3.8 Regulated Materials and Historic Mining

Issues relating to regulated material include the generation, storage, disposal, and release of any hazardous substance or petroleum product within the scope of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA). Regulated materials are transported on I-70 (in the Corridor) under regulatory authority of the US Department of Transportation (US DOT) and the Colorado Department of Public Safety (CDPS) State Patrol Hazardous Materials Section. Historic mining is also included in this section due to the potential for contamination from mine tailings and wastes in the Corridor. Although mine waste is not defined as a regulated hazardous material, the waste piles and tailings that may contain heavy metals and acid-generating materials are regulated by Colorado Department of Public Health and Environment (CDPHE) under various programs when disturbed and removed for disposal.

Numerous abandoned mines in Clear Creek County have been investigated and remedial action has been conducted under the CERCLA Superfund Program at priority sites. The EPA added the Clear Creek watershed to the National Priority List (NPL) in 1982 as the Clear Creek/Central City Superfund Area. Remedial investigations and feasibility studies were initiated in 1985.

Regulated Materials and Historic Mining Issues

- Properties contaminated by hazardous waste or petroleum products
- Containing hazardous material
- Highway accidents potentially releasing environmental contaminants into adjacent land and streams
- Potential for contamination from mine tailings and wastes from historic mines in the Corridor

3.8.1 Regulations and Coordination

Records were searched to determine the presence or likely presence of any hazardous substance or petroleum product that may have been released in the Corridor as a result of existing or past actions. Data sources reviewed include the following federal and state environmental agency records:

- Federal NPL site list and Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list (CDOT VISTA database, 2-mile radius).
- Federal Resource Conservation and Recovery Act (RCRA) Treatment, Storage, and Disposal (TSD) facilities list (CDOT VISTA database, 2-mile radius).
- Federal RCRA list of large and small generators (CDOT VISTA database, 2-mile radius).
- National Response Center (NCR), including federal Emergency Response Notification System (ERNS) list (NCR database, spills along I-70 only).
- Colorado State Underground Storage Tank (UST) list (Colorado Storage Tank Information System [COSTIS] database, 0.5-mile radius).
- Colorado State Leaking Underground Storage Tank (LUST) list (COSTIS database, 0.5-mile radius).

The Colorado Division of Oil and Public Safety (OPS) regulates the cleanup of petroleum contamination from UST and LUST sites. The Colorado State Patrol regulates hazardous materials transport in the state and is responsible for reporting spills associated with highway transportation incidents.

Mine tailings and waste (generally referred to as mine waste materials in this document) are regulated under various state and federal programs, depending on where the material is located and its designation under CERCLA. The Colorado Division of Minerals and Geology does not regulate waste materials from historic mines that predate the Mined Land Reclamation Act of 1978 but does regulate all currently operating mines. Historic mine waste materials are exempt from RCRA hazardous waste regulations and are considered solid waste in Colorado if disturbed and not reused. The CDPHE Solid Waste Unit of the Hazardous Materials and Waste Management Division has authority over mine tailings not covered by CERCLA. Mining waste materials are excluded from hazardous waste regulations as outlined in the Beville Amendment 40 CFR 261.4 and Colorado Hazardous Waste Regulations Section 261.4. The CDPHE has the lead and works with EPA for regulatory actions at the Clear Creek/Central City Superfund Area (CERCLA authority).

Under the CERCLA Superfund Program, priority sites within the Clear Creek/Central City Superfund Area have been selected for CERCLA investigation, remediation, and Records of Decision. Although the entire Superfund Area is characterized by historic mining (and areas of mining waste materials), only certain priority sites have been selected for CERCLA actions at this time. However, this does not preclude future CERCLA actions within the Superfund Area.

Supporting Documentation

- Appendix A, Environmental Analysis and Data
- Appendix I, Regulated Materials and Historic Mining
- Resource Map 3.8-1, Resource Conservation and Recovery Act Small-Quantity and Large-Quantity Generators
- Resource Map 3.8-2, Emergency Response Notification System Incident Locations
- Resource Map 3.8-3, EPA Historic Mining Within One Mile of I-70

3.8.2 Affected Environment

A review of federal and state environmental records resulted in the following findings of incidents and regulated material sites in the Corridor.

3.8.2.1 Federal NPL and CERCLIS Sites

CERCLA priority investigation and remedial activities associated with Clear Creek/Central City Superfund sites in the Corridor area are discussed in Appendix I, Regulated Materials and Historic Mining. (Note that although numerous CERCLA priority sites are in the vicinity of Central City and Black Hawk, these sites are not in the Corridor area.) The most substantial environmental impacts associated with these sites affect the Clear Creek stream system and include a reduced fishery, as well as substantial impacts on other aquatic life and habitat. Acidic, heavy-metal laden mine water that drains from historic mines, and mine wastes, such as tailings and waste rock, contribute to the nonpoint source impacts on the basin. Clear Creek is a drinking water source for more than 350,000 people living in the Denver metropolitan area and is a favored place for kayaking, rafting, fishing, and wildlife observation. The human health hazard associated with these sites involves potential exposure to heavy metals, primarily lead, arsenic, and cadmium. Soil from the tailings piles and waste rock can contain heavy metals.

3.8.2.2 Federal RCRA Generator Sites

RCRA sites generate, treat, store, and/or dispose of materials designated as hazardous waste. The database search identified one large-quantity generator in Glenwood Springs (see Map 3.8-1, located in the Resource Maps section).

Fifty-four small-quantity generators were identified in the 2-mile search area as shown on Map 3.8-1 (see Resource Maps section). These sites are located in communities along I-70 or near I-70 interchanges. Table 3.8-1 shows the distribution of these sites by county. Although these RCRA sites

are under regulatory authority for handling hazardous waste, no data collected indicate that environmental contamination has occurred at any of the sites.

3.8.2.3 National Response Center Database Sites

EPA's ERNS list includes reported incidents of CERCLA hazardous substance releases or spills as maintained at the NRC. The list includes 40 incidents between 1987 and 1997, as shown on Map 3.8-2, located in the Resource Maps section. Distribution by county is shown in Table 3.8-1.

According to the NRC database (which overlaps with the ERNS list from 1990 to 1997), 74 spills or releases of hazardous materials or petroleum products were reported in the Corridor between 1990 and 2002. Table 3.8-1 shows distribution of incidents by county. Spill incidents resulting from highway accidents are discussed further in section 3.8.2.5. Twenty-three reported incidents affected nearby waterways, causing fish kills and temporarily closing downstream water intakes due to the proximity of I-70 and US 6 to Clear Creek, Straight Creek, and other streams.

Most spills are cleaned up, contained, and monitored immediately following the incident as appropriate by the Colorado State Patrol and/or federal, state, and local hazardous materials emergency response personnel. State and/or federal environmental regulators including CDPHE and EPA may have become involved when waterways or groundwater contaminated with hazardous materials and long-term cleanup/monitoring were required.

Table 3.8-1. Federal and State Listed Sites, Generators, and Releases

County	NPL/CERCLA Sites	RCRA LQG[a] Sites	RCRA SQG[b] Sites	ERNS Spill Sites (1987 to 1997)	NRC Spill Sites (1990 to 2002)
Garfield	0	1	10	2	10
Eagle	0	0	8	15	14
Summit	0	0	4	6	22
Clear Creek	3	0	0	1	15
Jefferson	0	2	32	16	13
Total	**3**	**3**	**54**	**40**	**74**

[a] *Large-quantity generator*
[b] *Small-quantity generator*

3.8.2.4 UST/LUST Sites

Table 3.8-2 shows the results of the search for registered UST and LUST sites in the Corridor. These sites are usually retail fuel stations, local/state/federal vehicle maintenance facilities, industrial facilities for bulk fuel storage, and sites associated with ski lift operations. Table 3.8-2 shows the distribution by county of total USTs and active USTs (currently in use) recorded with the Colorado OPS. "Inactive" status indicates that a LUST site has been adequately addressed according to requirements of the Oil Inspection Section (OIS) of the OPS. "Active" LUST sites are being investigated or cleaned up and monitored under Colorado OPS authority. UST/LUST sites are clustered at Corridor population centers and near I-70 interchanges.

One active LUST site and 39 inactive LUST sites were identified near Glenwood Springs. Active LUST sites were identified at numerous Corridor communities including Avon, Edwards, Vail, and Wolcott in Eagle County; Dillon, Frisco, and Silverthorne in Summit County; and Idaho Springs, Silver Plume, Georgetown, Downieville, and Dumont in Clear Creek County.

Table 3.8-2. UST and LUST Sites

County	City	Total USTs on Record	Active USTs on Record	Active ASTs[a]	Inactive LUST Sites	Active LUST Sites
Garfield		154	49			
	Glenwood Springs			0	39	1
Eagle		297	123			
	Avon			0	10	3
	Eagle			6	12	0
	Edwards			4	4	1
	Gypsum			7	4	0
	Minturn			0	3	0
	Vail			4	13	3
	Wolcott			1	2	1
Summit		170	73			
	Dillon			0	7	1
	Frisco			0	9	3
	Silverthorne			1	15	8
Clear Creek		117	52			
	Idaho Springs			0	9	2
	Silver Plume			0	0	1
	Georgetown			0	4	2
	Downieville			0	1	1
	Dumont			0	0	1
Jefferson		3	3			
	Genesee			0	1	0
	El Rancho			0	1	0

[a] *Aboveground storage tank with capacity >10,000 gallons*

3.8.2.5 Hazardous Material Transport

The US DOT regulates the transportation of chemicals and other controlled substances. The CDPS State Patrol Hazardous Materials Section regulates the transportation of placarded loads and loads containing nuclear materials under DOT authority in the state of Colorado. Visible descriptive placards must be displayed on vehicles with loads that exceed 1,000 pounds of hazardous materials. Placard descriptions of hazardous materials are divided into the following specific classifications: explosive, gaseous, flammable or combustible liquids; flammable solids; spontaneously combustible materials; dangerous-when-wet materials, oxidizers, and organic peroxides; poisonous materials; infectious substances; radioactive, corrosive, and miscellaneous hazardous materials.

I-70 is a designated placarded hazardous materials transport route from the intersection with US 6 east of Loveland Pass to the intersection with I-25 in the Denver metropolitan area, and from the Utah state boundary to US 6 at Silverthorne (Loveland Pass) (*CDPS Rules and Regulations Concerning Hazardous Materials Route Designation*). Transport of hazardous materials through the EJMT is not allowed during normal operations; the normal route is via US 6 over Loveland Pass. However, when Loveland Pass is closed (such as during adverse weather conditions), and I-70 is open, placarded loads are allowed through the tunnel once an hour at distances of 800 feet apart. Passenger vehicles and other traffic are not allowed in the tunnel while placarded loads are being transported. CDOT also regulates transport of hazardous materials through EJMT (*1986 Traffic Regulations Governing the*

Use of the Tunnels on the State Highway System, Section 7). These regulations do not restrict transport of hazardous materials through the I-70 Twin Tunnels east of Idaho Springs.

The Corridor is not a designated nuclear materials transport route according to the Colorado Department of Public Safety Rules and Regulations Concerning Nuclear Materials Route Designation. Nuclear materials are generally defined as nuclear source material (uranium, thorium, plutonium) and byproduct material (includes nuclear reactor waste, and tailings and waste produced by extraction or concentration of uranium or thorium from ore processing). CDPS rules and regulations specifically state that motor vehicles transporting nuclear materials ***shall under no circumstances*** travel on I-70 between the Colorado/Utah state line and the junction with US 40. Nuclear materials from the Rocky Flats cleanup site in Jefferson County must be transported along routes north, south, or east through Colorado to various disposal site destinations and are not allowed to cross Colorado mountain corridors. Certain radioactive materials and products not defined as nuclear materials may be transported along the Corridor but must meet regulatory requirements for packaging and quantity.

Table 3.8-3 shows the number of hazardous materials shipments reported at the Dumont Port of Entry from July 2001 to June 2002. Most of the shipments (63 percent) were westbound. Flammable liquids, primarily petroleum fuel products, make up most of the shipment hazard class (84 percent).

Table 3.8-3. Hazardous Materials Transport, Dumont Port of Entry

Description	Hazard Class	Dumont Eastbound		Dumont Westbound	
		Number	Percent	Number	Percent
Explosive A or B or blasting agents	01	47	0.8	58	0.6
Compressed or liquid gases	02	456	7.5	685	6.6
Flammable liquids	03	5,146	84.9	8,609	83.5
Flammable solids	04	26	0.4	57	0.6
Oxidizers	05	45	0.7	66	0.6
Poisons	06	51	0.8	76	0.7
Radioactive materials	07	8	0.1	76	0.7
Corrosives	08	234	3.9	485	4.7
Miscellaneous or dangerous substances	09	46	0.8	193	1.9
Total		**6,059**	**37.0**	**10,305**	**63.0**
Grand total	**16,364**				

July 1, 2001 to June 30, 2002

Transportation-related spills are directly related to traffic accidents. A study of accidents from August 1996 to December 2001 showed that in 685 accidents the primary vehicle was either a truck weighing more than 10,000 pounds or a bus with more than 15 passengers (J.F. Sato and Associates 2002). Trucks were the secondary vehicle affected in 397 more accidents. The average number of heavy vehicle accidents per mile in the Corridor during this period was 7.26. Table 3.8-4 summarizes accidents in Corridor areas with the highest occurrence. Accidents in these 5-mile stretches number nearly twice the accidents in other parts of the Corridor.

Table 3.8-4. Truck and Bus Accidents

Milepost Range	Description (High Accident Areas)	Number of Accidents	Percent of Total Accidents
182–187	West side of Vail Pass	62	5.7
202–207	West of Frisco to east of Silverthorne	54	5.0
207–212	East of Silverthorne to west of EJMT	78	7.2
212–217	West of EJMT to east of Loveland Pass	53	4.9
242–247	Twin Tunnels to Hyland Hills	75	6.9
252–257	Evergreen to east of Lookout Mountain	64	5.9
257–261	East of Lookout Mountain to C-470	71	6.6
Total accidents for group (high accident areas)		**457**	42.2
Total accidents (Corridor)		**1,082**	
High-accident areas' percent of total miles in corridor: 24.5			

August 1996 to December 2001, truck >10,000 pounds or bus with more than 15 passengers

Table 3.8-5 depicts NRC data for transportation-related spill incidents (Mobile category) for the high-accident areas in the Corridor. Appendix I, Regulated Materials and Historic Mining, contains a more extensive table listing spills throughout the Corridor from 1990 through 2002. Five of these incidents released more than 1,000 gallons of material. The materials spilled included petroleum, paint, acetylene cylinders, transformer oil with PCBs, battery acid, sulfuric acid, hydrogen peroxide, formaldehyde mixture, antifreeze, asphalt, and calcium chloride.

The highest percentage of spill incidents on I-70 in the Corridor occur in Summit and Eagle counties (23.9 and 22.5 percent, respectively). The greatest number of spills in 5 miles occurred east of Silverthorne to west of EJMT (high-accident area; see Table 3.8-5), accounting for 16.9 percent of NRC spill incidents in the Corridor. Seventy-nine percent of all spills on I-70 in Colorado reported to the NRC occurred in the Corridor. (Note that 10 spill incidents in Summit County occurred on the Loveland Pass route that must be used by hazardous material carriers to bypass the EJMT.) See Table I-3 in Appendix I, Regulated Materials and Historic Mining, for more detailed information.

Table 3.8-5. NRC Vehicle Spill Incidents

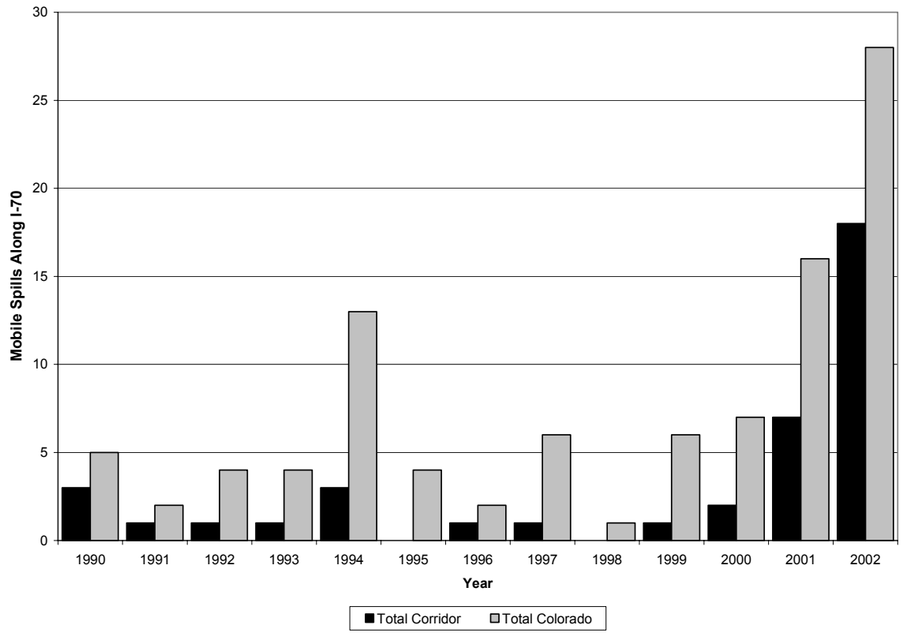
High-Accident Area	Number of Spills	Percent of Spills in Corridor
West side of Vail Pass	5	7
West of Frisco to east of Silverthorne	2	2.8
East of Silverthorne to west of EJMT	12	16.9
West of EJMT to east of Loveland Pass	3	4.2
Twin Tunnels to Hyland Hills	4	5.6
Evergreen to east of Lookout Mountain	6	8.5
East of Lookout Mountain to C-470	4	5.6
50.7% of spills occurred along 24% of Corridor		

Source: CDPHE 2002.

For high-accident areas; records from 1990 to June 2002

Chart 3.8-1 illustrates the number of mobile category NRC spills reported for the Corridor and for the span of I-70 through the entire state. Reported spills have increased in the Corridor and the state between 1990 and 2002.

Chart 3.8-1. Mobile Spills



3.8.2.6 Historic Mining

The Corridor passes through areas of substantial historic metals mining and, to a lesser degree, other types of mining (gypsum mines and gravel quarries). Metals mining activity occurred primarily in what is known as the Colorado Mineral Belt, a zone of highly mineralized rock that extends from northeast to southwest across the mountainous regions of Colorado from northern Boulder County to the La Plata Mountains west of Durango. Extensive and profitable mining continued from the mid-1800s until the outbreak of World War II when mines not essential to the war effort were closed by federal mandate under the War Powers Act.

The Central City-Idaho Springs District was the first major mining district in Colorado, established in January 1859. Gold and silver were the major metals mined, with lesser amounts of copper, lead, zinc, and uranium mined. Past mining activities left an environmental legacy of mine sites that impair water quality by releasing heavy metals from mined materials and tailings, as well as acid drainage from mine workings.

Mining-Related Hazards

Many of the historic mines in the Corridor are in much the same condition as when mining activity ceased, and their present-day mine features pose hazards and constraints on proposed I-70 modifications. These hazards are both physical and chemical in nature. Chemical hazards are discussed in this section as they pertain to regulated materials. Physical hazards are addressed in section 3.7, Geologic Hazards, as geotechnical considerations.

Acid Mine Drainage and Acid Rock Drainage

Mine openings create a conduit for interaction of oxygen and water with the mineralized rock, which produces acidic water. This acidic water often contains dissolved concentrations of metals such as zinc, copper, and cadmium.

In addition to the natural transport and chemical transformation of groundwater in mining areas, drainage tunnels were constructed specifically for transporting wastewater away from the mine sites during mining operations. Drainage tunnels were constructed specifically for dewatering mine workings in addition to serving as adits (deep mining shafts) into the ore rock. These drainage tunnels are typically of great length and are engineered to intersect one or more deep mining shafts to aid in dewatering efforts. Currently they provide a natural conduit for groundwater that commonly is altered chemically in the mineralized zones through the interaction of oxygen, water, and sulfide minerals.

Acid rock drainage is low-pH water that occurs naturally in mineralized rock zones. This type of drainage is a product of the geologic setting and not related to past mining. Both acid mine and acid rock drainage can leach heavy metals from mine waste and tailings.

Highly mineralized areas that could be sources of potential surface water contamination extend from Floyd Hill to Empire (mileposts 233 to 245), as well as Georgetown and Silver Plume (mileposts 223 to 228). The area of greatest concentration extends from just west of Fall River Road to the town of Idaho Springs (mileposts 237.5 to 239). This segment also has the potential for the groundwater emanating from this rock to have relatively low pH levels.

Leaching of Tailings/Waste Rock Piles

Relatively high concentrations of metals generally exist in mine tailings and waste rock. As water filters through this waste, it may become acidic and leach or carry metals from the waste into groundwater and surface water.

Wind-blown Dust from Mine Tailings

Clear Creek County residents have expressed concerns about wind-blown dust from mine tailings. These mine tailings contain heavy metals such as lead, arsenic, zinc, and cadmium, which can endanger human health, especially if mine tailings dust is mobilized and transported.

Mine Sites

EPA lists 789 historic mines within a 2-mile radius of the Corridor as shown on Map 3.8-3, located in the Resource Maps section. Most of these mines are within the Colorado Mineral Belt, and 754 are located between I-70 mileposts 222 and 242. Aerial photography and visual observation were used to identify mine waste materials and mineralized rock in the Corridor during 2001 (Yeh and Associates, Inc.). The study area for mineralized rock was within 200 feet of the existing I-70 alignment from the US 6 junction with I-70 to the town of Silver Plume; the study area for mining-related waste was within 1 mile of the existing I-70 alignment in Clear Creek and Summit counties. In addition, previous highway construction activities in mining-related hazard areas and the extent of contamination were identified using historic aerial photographic interpretation. Field verification of aerial photographic interpretation was limited to visual observation of the presence of mining-related waste from I-70 or other public access points. This cursory survey of historic mine waste materials was performed for the PEIS and general locations of identified mine waste materials were annotated on maps. *[It is important to note that numerous mine waste materials areas are obscured by development activities (roads, structures, and so forth) or by natural processes and could not be identified through visual methods alone. It is also unlikely that information inventories would capture all mine waste materials areas. Therefore, more detailed surveys, including sampling activities as*

appropriate, will be performed during future Tier 2 environmental studies.] Identified areas (areas with some level of characterization) of historic mining waste materials in relation to the I-70 Corridor are summarized in Appendix I, Regulated Materials and Historic Mining.

Clear Creek County and Watershed

The USGS estimates that there are 1,343 inactive or abandoned metals mines and more than 100 draining, inactive, or abandoned mine tunnels in the Clear Creek watershed. All together, these sites contribute an unknown but likely substantial level of metals to Clear Creek. This historic mining area was designated the Clear Creek/Central City Superfund Area and added to the Superfund NPL in 1982 to allow EPA and CDPHE to clean up the primary historic mining properties that were contaminating Clear Creek. Contaminants include zinc, copper, and cadmium, which are harmful to fish, and lead and arsenic, which can endanger human health.

Cleanup of priority mine waste materials sites (Superfund site) began in 1993 and focused on actions to improve the water quality of Clear Creek. Between 1993 and 1999, CDPHE (the lead agency) and EPA have worked with a number of government entities, developers, property owners, and other community stakeholders to complete cleanup work at 12 priority waste site locations. Cleanup plans for the Clear Creek/Central City Superfund sites call for treatment of contaminated water discharging from a number of mines; capping of tailings and waste rock piles determined to be the largest sources of contamination; and further investigation of groundwater. The cleanup plans have also identified contaminated domestic wells and provided the owners with access to uncontaminated water (via alternate supplies and/or treatment systems).

Remediation and I-70 Construction Materials

Remediation of mine waste materials and soil generally includes drying, covering or capping, and treating with lime to prevent potential contaminants such as metals from leaching into the environment. Mine waste and tailings have been and continue to be used as fill in construction of structures and roadways.

In 1943 the town of Idaho Springs used mine waste materials to elevate the grade in flood-prone areas of the town. More recent I-70 construction through Idaho Springs used the highway as a cap to protect mill tailings with high concentrations of toxic heavy metals from infiltration of water. Earlier I-70 construction activity encountered and affected mine waste material. The highway overlies mine waste materials and serves as a protective cap in places, most notably over mine tailings associated with the Big Five Tunnel in west Idaho Springs. I-70 road cuts exposed highly mineralized rocks from Idaho Springs to just west of Fall River Road.

Remediated waste sites in the general area of the Corridor (not in the immediate vicinity of the I-70 footprint) include the Minnesota Mine near Empire and the Black Eagle and Little Bear waste piles near Idaho Springs. These and other sites in various stages of cleanup are discussed in more detail in Appendix I. EPA and CDPHE are in the process of identifying potential additional cleanup sites in the Superfund Area based on recent water quality/stream flow information and previous investigations. Descriptions of specific mines, mine waste materials, and remedial actions in Clear Creek County are included in Appendix I, Regulated Materials and Historic Mining.

Clear Creek County is also the location of a large debris flow (Brownville; not a CERCLA priority site) developed at the former town site of Brownville (mileposts 224.6 to 224.9) where the town was buried in a debris flow in 1912. The debris flow includes native material, as well as mine tailings from upgradient historic mines.

Summit and Eagle Counties

Although most metals mining occurred in Clear Creek County, historic metals mining also took place in Summit and Eagle counties. Historic mining in Summit County primarily involved gold production from deep gravel placer deposits of the Blue River and other gulches. Gold and smaller amounts of lead, zinc, and copper also were mined from rich quartz-sulfide veins.

A small historic mill site (Excelsior Mine/Mill Site) is located near the West Frisco interchange within CDOT right-of-way (milepost 200.5), immediately north of the current I-70 alignment. Water drainage (seepage) at the site is being monitored for heavy metals contamination by the Colorado Geological Survey (CGS 1994). According to the 1994 CGS field inventory, the following reclamation recommendations have been made: remove tailings in east drainage channel, cover and reclaim east mill tailings pile.

Based on personal communication with a former CDOT engineer (Yeh and Associates, Inc. 2004), an area of native material mixed with mine tailings is believed to underlie ponds/wetlands and possibly the I-70 roadway in Tenmile Canyon (mileposts 195.3 to 197). Construction of I-70 and the Copper Mountain interchange (milepost 195) apparently encountered mine tailings (probably washed out from the Climax Mine) at the interchange and down-valley along Tenmile Creek.

The Eagle Mine, located near Red Cliff, has affected the water quality of the Eagle River. However, this site is well south of I-70 outside the existing highway footprint and will not be affected by project alternatives.

Gravel Quarries and Gypsum Mines

Not all mines in the Corridor are associated with metals. Active gypsum mines are located near the town of Gypsum, and gravel quarries are located along the Corridor as well. These mines are open pit mines. Open pit gravel quarries are located throughout Garfield County within 1 mile of the Corridor. Gravel pits are not generally associated with the presence of hazardous materials.

3.8.3 Environmental Consequences

Potential impacts on identified hazardous and regulated materials due to construction of alternatives will depend on design factors such as roadway excavation requirements, pier excavation and placement, and tunnel pathways. The methodology and criteria for evaluation of impacts on regulated materials and historic mine waste are presented in Appendix A, Environmental Analysis and Data. Potential and known impacts are presented in section 3.8.3.1. Mitigation strategies are discussed in section 3.8.5, and a summary of impacts by alternative is provided in section 3.8.4.

3.8.3.1 Direct and Indirect Impacts

Common Environmental Consequences

Direct Impacts

Numerous impacts on regulated and hazardous materials would be common to all of the action alternatives. LUST/UST sites are associated with community centers and interchanges along the Corridor, and all alternatives would have the potential to affect associated contamination. Detailed information about specific UST/LUST sites was not obtained during this PEIS, and actual direct impacts on these sites are unknown. This information will be gathered and evaluated during future environmental studies for specific alternative footprints. All alternatives would have the potential to encounter residual spill material at spill sites, and disturbance/replacement of existing highway structures such as guardrails, signs, and metal bridge components might affect paint containing toxic levels of various metals. Although multiple spills have been reported along the Corridor, these incidents have generally been handled with appropriate actions to protect the environment. At least six petroleum product tanker spill sites are currently in the cleanup process in the Corridor area and might affect project alternative construction activities. Residual contamination may be encountered at reported, unreported, or future spill sites during construction. Tier 2 studies will identify reported spill sites and potential issues related to specific Corridor alternatives. No identified RCRA sites are known to be associated with contamination, and none are expected to affect alternatives in the Corridor. Potential impacts by alternative are listed in Table 3.8-7.

Historic mine waste materials. Construction of all action alternatives in Clear Creek County would require the disturbance and reworking of many mine waste piles, including some designated Clear Creek/Central City Superfund NPL sites. Table 3.8-6 shows historic mine waste material areas that would be affected by all or some of the project alternatives. Direct impacts on identified/known mine waste materials are shown by alternative in Table 3.8-7. All of the action alternatives would affect mine waste materials at the Big Five Tunnel NPL site (west edge of Idaho Springs). Mine waste materials associated with the Big Five Tunnel NPL site are present at three primary locations along I-70: one on the north side between the tunnel portal and I-70; one on the south side but north of Clear Creek; and one south of both I-70 and Clear Creek. Approximately 55,000 cubic yards of waste rock are contained in the two waste piles on the south side of I-70. Most of the drainage from the Big Five Tunnel flows directly through the I-70 road base into Clear Creek.

Table 3.8-6. Identified Historic Mine Waste Materials Areas Affected by Project Alternatives[a]

Milepost Range	Description
195.3–197	Tenmile Canyon Material: Mixture of native material and mine tailings Probable Source: Climax Mine
200	West of Frisco Interchange Material: Mixture of native material and mine tailings Probable Source: Orphan mill site (Excelsior Mine/Mill Site)
224.2	West of Silver Plume Material: Mixture of native material and mine waste (not characterized) Probable Source: Johnny Bull Mine
224.6-224.9	Brownville Material: Mixture of native material and mine waste derived from debris flow Probable Source: Brownville debris flow
224.9-225.4	Silver Plume Material: Mixture of native material, mine waste, and mine tailings Probable Source: Burleigh Tunnel
235.5–235.7	Dumont Material: Mine waste and mine tailings Probable Source: McClelland Mine and mill site
237.8–238.7	Fall River Road to Idaho Springs Material: Mixture of native material, mine waste, and mine tailings Probable Source: Multiple orphan mine sites and Stanley Mill
238.7–239.9	Idaho Springs Material: Mixture of mine waste and mine tailings Probable Source: Big Five Tunnel, Black Eagle Mill, and other mill sites
240.0–240.7	Idaho Springs Material: Mine waste and mine tailings Probable Source: Argo Tunnel and mill site
240.8–241.3	East Idaho Springs Material: Mine tailings Probable Source: Silver Spruce Mill
242.8–243	Hidden Valley Material: Mixture of native material, mine waste, and mine tailings Probable Source: Dixie Mill

[a] *Approximate location of mine waste and mine tailings in existing I-70 embankment. The sites identified in this table would be affected by all or some of the project alternatives. Most of the sites listed in this table have been characterized to some degree. Note also that many of the mill sites identified within the I-70 right-of-way by Clear Creek County (see Appendix I) have not been characterized and might also be affected by all or some of the project alternatives.*

Alternative-Specific Direct Impacts

The degree of direct impacts on hazardous materials identified in the Corridor would depend on alternative design factors such as roadway excavation requirements, pier excavation and placement, and specific tunnel locations. Table 3.8-7 summarizes potential and known direct impacts on regulated materials and historic mine waste. Note that direct impacts have not been quantified during Tier 1 studies. A qualitative comparison of direct impacts by alternative is presented in this section and is summarized in Table 3.8-8.

Direct impacts on historic mining waste materials and NPL sites have been identified in the Idaho Springs, Silver Plume, and Hidden Valley areas. All action alternatives are likely to affect these mine waste materials and acid mine drainage. Efforts to minimize and avoid direct impacts in the immediate area of Idaho Springs would include elevated transportation segments for the Transit and Highway alternatives. A higher degree of impact is expected for the Rail with IMC alternative, Highway alternatives in Clear Creek County, and Combination alternatives. Detailed surveys of mine waste and tailings along alternative footprints will be performed in future environmental studies. Preservation alternatives would initially be associated with impacts resulting only from the build portion of the alternative. However, disturbance of mine waste materials should be based on the total Combination alternative footprint because space preservation would include sizing for interchanges and major walls.

Impacts on nonspecific mining waste materials, contamination from LUST sites, and residual spill contamination also would be possible. LUST/UST sites are primarily associated with community centers and interchanges along the Corridor. Active LUST sites are reported in the vicinity of Vail, Eagle, Avon, Dillon, Silverthorne, and Minturn (Dowd Canyon area); however, additional research is required for definitive determination of impacts. This information will be gathered and evaluated during future environmental studies (Tier 2) for specific alternative footprints.

Transit

The AGS alternative would be an elevated system that would likely result in fewer impacts than the Rail with IMC alternative or Bus in Guideway alternatives. This is based on the likelihood that pier construction for the AGS alternative would require less excavation, and the footprint width would be less than those of the other Transit alternatives. The Bus in Guideway alternatives would likely result in fewer impacts than the Rail with IMC alternative because they would largely be constructed in the median (a previously disturbed area) and would require minimal excavation. In addition, the Bus in Guideway alternatives would have a lower overall footprint width than that of the Rail with IMC alternative.

Highway

The Highway alternatives would be relatively similar in overall impacts due to their comparable footprint widths. However, in some areas, the Reversible/HOV/HOT Lanes alternative would likely result in fewer impacts than the Six-Lane Highway (55 or 65 mph) alternatives, while the opposite would be the case for other areas of the Corridor. The Highway alternatives would likely have more impacts on historic mine waste materials than the AGS and Bus in Guideway alternatives, and fewer impacts than the Rail with IMC alternative.

Combination

The Combination Six-Lane Highway with Rail and IMC alternative would likely have the greatest direct impacts on historic mine waste materials due to its footprint width. Based on footprint width, the Combination Six-Lane Highway with AGS and Combination Six-Lane Highway with Bus in Guideway alternatives would likely have similar impacts on historic mine waste materials.

Table 3.8-7. Summary of Impacts

	No Action	Minimal Action	Transit Alternatives				Highway Alternatives			Combination Highway/Transit Alternatives			
			Rail with IMC	AGS	Dual-Mode Bus in Guideway	Diesel Bus in Guideway	6-Lane Highway 55 mph	6-Lane Highway 65 mph	Reversible/HOV/HOT Lanes	6-Lane Highway with Rail and IMC	6-Lane Highway with AGS	6-Lane Highway with Dual-Mode Bus in Guideway	6-Lane Highway with Diesel Bus in Guideway
Potential Direct Impacts (Potential to Encounter Regulated Materials or Historic Mine Waste)													
Residual Spill Materials	No	Yes	Yes		Yes		Yes		Yes	Yes		Yes	
LUST/UST Sites	No		LUST sites in Corridor communities				LUST sites in Corridor communities			LUST sites in Corridor communities			
Historic Mine Waste Materials	No	Placer mines along Clear Creek. Potential unknown/ uncharacterized mine waste materials in Clear Creek County.	Placer mines along Clear Creek. Potential unknown/ uncharacterized mine waste materials in Clear Creek County.		Placer mines along Clear Creek. Potential unknown/uncharacterized mine waste materials in Clear Creek County.		Placer mines along Clear Creek. Potential unknown/uncharacterized mine waste materials in Clear Creek County.		Placer mines along Clear Creek. Potential unknown/ uncharacterized mine waste materials in Clear Creek County.	Placer mines along Clear Creek. Potential unknown/uncharacterized mine waste materials in Clear Creek County.		Placer mines along Clear Creek. Potential unknown/uncharacterized mine waste materials in Clear Creek County.	
Acid Rock/Acid Mine Drainage	No	Possible acid rock/ acid mine drainage from tunnel enhancements and rock cuts in Clear Creek County.	Possible effects from acid rock/acid mine drainage due to tunnel construction and rock cuts in Clear Creek County. Specific areas of concern include mileposts 223 to 228 and 233 to 245.				Possible effects from acid rock/acid mine drainage due to tunnel construction and rock cuts in Clear Creek County. Specific areas of concern include mileposts 223 to 228 and 233 to 245.		Possible effects from acid rock/acid mine drainage due to tunnel construction and rock cuts in Clear Creek County. Specific areas of concern include mileposts 223 to 228 and 233 to 245.	Possible effects from acid rock/acid mine drainage due to tunnel construction and rock cuts in Clear Creek County. Specific areas of concern include mileposts 223 to 228 and 233 to 245.		Possible effects from acid rock/acid mine drainage due to tunnel construction and rock cuts in Clear Creek County. Specific areas of concern include mileposts 223 to 228 and 233 to 245.	
Identified Direct Impacts													
Impact Areas	No	All mine waste material areas listed in Table 3.8-6, except the Excelsior Mine/Mill Site (milepost 200) and the Johnny Bull Mine (milepost 224.2). Acid rock/acid mine drainage (mileposts 237 to 239).	All mine waste material areas listed in Table 3.8-6. Acid rock/acid mine drainage (mileposts 237 to 239).		All mine waste material areas listed in Table 3.8-6. Acid rock/acid mine drainage (mileposts 237 to 239).		All mine waste material areas listed in Table 3.8-6, except the Excelsior Mine/Mill Site (milepost 200). Acid rock/acid mine drainage (mileposts 237 to 239).		All mine waste material areas listed in Table 3.8-6 except the Excelsior Mine/Mill Site (milepost 200). Acid rock/acid mine drainage (mileposts 237 to 239).	All mine waste material areas listed in Table 3.8-6. Acid rock/acid mine drainage (mileposts 237 to 239).		All mine waste material areas listed in Table 3.8-6. Acid rock/acid mine drainage (mileposts 237 to 239).	

Indirect Impacts

Indirect environmental impacts from regulated materials may result from project construction, hazardous materials transport, or commercial, industrial, and highway operations and maintenance activities. These impacts are further described in the paragraphs below. The potential for and degree of indirect impacts discussed below would depend on the magnitude of the alternative disturbance. The following points summarize the comparative level of impacts of the alternatives:

- The No Action alternative is expected to have the fewest indirect impacts.
- The Minimal Action alternative is expected to have fewer indirect impacts than all of the alternatives except the No Action alternative.
- The Transit alternatives would not address accident areas and would, therefore, have the greatest indirect impacts in terms of spill incidents. Transit alternatives would be associated with possible induced growth in Eagle County and might, therefore, cause indirect impacts via increased industrial/commercial activities.
- The Highway alternatives would allow for increased truck transport. However, these alternatives would also address safety issues and accident areas. Highway alternatives are associated with minimal induced growth (less than Transit alternatives) in Eagle County and minimal impacts via increased industrial/commercial activities.
- Alternatives that include tunnels (Transit, Highway, and Combination Highway/Transit) would have considerable potential for indirect impacts related to highway operation and maintenance activities and construction disturbance. Hazardous materials routes may require modifications during and after tunnel construction. The EJMT tunnel improvements are expected to have the greatest indirect impacts (due to the length/size of the tunnel and elevated location in comparison with the other tunnels).
- The Combination Highway/Transit alternatives would allow for increased truck transport. However, these alternatives would also address safety issues and accident areas. Combination Highway/Transit alternatives would be associated with possible induced growth in Eagle and Summit counties and might, therefore, cause indirect impacts via increased industrial/commercial activities. These alternatives would be associated with the greatest amount of indirect impacts.
- Preservation alternatives would initially be associated with corresponding build alternative indirect impacts. However, long-range total impacts would be associated with Combination alternatives.

Construction

Vehicles and equipment such as fuel storage tanks used during construction activities would have the potential to release hazardous materials, mainly petroleum constituents. Releases could be minimized by appropriate construction safety procedures and equipment stockpiling methods, and would be reported and addressed under appropriate regulatory guidance.

Hazardous Materials Transport

The potential for commodity releases during highway transportation is important to consider because of the large and growing role truck transport plays in domestic freight movement. In 1997 truck transport accounted for 32 percent of the ton-miles moved in domestic intercity transport (excluding pipelines). Trucks carry more than 60 percent of the hazardous materials in the US (EPA 1999). Increased traffic capacity would likely include increased transport of hazardous materials through the Corridor, increasing the potential for spill incidents. Routing designations and requirements must be developed for all alternatives that include tunnels.

CDOT *1986 Traffic Regulations Governing the Use of the Tunnels on the State Highway System* and CSP route designations for hazardous materials transport would require modification for any of the alternatives that include tunnels. The following hazardous material loads are currently prohibited from traveling through EJMT:

- Any quantity of Class A Explosives, Class B Explosives, Forbidden Explosives, Flammable Solid (Dangerous When Wet label only), Poison A, Radioactive Material.
- 1,000 pounds or more gross weight of Class C Explosives, Blasting Agents, Nonflammable Gas, Nonflammable Gas (chlorine), Nonflammable Gas (oxygen, cryogenic liquid), Nonflammable Gas (fluorine), Combustible Liquid, Poison B, Corrosive Material, Irritating Material, Flammable Gas, Flammable Liquid, Oxidizer, Organic Peroxide.

Regulations restrict transport of these hazardous materials through EJMT as follows:

- Conditional transport is allowed when Loveland Pass is closed.
- Vehicles transporting more than 500 but less than 1,000 pounds of designated hazardous materials must stop in the truck parking areas at EJMT and declare the type of cargo being transported before entering the tunnel.
- Tunnel maintenance personnel have the authority to stop motor vehicles for reasonable cause.
- Tunnel maintenance personnel have the authority to regulate the manner in which access is granted or to prohibit access.

As discussed in Chapter 1, Purpose of and Need for Action, Baseline 2025 predictions indicate that truck and recreational vehicle (RV) traffic would increase considerably in western areas of the Corridor on summer weekdays, summer weekends, and winter weekends. EJMT and eastern Corridor locations also would be affected by increased truck and RV traffic. Increased truck traffic may be associated with a higher incidence of accidents and spills. Alternatives that do little to improve mobility and/or safety (No Action and Minimal Action) would have the highest potential to be associated with increased spill incidents. Highway and Combination alternatives would be associated with the greatest improvements in truck mobility and safety and would have the greatest potential to minimize accidents and spill incidents.

Gas Stations, Commercial and Industrial Activity, Highway Operations and Maintenance

Increased traffic capacity and more interchanges might increase the number of gas stations, commercial and industrial activity, and highway operations and maintenance activities in the Corridor, increasing the potential to release hazardous materials. Each of these activities would be associated with potentially harmful environmental impacts. Gas stations, maintenance shops, and service stations might affect water quality by runoff of gas, oil, and dirt; spills during refueling; and waste releases to sewer systems. Highway operations and maintenance would involve activities such as painting of bridges, restriping of highways, deicing of roadway facilities during winter weather conditions, and application of pesticides to roadside vegetation. Possible induced growth associated with specific project alternatives might cause additional impacts related to possible increased commercial and industrial activity.

The number of active petroleum USTs in the US has decreased due to regulatory requirements and closures (EPA 1999). Releases from registered USTs are less likely to occur or cause substantial environmental impacts under regulatory requirements that include tank specifications and monitoring. The identification and cleanup of LUST sites throughout the US and the Corridor is ongoing. Environmental impacts from these sites are expected to decrease in the future.

Table 3.8-8. Degree of Direct and Indirect Impacts

	No Action	Minimal Action	Transit Alternatives				Highway Alternatives			Combination Highway/Transit Alternatives			
			Rail with IMC	AGS	Dual-Mode Bus in Guideway	Diesel Bus in Guideway	6-Lane Highway 55 mph	6-Lane Highway 65 mph	Reversible/HOV/HOT Lanes	6-Lane Highway with Rail and IMC	6-Lane Highway with AGS	6-Lane Highway with Dual-Mode Bus in Guideway	6-Lane Highway with Diesel Bus in Guideway
Direct Impacts	None	Medium	High	Medium	Medium	Medium	High	High	High	High	High	High	High
Indirect Impacts	None	Low	Medium	Medium	Medium	Medium	Medium	Medium	Medium	High	High	High	High

Direct Impacts Legend
None = no known impacts on regulated materials or historic mine waste
Medium = moderate impacts on historic mine waste
High = highest impacts on historic mine waste

Indirect Impacts Legend
Low = least indirect impacts
Medium = moderate indirect impacts
High = highest indirect impacts

3.8.4 Evaluation Summary

Direct and indirect impacts on regulated materials and historic mine waste are summarized in Table 3.8-8 by alternative. Transit and Highway alternatives that would traverse Clear Creek County are indicated to have the highest direct impacts, as these would necessitate handling of historic mine waste. Because the Combination alternatives would include both of these components, Combination alternatives might be expected to have increased direct impacts. Indirect impacts are rated according to the amount of construction necessary (higher potential for the release of regulated materials during construction) and the potential for increased heavy truck traffic (higher potential for materials spills).

3.8.5 Mitigation Measures

As a general rule, CDOT would take the following steps to minimize and avoid potential environmental impacts resulting from the disturbance of regulated materials and historic mine wastes:

- Minimize property acquisition and disturbance of mine wastes, tailings, and drainage tunnels, and areas in active/inactive LUST sites
- Minimize impacts on the Clear Creek channel and floodplain both during and after disturbance of mine waste, tailings, and drainage tunnels
- Manage mine waste and tailings materials onsite as far as possible to minimize potential problems resulting from offsite disposal
- Minimize wind-blown dust from mine tailings on construction sites by wetting or other dust control measures
- Manage mine waste and tailings materials under CDPHE and EPA guidance and authority
- Manage contaminated soil and groundwater under applicable CDPHE, EPA, Colorado OPS, and CDOT regulations and guidance
- Follow CDOT procedures and other applicable guidance for storage and handling of regulated materials and historic mine waste during construction activities
- Work cooperatively with various local, state, and federal agencies and local watershed groups to help avoid further impacts to and possibly improve Clear Creek water quality, including management of mine piles and tunnels within the I-70 right-of-way

3.8.5.1 LUST Sites

Disturbance of identified LUST sites would require coordination with Colorado OPS to ensure proper handling and disposal of contaminated materials (also see CDOT requirements and best management practices [BMPs] below). Construction activities associated with the alternatives may also uncover petroleum contamination from identified LUST sites or from LUST site contamination that was not indicated by PEIS research activities (or during subsequent research). Should contamination be discovered, construction activities would be temporarily halted until characterization/storage/disposal/cleanup requirements could be discussed with the Colorado OPS or a professional familiar with OPS procedures and requirements. Nonpetroleum contaminants might also be encountered and would be handled under CDPHE Solid Waste or RCRA Hazardous Materials regulations and requirements, and EPA toxic substances requirements if applicable.

3.8.5.2 UST Sites

USTs from existing and historic service stations might also be encountered. USTs must be removed according to Colorado OPS requirements during excavation/construction activities for any of the alternatives where they would be affected by the project footprint. Tank removal generally includes sampling and analysis of underlying soil and soil removal (if necessary) to meet OPS designated standards.

3.8.5.3 Dewatering

Excavation and grading activities for all of the alternatives, especially those that would include tunnel construction, might encounter groundwater and require dewatering activities. Tunnel construction practices would include consolidation grouting to minimize inflow into the tunnel. However, dewatering activities would be required on the tunnel and at the waste disposal (spoil) areas. Should dewatering be required, permit acquisition (from CDPHE) for discharge of groundwater into nearby surface water may require water analyses, removal of specific contaminants to CDPHE- and EPA-approved levels, and lowering of total suspended solids (TSS) to acceptable levels. Groundwater treatment might be accomplished by filtration, air stripping for volatile compounds, or stage dewatering methods. A permit variance may be necessary for effluent parameter to meet discharge standards. Construction dewatering would require coordination with CDPHE to determine necessary treatment and handling of extracted water before final discharge/disposition.

3.8.5.4 Acid Rock Drainage

Excavation of road cuts in areas of mineralized rock would have the potential to introduce conditions for the leaching of metals from these excavated materials. Potential areas of mineralized rock requiring excavation will be specifically identified during Tier 2 studies. Tier 2 mitigation plans will ensure that acid rock drainage would not affect Corridor water quality through the implementation of appropriate BMPs and appropriate disposition activities for these materials.

3.8.5.5 Metal Highway Structures

Disturbance or replacement of highway structures such as painted guardrails, signs, or metal bridge components would require appropriate characterization and disposal according to CDPHE guidelines and requirements.

3.8.5.6 CDOT Requirements and BMPs

CDOT contractors are required to comply with Section 250, Environmental, Health and Safety Management of the CDOT Standard Specifications, when applicable. The specifications provide guidelines and requirements for health and safety measures during construction, the investigation and testing of contaminated materials, and procedures to use if contamination is encountered during construction.

All petroleum products and other hazardous materials (for example, fuel, solvents) used for action alternatives' construction purposes would be handled and stored per CDOT BMPs to prevent accidental spillage or other harm to the project area. If suspected hazardous or petroleum products were encountered during construction, samples of the material would be collected and analyzed for metals, hydrocarbons, organic chemicals (volatile or semivolatile organic compounds), and other toxicity and characteristic parameters to determine what special handling and disposal requirements are appropriate. The telephone numbers for medical and emergency services would be maintained onsite. If any unplanned occurrence requires assistance, the site supervisor or designated person would contact the appropriate response team.

3.8.5.7 Historic Mine Waste

CDPHE and EPA coordination would be required for the handling of mine waste materials, and specific CDPHE and EPA approval may be required for construction disturbance of sites that are currently designated as NPL sites within the Clear Creek/Central City Superfund Area. Other Clear Creek historic mining sites that pose considerable threats to Clear Creek might also require specific regulatory actions under CERCLA. Regulatory authority for mine tailings and waste would fall under various state and federal programs, depending on where the waste is located and its designation under CERCLA. The CDPHE would have the lead (and works with EPA) for regulatory actions at the Clear Creek/Central City Superfund Area, and the CDPHE Solid Waste Division would have authority for mine tailings not covered by CERCLA.

In addition, FHWA encourages "participation in transportation projects that include the use and redevelopment of contaminated sites when appropriate." Alternative implementation might offer a means to clean up contaminants that might not otherwise be addressed by means of the FHWA 1998 Brownfields Economic Redevelopment Initiative. The initiative, administered by EPA, provides assistance and incentives to agencies for the assessment, cleanup, and economic reuse of contaminated properties known as Brownfields.

To address multiple regulatory authorities and to ensure consistent and effective handling of waste materials, CDPHE has recommended that CDOT's materials handling plan be formalized into a Memorandum of Agreement (MOA) among CDOT, EPA, and CDPHE (with involvement of the Solid Waste and CERCLA programs). This MOA would require that CDOT's proposed mine waste management be consistent with CERCLA cleanups that have taken place elsewhere in the area. The MOA will seek CDPHE and EPA's prior approval of a Materials Management Plan, which includes results of waste pile sampling, a Corridor-wide plan based on performance goals similar to those required by the CDPHE Solid Waste Unit program, and site-specific details similar to the as-builts required by Solid Waste staff. CDOT will work with CDPHE and EPA to develop the Corridor-wide MOA and coordinate MOA activities with local watershed organizations and provide for public comment as needed.

A detailed discussion of the intended contents of the MOA is provided in Appendix I, Regulated Materials and Historic Mining. In general, CDOT would attempt to avoid disturbance of mine waste wherever possible. If avoidance would not be feasible, CDOT would characterize the mine materials and reuse the material onsite according to MOA procedures if possible. Offsite disposal of mine waste materials would be the least desirable mitigation option. Long-term impacts would include the potential to release contaminants from disturbance of mine waste (or other contaminants encountered in soil or groundwater) during construction activities. Such impacts could be avoided with appropriate handling of materials and implementation of state-of-the-practice erosion and sediment control plans.

Although contaminants sampling and testing has not yet specifically been performed for the mine waste materials within the alternative footprints, it is expected (based on previous studies) that much of these waste materials would have relatively low levels of contaminants and would not be within or from sites requiring specific CERCLA remedial actions. Such materials may be suitable for construction material uses, including backfill and landscaping. These materials would be stabilized and maintained during and after construction to minimize environmental impacts. In certain cases, highway improvements, through proper handling and stabilization of these materials, would serve to enhance environmental conditions in the Corridor.