a mining operation's runoff is contaminated will be made in the context of the permit issuance proceedings. If the determination is made that the runoff is not contaminated, a permit is not required. Mining areas that are no longer being mined but that have an identifiable owner/operator are included.

NPDES permits are *not* required for discharges of storm water runoff from mining operations that are composed entirely of flows from conveyances used for collecting and conveying precipitation runoff that are not contaminated by contact with any overburden, raw material, intermediate product, finished product, byproduct, or waste product located on the site of such operations.

Permit applications must be submitted within one year from the date of publication of this notice (i.e., November 16, 1991) but this date was extended for several types of activities in subsequent rulemakings. Facilities proposing a *new* discharge of storm water associated with industrial activity shall submit an application 180 days before that facility commences the industrial activity. Permits will require compliance with sections 301 and 402 of the CWA (requiring control of the discharge of pollutants that utilize the Best Available Technology (BAT) and the Best Conventional Pollutant Control Technology (BCT) and where necessary, water quality-based controls). General permits will require development of storm water control plans and practices (the conditions for these permits have not yet been finalized). In addition, permittees will have to meet effluent guidelines. EPA has established effluent guideline limitations for storm water discharges for nine subcategories of industrial dischargers, including cement manufacturing, feedlots, fertilizer manufacturing, petroleum refining, phosphate manufacturing, steam electric, coal mining, ore mining and dressing, and asphalt.

In an April 2, 1992 rule, EPA published general permit requirements for reporting for discharges associated with an industrial activity and minimum monitoring requirements. This rule also presented a strategy for issuing stormwater permits. Among the monitoring requirements for covered activities are the following:

- Monitoring frequency will be set on a case-by-case basis, but no less than at least once each year.
- Inactive mining operations can have inspections once every three years when annual inspections are impracticable.
- Monitoring results will be repeated at least once each year.

Storm water requirements will generally not be applicable at Superfund actions, because the requirements are intended to regulate active industrial activities. However, the requirements could be relevant and appropriate at mining sites where storm water runoff is contaminated.

D.4.5 Dredge and Fill Requirements. Dredge and fill activities at CERCLA sites may include dredging of a contaminated lake or river, disposal of contaminated soil or waste in surface water, capping of the site, construction of berms and levees to contain wastes, stream channelization, excavation to contain effluent, and dewatering of the site. Specific requirements, established under the CWA as well as other statutes, regulate the discharge of dredged or fill material to waters of the U.S.

Dredge-and-fill activities are regulated under the following authorities:

- **Section 10 of the Rivers and Harbors Act** prohibits the unauthorized obstruction or alteration of any navigable water of the United States.
- **Section 404 of the Clean Water Act** regulates the discharge of dredged or fill material to waters of the United States. It states that no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, as long as the alternative does not have other significant adverse environmental effects. "Practicable" is defined by the regulations to mean available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.
- **Section 103 of the Marine Protection Research and Sanctuaries Act** regulates ocean discharges of materials dredged from waters of the United States.
- **40 CFR Part 6, Appendix A** contains EPA's regulations for implementing Executive Order 11990, Protection of Wetlands, and Executive Order 11988, Floodplain Management (see the section on these Executive Orders in this appendix), which require federal agencies to avoid, to the extent possible, long- and short-term adverse impacts associated with the destruction or modification of wetlands, to avoid direct or indirect support of new construction in wetlands where there are practicable alternatives, and to minimize potential harm to wetlands when there are no practicable alternatives. The proposed plan and selected remedial action should be evaluated in light of these requirements and the alternative modified, if necessary, to avoid or minimize adverse impacts.

The Army Corps of Engineers evaluates applications for permits for activities regulated under section 10 of the Rivers and Harbors Act and section 404 of the CWA. Although section 404 permits are not required for dredge and fill activities conducted entirely on site, the Corps' expertise in assessing the public interest factors for dredge and fill operations can contribute to the overall quality of the response action.

Section 404 applies to the discharger of dredged and fill materials and addresses the impacts caused by such discharges. In some CERCLA response actions, the wetland will already be severely degraded by virtue of prior discharges of waste. Part of the CERCLA remedy may be to fill in the wetland, with the intention that the fill would serve an environmental benefit. Where the function of the wetland has already been significantly and irreparably degraded, mitigation would be oriented towards minimizing further adverse environmental impacts, rather than attempting to recreate the wetland's original value on site or off site. That is, there would be no obligation under CWA section 404 for the lead agency to mitigate those impacts that preceded the remedial fill operation. Although section 404 is not applicable in such cases, mitigation, including wetland restoration and creation, may be appropriate in some circumstances to protect the environmental value of the site. Other provisions, such as 40 CFR 6.302, may require such mitigation (see the section on E.O. 11990, Protection of Wetlands in this appendix for more information on the mitigation of adverse effects on wetlands).

D.4.6 Implementation of CWA Requirements at Superfund Mining Sites. Certain conditions commonly found at mining sites may complicate attempts to comply with CWA requirements. Mine sites often have large areas and many sources from which large volumes of waste flow. Because of these conditions, it may be difficult to achieve water quality criteria or standards. In some cases, it may be necessary to construct an on-site treatment facility.

Existing sediment contamination may lead to continued exceedances even after discharges comply and/or streams are diverted or channeled. Likewise, storm water runoff from wide-spread contamination sources may produce contaminant loading. Other sources may also cause problems and may require multi-program strategy. Site managers should coordinate activities regulated by the CWA with the appropriate state agency, particularly if the state has an authorized NPDES program.

D.5 SAFE DRINKING WATER ACT

D.5.1 Regulatory Program. The Safe Drinking Water Act (SDWA) establishes regulations to protect human health from contaminants in current and potential sources of drinking water. SDWA requirements are potential ARARs for CERCLA sites that contain contaminated drinking water or where remedial actions will involve discharges to drinking water. In addition, sites where underground injection will be part of the remedial action may be subject to SDWA requirements.

Requirements from the following EPA programs established under the SDWA are potential ARARs for CERCLA actions:

- **Drinking Water Standards.** EPA has developed two sets of drinking water standards that may be ARARs for CERCLA actions:
 - **Primary drinking water regulations.** These standards consist of contaminant-specific levels known as Maximum Contaminant Levels (MCLs). They are based on Maximum Contaminant Level Goals (MCLGs), which are purely health-based goals.
 - **Secondary drinking water regulations.** These standards consist of Secondary MCLs (SMCLs) for specific contaminants or water characteristics that may affect the aesthetic qualities (e.g., odor, taste) of drinking water.

States may also establish drinking water standards. Where drinking water standards cannot be attained, provisions exist for application for variances and exemptions from compliance with primary MCLs.

- **Underground Injection Control (UIC) Program.** Requirements under this program regulate the injection of hazardous waste and other wastewaters into wells.
- **Sole-Source Aquifer and Wellhead Protection Programs.** These programs are designed to protect these vital aspects of the nation's groundwater.

D.5.2 Drinking Water Standards.

Applicability

MCLs set under the primary drinking water regulations will be applicable where certain contaminants are found in drinking water that is directly provided to 25 or more people or supplied to 15 or more service connections. If MCLs are applicable, they must be complied with at the tap. MCLs are relevant and appropriate as cleanup standards where either surface water or groundwater is or may be used for drinking water. Where multiple contaminants or multiple pathways of exposure present extraordinary risks, a standard more stringent than an MCL may be needed (to reflect the additivity of risks). Site managers should make site-specific determinations in setting a level more stringent than the MCL.⁹

SMCLs are nonenforceable limits and therefore generally cannot be applicable to CERCLA actions. However, they may be relevant and appropriate, or, where a state has adopted SMCLs as additional drinking water standards, they may be applicable.

Primary Drinking Water Regulations (40 CFR Part 141)

MCLs have been promulgated for the following contaminants commonly found at mining sites. They are:

Contaminant	MCL (mg/l)
Arsenic	0.05
Barium	1
Cadmium	0.010
Chromium	0.05
Flouride	4
Lead	0.05
Mercury	0.002
Nitrate (as N)	10
Selenium	0.01

For MCLs for radionuclides, see the Radioactive Wastes section of this document.

⁹ In the past, EPA's policy was that, in cases involving multiple contaminants or pathways where the risk exceeded 10^{-4} , MCLGs were to be considered when determining acceptable exposures. This policy was changed, however, by the NCP (55 FR 8750, March 8, 1990). Under the revised NCP, where an MCLG establishes a contaminant level above zero, that MCLG is a potential relevant and appropriate requirement, with determinations to be made on a site-specific basis as to the relevance and appropriateness of meeting that level under the circumstances of the release. Where an MCLG is equal to zero level of contaminants (as for carcinogens), that MCLG is not "appropriate" for the cleanup of ground or surface water at CERCLA sites. In such cases, the corresponding MCL will be considered as a potential relevant and appropriate requirement, and attained where determined to be relevant and appropriate under the circumstances of the release. In cases involving multiple contaminants or pathways where attainment of chemical-specific ARARs will result in cumulative risk in excess of 10^{-4} , criteria in NCP §300.430(e)(2)(l)(A) (55 FR 8848) may also be considered when determining the cleanup level to be attained.

**Highlight D-13:
SDWA as ARARs: Example Site**

California Gulch, CO

Surface water and groundwater at this site, which are contaminated with cadmium, copper, lead, and zinc, do not meet the SDWA definition of public water supply, but they connect in the lower California Gulch shallow alluvial system, which is an existing or potential drinking water source. Therefore, SDWA drinking water standards are relevant and appropriate for this site.

EPA anticipates that the selected remedy will not achieve a degree of cleanup in lower California Gulch surface water that attains primary and secondary MCLs. Numerous sources contribute to metals loadings in lower California Gulch, including mine wastes, tailings, and slag in the California Gulch drainage basin and tributaries. The tunnel plugging and interim treatment facility components of the selected remedy will achieve substantial reductions in metals loadings. In future operable units, it will be necessary to develop and evaluate additional source control measures to attain or exceed drinking water ARARs for specific metals.

Secondary Drinking Water Regulations (40 CFR 143)

SMCLs have been promulgated for the following contaminants commonly found at mining sites. They are:

Contaminant	Level
Aluminum	0.05 to 0.2 mg/1
Chloride	250 mg/1
Color	15 color units
Copper	1.0 mg/1
Corrosivity	Non-corrosive
Fluoride	2.0 mg/1
Foaming Agents	0.5 mg/1
Iron	0.3 mg/1
Manganese	0.05 mg/1
Odor	3 threshold odor #
pH	6.5-8.5
Silver	0.1 mg/1
Sulfate	250 mg/1
Total dissolved solids	500 mg/1
Zinc	5 mg/1

D.5.3 Underground Injection Control Program (40 CFR Part 144).

Applicability

In 40 CFR Part 144, five classifications of underground injection wells are established:

- **Class I:** wells that inject RCRA hazardous or other industrial or municipal waste beneath the lowermost formation containing, within 1/4-mile of the well bore, an underground drinking water source. An underground source of drinking water is defined as any aquifer or its portion that supplies a public water system or contains fewer than 10,000 mg/l total dissolved solids.
- **Class II:** injection wells associated with oil and natural gas production, recovery, and storage.
- **Class III:** wells that inject fluids for use in extraction of minerals.
- **Class IV:** wells used to inject RCRA hazardous waste into or above a formation that within 1/4-mile of the well, contains an underground drinking source.
- **Class V:** wells not considered to be Class I, II, III, or IV.

Requirements for Class I, IV, and V wells are most likely to be ARARs for CERCLA actions when wastes are disposed of into one of these units. The injection of wastes into on-site wells must meet the substantive requirements of this part; injections into off-site wells must meet both substantive and administrative requirements.

Certain UIC program standards require compliance with the LDRs before injection can occur. Mining wastes that are excluded from Subtitle C regulation by the Bevill amendment (see the RCRA section of this appendix) need not comply with these requirements. Mineral processing wastes that have been removed from the Bevill exclusion are also not required to meet the LDRs before injection, *at this time*. However, once the Agency has set LDR treatment standards for those wastes now subject to Subtitle C, compliance with the LDRs will be required.

Substantive Requirements

- No owner or operator may construct, operate, or maintain an injection well in a manner that results in the contamination of an underground source of drinking water at levels that violate MCLs or otherwise adversely affect the health of persons.
- Under the RCRA land disposal restrictions, before RCRA hazardous waste can be disposed of in a Class I well or contaminated groundwater can be reinjected into a Class IV well, the wastes or the groundwater must attain any promulgated treatment levels for each constituent disposed in the injection well, or obtain a variance.
- Class I wells must obtain a RCRA permit-by-rule as a condition for injecting hazardous waste. The owner or operator must comply with RCRA corrective action for releases from solid waste management units (40 CFR 264.101).

- Owners and operators of underground injection wells must prepare and submit a plugging and abandonment plan.
- Owners and operators of Class I wells are subject to the following additional requirements:
 - Construction requirements;
 - Operating requirements;
 - Monitoring requirements.

Administrative Requirements

Off-site CERCLA actions must comply with the following administrative requirements of the UIC Program:

- **Application Requirements.** All existing and new underground injection wells must apply for a permit unless an existing well is authorized by rule for the life of the well;
- **Inventory and Other Information Requirements.** Existing underground injection wells that are authorized by rule are required to submit inventory information to EPA or an approved state. Other information may be required to determine whether injection will endanger an underground source of drinking water; and
- **Reporting Requirements.** Owners and operators of Class I wells are required to maintain records and report quarterly on the characteristics of injection fluids and groundwater monitoring wells and various operating parameters (e.g., pressure, flow rate, etc.).

D.5.4 Sole-Source Aquifer Program. EPA may designate aquifers that are the sole or principal drinking water source for an area and which, if contaminated, would present a significant hazard to human health, as "sole source aquifers." Federal financial assistance may not be committed for any project that may contaminate a sole source aquifer so as to create a significant public health hazard. In general, CERCLA activities will not increase preexisting contamination of sole source aquifers. Therefore, it is unlikely that CERCLA actions would be subject to restrictions on federal financial assistance. However, site managers should review potential problems associated with sole source aquifers as part of the RI/FS.

D.5.5 Wellhead Protection Program. States must develop and implement programs to protect wells and recharge areas that supply public drinking water systems from contaminants that flow into the well from the surface and sub-surface. Site managers should identify ARARs under these state wellhead protection programs.

D.5.6 Implementation of the SDWA at Superfund Mining Sites. Certain conditions commonly found at mining sites may complicate attempts to comply with drinking water standards. Mine sites often have large areas and many sources from which large volumes of waste flow. Because of these conditions, it may be difficult to achieve drinking water standards. In these circumstances, close coordination with appropriate regulatory offices is necessary to devise an acceptable strategy. In some cases, an ARAR waiver may be required if it is not practicable to meet MCLs. Other approaches to consider may include well head treatment, alternate water supplies, and institutional controls.

D.6 CLEAN AIR ACT

The Clean Air Act (CAA) places controls on stationary and mobile sources of emissions into the air. CAA requirements, including those promulgated since the passage of the 1990 Clean Air Act Amendments, are potential ARARs for emissions of gas or particulate matter (e.g., dust) from uncontrolled CERCLA hazardous waste sites both that may occur naturally (i.e., without disturbance during remediation) and those that are a result of response activities. Types of activities likely to result in air emissions problems at mining sites include:

- Blowdown from wastes in piles, ponds, or other locations;
- Soil or waste excavation and movement; and
- Activities involving construction and operation of waste management units.

Other types of remedial activities that could result in air emissions are:

- Air stripping (used to volatilize contamination both in groundwater and in soil);
- Thermal destruction (e.g., incineration), which may produce emissions through volatilization of organic contaminants and through volatilization or suspension of particulate matter into the stack gases;
- Handling of contaminated soil, which can result in volatilization of organic contaminants and wind entrainment of particulates;
- Gaseous waste treatment (e.g., flaring used when capping and venting a site, usually abandoned or inactive landfills);
- Biodegradation, especially when aeration of liquids is involved; and
- Demolition projects, which may cause emission of contaminants to the air.

Under the Clean Air Act, EPA has established three types of standards: National Ambient Air Quality Standards (NAAQS), National Emission Standards for Hazardous Air Pollutants (NESHAPs), and New Source Performance Standards (NSPS). These standards are chemical- and/or source-specific. In deciding which standards are applicable or relevant and appropriate for mining sites, site managers should determine:

- If a pollutant regulated by the standards is or will be emitted at the site; and
- If the pollutant is or will be emitted from one of the sources specified by the standards.

D.6.1 National Ambient Air Quality Standards for Criteria Pollutants (40 CFR Part 50).

Applicability

These standards (listed in Highlight D-14) are national limitations on ambient concentrations of carbon monoxide, lead, nitrogen dioxide, particulate matter (PM₁₀), ozone, and sulfur oxides. Although they are not source-specific emissions limitations, they apply only to major sources. The definition of major source depends on whether the source is located in an attainment or non-attainment area (designated in 40 CFR Part 81). In general, emissions from CERCLA

activities do not qualify as major. However, even if a site is not a major source, NAAQS may be relevant and appropriate.

Because CERCLA mining sites often contain large volumes of waste, these sites may, when the aggregate of all source emissions at the site is considered, qualify as a major source. A major source is:

- For an **attainment area**: a site that emits 250 tons or more per year of any regulated pollutant, or a site that contains certain specific types of facilities, such as an incinerator or chemical processing plant that emits 100 tons or more per year.
- For a **non-attainment area**: a site that emits 100 tons or more per year of the pollutant for which the area is designated non-attainment.

Each state has the primary responsibility for assuring that NAAQS are attained and maintained. Each state must submit a State Implementation Plan (SIP) to EPA for approval. Once approved, the SIP becomes federally enforceable. Thus, state requirements can become federal requirements through the SIP approval process. Elements of approved SIPs, which can include more stringent state requirements, are potential ARARs for CERCLA sites.

Pre-construction Review

- New and modified stationary sources of air emissions must undergo a pre-construction review to determine whether the construction or modification of any stationary source will interfere with the attainment or maintenance of NAAQS or will fail to meet other new source review requirements, which would result in a denial of a permit to construct.

Prevention of Significant Deterioration (PSD) Requirements

PSD requirements for **attainment areas** apply to new major stationary sources and major modifications in areas designated as being in attainment of the NAAQS for criteria pollutants. They also apply in areas where no data exist and the area is defined as unclassified. Part C of the CAA requires SIPs to contain "adequate provisions" for the prevention of significant deterioration of air quality in an attainment area.

Under the PSD program, a CERCLA site would not be considered a major source unless it was expected to emit 250 tons or more per year of any regulated pollutant (or unless the site contains certain specific types of facilities, such as an incinerator or chemical processing plant, for which the threshold is 100 tons per year.

**Highlight D-14:
National Ambient Air Quality Standards (NAAQS)**

Criteria Pollutant	Primary Standards	Averaging Time	Secondary Standards
Carbon Monoxide	9 ppm 35 ppm	8-hour ^a 1-hour ^a	None
Lead	1.5 µg/m ³	Quarterly average	Same as primary
Nitrogen dioxide	0.053 ppm	Annual (arithmetic mean)	Same as primary
Particulate Matter (PM ₁₀)	50 µg/m ³	Annual (arithmetic mean) ^b	Same as primary
	150 µg/m ³	24-hour ^c	
Ozone	0.12 ppm	1-hour ^d	Same as primary
Sulfur oxides	0.03 ppm	Annual (arithmetic mean)	---
	0.14 ppm	24-hour ^a	---
	---	3-hour ^a	0.5 ppm

^a Not to be exceeded more than once per year.
^b The standard is attained where the expected annual arithmetic mean concentration, as determined in accordance with Appendix K (52 FR 24667, July 1, 1987), is less than or equal to 50 µg/m³.
^c The standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than 1.
^d The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is equal to or less than 1.

Where there is an existing major stationary source, a Superfund site could trigger a modification to that source. A major modification is generally a physical or operational change in a major stationary source that would result in a significant net emissions increase for any regulated pollutant. Specific numerical cutoffs that define significant increases are identified in 40 CFR 52.21(b)(23). A Superfund site would be considered a modification to an existing source only where:

- The site is physically connected to or immediately adjacent to the existing source;
- A responsible party (RP) is conducting the cleanup;
- The RP is also the owner or operator of the existing source; and
- The CERCLA site is somehow associated with the operations of the existing source.

Fugitive emissions are not to be considered in determining whether a source would be a major source, except when such emissions come from source categories listed in 40 CFR 52.21(b)(1)(iii) (see Highlight D-15). Fugitive emissions would not be counted in with CERCLA site emissions unless the site is considered a modification to one of the listed source categories. However, operations resulting in emissions are not considered fugitive and would be subject to the NAAQS standards.

D.6.2 National Emissions Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR Part 61).

Applicability

NESHAPs are emission standards for certain hazardous air pollutants for which no NAAQS exists. They are promulgated for emissions from specific sources. NESHAPs are generally not applicable to CERCLA remedial actions because Superfund sites do not usually contain any of the specific source categories regulated. Furthermore, they are generally not relevant and appropriate, because the standards of control are intended for the specific type of source regulated and not all sources of that pollutant.

In general, only NESHAPs for radionuclides and asbestos are likely to be ARARs for CERCLA sites. NESHAPs for radionuclides, which are discussed in detail in the radioactive wastes section of this appendix, regulate radionuclide air emissions from active underground uranium mines, certain DOE facilities, certain NRC-licensed facilities and non-DOE federal facilities, and active NRC-licensed uranium mill tailings sites. Most of these NESHAPs will be only relevant and appropriate for CERCLA mining site actions.

Asbestos NESHAPs govern inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations, active waste disposal sites, and disposal of asbestos-containing waste from demolition and renovation operations. Although these requirements are not applicable to CERCLA sites, they may be relevant and appropriate when they are sufficiently similar to the site situation and appropriate to the circumstances of the release.

Under the authority of the 1990 amendments to the Clean Air Act, additional NESHAPs will be promulgated for certain sources not currently regulated. Several of these NESHAPs, when promulgated, may be relevant and appropriate for activities at mining sites. The sources added by the amendments include primary copper smelters, primary lead smelters, zinc smelting, and other facilities that process nonferrous metals. In addition, under the CAA amendments, emissions of greater than 10 tons per year of a pollutant will be subject to NESHAPs. Such quantities could be generated by response activities such as re-mining at a Superfund mining site.

Standards

Asbestos NESHAPs (40 CFR Part 61 Subpart M).

- 40 CFR 61.145: Standard for Demolition and Renovation: Procedures for Asbestos Emission Control
 - This section sets requirements for removing friable asbestos during building demolition, including wetting, exhaust systems, and removal procedures.
- 40 CFR 61.150: Standard for Waste Disposal for Manufacturing, Fabricating, Demolition, Renovation, and Spraying Operations
 - Owners/operators must deposit all asbestos-containing waste material at waste disposal sites in accordance with 40 CFR 61.154; and
 - Discharge no visible emissions to the outside air during the collection, processing (including incineration), packaging, or transporting of any

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asbestos-containing waste material generated by the source, or use one of the emission control and waste treatment methods specified in this section.

**Highlight D-15:
Source Categories Listed in 40 CFR 52.21(b)(1)(iii)**

- Coal cleaning plants (with thermal dryers)
- Kraft pulp mills
- Portland cement plants
- Primary zinc smelters
- Iron and steel mills
- Primary aluminum ore reduction plants
- Primary copper smelters
- Municipal incinerators capable of charging more than 250 tons of refuse per day
- Hydrofluoric, sulfuric, or nitric acid plants
- Petroleum refineries
- Lime plants
- Phosphate rock processing plants
- Coke oven batteries
- Sulfur recovery plants
- Carbon black plants (furnace process)
- Primary lead smelters
- Fuel conversion plants
- Sintering plants
- Chemical processing plants
- Secondary metal production plants
- Fossil-fuel boilers (or combination thereof) totaling more than 250 million British thermal units per hour heat input
- Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels
- Taconite ore processing plants
- Glass fiber processing plants
- Charcoal production plants
- Fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input
- Any other stationary source category which, as of August 7, 1980, was regulated under section 111 or 112 of the Clean Air Act.

- 40 CFR 61.151: Standard for Inactive Waste Disposal Sites for Asbestos Mills and Manufacturing and Fabricating Operations
 - Owners/operators of inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations must comply with one of the following:
 - Discharge no visible emissions to the outside air from an inactive waste disposal site subject to these requirements;
 - Cover the asbestos-containing waste material with at least 15 cm (6 inches) of compacted nonasbestos-containing material, and grow and maintain a cover of vegetation on the area adequate to prevent exposure of the asbestos-containing material, or in desert areas where vegetation would be difficult to maintain, place at least 8 additional cm (3 inches) of well-graded, nonasbestos crushed rock on top of the final cover instead of vegetation and maintain it to prevent emissions;
 - Cover the asbestos-containing waste material with at least 60 cm (2 feet) of compacted nonasbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste; or
 - For inactive waste disposal sites for asbestos tailings, apply a resinous or petroleum-based dust suppression agent that effectively binds dust to control surface air emissions, using the agent as recommended by its manufacturer. (Obtain prior written approval of the Administrator to

use other equally effective dust suppression agents, excluding any used, spent, or other waste oil).

- Unless a natural barrier adequately deters access by the general public, install and maintain warning signs and fencing (as directed by 40 CFR 61.151(b)(1) and (2)) or comply with the standards listed above.
- With EPA approval, an owner/operator may use an alternative control method.
- Notify the Administrator in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site under this section.
- Within 60 days of a site becoming inactive, record a notation on the deed to the facility property and on any other instrument that would normally be examined during a title search.
- 40 CFR 61.154: Standard for Active Waste Disposal Sites
 - Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited; or
 - At the end of each operating day or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited during the operating day or previous 24-hour period should be covered with at least 15 cm (6 inches) of compacted nonasbestos-containing material or a resinous or petroleum-based dust suppression agent; or
 - An alternative control method for emissions is used, with prior EPA approval.
 - Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained or at least 15 cm (6 inches) of compacted nonasbestos-containing material must cover the asbestos-containing waste material.
 - Owners or operators of active waste disposal sites must maintain waste shipment records as specified, send a copy of the signed waste shipment record to the waste generator, correct discrepancies to the records as specified, and keep copies of all the records and reports for at least 2 years, to be made available to the Administrator for inspection upon request.
 - Upon closure of the site, owners or operators must comply with provisions for inactive waste disposal sites and submit records of asbestos quantities and locations to the Administrator.
 - Owners or operators must notify the Administrator in writing at least 45 days prior to excavating any asbestos-containing waste material that has been deposited and covered at a waste disposal site.

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Under RCRA, EPA is also regulating air emissions of some organics from process vents and surface impoundments and tanks in three phases. Phase I, which was promulgated on June 21, 1990 (55 FR 25454), limits organic emissions from (1) process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations that manage hazardous wastes with 10 ppm by weight or greater total organics concentration, and (2) leaks from equipment that contains or contacts hazardous waste streams with 10 percent by weight or greater total organics. Phase II, which was proposed July 22, 1992 (56 FR 33490), consists of air standards for organic air emissions from other sources not covered or not adequately controlled by existing standards, specifically from surface impoundments, tanks, containers, and miscellaneous units. Under Phase III, EPA will assess the residual risk from Phases I and II and will, if necessary, develop further regulations or guidance to address the effects of organic air emissions.

D.6.3 New Source Performance Standards (NSPS). These standards cover categories of stationary sources that emit particular pollutants. The purpose of these standards is to ensure that new stationary sources are designed, built, equipped, operated, and maintained to reduce emissions to a minimum. The standards affect all new stationary sources, regardless of whether they are located in an attainment or non-attainment area. Because they are source-specific, the standards are generally not applicable to Superfund remedial actions. An NSPS may be applicable if the facility at the Superfund site is a new source subject to an NSPS (e.g., an incinerator). An NSPS may be relevant and appropriate if the pollutant emitted and the technology employed during the remedial action are sufficiently similar to the pollutant and source category regulated by an NSPS. (As these standards are source-specific, they are located at various points in the regulations, dependent upon the sources. For example, NSPS's addressing coal mining, mineral mining and processing, and ore mining and dressing appear at 40 CFR Part 434, 40 CFR Part 436, and 40 CFR Part 440 respectively).

D.6.4 State Programs. As discussed above, states must adopt a plan to implement, maintain, administer, and enforce NAAQS. These State Implementation Plans (SIPs) must be approved by EPA. States also may be authorized to enforce NSPS and NESHAPs. States have the authority to adopt emissions standards and limitations and control strategies more stringent than federal standards. State standards are potential ARARs for Superfund sites, as are Regional or local air program requirements that are a part of a SIP.

In addition, many states have adopted programs to regulate "toxic air pollutants." Requirements under these programs are likely to be the most significant ARARs for Superfund activities. These programs differ from state to state in terms of the pollutants and sources regulated and the safe levels adopted. Site managers should determine if the state in which the CERCLA site is located has adopted such a program.

A typical state air toxics program will require a source to do the following:

- Identify pollutants of concern by comparing anticipated emissions with the state air toxics list;
- Estimate emissions of toxic air pollutants using procedures by the state;
- Estimate off-site concentrations, normally by air quality modeling procedures approved by EPA or the state;
- Compare off-site concentrations to permissible state levels; and
- Require additional controls (beyond what would otherwise be required) if a new source is likely to exceed the state limits.

D.6.5 Implementation of CAA Requirements. Where NAAQS are applicable, certain pollution controls may be required. At CERCLA sites, these may include vapor recovery on air strippers, controls on emissions of particulates from incinerators, and controls on sources of fugitive particulate emissions. Construction and demolition sites are areas of Superfund sites that are commonly regulated by Clean Air Act requirements.

**Highlight D-16:
CAA Requirements as ARARs: Example Site**

Anaconda Smelter/Mill Creek, MT

Arsenic, cadmium, and lead contamination in several media in Mill Creek, Montana posed an imminent and substantial danger to human health. The selected remedy for the first operable unit called for relocation of residents and temporary stabilization of the area, including demolition activities. It was determined that remedial actions were subject to NAAQS for total suspended particulates and lead (40 CFR Part 50) and to the Montana Air Quality Bureau's requirements for particulate matter and construction/demolition sites. Under these requirements, all buildings had to be wetted with water inside and outside prior to demolition. A dust-suppressing mist had to be applied at demolition to control airborne particles. In addition, all haul roads and demolition debris had to be watered to prevent excessive dust.

D.7 SURFACE MINING CONTROL AND RECLAMATION ACT

D.7.1 Scope. The Surface Mining Control and Reclamation Act of 1977 (SMCRA) governs activities associated with coal exploration and mining. Because the standards promulgated under SMCRA are intended for active coal mines, they will not be *applicable* to actions at Superfund mining sites. However, the standards found in 30 CFR Parts 816 and 817, which govern surface mining activities and underground mining activities, respectively, may be relevant and appropriate at inactive CERCLA mining sites where activities similar to SMCRA-regulated activities occur. This is because SMCRA regulations often address circumstances that are similar and establish performance objectives that are consistent with the objectives of a CERCLA investigation.

D.7.2 Implementation.

Under SMCRA, states may be authorized to implement their own programs for controlling coal mining operations. Regulations passed by an authorized state may be more stringent than federal requirements. States also have the authority to conduct reclamation programs for abandoned coal mines, which may be financed using the Abandoned Mine Land Reclamation Fund (AMLRF), a Fund established by SMCRA. In states where more stringent standards are promulgated, these standards (and not the federal requirements) will be ARARs.

Although EPA, under CERCLA, and the Office of Surface Mining Reclamation and Enforcement (OSMRE) of the Department of the Interior, under SMCRA, *both* have authority to clean up abandoned coal mine sites, it has been EPA's policy until this time not to assert its authority and list coal mine sites on the NPL. EPA's position has been that because the AMLRF was designed specifically to address reclamation and restoration of land and water resources adversely affected by past coal mining activities, it is a more efficient use of resources to allow this Fund to address abandoned coal sites than to clean up these sites under Superfund. Therefore, coal mining sites will seldom, if ever, be addressed by CERCLA cleanup actions, and the SMCRA requirements will not be applicable.

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Like Superfund requirements, SMCRA performance standards are often established based on the environmental provisions of other laws. For example, regulations may require compliance with established numerical standards, such as applicable water quality standards. In other cases, the standards may be technology-based or may simply require that activities minimize adverse effects.

SMCRA standards may be relevant and appropriate for CERCLA actions at mining sites if remedial activities include those covered by these standards. SMCRA will generally be considered ARARs for activities that are not regulated under other laws. For example, none of the units regulated under SMCRA is regulated under other environmental laws, nor is revegetation regulated. In some cases, however, CERCLA requirements for achieving a protective remedy may be more stringent than SMCRA standards. For example, revegetation needs at a Superfund mining site may exceed the SMCRA performance standard for revegetation. In such instances, site managers must ensure that the remedy for the site is protective of human health and the environment, even after standards determined to be ARARs are met. A discussion of when each SMCRA requirement in 30 CFR Part 816 may be relevant and appropriate is included in the table below. (The standards of 30 CFR Part 817, which cover underground mines, are similar to those in Part 816.)

Although the above table lists only the SMCRA requirements of 30 CFR Part 816, standards found in Part 817, which govern underground mining activities at coal mines, should also be considered at Superfund mining sites. In most cases, they will not be ARARs, but they may offer standards for activities not regulated elsewhere, such as for tunnel plugging. The standards in Part 817 regulate many of the same activities as Part 816. Additional regulated activities include sealing of underground openings, use of explosives, and disposal of excess spoil and coal mine waste.

Highlight D-17: SMCRA Requirements as ARARs: 2 Example Sites

At the *Cherokee County* site in Kansas, the selected remedial action includes the removal, consolidation, and on-site placement of surface mine wastes in mine pits, shafts, and subsidences. It also includes diversion and channelization of surface streams with recontouring and vegetation of land surfaces. The site manager determined that the SMCRA standards for backfilling and grading, revegetation, postmining land use, and rehabilitation of sedimentation ponds, diversions, impoundments, and treatment facilities are relevant and appropriate for the site.

At the *California Gulch* site in Colorado, the selected remedial action includes tunnel plugging and water control measures. Although EPA and the state identified no ARARs related to tunnel plugging, they considered 30 CFR Part 817 requirements as guidance to ensure that the tunnel plugging activities were protective. They also considered 30 CFR Part 817 for guidance to see that activities associated with water control measures are protective.

D.8 FISH AND WILDLIFE COORDINATION ACT

D.8.1 Prerequisites for Applicability. The Fish and Wildlife Coordination Act is designed to protect fish and wildlife when federal actions result in the control or structural modification of a natural stream or body of water. If remedial actions at a CERCLA site will include control or structural modification of a natural stream or body of water, site managers should consider the Fish and Wildlife Coordination Act as a potential ARAR.

Fish and Wildlife Coordination Act requirements will generally be applicable to remedial actions that include:

- Construction of dams, levees, impoundments;
- Stream relocation;
- Water diversion structures; or
- Discharges of pollutants into a body of water or wetlands.

D.8.2 Standards.

- Federal agencies must take into consideration the effect that water-related projects would have on fish and wildlife and take action to prevent loss or damage to these resources.
- Agencies must consult with the Fish and Wildlife Service or the National Marine Fisheries Service as well as the state Wildlife Resources Agency if alteration occurs as a result of off site actions. Consultation is recommended for on site actions involving alteration.

Circumstances Under Which Some SMCRA Standards May Be Relevant and Appropriate at CERCLA Mining Sites

SMCRA Requirement That May Be Relevant and Appropriate	Summary of SMCRA Requirement	Discussion of When Requirement is Potentially Relevant and Appropriate for CERCLA
Casing and Sealing of Drilled Holes (816.15)	<p>Exposed underground openings no longer needed for monitoring or as water wells, will be capped, sealed, and backfilled.</p> <p>Permanent closure methods will be designed to prevent access to mine workings and to keep acid and other toxic drainage from entering ground/surface waters.</p>	<p>Probably not relevant and appropriate to CERCLA unless attaining remedial action objectives requires sealing of drilled holes or other mine openings.</p> <p>May be relevant and appropriate to CERCLA if containment of mine drainage is required to meet remedial action objectives. These requirements should be considered especially at sites where Acid Mine Drainage is a source of contamination. They may be appropriate, for example, if there is a release or threat of a release of acid that could mobilize a related release of acid-soluble metals that could disrupt the hydrologic balance.</p>
Diversions (816.43)	<p>Diversions shall be designed to minimize adverse impacts to hydrologic balance within permit area.</p> <p>Diversions shall not be used to divert water into underground mines without approval of regulatory authority.</p> <p>Diversions shall:</p> <ul style="list-style-type: none"> • be stable; • provide protection against flooding; • prevent outside sediment from entering into streamflow; and • comply with all applicable local, State, and Federal regulations. <p>Temporary diversions shall be replaced with permanent diversions.</p> <p>Additional requirements may be required of diversions by a regulatory authority.</p>	<p>When diversions of surface water are used to meet remedial action objectives, the performance standards may be relevant and appropriate. These standards are most likely to be relevant and appropriate at sites where stream and/or runoff channelization is part of the remedy.</p>
Sediment Control Measures (816.45)	<p>Sediment control measures consist of proper mining and reclamation methods and sediment control practices.</p> <p>Sediment control methods include §816.45 (b) (1) - (3):</p> <ul style="list-style-type: none"> • disturbing the smallest practicable area at any mining operation by backfilling, grading, and revegetation; 	<p>May be relevant and appropriate to CERCLA. If remedial action involves sediment control measures, performance standards should be met, except for certain elements of §816.45 (b) (1) - (3) that address active sites (e.g., disturbing smallest practicable area). These standards are most likely</p>

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	<ul style="list-style-type: none"> • stabilizing backfill material to promote a reduction in the rate and volume of runoff; • retaining sediment in disturbed area; • diverting runoff; • reducing overland velocity, run off volume, and trap sediment; and • treating with chemicals. <p>Sediment control measures shall be designed, constructed, and maintained to:</p> <ul style="list-style-type: none"> • prevent additional sediment from entering the streamflow; • meet more stringent State or Federal effluent limitations; and • minimize erosion. 	<p>to be relevant and appropriate for remedial actions involving runoff diversion and/or slope stabilization designed to control sedimentation.</p>
<p>Hydrologic Balance: Siltation Structures (816.46)</p>	<p>Surface drainage from a disturbed area shall be passed through a siltation structure before leaving permit area.</p> <p>Siltation structures shall be maintained until removal is authorized.</p> <p>The land on which a siltation structure was located shall be regraded and revegetated.</p> <p>When sedimentation ponds are used they shall be:</p> <ul style="list-style-type: none"> • located as near as possible to the disturbed area; • designed to: <ul style="list-style-type: none"> - provide adequate sediment storage volume; - meet effluent regulations by State and Federal effluent limitation; - contain or treat 10-year, 24-hour precipitation events; and - provide a non-clogging dewatering device adequate to maintain detention time; and • contain spillways. 	<p>When siltation structures (e.g., sedimentation ponds) are required as part of the remedial action, these requirements may be relevant and appropriate and performance standards should be met.</p>
<p>Hydrologic Balance: Discharge Structures (816.47)</p>	<p>To reduce erosion, prevent deepening or enlargements of stream channels, and minimize disturbance of hydrologic balance, discharge from sedimentation ponds, coal processing waste dams, embankments, and diversions shall be controlled by: energy dissipators, riprap channels, and other devices.</p>	<p>May be relevant and appropriate to CERCLA when remedial action involves sedimentation ponds; performance standards should be met.</p>
<p>Post-mining rehabilitation of sedimentation ponds, diversions, impoundments, and treatment facilities (816.56)</p>	<p>Before abandoning a permit area or seeking bond release, all temporary structures shall be removed and all permanent sedimentation ponds, diversions, impoundments, and treatment facilities will meet permanent structure requirements. (in §816.49 (b)), which include:</p>	<p>May be relevant and appropriate to CERCLA when remedial action involves sedimentation ponds; performance standards should be met.</p>

- A permanent impoundment of water may be created, if authorized by a regulatory authority and the following is demonstrated:
 - size and configuration of such impoundment is adequate for purposes;
 - quality of water will be suitable for intended use, will meet applicable State and Federal water quality standards, discharges will meet applicable effluent limitations, and will not degrade receiving water below applicable State and Federal water quality standards;
 - water level will be sufficiently stable and capable of supporting use;
 - final grading will provide adequate safety and access for water users;
 - impoundment will not result in diminution of quality and quantity of water used by surrounding landowners for commerce or regulation; and
 - impoundment is suitable for approved postmining land use.
-

Backfilling and grading (816.102)

Disturbed areas shall be backfilled and graded to:

- achieve original contour;
- eliminate highwalls, spoil piles, and depressions;
- achieve a postmining site that prevents slides;
- minimize erosion and water pollution;
- support approved postmining;
- return spoil to mined-out areas;
- compact spoil and waste materials outside the mined-area in non-steep slope areas to restore contour;
- dispose of coal processing waste and underground development waste in accordance with §§816.81 and 816.83; and
- cover exposed coal seams, acid- and toxic-forming materials, and combustible materials, exposed, used, or produced during mining with nontoxic and noncombustible material, or treat these materials to control their impact on surface and groundwater.

If the objectives of the remedial action involve backfilling and grading, these requirements may be relevant and appropriate to CERCLA, and SMCRA performance standards should be met. These requirements also should be evaluated for remedial actions involving filling in of mined areas, excavation pits, etc.

Cut and fill-terraces may be allowed.

Backfilling and grading: previously mined areas (816.106)

Remining operations on previously mined areas, containing a preexisting highwall shall comply with §§816.102 through 816.107, except as provided:

When remedial action involves remining, CERCLA should follow performance standards. These are especially likely to be relevant and appropriate where remedial actions will involve on-site place-

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- Requirements of §816.102(a) (1) and (2) requiring the elimination of highwalls do not apply where the volume of spoil is insufficient to completely backfill the reaffected or enlarged highwall.
 - The highwall shall be eliminated to the maximum extent technically practical, in accordance with the following:
 - all spoil by remaining operation shall be used to backfill area and any reasonably available spoil in immediate vicinity will be included;
 - backfill shall be graded to a slope which is compatible with approved postmining land use;
 - any highway remnant must be stable, not posing a hazard to safety; and
 - if moving spoil, placed on the outslope during previous mining operations, will cause instability to remaining spoil, it will not be disturbed.
-

ment of surface mine wastes in mine pits, shafts, and subsidences, or where previous openings must be sealed.

Backfilling and grading: steep slopes (816.107)

Surface mining activities on steep slopes will be conducted to meet requirements of §§816.102 - 816.106 and requirements of this section except where mining is conducted on flat or gently rolling terrain with an occasional steep slope through which mining proceeds.

When remedial action involves backfilling and grading on steep slopes, performance standards should be met. Remedial actions affected by these requirements may include slope stabilization and other measures to prevent erosion and/or runoff.

The following materials shall not be placed on a downslope:

- spoil;
- waste material of any type;
- debris from clearing and grubbing; and
- abandoned or disabled equipment.

Land above highwall shall not be disturbed unless regulatory authority finds disturbance will facilitate compliance.

Woody materials shall not be buried in the backfilled area, unless the regulatory authority determines otherwise.

Revegetation - general requirements (816.111)

On regraded areas and all other disturbed areas (except water areas and surface area roads), the permittee shall establish a vegetative cover that is:

- diverse, effective, and permanent;
- comprised of species native to the area or desirable and necessary species;
- a cover equal to the natural vegetation of the area; and
- capable of stabilizing surface soil from erosion.

Revegetation requirements may be relevant and appropriate to CERCLA when standards do not exist for non-coal mining lands. In some cases, these requirements may not be sufficient to protect human health and the environment at a Superfund site. However, they should be considered for sites that are subject to erosion and soils are contaminated as well as for sites where the

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	<p>Reestablished plant species shall be:</p> <ul style="list-style-type: none"> • compatible with approved postmining use; • have same seasonal characteristics as the area; • capable of self-regeneration; • compatible with plant and animal species of the area; and • meet State and Federal seed and plant regulations. <p>Regulatory authority may grant exceptions.</p> <p>When regulatory authority approves of cropland postmining, the authority may grant exceptions.</p>	<p>remedial action involves stream diversion/channelization or filling of mine shafts.</p>
Timing	<p>Disturbed areas shall be planted during:</p> <ul style="list-style-type: none"> • first normal period for favorable plant growth after plant-growth medium has been replaced; and • the planting time generally accepted locally for the plant materials selected. 	<p>These timing requirements may be relevant and appropriate to CERCLA, if remedial action involves revegetation.</p>
Mulching and other soil stabilizing practices	<p>Suitable mulch and other stabilizing practices will be used on all regraded areas, covered with topsoil.</p> <p>Regulatory authority may waive this requirement if seasonal, soil, or slope factors do not require mulching and soil stabilization to control erosion or maintain an effective cover.</p>	<p>Mulching and other soil stabilizing practices may be relevant and appropriate to CERCLA, if remedial action involves revegetation.</p>
Standards for success	<p>Judged on effectiveness of vegetation for postmining land use, extent of cover vs. natural cover, and implementation of general requirements. Evaluation requires:</p> <ul style="list-style-type: none"> • Valid sampling approach • Comparison to unmined lands • Meeting different criteria for grazing, cropping, fish/wildlife, and industrial/ commercial/residential use <p>Specifies period of required husbandry, based on average precipitation amounts</p>	<p>Revegetation requirements may be relevant and appropriate to CERCLA when standards do not exist for non-coal mining lands.</p> <p>Superfund may incorporate additional goals into successful revegetation related to specific plant and animal conditions, as well as species appropriate given remaining wastes on site.</p> <p>Post-revegetation activities are considered operation and maintenance and would be addressed accordingly.</p>
Post mining land use (816.133)	<p>All disturbed areas must be restored in a timely manner to conditions capable of supporting</p> <ul style="list-style-type: none"> • Use capable of supporting before mining; or • Higher or better uses 	

D.8.3 Implementation of the Fish and Wildlife Coordination Act at Superfund Mining Sites.

Remedial actions at Superfund mining sites will often require alteration of natural bodies of water, due to the nature of the sites. For example, at many mining sites, tunnel plugging will be necessary, or surface water may have to be diverted around tailings or away from mine areas.

The RI/FS should describe any reports or recommendations of the FWS. When control or modification of a water body is involved, the ROD should state whether each alternative will meet substantive Fish and Wildlife Coordination Act requirements, and should briefly describe requirements for the remedy selected, including the impacts, if any, of the response alternatives on wildlife and the mitigation measures that would be employed.

D.9 EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS AND EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT

E.O. 11990, Protection of Wetlands, requires federal agencies conducting certain activities to avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands if a practicable alternative exists. The requirements of this E.O. are spelled out in 40 CFR 6.302(a) and 40 CFR Part 6, Appendix A. E.O. 11988, Floodplain Management, requires federal agencies to evaluate the potential effects of actions they may take in a floodplain to avoid, to the extent possible, adverse effects associated with direct and indirect development of a floodplain. The requirements of this E.O. are spelled out in 40 CFR 6.302(b) and 40 CFR Part 6, Appendix A. CERCLA actions at mining sites must consider these Executive Orders and comply with the promulgated requirements, where they are determined to be ARARs.

The procedures for meeting the requirements of each Executive Order are similar. There are three steps to meeting the requirements:

- The site manager must determine if proposed actions will be in or will affect a floodplain/wetlands. **If it is determined that actions will not be located in or will not affect a floodplain/wetlands, no further consideration of the requirements of these Executive Orders is necessary.**
- If actions will be in or will affect a floodplain/wetland, the site manager must prepare a floodplains/wetlands assessment. This assessment will be part of the environmental assessment.
- The site manager must either avoid adverse impacts or minimize them if no practicable alternative exists.

Highlight D-18: Fish and Wildlife Coordination Act as ARARs: Example Site

At the *California Gulch* site in Colorado, the remedial action included tunnel plugging that would modify streamflow. It also required surface water diversions and construction of surge ponds that could affect the California Gulch. Because of these remedial activities and their potential impact on fish and wildlife, EPA was required to consult with the FWS and the Colorado Department of Natural Resources to determine the means and measures necessary to mitigate, prevent, and compensate for project-related losses of wildlife resources and to enhance the resources. EPA received and responded to comments on the FS alternatives and the proposed plan from both the Department of the Interior and the State of Colorado. In addition, the state was consulted on the ROD.

D.9.1 Standards (40 CFR 6.302(a) and (b), 40 CFR Part 6, Appendix A).

Floodplain/Wetlands Determination

- Before undertaking an action, EPA must determine whether or not the action will be located in or affect a floodplain or wetlands.
- The Agency shall utilize maps prepared by the federal Insurance Administration of the federal Emergency Management Agency, Fish and Wildlife Service, and other appropriate agencies to determine whether a proposed action is located in or will likely affect a floodplain or wetlands.
- If there is no floodplain/wetlands impact identified, the action may proceed without further consideration of the remaining procedures set forth below.

Early Public Notice

- When it is apparent that a proposed or potential Agency action is likely to impact a floodplain or wetlands, the public should be informed through appropriate public notice procedures.

Floodplain/Wetlands Assessment

- If the Agency determines a proposed action is located in or affects a floodplain or wetlands, a floodplain/wetlands assessment shall be undertaken.
- For those actions where an environmental assessment (EA) or environmental impact statement (EIS) is prepared pursuant to 40 CFR Part 6, the floodplain wetlands assessment shall be prepared concurrently with these analyses and shall be included in the EA or EIS. In all other cases, a "floodplain/wetlands assessment" shall be prepared.
- Assessments shall consist of a description of the proposed action, a discussion of its effect on the floodplain/wetlands, and a description of alternatives.

Public Review of Assessments

- Where an EA/EIS is prepared, opportunity for public review will be provided by EIS provisions. In other cases, an equivalent public notice shall be made.

Minimize, Restore, or Preserve

- If there is no practicable alternative to locating in or affecting the floodplain or wetlands, the Agency shall act to minimize potential harm to the floodplain/wetlands.
- The Agency shall act to restore and preserve the natural beneficial values of floodplains/wetlands as part of the analysis of alternatives under consideration.

Agency Decision

- After consideration of alternative action, the agency shall select the desired alternative.
- For all Agency actions proposed to be in or affecting a floodplain/wetlands, the Agency shall provide further public notice announcing this decision.
- This decision shall be accompanied by a Statement of Findings, which shall include:
 - The reasons why the proposed action must be located in or affect the floodplain/wetlands;
 - A description of significant facts considered in making the decision;
 - A statement indicating whether the proposed action conforms to applicable state or local floodplain protection standards;
 - A description of the steps taken to design or modify the proposed action to minimize potential harm to or within the floodplain or wetlands; and
 - A statement indicating how the proposed action affects the natural or beneficial values of the floodplain or wetlands.
- If the provisions of 40 CFR Part 6 apply, the Statement of Findings may be incorporated in the final EIS or in the environmental assessment. In other cases, notice should be placed in the *Federal Register* or other local medium and copies sent to federal, state, and local agencies and other entities which submitted comments or are otherwise concerned with the floodplains/wetlands assessment.

Additional Floodplain Management Provisions

- EPA controlled structures and facilities must be constructed in accordance with existing criteria and standards set forth under the National Flood Insurance Program (NFIP) and must include mitigation of adverse impacts wherever feasible. Deviation from these requirements may occur only to the extent NFIP standards are demonstrated as inappropriate for a given structure or facility.
- If newly constructed structures or facilities are to be located in a floodplain, accepted floodproofing and other flood protection measures shall be undertaken. EPA shall, wherever practicable, elevate structures above the base flood level rather than filling land.
- The potential for restoring and preserving floodplains and wetlands so that their natural and beneficial values can be realized must be considered and incorporated into any EPA plan or action wherever feasible.
- If property used by the public has suffered damage or is located in an identified flood hazard area, EPA shall provide on structures, and other places where appropriate, conspicuous indicators of past and probable flood height to enhance public knowledge of flood hazards.
- When property in flood plains is proposed for lease, easement, right-of-way, or disposal to non-federal public or private parties, EPA shall reference in the conveyance those uses that are restricted under federal, state, and local floodplain regulations and attach other restrictions to uses of the property as appropriate.

D.9.2 Applicability of E.O. 11990 and Other Wetlands Protection Requirements. In addition to the requirements of 40 CFR Part 6, which requires that EPA initiate activities to avoid, to the extent possible, long- and short-term adverse impacts associated with the destruction or modification of wetlands, to avoid direct or indirect support of new construction in wetlands where there are practicable alternatives, and to minimize potential harm to wetlands when there are no practicable alternatives, section 404 of the Clean Water Act contains provisions for wetlands protection. Section 404 requires that no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, as long as the alternative does not have other significant adverse environmental consequences. (For more information on CWA section 404, see the CWA section of this appendix.) Also, E.O. 11990 adopts a policy for federal agencies that wherever wetlands are destroyed or lost, wetlands of the same magnitude will be enhanced or created.

Section 404 requirements and the 40 CFR Part 6 requirements are ARARs for different types of actions and require different analyses. Section 404 requirements are only applicable when dredged or fill material is placed into a wetland; therefore, excavation of wastes from a wetland would not trigger these standards or require any analysis of "practicability." The 40 CFR 6.302 requirements are potential ARARs whenever wetlands are affected, but E.O. 11990 itself is never an ARAR because it is not legally promulgated or enforceable against the Agency by the public.

In deciding whether a wetland requirement is an ARAR, there may be some flexibility in determining the meaning of "minimizing adverse effects to the extent possible" (under 40 CFR 6.302). Some interpretation may be necessary because, in some cases, a response action at a Superfund site may involve a discharge that may destroy an undegraded, functioning wetland. Examples of such an action include the diversion of surface or groundwater through an existing wetland and building access roads in wetlands. As a further example, a wetland may be contaminated, but if the wastes are removed, the wetland will become a lake and the wetland will be destroyed. If the waste is left in place, the wetland will be preserved, but the risk to human health and the environment will remain.

Site managers should try to avoid adverse impacts wherever possible; however, in some cases the benefits gained by the response action may outweigh the adverse effects to the wetland. In fact, avoiding the adverse effects may even be more harmful to human health and the environment than preserving the wetland. In such instances, an ARARs waiver for greater risk to human health and the environment may be appropriate (see the section on ARARs waivers in this appendix). (Wetlands creation to replace destroyed wetlands may also be required.)

D.9.3 Implementation of Wetlands Protection Requirements at Mining Sites. An innovative technology for treating acid mine drainage (AMD) from Superfund mining sites may be affected by wetlands protection requirements. In this treatment, AMD is allowed to flow through artificial wetlands, which filter out contaminants. If these artificial wetlands are constructed in a natural wetland, the requirements of 40 CFR Part 6 may be applicable. Also, if construction involves placing dredged or fill material into a natural wetland, the site manager should consider CWA section 404 as a potential ARAR. Finally, if natural wetlands rather than artificial wetlands are used for this type of treatment, this may also trigger Part 6 requirements.

**Highlight D-19:
Wetlands/Floodplains Requirements as ARARs: Example Site**

The *Anaconda Smelter/Mill Creek* site in Montana is located within the 100-year floodplain of Mill Creek. EPA also determined that riparian woodland/shrubland at the site is a wetland. Demolition activities will occur within the wetland area. The following management practices will be utilized during demolition and site stabilization activities:

- Mechanized equipment will be used in a manner that minimized effects to wetland vegetation.
- No new roads will be constructed.
- Following demolition, building foundations will collapsed and filled, and the area regraded and smoothed to conform to the existing topography and to facilitate drainage.
- Riparian vegetation rendered non-viable during demolition activities will be removed and replaced with like vegetation.
- Disturbed areas will be mulched with straw and seeded with grasses.

D.10 NATIONAL HISTORIC PRESERVATION ACT

The Historic Sites Act (HSA) of 1935, The National Historic Preservation Act (NHPA) of 1966, and the Archeological and Historic Preservation Act (AHPA) of 1974 are designed to protect the Nation's historical heritage from extinction. Because of the CERCLA section 121 mandate to comply with those requirements of other federal and state environmental laws that are ARARs, Superfund actions are required to take into account the effects of any response activities on any historic properties or cultural resources regulated under these laws. If no cultural resources or historic properties are present at an NPL site, the NHPA and other laws are not considered an ARAR for the proposed response activity. If a cultural resource on or eligible for inclusion on the National Register of Historic Places is present at an NPL site, however, the NHPA may be considered an ARAR. In this case, EPA must determine what effect a Superfund response activity (i.e., a removal or remedial cleanup activity) will have on an identified cultural resource. If cultural resources are present, the ROD or removal action memorandum should identify the NHPA as an ARAR. For each alternative, the ROD should identify whether the alternative will comply with substantive NHPA requirements. For the selected remedy, the ROD or action memorandum should also include a brief statement describing what compliance with the NHPA entails.

This section discusses how to determine whether the NHPA and other historic preservation laws are ARARs and the steps that must be taken to ensure that remedial activities at mining sites comply with the NHPA. Highlight D-20 provides more information on the historic preservation laws.

D.10.1 Implementing Historic Preservation Requirements. The Department of Interior has formed the Advisory Council on Historic Preservation (ACHP) and the National Register of Historic Places to implement these historic preservation laws. The National Register of Historic Places lists the nation's cultural resources that should be considered for protection from destruction or impairment. The National Register is not an all inclusive list (i.e. not every historical site that should be protected has been included in the National Register at this time). Consequently, historic properties that may be eligible for inclusion on the National Register must also be protected under these laws. Procedural requirements for listing properties on the National Register are listed in 36 CFR 60.1. The criteria applied to evaluate whether cultural resources will be eligible for inclusion on the National Register, including those found at Superfund sites are found in 36 CFR 60.4 and are summarized in Highlight D-21. Executive Order 11593, revised on May 13, 1971, "Protection and Enhancement of the Cultural Environment," requires federal agencies to locate, inventory and nominate all sites, buildings, districts, and objects under their jurisdiction or control for listing on the National Register of Historic Places. Under this Executive Order, EPA must undertake these activities when such sites are addressed as part of the Superfund program.

**Highlight D-20:
Historic Preservation Laws**

The Historic Sites Act of 1935 authorizes the Secretary of the Interior to designate areas as national landmarks for listing on the National Registry of Natural Landmarks. Under this Act, federal agencies, or responsible parties under the direction of a federal agency, are required to avoid undesirable impacts on such landmarks. Under the Archeological and Historic Preservation Act, if a federal agency, or responsible party under the direction of a federal agency, conducts an activity that may cause irreparable loss or destruction of significant scientific, prehistoric, historic, or archeological data, the Secretary of the Interior is authorized to undertake data recovery and preservation activities. The National Historic Preservation Act (NHPA) of 1966 established a program for the preservation of historic properties throughout the nation. The NHPA requires the federal government to encourage government agencies and individuals undertaking activities to preserve the cultural foundations of the Nation. The NHPA also requires that the federal government assist state and local governments to expand their historic programs and activities.

The ACHP oversees the protection of properties of historical, architectural, archeological, and cultural significance at the national, state, and local level. Under section 106 of the NHPA and Executive Order 11593, federal agencies must provide the Advisory Council on Historic Preservation a reasonable opportunity to comment on activities that may affect properties on or eligible for listing on the National Register of Historic Places. For Superfund, a Memorandum of Agreement (MOA) between EPA and DOI provides the framework of the actions agreed upon to implement the NHPA at Superfund sites.

The State Historic Preservation Officer (SHPO) is the official responsible pursuant to section 101(b)(1) of the NHPA for administering the state historic preservation program within each state or jurisdiction. For Superfund response actions, the SHPO serves as a liaison between EPA and the ACHP, and should be viewed as a technical resource to assist in determining if NHPA requirements are ARARs, and if so, how EPA must comply. The SHPO participates in the review process established by the NHPA when a federal agency's proposed activity occurs within the SHPO's jurisdiction. Although compliance with the NHPA rests with the federal agency implementing the action, EPA staff may not be as familiar with historic issues as the SHPO. Consequently, the SHPO can and should play an important role in the ARARs evaluation compliance process for this law. Coordination should be maintained among EPA, the state environmental protection department, and the SHPO to ensure full utilization of existing staff expertise in the historic preservation planning process and in the treatment of historic properties affected by the proposed remedial or removal actions. If mitigation measures are necessary to comply with the NHPA, they will occur more readily if the SHPO is involved *early* in the RI/FS process.

**Highlight D-21:
Criteria for Inclusion of a Cultural Resource on the National Register of Historic Places**

Cultural resources that may be placed on the National Register include those that:

- Are associated with events that have made a significant contribution to the broad patterns of our history;
- Are associated with the lives of persons significant in our past;
- Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

D.10.2 Complying With the Historic Preservation Laws. Compliance with the NHPA during Superfund response action requires that EPA, the state lead agency, or the private party taking a CERCLA section 104 or CERCLA section 106 action:

- Identify cultural resources on or eligible for inclusion on the National Register of Historic Places;
- Determine the effect a proposed activity will have on the identified cultural resources; and
- Avoid, minimize, or mitigate any adverse effects during implementation of the action.

In order for the Record of Decision (ROD) to be developed in a timely manner, the demonstration of compliance with the NHPA must be done as part of the Feasibility Study. During the Feasibility Study the various alternatives being considered must be evaluated for compliance with all ARARs. To ensure compliance with the NHPA, the EPA site manager should begin working with the SHPO and ACHP in the very early stages of the Superfund process. If at any point in the compliance process it is determined that cultural resources are not present or will not be affected by the proposed activity, no further investigation is required.

Identification of Properties on or Eligible for Inclusion on the National Register of Historic Places

Identification of cultural resources on, or that may be eligible for inclusion on, the National Register of Historic Places is the first step towards compliance with the NHPA. Identification should be made in the very early stages of an RI/FS (e.g., scoping), before conducting investigation activities that disturb the site, (e.g. well drilling). EPA or lead agency consultation with the SHPO is the first stage in the identification process. EPA in conjunction with the SHPO, is responsible for determining whether the area of planned remedial action includes any historic properties. "The Agency Official shall consult the State Historic Preservation Officer, the published lists of National Register and eligible properties, public records, and other individuals or organizations with historical and cultural expertise, as appropriate, to determine what historic and cultural properties are known to be within the area of the undertaking's potential environmental impact" (40 CFR section 800.4(1)). In many cases, mining sites may be historical landmarks, and when they are subject to remedial actions, it may be necessary to consider the effects of the actions on the landmark. (See Highlight D-22.)

**Highlight D-22:
Examples of the NHPA as an ARAR**

California Gulch

The Yak tunnel at the California Gulch mining site in Leadville, Colorado is considered a historical landmark due to its historical association with mining engineering in the 19th and 20th centuries. Therefore, CERCLA must take into account any adverse effects at this facility.

Clark Fork

Many mining areas along the Clark Fork, including the areas around the city of Butte, Montana, are considered historical landmarks due to their historical association with mining. Cleanup activities at the Clark Fork sites could alter certain historical structures within the local community. In order to comply with the NHPA, EPA and the state have produced a historical film to document historical resources prior to any cleanup activities.

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When determining whether the area of planned remedial action includes any historic properties, the SHPO and EPA should consider the following factors:

- The area of potential effects of the remedial action (i.e., extent of the effects of potentially disturbing investigation activities and response action);
- Existing information on historic properties already identified that are potentially affected by the action;
- The likelihood that there are unidentified historic properties within the area of potential effects; and
- Further actions that may be necessary to identify historic properties that may be affected.

The MOA between EPA and DOI specifies that once contacted, the SHPO will respond to EPA's request to determine whether the area of planned remedial action includes any historic properties within 30 days.

After consulting with the SHPO, the lead agency determines what, if any, further actions are necessary to locate and identify cultural resources. If the SHPO has inadequate information to document the presence or absence of historic properties in the project area, the SHPO may suggest that the lead agency conduct a professional cultural resource survey (CRS). **The analysis to determine whether a CRS is necessary should be conducted prior to developing the RI/FS workplan.** In this way, requirements to conduct a CRS can be met during the course of early RI activities, allowing a determination to be made whether the detailed analysis of alternatives will have to evaluate compliance with the historic preservation laws as ARARs. In some cases, cultural resources may not be discovered until after the RI/FS has started, or until after the ROD or Action Memo is signed and implementation of the design or action has started. Where the resource is identified before the ROD is signed, the RI/FS plans should be revised to accommodate and include the CRS. Where the resource is discovered after the ROD or action memo is signed, the site manager should work with the SHPO to undertake a CRS. If the CRS shows potential impacts of the action on the resource, an explanation of significant differences (ESD) may be used to make any necessary adjustments in the remedy.

The purpose of the CRS is to identify cultural resources within the project area and develop information required to apply the National Register's criteria for evaluation (see Highlight D-21). The CRS includes research conducted on each identified resource to determine:

- Whether the resource is eligible for listing on the National Register;
- The effects an activity will have on the cultural resource; and
- Ways to avoid or reduce the effects on any cultural resources.

Highlight D-23 highlights the factors to consider when determining the need for a CRS.

If EPA determines that a CRS is necessary, cultural resource plans outlining the scope of work and schedule for completion of the CRS should be incorporated into the appropriate RI/FS and/or RD workplans. Data from the CRS report should be incorporated into the RI/FS environmental evaluation. The decision whether to undertake a CRS rests with EPA, but SHPO opinions should be strongly considered in making the final determination.

Stage I of a CRS is designed to determine the presence or absence of cultural resources in the potential impact area. This process generally requires conducting documentary research and/or a field investigation (e.g., limited excavation or site surveillance in a potentially affected area, interviews with knowledgeable resources). The activities of a Stage I investigation should be part of RI work

conducted on the site. **Stage II** of the CRS, if necessary, is a detailed evaluation of an identified cultural resource that may be affected by the remedial alternatives being considered. Stage II of a CRS is conducted only if it is determined that a proposed response activity will affect resources identified in Stage I. Highlight D-24 defines in more detail the major components of each stage of a CRS.

**Highlight D-23:
Factors to Consider When Determining the Need for a CRS¹**

- Type and scope of the response activity under preliminary consideration;
- Nature and extent of the physical disruption likely to be associated with the undertaking;
- Environmental characteristics of the planning area;
- Type of direct and indirect impacts anticipated in the planning area;
- Data gathered from a field inspection of the proposed planning area, including photo-documentation of any potential cultural resources that may be directly or indirectly impacted; and
- Recommendations of the SHPO and other appropriate state agencies, and state and local historic preservation groups, local governments, Indian Tribes, and other parties likely to have knowledge of historic properties in the area.

¹ The effect of these factors on making a decision whether to undertake a CRS should be documented in the RI/FS report.

If the lead agency and the SHPO agree that no identified property on, or eligible for inclusion on, the National Register is located within the area of the proposed activity, the lead agency official should document this finding in the RI/FS report. Unless the Secretary of the Interior disagrees with this determination, the response action may proceed with the proposed activities. If the SHPO and agency official identify a cultural resource in the area of a proposed response, however, the criteria listed in Highlight D-21 are applied to determine whether the property is eligible for inclusion on the National Register (if it is not already being considered or listed). Provided that the SHPO and EPA agree that a property should be included in the National Register, either the SHPO or EPA site manager official should forward the following documentation to the Keeper of the National Register:

- A letter signed by EPA stating that EPA and the SHPO agree that the property is eligible for inclusion on the National Register; and
- A statement signed by the SHPO that in his opinion the property is eligible for the National Register.

**Highlight D-24:
Major Components of a Cultural Resource Survey**

Stage I:

- **Documentary Research** activities include researching sources at the State Historic Preservation Office, local governments, universities, local libraries, museums, and historical societies. The Stage I research survey should also include a synthesis of land use patterns, and prehistoric and historic cultural development of the project area.
- **Field Investigation** involves subsurface testing. A record and description of cultural resources including their location on the site is also completed during the Field Investigation of Stage I.

Stage II:

- The Stage II report of the CRS should include information on boundaries, integrity, and significance of the resource(s), and evaluation of the effect of the proposed project.

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The Keeper of the National Register will give written notice of his determination to both the SHPO and the EPA site manager 10 working days of receipt. If the SHPO and agency official disagree about the eligibility for inclusion on the National Register, the EPA site manager should submit a letter of request for a determination of eligibility with a description, statement of significance, photographs, and a map to the Keeper of the National Register. The opinion of the SHPO should also be forwarded with the request, if available. The Keeper of the National Register will respond in writing to the agency's request within 45 days of receipt of the request. **Only properties subsequently listed on the National Register will have to comply with the step of the NHPA process that determines if the proposed activity will affect the resource. For properties not listed at this stage, the NHPA and other laws are not considered ARARs.**

Determination of Effect

Identifying the possible effects of response actions on each cultural resource that is on, or eligible for inclusion on, the National Register is the second step towards compliance with the NHPA. "A federal activity is considered to have an effect on a cultural resource whenever the activity causes or may cause any change, beneficial or adverse, in the quality of the historical characteristics that qualify the cultural resource for inclusion on the National Register." (36 CFR 800.3(a)) The EPA site manager, in consultation with the SHPO, will make one of the following determinations of the effect of the response action for each of the alternatives considered in the RI/FS Detailed Analysis of Alternatives Stage:

- No effect;
- No adverse effect; or
- Adverse effect

Determination Of No Effect

If the SHPO and agency official agree that a response action will have no effect on historic properties, the agency official should document this determination which is then made available for public review. If either the SHPO or the agency official objects, the Executive Director of the ACHP reviews the determination and notifies the objecting party of his decision within 15 days.

Determination of No Adverse Effect

If the agency official or Executive Director of the ACHP determines that a response action will affect a cultural resource eligible for inclusion on the National Register, the agency official in consultation with the SHPO, shall determine whether the effect is an adverse effect. Highlight D-25 provides several definitions of adverse effects. If the agency official and the SHPO determine that a response action will have no adverse effect on the cultural resource, the agency official is responsible for submitting adequate documentation of this determination to the Executive Director of the ACHP which is available for public review. Highlight D-26 lists the information to be included in the RI/FS report or action memo to document a no adverse effect finding as required by 36 CFR 800.13(a). The regulation also states that there must be the opportunity for public review and comment on this finding.

Provided that no objection has been made by the public, the SHPO, or any interested party, upon receipt of the documentation of no adverse effect, the Executive Director of the ACHP will normally concur without delay. If the Executive Director determines that the documentation of no adverse effect is inadequate, the Executive Director will notify the agency official within 15 days. Unless the Executive Director objects within 30 days, the agency official will have satisfied the requirements under the NEPA and may proceed with the proposed activity. If the Executive Director objects, the Executive Director will specify conditions that will eliminate the objection. The agency official may either accept the Executive Director's conditions in writing and proceed with the proposed activity, or

reject the Executive Director's conditions, in which case the Executive Director should initiate the consultation process.

Determination of Adverse Effects

Should the agency official determine that an activity, including ones designed by Superfund to protect human health and the environment, will have an adverse effect on an historic property, or the Executive Director of the ACHP rejects the agency's determination of no adverse effect, the lead agency should prepare and submit documentation that outlines how the lead agency is going to avoid, minimize, or mitigate the adverse effects of a remedial activity to the Advisory Council for comments. This type of documentation is referred to as a Preliminary Case Report. A separate case report does not need to be prepared for a site. Instead, this information should be incorporated into the RI/FS Report, Proposed Plan, and the ROD. Highlight D-27 lists the type of information that should be included in the ROD or action memo to document a finding that the action will have an adverse effect.

Upon receipt of the Council's comments, the lead agency shall take the comments into account when reaching a final decision regarding the proposed activity. Highlight D-28 provides examples of mitigation measures the ACHP has suggested in the past. Given the lack of specific guidance in terms of what mitigation measures might encompass, EPA, PRPs, and the local community should negotiate with each other to clarify what mitigation measures are and how they should be implemented. If parties do not identify mitigation measures at appropriate times, mitigation measures change after the ROD is signed, or financial requests are not within available resources, EPA may not be able to fund implementation of the measures. Given a lack of funding, other parties (e.g., PRPs, communities) may be more appropriate to implement certain mitigation measures requested by the SHPO.

When agreement is reached on how the effects will be taken into account, the Executive Director of the ACHP will prepare a Memorandum of Understanding (MOU) reflecting such agreement. Typically, the RPM prepares a proposal for inclusion in the MOU that details the actions agreed upon to avoid, mitigate, or accept the adverse effects on the property. If the Executive Director determines that the proposal accurately represents the agreement, the RPM's proposal is forwarded to the Chairman of the ACHP for ratification.

**Highlight D-25:
Definition of Adverse Effects**

Adverse effects may include, but are not limited to, the following:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
- Neglect of the property resulting in its deterioration or destruction; and
- Transfer, lease, or sale of the property.

SOURCE: CERCLA Compliance With Other Laws Manual.

**Highlight D-26:
Information to be Included in Documentation of No Adverse Effect**

The requirements of 36 CFR 800.13(a) state the following must be included when documenting a "no adverse effect" finding.

- A description of the agency's involvement with the proposed activity with citations of the agency's program authority and applicable implementing regulations, procedures, and guidelines;
- A description of the proposed activity, including as appropriate, photographs, maps, drawings, and specifications;
- A list of National Register and eligible properties that will be affected by the proposed activity, including a description of the property's physical appearance and significance;
- A brief statement explaining why the proposed activity will have no adverse effect on the cultural resource;
- Written views of the SHPO concerning the determination of no adverse effect, if available; and
- An estimate of the cost of the proposed activity, identifying federal and non-federal shares.

SOURCE: 36 CFR 800.13(a)

**Highlight D-27:
Information Required in the ROD or Action Memo to Document Adverse Effect**

The ROD or action memo should include the following information, as required by 36 CFR 800.13(b):

- A description of the proposed activity, including, as appropriate, photographs, maps, drawings, and specifications;
- A description of the National Register or eligible properties affected by the proposed activity, including a description of the properties' physical appearance and significance;
- A brief statement explaining why the proposed activity will adversely affect the cultural resource;
- Written views of the SHPO concerning the effect on the property, if available;
- The views of other federal agencies, state and local governments, and other groups or individuals, when known;
- A description and analysis of alternatives that would avoid the adverse effects;
- A description and analysis of alternatives that would mitigate the adverse effects; and
- An estimate of the cost of the proposed activity, identifying federal and non-federal shares.

**Highlight D-28:
Examples of Mitigation Measures**

- Producing historical films;
- Videotaping\photographing landscape for documentary purposes;
- Designating land to the historical society;
- Modifying workplans to preserve historical structures (One mining facility preserved historical wooden pipes by revising design plans around the pipes); and
- Constructing state parks or museums.

D.10.3 Cultural Resources Discovered After Complying with the NHPA. In some cases, a federal agency may identify a cultural resource eligible for inclusion on the National Register of Historic Places after completing all its responsibilities under section 106 of the NHPA. Unless the Secretary of the Interior determines that the significance of the property, the effect, and any proposed mitigation actions warrant Council consideration, the federal agency may fulfill its responsibilities under section 106 of the NHPA by complying with the requirements of the Archeological and Historic Preservation Act. The Archeological and Historic Preservation Act provides for the preservation of historical and archeological data that might be lost or damaged as a result of a proposed activity. If a federal activity may cause irreparable loss to significant scientific, prehistorical, or archeological data, the Act requires the federal agency to preserve the data or request the Department of the Interior to do so. The Archeological and Historic Preservation Act mandates only the preservation of the data. If

the Secretary of the Interior determines that the Council's comments are warranted, the agency official should request the comments of the Council and repeat the procedure discussed in section 3.0.

If it is determined that the identified cultural resource will not be affected by the remedial activity, EPA must document this determination. Provided that the Executive Director of the ACHP does not object to this determination, EPA will have satisfied the requirements of the NHPA. If EPA and the SHPO determine that a remedial activity will have no adverse effect on a cultural resource, EPA shall document that determination, carry out any agreed-upon conditions accompanying the SHPO's concurrence, and provide the Advisory Council on Historic Preservation with the determination.

D.10.4 Summary of RPM's Responsibilities to Ensure Compliance with the NHPA. Compliance with the NHPA can be broken down into five major steps:

1. Determine whether cultural resources that are on, or eligible for inclusion on the National Register of Historic Places are located in or near the area under study in the RI;
2. Determine whether a cultural resource survey is necessary;
3. Determine whether identified resources are on or eligible for inclusion on the National Register of Historic Places;
4. Determine the effect affect a proposed response activity will have on a property on, or eligible for inclusion on the National Register of Historic Places; and
5. Develop mitigation measures if proposed activities will have an adverse effect on a cultural resource.

The RPM should complete the first four steps in the very early stages of an RI/FS, prior to conducting sampling activities on mine waste NPL sites. The RPM should conduct the fifth and final step during the Feasibility Study, when the various alternatives are evaluated for compliance with all ARARs. It is not realistic to select a remedial action and then determine what the appropriate compliance/mitigation procedures will be during the ROD process. Developing mitigation measures during the Feasibility Study will ensure that the Record of Decision can be developed in a timely manner.

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