

Comparison of Predicted and Actual Water Quality at Hardrock Mines

*The reliability of predictions in
Environmental Impact Statements*

APPENDIX A

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1. INTRODUCTION

The following sections contain general major mine characteristics and regulatory oversight and NEPA document information on major mines and NEPA eligible mines organized by State and by primary administering agency.

During the course of NEPA document and subsequent water quality information acquisition various requests were made and a record was kept of the response to those requests and is summarized and provided as an additional feature in the following sections.

2. ALASKA

This section contains information on Alaska’s Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

2.1. MAJOR MINES

Eight modern era major hardrock mines were identified in Alaska. These mines have been classified based on commodity, operation type, and current status as indicated in Table 2.0. Each of the categories is described in the following sections.

2.1.1. COMMODITY

As indicated in Figure 2.0, five (63%) of the eight major mines in the state are primary gold producers, while two (25%) are primary gold and silver producers. One (13%) mine is a base metal silver, lead and zinc producer and one (13%) is a base metals gold, silver, lead, zinc producer.

2.1.2. OPERATION TYPE

The eight current era major hardrock mines in Alaska are operated by both open pit and underground mining methods, and employ heap or vat leaching, flotation and gravity process methods.

As shown in Figure 2.1, four of the eight mines are underground mines, while three are open pit. One mine is a combination open pit and underground mine.

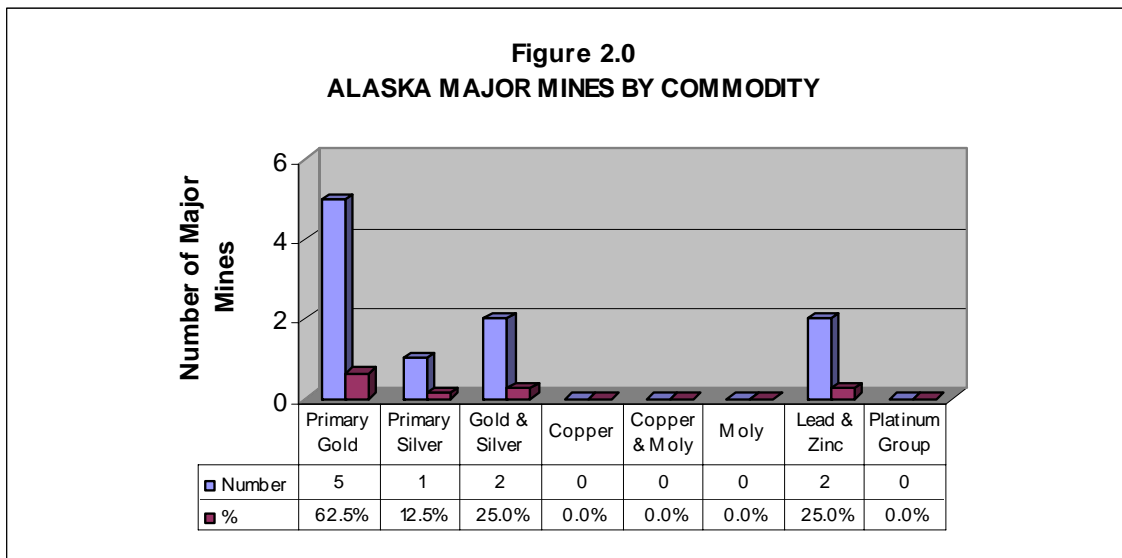
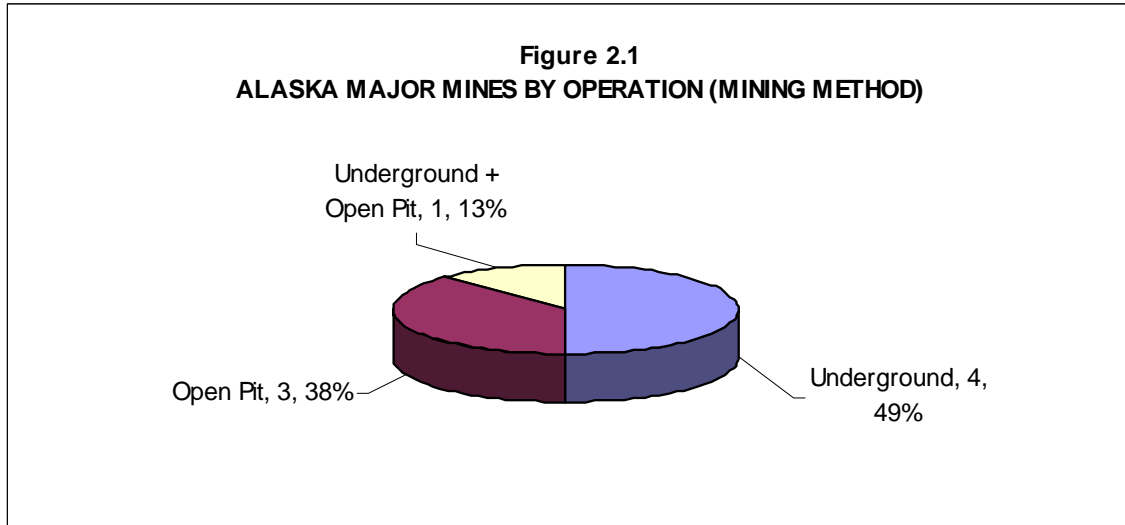
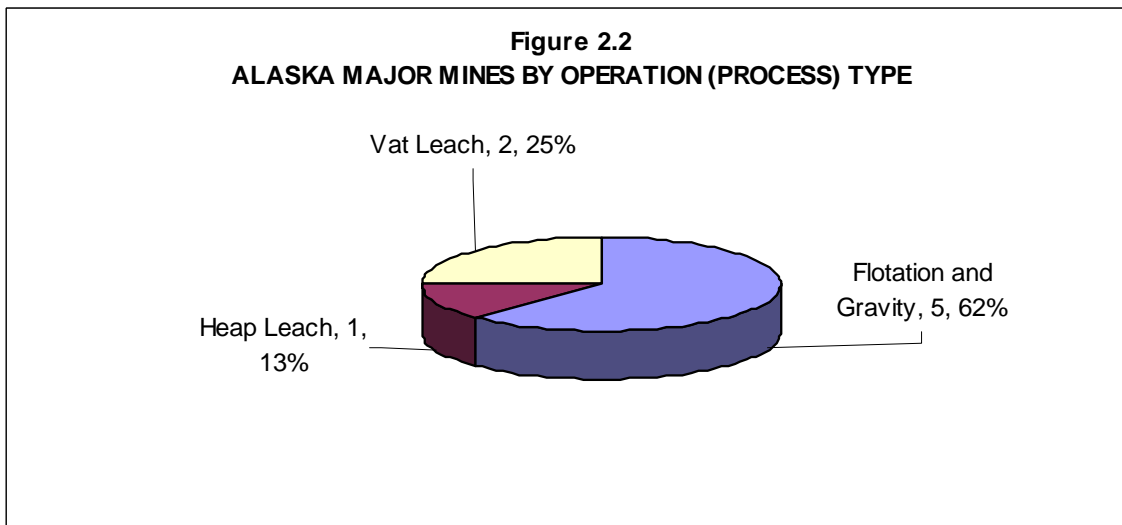


Table 2.0
Alaska Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status	
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	AJ Project	AK		Echo Bay Mines Ltd. (100%)	Y								Y					Y			Proposed	Withdrawn
2	Fort Knox	AK		Kinross Gold Corp (100%)	Y									Y			Y				1994	Operating
3	Greens Creek	AK		Kennecott Minerals (70%), Hecla (30%)	Y	Y			Y	Y			Y					Y			1984	Operating
4	Illinois Creek	AK		American Land Reclamation	Y	Y								Y	Y						1997	Operating
5	Kensington Project	AK		Coeur D'Alene Mines Corp (100%)	Y								Y					Y			Proposed	Permitting
6	Pogo Project	AK		Teck Corp (100%)	Y								Y					Y			2005	In Construction
7	Red Dog	AK		Cominco Alaska Inc.		Y			Y	Y			Y	Y				Y			1985	Operating
8	True North	AK		Kinross Gold Corp (100%)	Y									Y			Y				2001	Operating

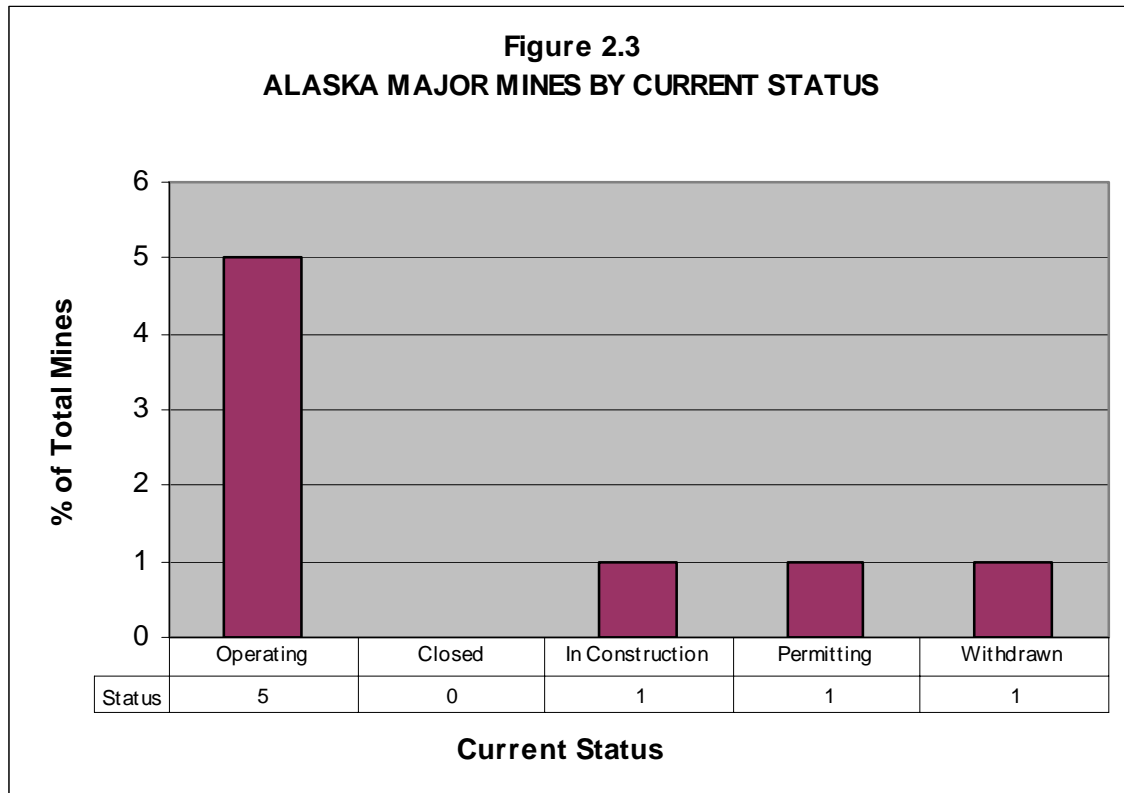


As indicated in Figure 2.2, three of the five primary gold or gold mines use cyanide leach methods. One mine uses only heap leach methods, while two use only vat leach methods. Five of the mines in the state use flotation or gravity processing methods for beneficiation of lead, zinc, silver and gold ores.



2.1.3. PRODUCTION STATUS

As shown in Table 2.0 and Figure 2.3, five of the eight mines (63%) are currently operating while one is in construction, one is in permitting and one has been withdrawn.



2.2. MAJOR NEPA APPLICABLE MINES

Of the eight major current era mines identified in Alaska, seven meet the requirements to undergo the NEPA process as seen in Table 2.1. The only non-NEPA eligible major mine in the state is the Illinois Creek project which is located on state and private land. Of the current era hardrock mines eligible for NEPA analysis, the following were the requirements determining the eligibility for NEPA:

- None are located on BLM administered lands
- Two (28%) are located on Forest Service administered lands
- None are located on both BLM and Forest Service administered lands
- Four (57%) required 404 wetlands permits from the COE invoking NEPA
- Three (43%) required NPDES permits from EPA invoking NEPA
- None are located on Indian Lands invoking NEPA

No major mines are located on BLM land in Alaska which is surprising given the large amount of BLM controlled land in the state. Two mines (Greens Creek and Kensington) are located on Forest Service lands (Greens Creek is actually on a National Monument).

Four mines have been the subject of Corp of Engineers NEPA analysis (Greens Creek, Pogo, Red Dog, and True North) and three have been the subject of EPA NEPA analysis (AJ, Pogo and Red Dog). Two mines (Pogo and Red Dog) required both 404 wetlands permits and NPDES permits invoking NEPA.

Although parts of the Red Dog mine involve use of Native American Corporation lands, NEPA has not been invoked at the Red Dog mine as might be expected on Indian lands entrusted to the BIA.

None of Alaska's NEPA eligible current era major mines were operating prior to the enactment of NEPA, with the exception of the historic AJ Mine. Two of the mines were permitted as new mines with EA's (Fort Knox and True North) with no subsequent EA's or EIS's. The Red Dog Mine was permitted with an EIS for the NPDES permit and no subsequent NEPA analysis has been performed. Two of the mines (Greens Creek, Pogo) were permitted as new mines based on EIS's. This is the sole NEPA analysis for the Pogo mine which is under construction, while the Greens Creek mine has been the subject of several subsequent EA's and EIS's. The Kensington Mine, which has not yet been permitted, has already been the subject of several EIS's and an SEIS.

Commodity, operations and status of major mines in Alaska as a whole that are NEPA eligible only slightly differs from that of all major mines in the state by one mine, so separate statistics for Alaska NEPA eligible mines are not provided.

2.3. NEPA AND WATER QUALITY DOCUMENTATION

No state equivalent NEPA process exists for Alaska. The Alaska Department of Natural Resources cooperated in the providing the True North EA's conducted by the Army Corp of Engineers. Water quality information in the form of an electronic database for the mines in the state is not available via website or other electronic means. Some water quality information on Greens Creek was obtained from other consultants and state regulators but findings were primarily based on information contained in the multiple EA's and EIS's for the mine.

Table 2.1
Alaska Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
1	AJ Project	AK					Yes		Yes	1992	Reopen existing mine	EIS				
2	Fort Knox	AK				Yes			Yes	1993	COE 404 Permit	EA				
3	Greens Creek	AK		Yes	R10 - Tongass				Yes	1983	New Project	EIS				
	Greens Creek	AK		Yes	R10 - Tongass				Yes	1988	General Operation Changes	EA				
	Greens Creek	AK		Yes	R10 - Tongass				Yes	1992	Waste Rock Expansion	EA				
	Greens Creek	AK		Yes	R10 - Tongass				Yes	2003	Tailings Disposal	FEIS				
4	Kensington Project	AK		Yes	R10 - Tongass				Yes	1992	New Project	EIS				
	Kensington Project	AK		Yes	R10 - Tongass				Yes	1997	Modified New Project	SEIS				
	Kensington Project	AK		Yes	R10 - Tongass				Yes	2004	Modified New Project	SEIS				
5	Pogo Project	AK				Yes	Yes		Yes	2003	New Project NPDES	FEIS				
6	Red Dog	AK				Yes	Yes		Yes	1984	New Project NPDES	EIS				
7	True North	AK				Yes			Yes	2000	COE 404 Permit	EA				

3. ARIZONA

This section contains information on Arizona’s Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

3.1. MAJOR MINES

Twenty modern era major hardrock mines were identified in Arizona. These mines have been classified based on commodity, operation type, and current status as indicated in Table 3.0. Each of the categories is described in the following sections.

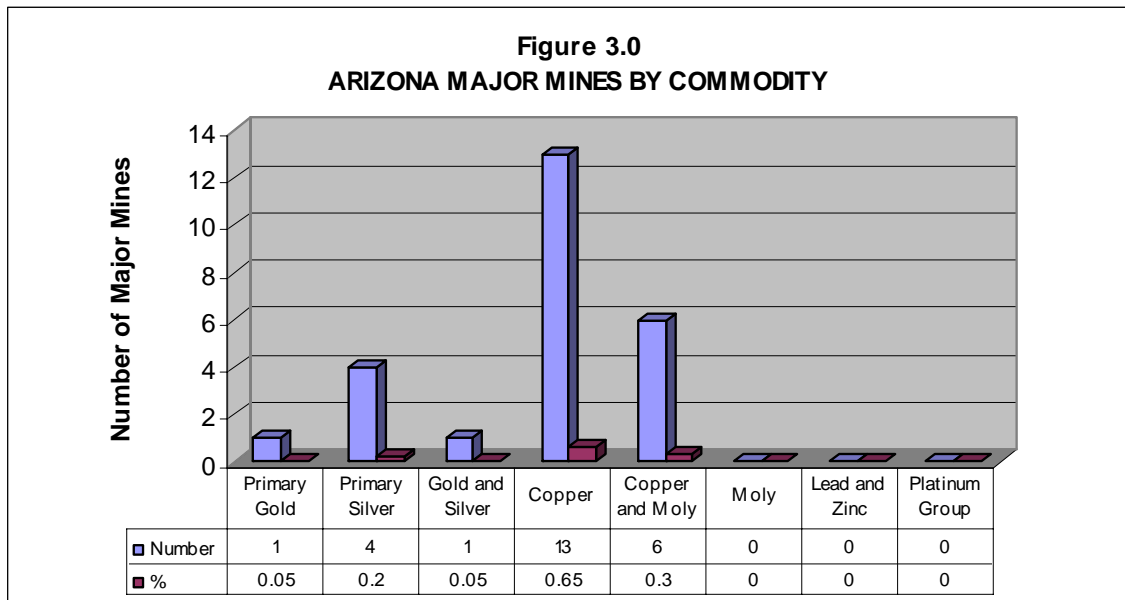
3.1.1. COMMODITY

As indicated in Figure 3.0, one (5%) of the twenty major mines in the state are primary gold producers, while four (20%) are primary silver producers, and one (5%) is a primary gold and silver producer. Thirteen (65%) mines are primary copper producers, while six (30%) are primary copper and molybdenum producers.

3.1.2. OPERATION TYPE

The twenty current era major hardrock mines in Arizona are operated by both, open pit and underground mining methods, and employ heap leaching, dump leaching or flotation and gravity process methods.

As shown in Figure 3.1, only one of the twenty mines is an underground mine, while sixteen are open pit. Three mines are a combination of open pit and underground mines.

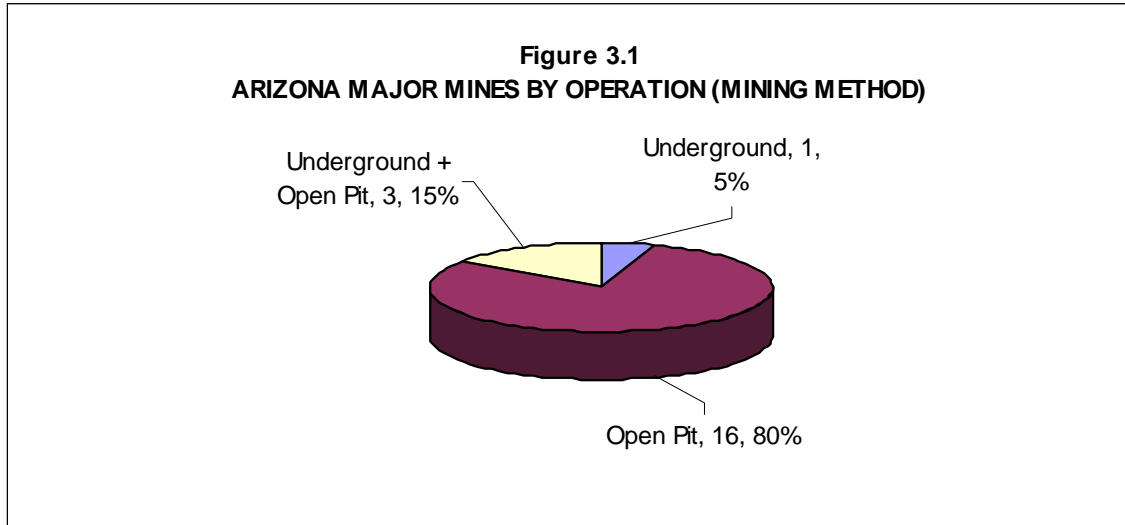


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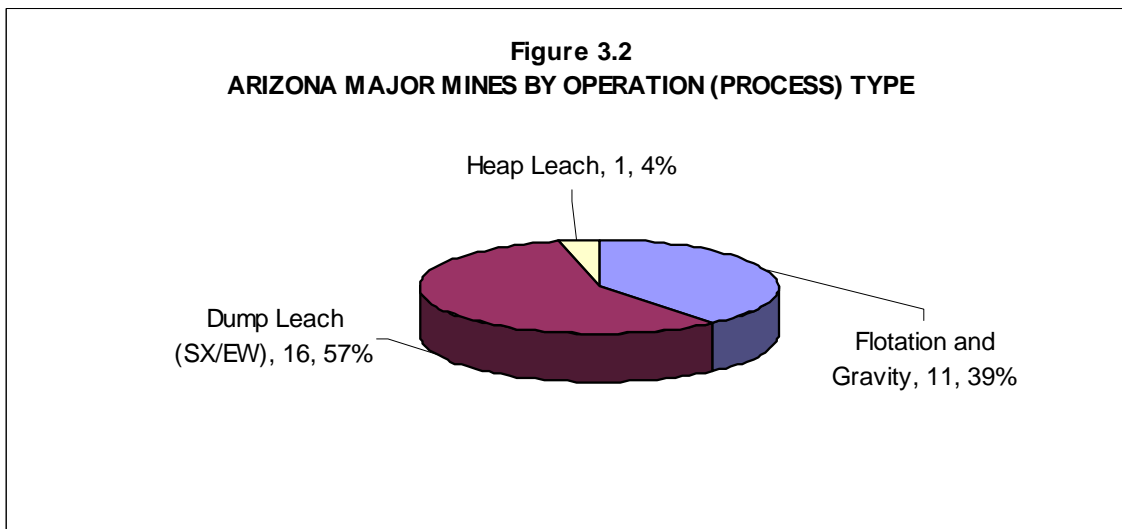
ARIZONA

Table 3.0
Arizona Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status		
	Name	State	County	Ownership	Commodity							Operation Type											
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S					
1	Ajo	AZ	Pima	Phelps Dodge Corp.			Y	Y						Y				Y			Historic	Closed	
2	Bagdad	AZ	Yavapai	Phelps Dodge Corp.			Y	Y						Y				Y	Y		Historic	Operating	
3	Carlotta	AZ	Gila and Pinal	Carlotta Copper Co.			Y							Y					Y		Proposed	Pending Appeals	
4	Cyprus Tohono	AZ	Pinal	Phelps Dodge Corp.			Y							Y					Y		Historic	Closed	
5	Hayden	AZ	Gila	ASARCO		Y	Y							Y				Y	Y	Y	Historic	Operating	
6	Miami - PD	AZ	Gila	Phelps Dodge Corp.		Y	Y							Y					Y	Y	Historic	Operating	
7	Miami - BHP	AZ	Gila	BHP Copper, Inc.			Y							Y					Y		Historic	Operating	
8	Mineral Park	AZ	Mohave	Mercator Minerals			Y							Y					Y		1995	Operating	
9	Mission	AZ	Pima	ASARCO		Y	Y						Y	Y				Y			Historic	Operating	
10	Morenci	AZ	Greenlee	Phelps Dodge Corp.			Y							Y					Y		Historic	Operating	
11	Pinto Valley	AZ	Gila	BHP Copper, Inc.			Y	Y					Y	Y				Y	Y	Y	Historic	Closed	
12	Ray	AZ	Pinal	ASARCO		Y	Y							Y					Y	Y	Historic	Operating	
13	Safford (Dos Pobres/San Juan)	AZ	Safford	Phelps Dodge Corp.			Y							Y					Y		Proposed	Permitting	
14	Sanchez	AZ	Graham				Y							Y					Y	Y	Proposed	Withdrawn	
15	San Manuel	AZ	Pinal	BHP Copper, Inc.	Y	Y	Y	Y					Y	Y					Y	Y	Y	1952	Closed
16	Sierrita	AZ	Pima	Phelps Dodge Corp.			Y	Y						Y					Y	Y	Historic	Operating	
17	Silver Bell	AZ	Pima	ASARCO			Y							Y					Y		Historic	Operating	
18	Superior	AZ		BHP Copper, Inc.			Y						Y						Y		Historic	Closed	
19	Twin Buttes	AZ	Pima	Phelps Dodge Corp.			Y	Y						Y					Y	Y	Historic	Closed	
20	Yarnell	AZ	Yavapai	BEMA	Y									Y	Y						Proposed	Withdrawn	

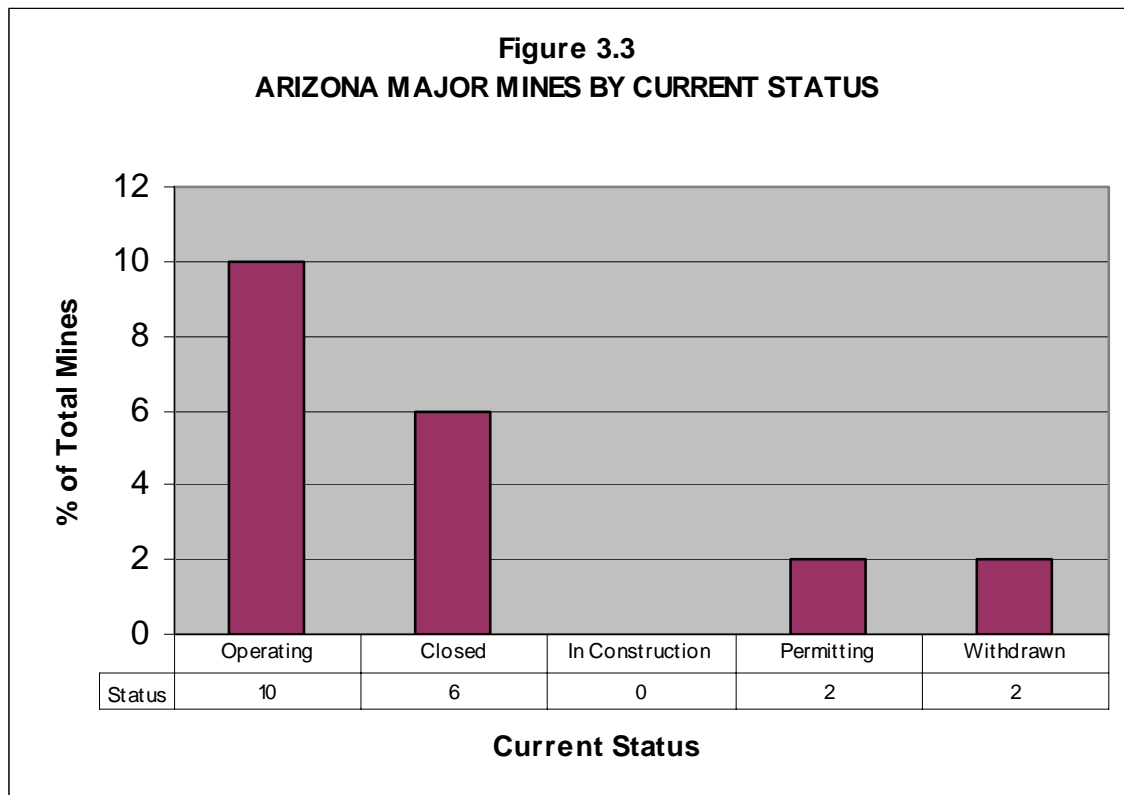


As indicated in Figure 3.2, the one primary gold mine uses cyanide leach methods. Eleven of the twenty mines in the state use flotation or gravity processing methods while sixteen mines use dump leach processes for beneficiation of silver, copper and molybdenum ores.



3.1.3. PRODUCTION STATUS

As shown in Table 3.0 and Figure 3.3, ten of the twenty mines (50%) are currently operating, six (30%) are closed, two mines (10%) are in permitting, and two mines (10%) have been withdrawn.



3.1.4. MAJOR NEPA APPLICABLE MINES

Of the twenty major current era mines identified in Arizona, thirteen meet the requirements to undergo the NEPA process as seen in Table 3.1. Of the current era hardrock mines eligible for NEPA analysis, the following were the requirements determining the eligibility for NEPA:

- Ten (77%) are located on BLM administered lands
- Two (15%) are located on Forest Service administered lands
- One (8%) is located on both BLM and Forest Service administered lands
- None require 404 wetlands permits from the COE invoking NEPA
- None require NPDES permits from EPA invoking NEPA
- Two (15%) are located on Indian Lands invoking NEPA

Ten major mines are located on BLM land in Arizona. Two mines (Carlotta and Miami - PD) are located on Forest Service lands. Only one mine (Miami – PD) is located on both BLM and Forest Service lands. None of the mines have been the subject of Corp of Engineers NEPA analysis or the EPA NEPA analysis. Two mines involve the use of Native American Corporation lands, NEPA has been invoked at the Cyprus Tohono and Mission mines as might be expected on Indian lands entrusted to the BIA.

Eight of Arizona’s NEPA eligible current era major mines were operating prior to the enactment of NEPA. One of the mines was permitted as a new mine with an EA (Mineral Park) with no subsequent EA’s or EIS’s. Four new mines and three mine expansions were permitted based on EIS’s. Three land exchanges were also permitted based on EIS’s.

Commodity, operations and status of major mines in Arizona as a whole that are NEPA eligible slightly differ from that of all major mines in the state, so separate statistics for Arizona NEPA eligible mines are provided.

3.2. MAJOR NEPA APPLICABLE MINES

Thirteen modern era major NEPA applicable hardrock mines were identified in Arizona. These mines have been classified based on commodity, operation type, and current status as indicated in Table 3.2. Each of the categories is described in the following sections.

3.2.1. COMMODITY

As indicated in Figure 3.4, one (8%) of the thirteen major NEPA applicable mines in the state are primary gold producers, while three (23%) are primary silver producers. Nine (69%) mines are primary copper producers, while three (23%) are primary copper and molybdenum producers.

3.2.2. OPERATION TYPE

The thirteen current era major NEPA applicable hardrock mines in Arizona are operated by both, open pit and underground mining methods, and employ heap leaching, dump leaching or flotation and gravity process methods.

As shown in Figure 3.5, twelve of the thirteen NEPA applicable mines are open pit, while only one mine (Mission) is a combination of open pit and underground mine.

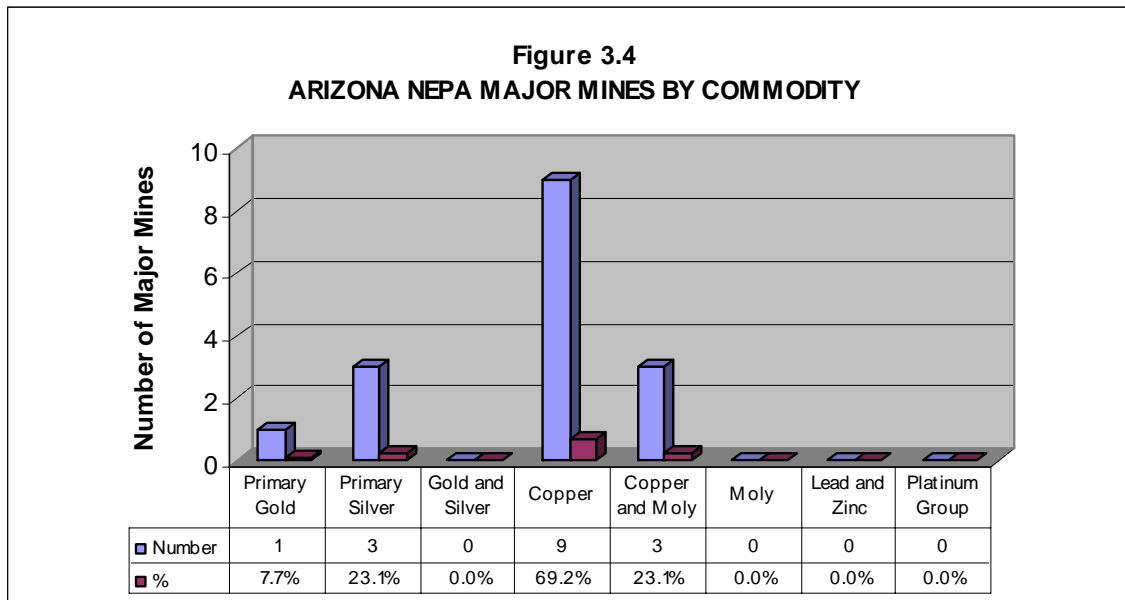
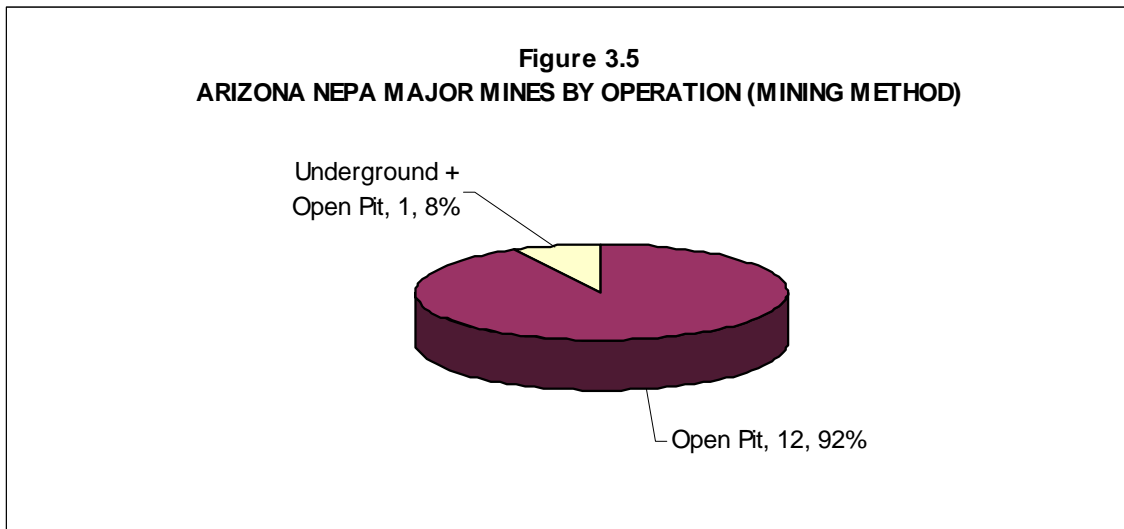


Table 3.1
Arizona Major Mines NEPA Actions Database

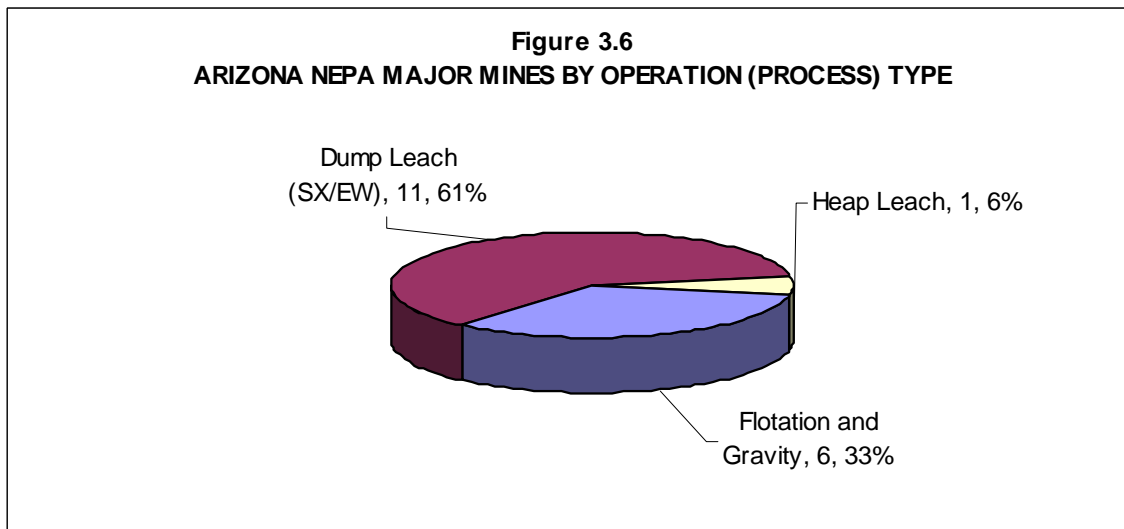
No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
1	Bagdad	AZ	Yes		Phoenix				Yes	1996	Expansion	EIS				
2	Carlotta	AZ		Yes	Tonto				Yes	1997	New Project	EIS				
3	Cyprus Tohono	AZ						Yes	Yes	1995	Expansion	EIS				
4	Miami - PD	AZ	Yes	Yes	Phoenix, R? - Tonto				Yes	1998	Expansion	EIS				
5	Mineral Park	AZ	Yes						Yes	?	New Project	EA				
6	Mission	AZ						Yes	Yes							
7	Morenci	AZ	Yes		Safford				Yes	1996	Land Exchange	EIS				
8	Ray	AZ	Yes		Tucson				Yes	1999	Land Exchange	EIS				
9	Safford (Dos Pobres/San Juan)	AZ	Yes		Safford				Yes	2004	New Project & Land Exchange	EIS				
10	Sanchez	AZ	Yes		Safford				Yes	1992	New Project	EIS				
11	Sierrita	AZ	Yes		?				Yes							
12	Twin Buttes	AZ	Yes		?				Yes							
13	Yarnell	AZ	Yes		Phoenix				Yes	1998	New Project	EIS				

Table 3.2
Arizona NEPA Eligible Major Mines Database

No	Major Mines				General Information															Year Production Initiated	Current Status
	Name	State	County	Ownership	Commodity							Operation Type									
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S			
1	Bagdad	AZ	Yavapai	Phelps Dodge Corp.			Y	Y					Y				Y	Y		Historic	Operating
2	Carlotta	AZ	Gila and Pinal	Carlotta Copper Co.			Y						Y					Y		Proposed	Pending Appeals
3	Cyprus Tohono	AZ	Pinal	Phelps Dodge Corp.			Y						Y					Y		Historic	Closed
4	Miami - PD	AZ	Gila	Phelps Dodge Corp.		Y	Y						Y					Y	Y	Historic	Operating
5	Mineral Park	AZ	Mohave	Mercator Minerals			Y						Y					Y		1995	Operating
6	Mission	AZ	Pima	ASARCO		Y	Y					Y	Y				Y			Historic	Operating
7	Morenci	AZ	Greenlee	Phelps Dodge Corp.			Y						Y					Y		Historic	Operating
8	Ray	AZ	Pinal	ASARCO		Y	Y						Y					Y	Y	Historic	Operating
9	Safford (Dos Pobres/San Juan)	AZ	Safford	Phelps Dodge Corp.			Y						Y					Y		Proposed	Permitting
10	Sanchez	AZ	Graham				Y						Y					Y	Y	Proposed	Withdrawn
11	Sierrita	AZ	Pima	Phelps Dodge Corp.			Y	Y					Y					Y	Y	Historic	Operating
12	Twin Buttes	AZ	Pima	Phelps Dodge Corp.			Y	Y					Y					Y	Y	Historic	Closed
13	Yarnell	AZ	Yavapai	BEMA	Y								Y	Y						Proposed	Withdrawn

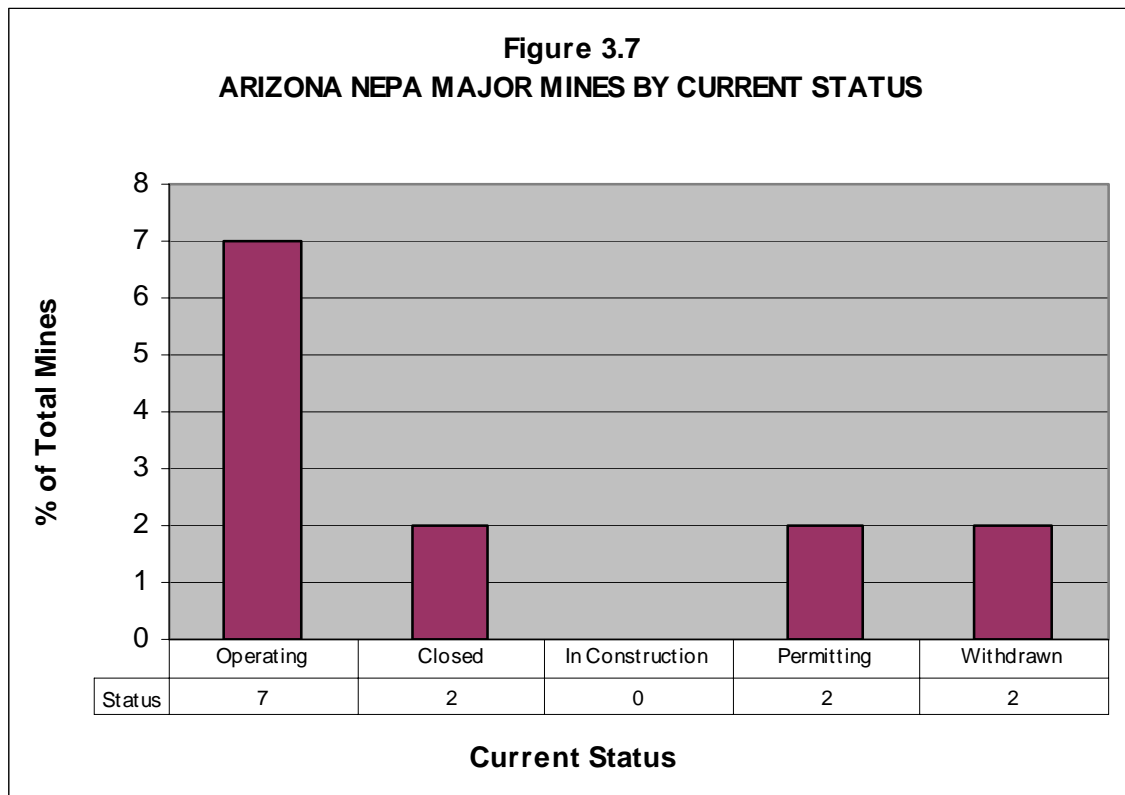


As indicated in Figure 3.6, the one (6%) primary gold mine uses cyanide heap leach methods. Six (33%) of the thirteen NEPA applicable mines in the state use flotation or gravity processing methods while eleven (61%) mines use dump leach processes for beneficiation of silver, copper and molybdenum ores.



3.2.3. PRODUCTION STATUS

As shown in Table 3.2 and Figure 3.7, seven (54%) of the thirteen NEPA applicable mines are currently operating, two (15%) are closed, two mines (15%) are in permitting, and two mines (15%) have been withdrawn.



3.3. NEPA AND WATER QUALITY DOCUMENTATION

No state equivalent NEPA process exists for Arizona. Water quality information in the form of an electronic database for mines in the state is not generally available via website or other electronic means although some information is available for 303(d) and 305(b) impaired waters. Some water quality information in hardcopy and CD form was also obtained from the Arizona Department of Environmental Quality (ADEQ) on groundwater and surface water for the Bagdad and Ray mines as well as other mines in the state. ADEQ staff also provided information concerning specific mines and drainages.

4. CALIFORNIA

This section contains information on California’s Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

4.1. MAJOR MINES

Fifteen modern era major hardrock mines were identified in California. These mines have been classified based on commodity, operation type, and current status as indicated in Table 4.0. Each of the categories is described in the following sections.

4.1.1. COMMODITY

As indicated in Figure 4.0, five (33%) of the eight major mines in the state are primary gold producers, while ten (67%) are primary gold and silver producers, and one (7%) is a primary copper producer.

4.1.2. OPERATION TYPE

The fifteen current era major hardrock mines in California are operated primarily by open pit, with only one mine (American Girl, Cargo Muchaco, Oro Cruz) using both open pit and underground mining methods, and employ heap and/or vat leaching process methods.

As shown in Figure 4.1, all fifteen mines are open pit operations with one mine (American Girl) operating as a combination open pit and underground mine.

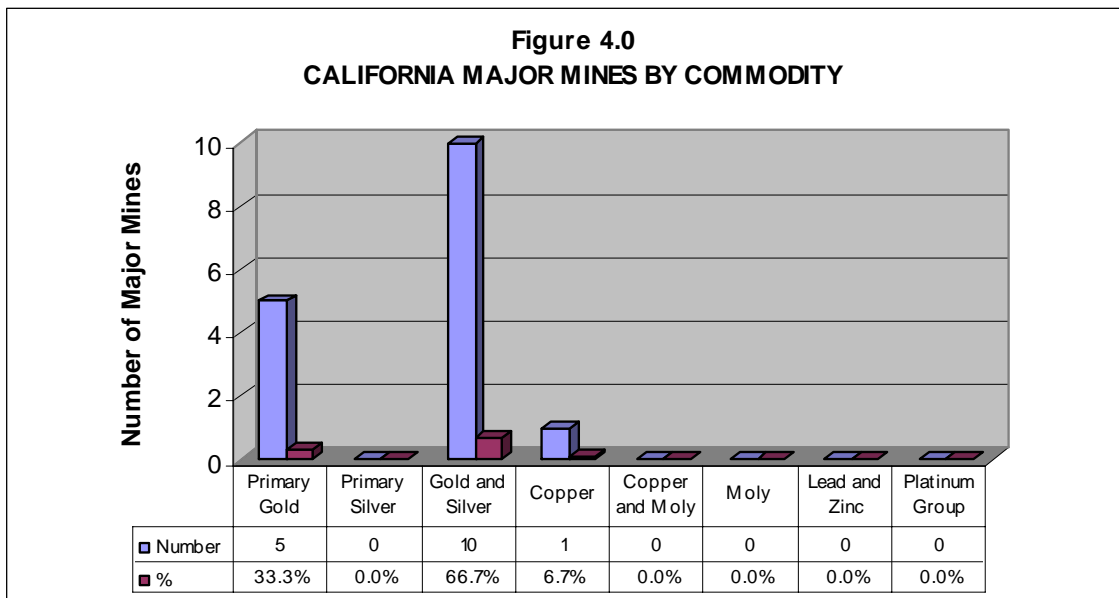
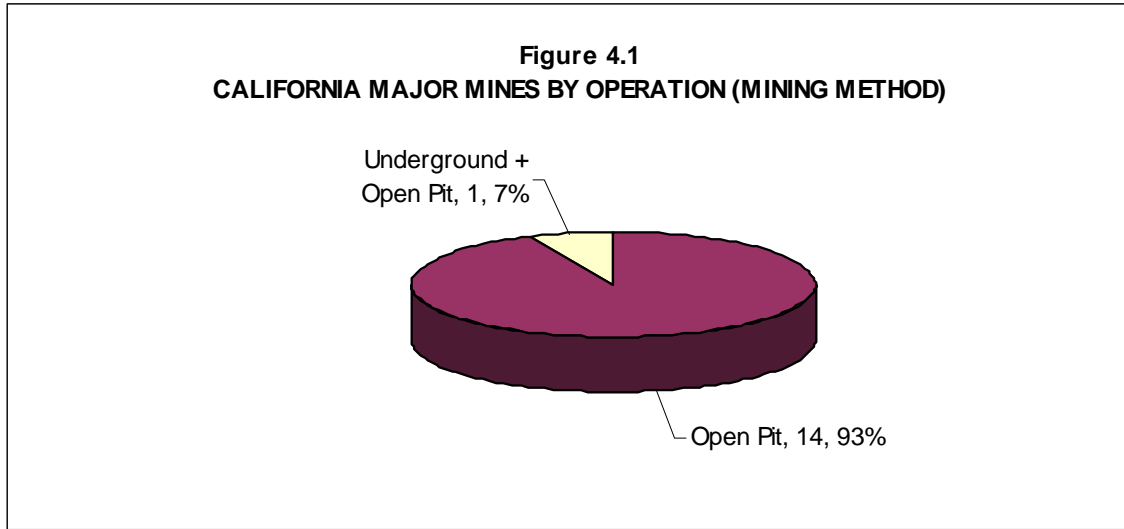
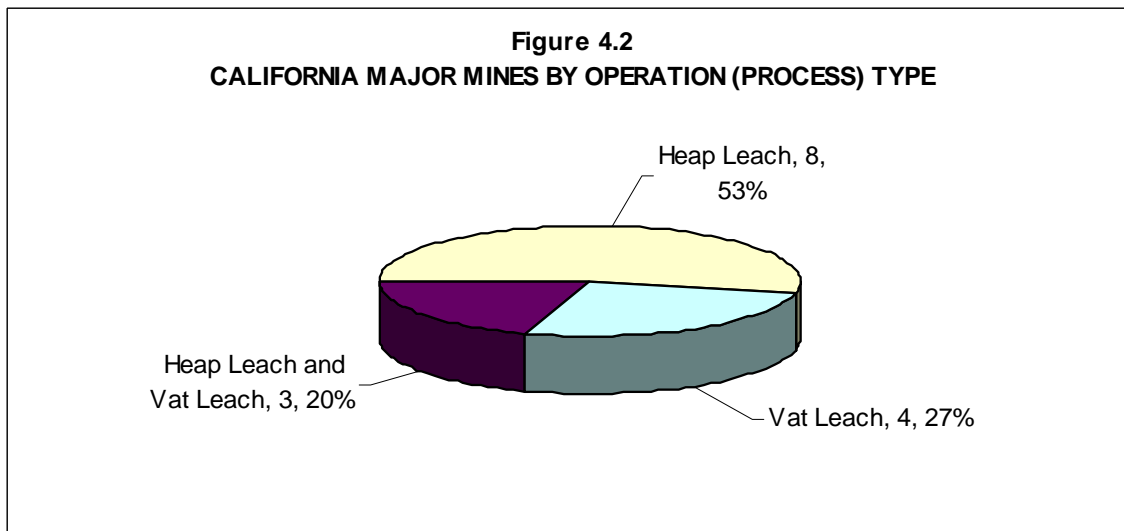


Table 4.0
California Major Mines Database

No	Major Mines			General Information																	
	Name	State	County	Ownership	Commodity							Operation Type							Year Production Initiated	Current Status	
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S			
1	American Girl (Cargo Muchaco, Oro Cruz)	CA	Imperial	MK Gold Co. (50%), Hecla Mining Co. (50%)	Y	Y							Y	Y	Y	Y				1995	Closed
2	Briggs	CA	Inyo	Canyon Resources Corp.	Y									Y	Y					1997	Operating
3	Cactus Gold (Shumake)	CA	Kern	Hecla Mining Co. (75%), Dakota Mining (25%)	Y	Y								Y	Y					1995	Closed
4	Castle Mountain	CA	San Bernardino	Viceroy Gold Corp. (75%), MK Gold Company (25%)	Y	Y								Y	Y	Y				1992	Closed
5	Carson Hill	CA	Calaveras	Western Mining Corp.	Y	Y								Y	Y					1987	Closed
6	Gray Eagle	CA	Siskiyou	Noranda	Y	Y	Y				Y			Y		Y				1986	Closed
7	Hayden Hill	CA	Lassen	Krinross Gold Corp.	Y	Y								Y	Y	Y				1992	Closed
8	Imperial	CA	Imperial	Glamis Gold Inc.	Y									Y	Y						Permitting
9	Jamestown (California Gold)	CA	Tuolumne	Sonora Diamond Corp.	Y									Y		Y				1987	Closed
10	McLaughlin	CA	Napa, Sonoma, Yolo	Homestake Mining Co.	Y									Y		Y				1985	Closed
11	Mesquite	CA	Imperial	Newmont Gold Company	Y	Y								Y	Y					1985	Operating
12	Picacho	CA	Imperial	Glamis Gold Inc.	Y									Y	Y					1977	Closed
13	Rand	CA	Kern	Glamis Gold Inc.	Y	Y								Y	Y					1987	Operating
14	Royal Mountain King	CA		Meridian Gold Inc.	Y	Y								Y		Y				1990	Closed
15	Soledad Mountain	CA	Kern	Golden Queen Mining Co. Ltd.	Y	Y								Y	Y					1998	Closed

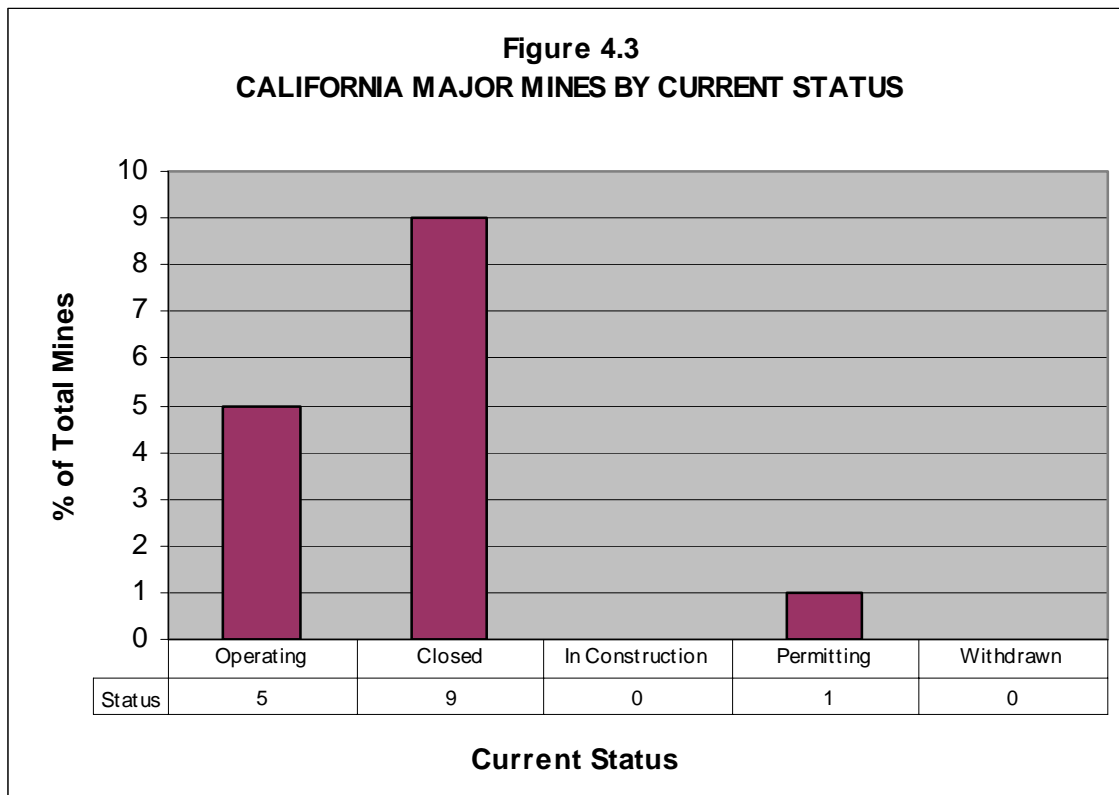


As indicated in Figure 4.2, all of the five primary gold mines and the ten primary gold and silver mines use cyanide leach methods for beneficiation of the ores. Eight (53%) mines use heap leach methods only, while four mines use only vat leach methods. Three (20%) of the primary gold and silver mines use both heap and vat leaching methods.



4.1.3. PRODUCTION STATUS

As shown in Table 4.0 and Figure 4.3, five (39%) of the thirteen mines are currently operating, nine (60%) are closed, and one (7%) is in permitting. No mines in California are currently under construction.



4.2. MAJOR NEPA APPLICABLE MINES

Thirteen of the fifteen major current era mines identified in California meet the requirements to undergo the California Environmental Quality Act (CEQA), equivalent to the NEPA process as seen in Table 4.1. The following were the requirements determining the eligibility for NEPA:

- Eight (62%) of the fifteen mines are located on BLM administered lands
- One (8%) mine is located on Forest Service administered lands
- One (8%) mine is located on both BLM and Forest Service administered lands
- None required 404 wetlands permits from the COE invoking NEPA
- None required NPDES permits from EPA invoking NEPA
- None are located on Indian Lands invoking NEPA

Eight of the thirteen major mines are located on BLM land in California. Only one mine (Hayden Hill) is located on Forest Service and BLM lands.

None of the mines have been the subject of EPA NEPA, COE 404 wetlands permits, NPDES permits invoking NEPA, or are located on Indian Lands invoking NEPA.

Only one of California’s NEPA eligible current era major mines (Picacho) was operating prior to the enactment of NEPA. All of the mines were permitted with State EIS’s.

Commodity, operations and status of major mines in California that are NEPA eligible is the same as that of all major mines in the state, so separate statistics for California NEPA eligible mines are not provided.

Table 4.1
California Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?						NEPA Process			State EIS				
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
1	American Girl (Cargo Muchaco, Oro Cruz)	CA	Yes		El Centro				Yes	1988	Oro Cruz	EIS	Yes	same as NEPA		
	American Girl	CA	Yes		El Centro				Yes	1994	Oro Cruz	EIS	Yes	same as NEPA		
2	Briggs	CA	Yes		Ridgecrest				Yes	1995	New Project	EIS	Yes	same as NEPA		
3	Cactus Gold (Shumake)	CA							Yes			EIS	Yes	same as NEPA		
4	Castle Mountain	CA	Yes		Needles				Yes	1990	New Project	EIS	Yes	same as NEPA		
	Castle Mountain	CA	Yes		Needles				Yes	1997	Expansion	EIS	Yes	same as NEPA		
5	Hayden Hill	CA	Yes	Yes	Susanville, R? Modoc				Yes	1991	New Project	EIS	Yes	same as NEPA		
6	Imperial	CA	Yes		El Centro				Yes	2000	New Project	EIS	Yes	same as NEPA		
7	Jamestown (California Gold)	CA							Yes			EIS	Yes	1983	New Project	EIS/EIR
	Jamestown	CA							Yes			EIS	Yes	1991	Expansion	EIS/EIR
8	McLaughlin	CA	Yes		Ukiah				Yes	1983	New Project	EIS	Yes	same as NEPA		
9	Mesquite	CA	Yes		El Centro				Yes	1984	New Project	EIS	Yes	same as NEPA		
	Mesquite	CA	Yes		El Centro				Yes	1987	Expansion	EIS	Yes	same as NEPA		
	Mesquite	CA	Yes		El Centro				Yes	2000	Expansion	EIS	Yes	same as NEPA		
10	Picacho	CA							Yes				Yes	?	New Project	EIS/EIR
11	Rand	CA							Yes			EIS	Yes	1995	New Project	EIS/EIR
12	Royal Mountain King	CA							Yes				Yes	?	New Project	EIS/EIR
13	Soledad Mountain	CA	Yes		Ridgecrest				Yes	1997	New Project	EIS	Yes			

4.3. NEPA AND WATER QUALITY DOCUMENTATION

The State of California has an equivalent state California Environmental Quality Act (CEQA) process to NEPA. Projects where a federal agency is not involved are administered solely under CEQA. The objectives of CEQA are to maintain a high-quality environment, protect human health and safety, protect fish and wildlife and prevent environmental damage. To achieve these objectives, the state agencies must undergo project reviews; all approved projects must include feasible alternatives or mitigation measures to lessen significant environmental impacts; the agencies must provide the information in an environmental report; and must provide information disclosure and findings; and issue licenses, permits, certificates or other entitlements for activities undertaken pursuant to federal statutes containing specific waivers of sovereign immunity.

The California Environmental Quality Act (CEQA) requires that the state conduct the equivalent of NEPA (CAL. PUB. RES. CODE §§ 21000 - 21177) in the form of an Environmental Impact Review (EIR) process, therefore all 13 modern era major mines in California are NEPA eligible. In addition, eight of the thirteen mines are located on lands administered by the BLM. One mine (Hayden Hill) is located on lands administered by both BLM and the Forest Service. No current era major mines in California have been subject to COE wetlands or EPA NPDES requirements. The five mines (Cactus, Jamestown, Picacho, Rand, Royal Mountain King) that are not located on public lands or otherwise eligible for NEPA from a federal standpoint, are applicable solely from a state standpoint. All 13 of the mines are new projects and therefore an initial EIR/EIS was performed on the eight federal mine sites while an EIR was performed on the five state mine sites. Three mines have had subsequent EIS's for expansion (Castle Mountain and Mesquite) and one (Jamestown) an EIS/EIR for expansion.

Water quality information on the mines in the state is not located at a central repository and is not available as an electronic database for mines in the state via website or other electronic form. Water quality information is instead located in individual Regional Water Quality Control Board offices. The Central Valley Regional Water Quality Control Board in Sacramento is the largest Regional Board and has responsibility for the majority of the modern-era mines in the State, including McLaughlin, Jamestown, Carson Hill, Royal Mountain King, and Hayden Hill. The Colorado River Basin Regional Water Quality Control Board in Palm Desert has jurisdiction over American Girl, Mesquite, and Castle Mountain Mines, and the Lahontan Regional Water Quality Control Board in South Lake Tahoe oversees the Briggs, Cactua Gold, Rand, and Soledad Mountain Mines. The Regional Boards report to the California State Water Resources Control Board in Sacramento, but the higher level technical work related to mines is performed at the Regional Boards, not at the State Board or the County level. The counties are in charge of the EIR's and the CEQA process. When a mine applies for a permit, they first get a conditional use permit from the county. If the wastes are considered designated waste (Level B), the mine must do a Report of Waste Discharge and submit it to the Regional Water Quality Control Board. Predictive tests such as acid-base accounting and leach tests would be performed as part of the RWD, and a number of different types of documents may serve as the RWD, such as a corrective action or a closure plan or a consultant report on the characteristics of the waste. The State can update the RWD. The RWD's are exempt from CEQA and rarely are included in the EIR's.

Various sources were contacted to obtain state EIS/EIR documents for the Jamestown, McLaughlin and Royal Mountain King mines including the California Department of Conservation Office of Mine Reclamation, University of California (Davis) Library and California Central Valley Regional Water Board. Despite indications that the documents should be retained by these agencies they were not able to provide them.

The Tuolumne County Community Development Department cooperated in providing the Jamestown (California Gold) EIS/EIR's for a fee upon submittal of a FOIA request.

It was necessary to visit the Regional Water Quality Control Board offices in Sacramento reviewing documents and discussing water quality information with RWQCB personnel in order to obtain water quality information in electronic form for the Royal Mountain King, Jamestown and McLaughlin mines.

5. COLORADO

This section contains information on Colorado’s Major mines in terms of commodity, operation type, and operating status. In Colorado there are no NEPA applicable mines in the state because all of the mines are located on private lands.

5.1. MAJOR MINES

Nine modern era major hardrock mines were identified in Colorado. These mines have been classified based on commodity, operation type, and current status as indicated in Table 5.0. Each of the categories is described in the following sections.

5.1.1. COMMODITY

As indicated in Figure 5.0, two (22%) of the nine major mines in the state are primary gold producers, while five (56%) are primary gold and silver producers. Two (22%) are primary molybdenum mines while one (11%) mine is a base metals lead and zinc producer.

5.1.2. OPERATION TYPE

The nine current era major hardrock mines in Colorado are operated by both open pit and underground mining methods, and employ heap leaching, flotation and gravity process methods.

As shown in Figure 5.1, four of the nine mines are underground mines, while four are open pit. One mine is a combination open pit and underground mine.

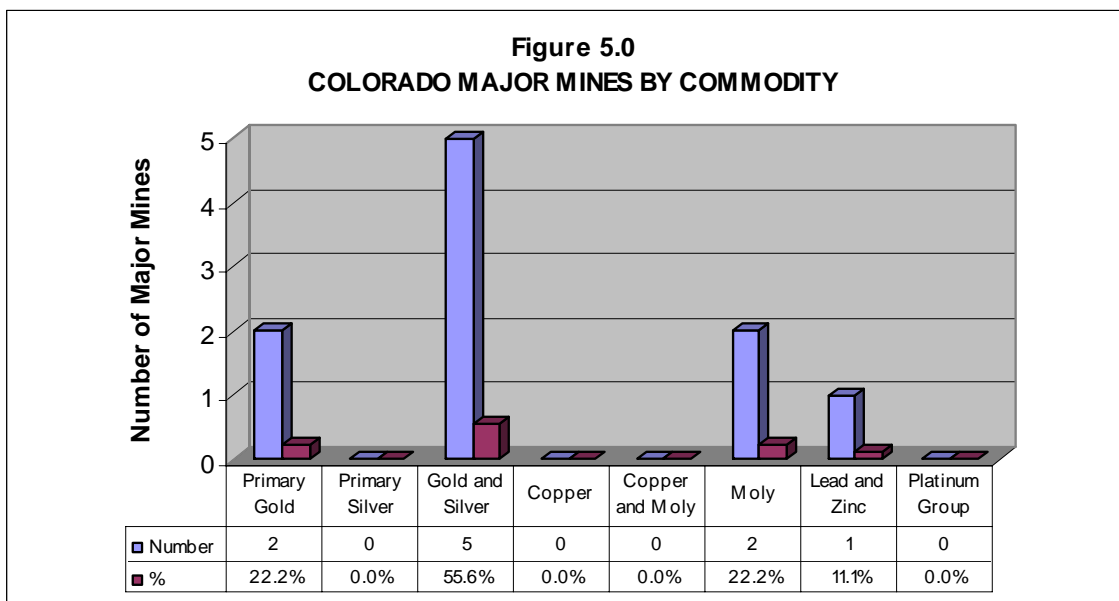
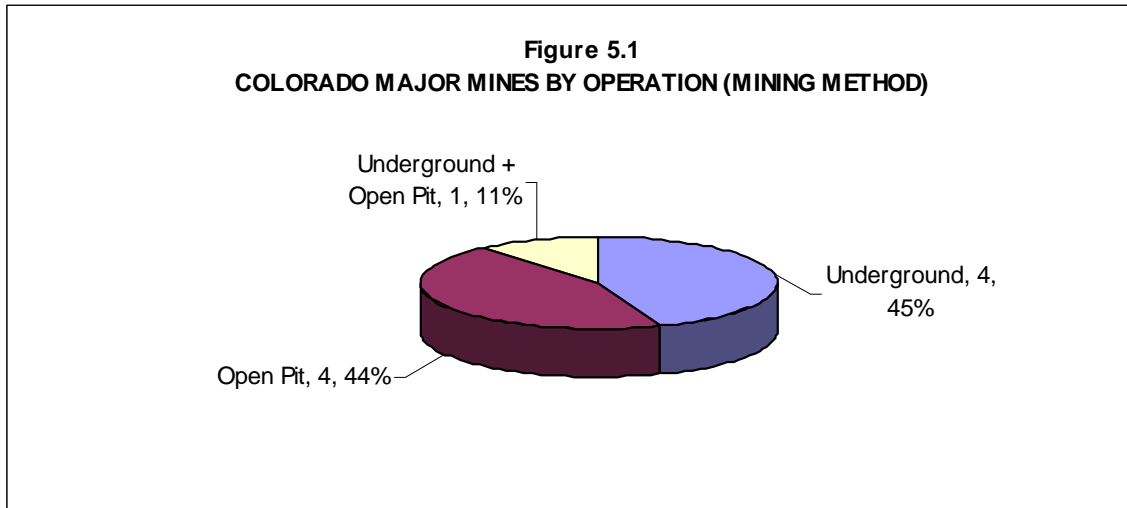
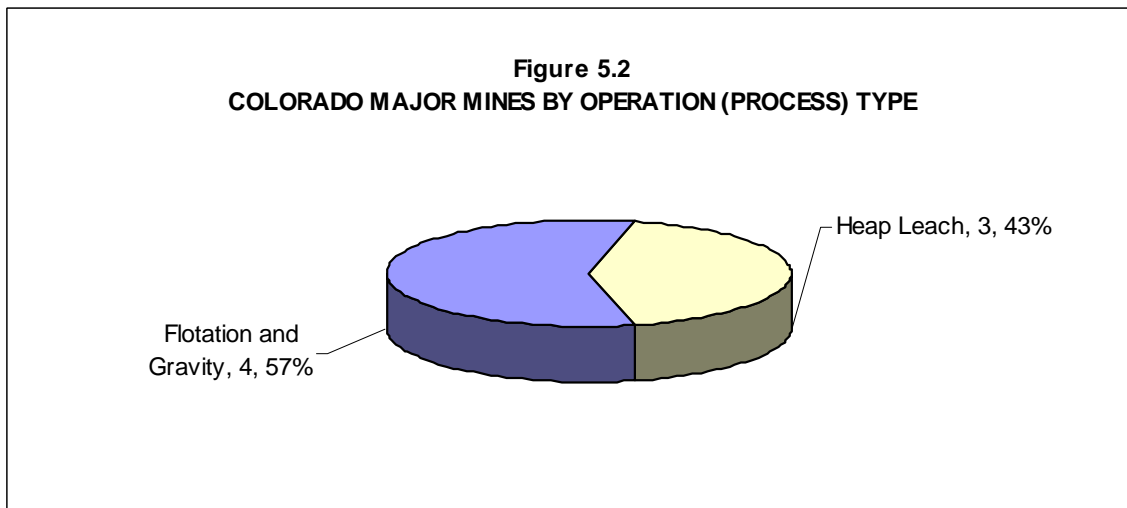


Table 5.0
Colorado Major Mines Database

No	Major Mines		General Information																		
	Name	State	County	Ownership	Commodity							Operation Type							Year Production Initiated	Current Status	
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S			
1	Climax	CO	Summit	Phelps Dodge Corporation				Y					Y	Y			Y			Historic	Closed
2	Cresson	CO	Teller	Anglo Gold Corporation	Y									Y	Y					1995	Operating
3	Empire	CO	Clear Creek	Nevada Goldfields Inc.	Y	Y							Y				Y			?	Closed
4	Henderson	CO	Clear Creek	Phelps Dodge Corporation				Y					Y				Y			1976	Operating
5	Pride of the West	CO	San Juan	The Silver Wing Company, Inc.	Y	Y							Y							?	Closed
6	San Luis	CO	Costilla	Battle Mountain Resources, Inc.	Y	Y								Y						1993	Closed
7	Summitville	CO	Rio Grande	Galactic Resources	Y	Y								Y	Y					1986	Closed
8	Sunnyside	CO	San Juan	Echo Bay Mines Ltd.	Y	Y			Y	Y			Y				Y			Historic	Closed
9	Victor	CO	Teller	Cripple Creek and Victor Gold Mining Co.	Y									Y	Y					1986	Operating

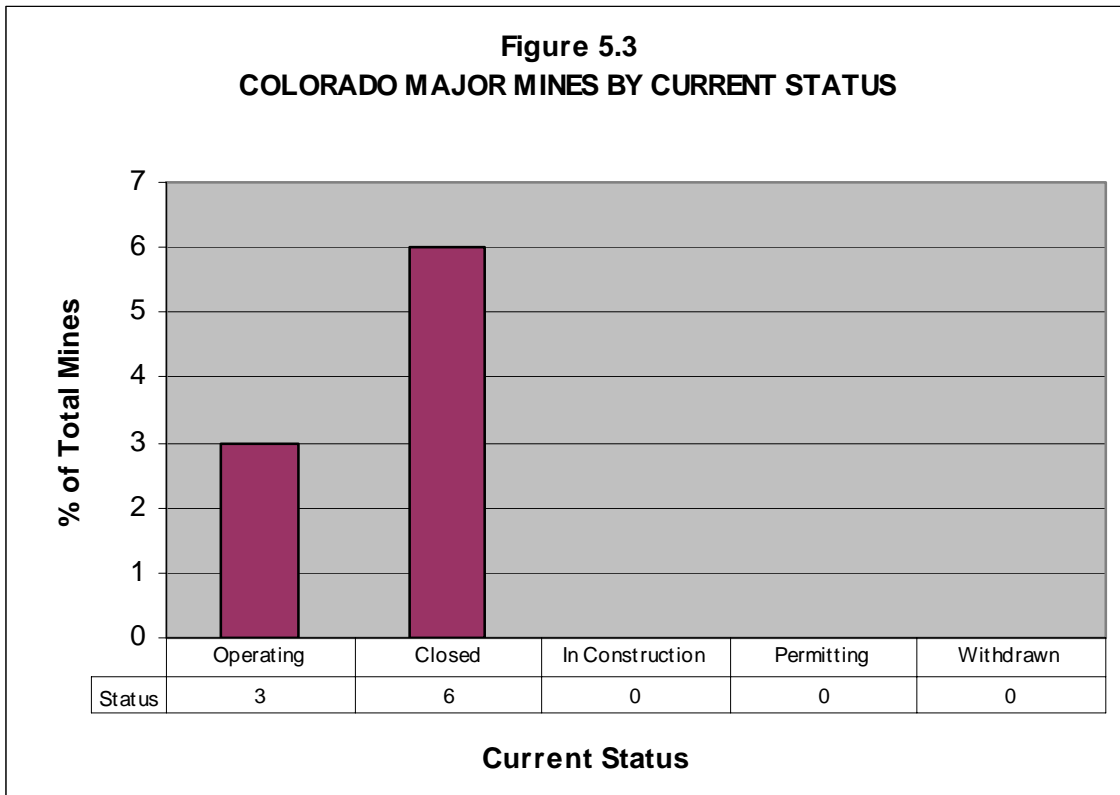


As indicated in Figure 5.2, two primary gold mines and one primary gold and silver mine (43%) use cyanide heap leach methods. Four (57%) of the mines in the state use flotation or gravity processing methods for beneficiation of molybdenum, lead, zinc, silver and gold ores.



5.1.3. PRODUCTION STATUS

As shown in Table 5.0 and Figure 5.3, three (33%) of the nine mines are currently operating while the other six mines (67%) are closed. There are no new projects in permitting or under construction at this time.



5.2. MAJOR NEPA APPLICABLE MINES

All of the mines in Colorado are located on private land; therefore NEPA has not been required for any of these mines.

5.3. WATER QUALITY

No state equivalent NEPA process exists for Colorado. NEPA review was not performed for any of the identified large hardrock mines within the state of Colorado; therefore, no mines in the state of Colorado are eligible for this study.

6. IDAHO

This section contains information on Idaho’s Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

6.1. MAJOR MINES

Thirteen modern era major hardrock mines were identified in Idaho. These mines have been classified based on commodity, operation type, and current status as indicated in Table 6.0. Each of the categories is described in the following sections.

6.1.1. COMMODITY

As indicated in Figure 6.0, two (15%) of the thirteen major mines in the state are primary gold producers, while three (23%) are primary silver producers. Two (15%) mines are primary copper producers, while seven (54%) mines are both gold and silver producers. One mine (8%) is a primary molybdenum producer while one (8%) mine is a lead and zinc producers.

6.1.2. OPERATION TYPE

The thirteen current era major hardrock mines in Idaho are operated by both open pit and underground mining methods, and employ heap or vat leaching, flotation and gravity process methods.

As shown in Figure 6.1, three of the thirteen mines are underground mines, while ten are open pit operations.

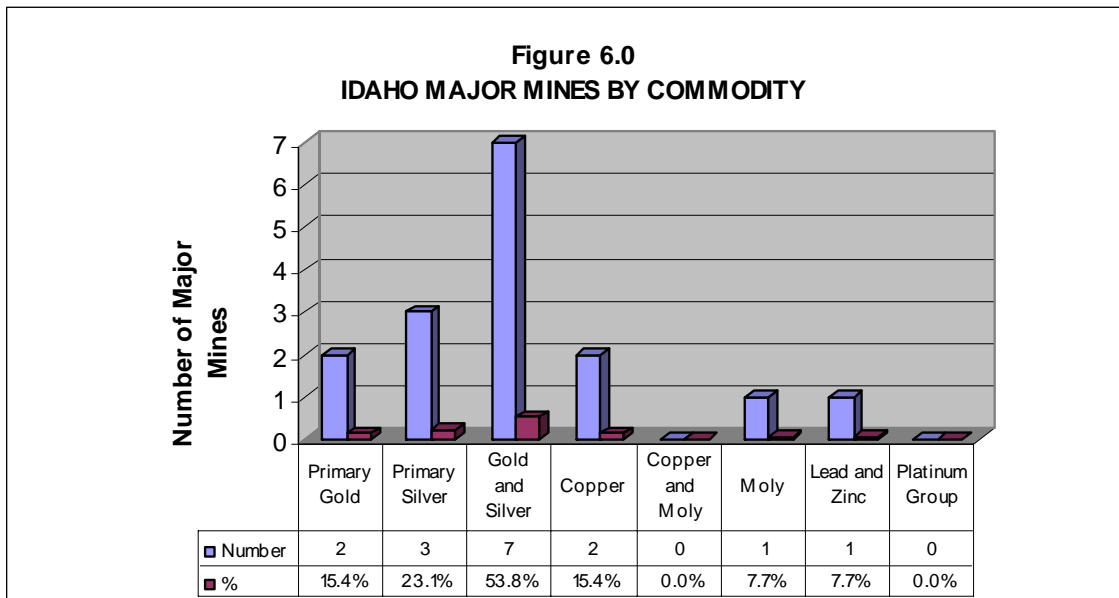
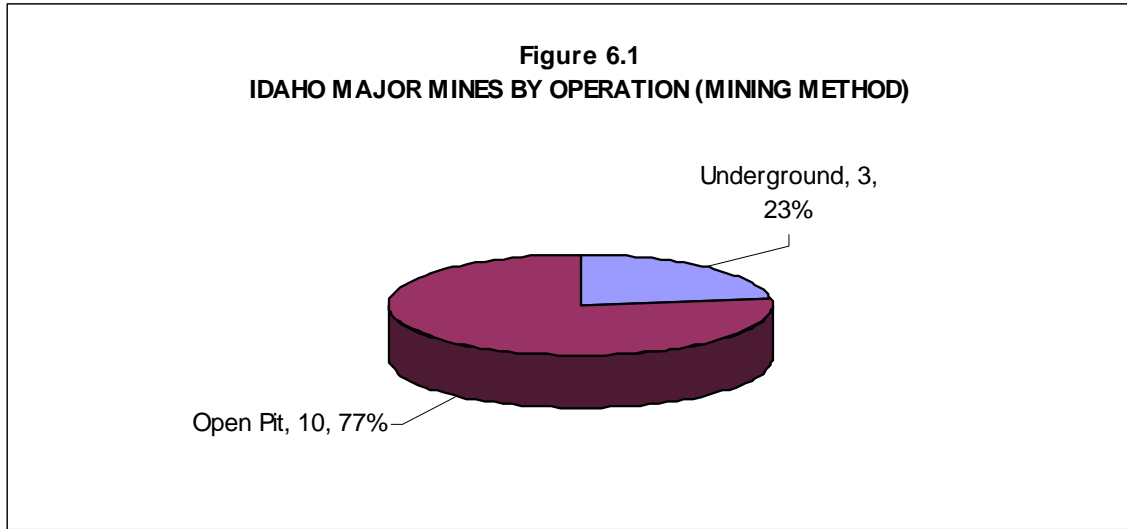
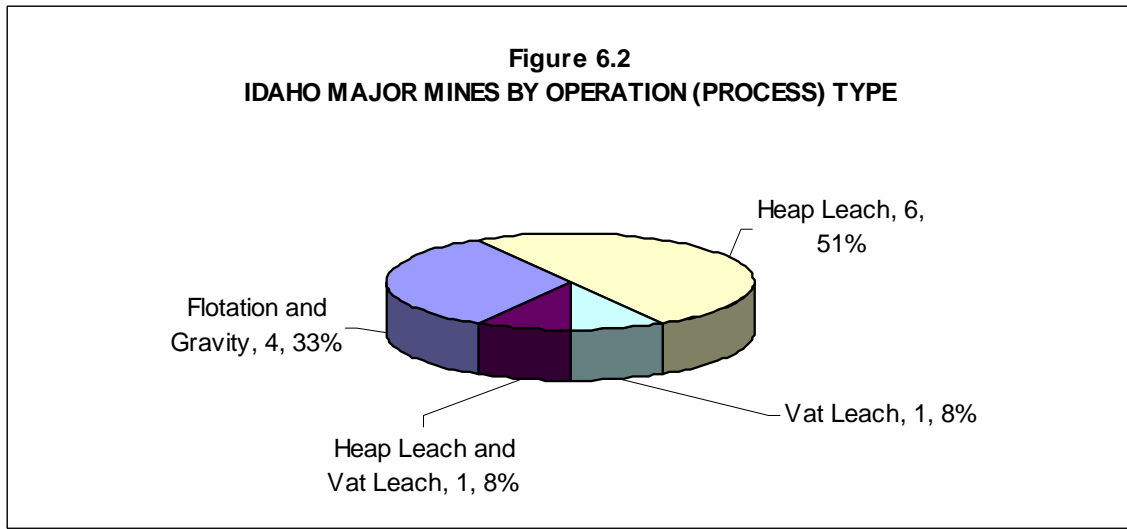


Table 6.0
Idaho Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status	
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	Beartrack	ID	Lemhi	FMC Gold Co. (Meridian)	Y	Y								Y	Y						1995	Closed
2	Black Pine	ID	Cassia	Black Pine Mining (Pegasus Gold, Inc.)	Y	Y								Y	Y						1992	Closed
3	DeLamar	ID	Owyhee	Kinross Gold Corporation.	Y	Y								Y	Y	Y					1977	Closed
4	Champagne	ID	Butte	Idaho Gold Corp.	Y	Y								Y	Y						1989	Closed
5	Coeur	ID	Shoshone	Coeur D'Alene Mines Corp (50%) Asarco Inc. (50%)		Y	Y					Y					Y				1996	Closed
6	Galena	ID	Shoshone	Coeur D'Alene Mines Corp (50%) Asarco Inc. (50%)		Y	Y					Y					Y				Historic	Operating
7	Grouse Creek (Sunbeam)	ID	Custer	Sunbeam Mining Corporation	Y									Y		Y					1985	Closed
	Grouse Creek	ID	Custer	Hecla Mining Co.	Y	Y								Y	Y	Y					1994	Closed
8	Lucky Friday	ID	Shoshone	Hecla Mining Co.		Y			Y	Y		Y					Y				Historic	Operating
9	Stibnite	ID	Valley	Dakota Mining Corp.	Y	Y								Y	Y						Historic	Closed
10	Stone Cabin	ID	Owyhee	Kinross DeLamar Mining Co.	Y	Y								Y							1995	Closed
11	Thompson Creek	ID	Custer	Thompson Creek Mining Co.				Y						Y			Y				1983	Operating
12	Thunder Mountain	ID	Valley	Coeur d'Alene Mines Corp.	Y									Y	Y						1986	Closed
13	Yellow Pine	ID	Valley	Hecla Mining Co. (100%)	Y	Y								Y	Y						1988	Closed

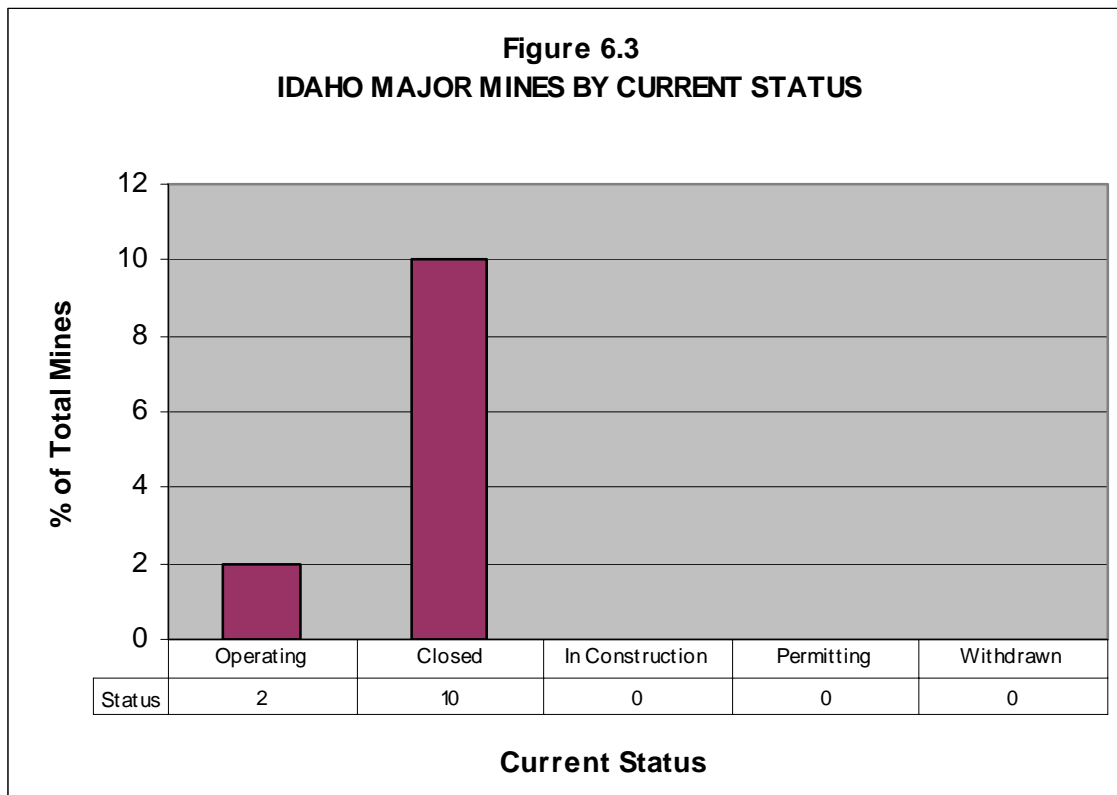


As indicated in Figure 6.2, six of the thirteen primary gold or gold and silver mines use cyanide leach methods. Four mines uses only heap leach methods only, while one uses only vat leach methods. Four of the mines in the state use flotation or gravity processing methods for beneficiation of molybdenum, silver, lead and zinc ores.



6.1.3. PRODUCTION STATUS

As shown in Table 6.0 and Figure 6.3, only two (Galena and Thompson Creek) of the thirteen mines (15%) is currently operating while ten are closed.



6.2. MAJOR NEPA APPLICABLE MINES

Of the thirteen major current era mines identified in Idaho, six meet the requirements to undergo the NEPA process as seen in Table 6.1. The non-NEPA eligible major mines in the state are (Champagne, DeLamar, Galena, Coeur, Lucky Friday, Thunder Mountain and Yellow Pine). Of the current era hardrock mines eligible for NEPA analysis, the following were the requirements determining the eligibility for NEPA:

- Three (50%) are located on BLM administered lands
- Five (83%) are located on Forest Service administered lands
- Two (33%) are located on both BLM and Forest Service administered lands
- None required 404 wetlands permits from the COE invoking NEPA
- Two (33%) required NPDES permits from EPA invoking NEPA
- None are located on Indian Lands invoking NEPA

Three major mines are located on BLM land in Idaho. Five mines are located on Forest Service lands and two mines are located on both BLM and Forest Service administered lands.

None of Idaho’s NEPA eligible current era major mines were operating prior to the enactment of NEPA. One of the mines (Black Pine) was permitted as a new mine with an EA followed by an EIS for mine expansion. Five mines were permitted with EIS’s and two of these (Beartrack and Stone Cabin) had no subsequent NEPA analysis performed. Grouse Creek and Thompson Creek mines were permitted as new mines with EIS’s followed by SEIS’s for mine expansion and plan of operation changes. Stibnite mine is the only mine to have been permitted with an EIS, followed by an expansion EIS.

Commodity, operations and status of major mines in Idaho as a whole that are NEPA eligible differs slightly from that of all major mines in the state, so separate statistics for Idaho NEPA eligible mines are provided.

6.2.1. COMMODITY

As indicated in Figure 6.4, one (17%) of the six major NEPA applicable hardrock mines in the state is a primary gold producer. Four (67%) mines are both gold and silver producers and one mine (17%) is a primary molybdenum producer.

6.2.2. OPERATION TYPE

All six current era major NEPA applicable hardrock mines in Idaho are operated by open pit mining methods, and employ heap or vat leaching, flotation and gravity process methods.

As shown in Figure 6.5, all six (100%) NEPA applicable mines are open pit operations.

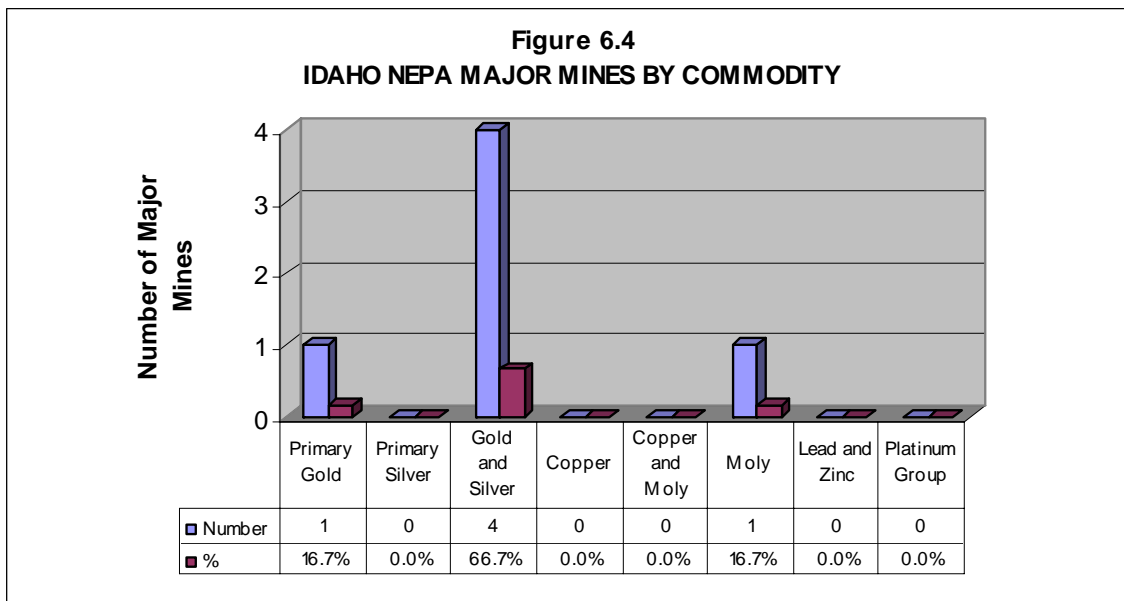
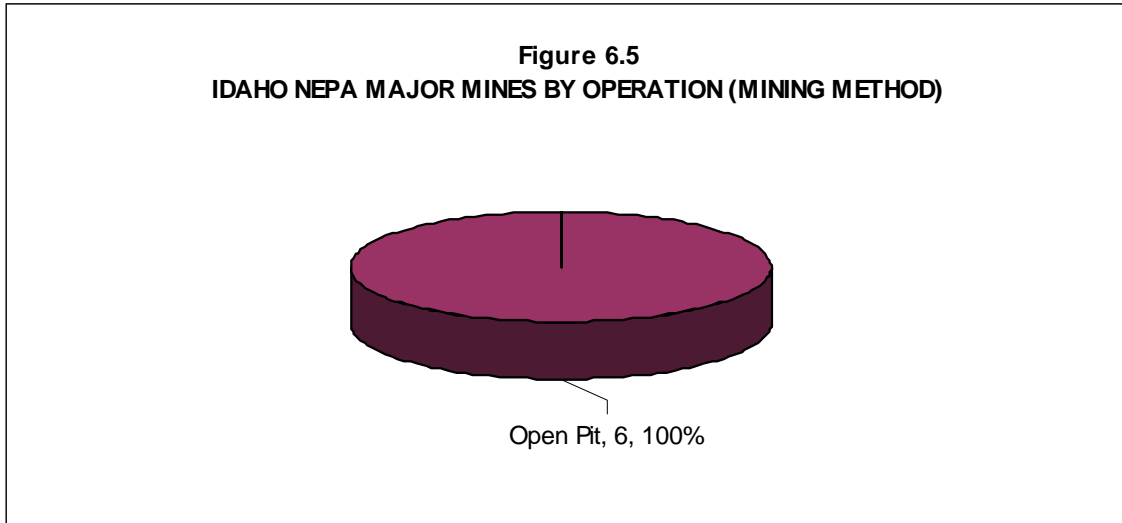


Table 6.1
Idaho Major Mines NEPA Actions Database

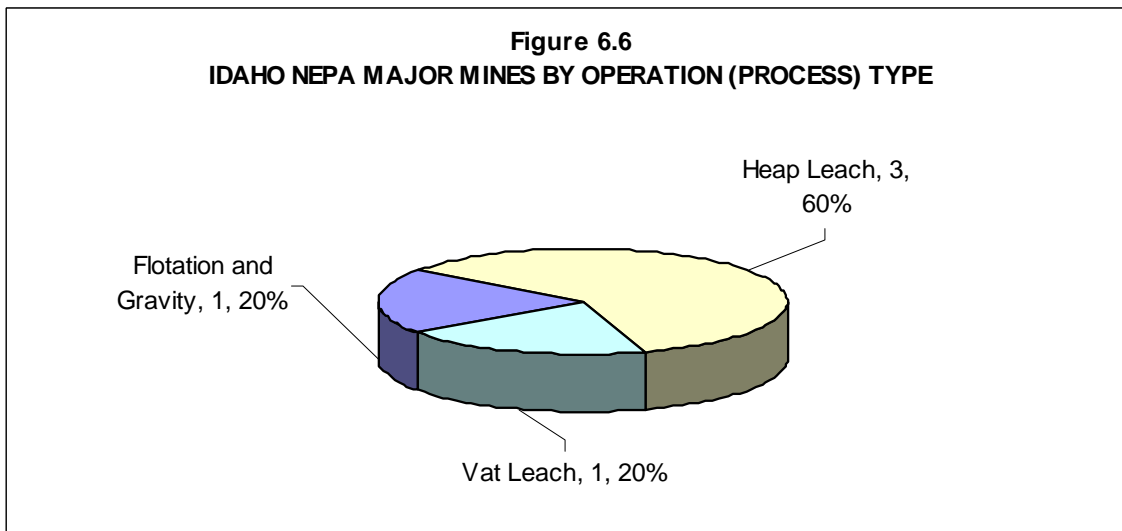
No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA, EIS, or SEIS	State EIS	Year	Proposed Action	EA, EIS, or SEIS
			BLM	FS	District or Forest											
1	Beartrack	ID		Yes	Salmon				Yes	1991	New Project	EIS				
2	Black Pine	ID	Yes	Yes	Sawtooth				Yes	1991	New Project	EA				
	Black Pine	ID	Yes	Yes	Sawtooth				Yes	1991	Supplement	EA				
	Black Pine	ID	Yes	Yes	Sawtooth				Yes	1994	Expansion	EIS				
3	Grouse Creek (Sunbeam)	ID		Yes	Challis				Yes	1984	New Project	EIS				
	Grouse Creek	ID		Yes	Challis				Yes	1992	Expansion	SEIS				
4	Stibnite	ID		Yes	Payette				Yes	1981	New Project	EIS				
	Stibnite	ID		Yes	Payette				Yes	1994	Expansion	EIS				
5	Stone Cabin	ID	Yes		Boise				Yes	1994	New Project	EIS				
6	Thompson Creek	ID	Yes	Yes	Salmon-Challis				Yes	1980	New Project	EIS				
	Thompson Creek	ID	Yes	Yes	Salmon-Challis				Yes	1999	Plan of Operation Changes	SEIS				

Table 6.2
Idaho NEPA Eligible Major Mines Database

No	Major Mines			General Information																	Year Production Initiated	Current Status
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	Beartrack	ID	Lemhi	FMC Gold Co. (Meridian)	Y	Y								Y	Y						1995	Closed
2	Black Pine	ID	Cassia	Black Pine Mining (Pegasus Gold, Inc.)	Y	Y								Y	Y						1992	Closed
3	Grouse Creek (Sunbeam)	ID	Custer	Sunbeam Mining Corporation	Y									Y		Y					1985	Closed
4	Stibnite	ID	Valley	Dakota Mining Corp.	Y	Y								Y	Y						Historic	Closed
5	Stone Cabin	ID	Owyhee	Kinross DeLamar Mining Co.	Y	Y								Y							1995	Closed
6	Thompson Creek	ID	Custer	Thompson Creek Mining Co.				Y						Y			Y				1983	Operating

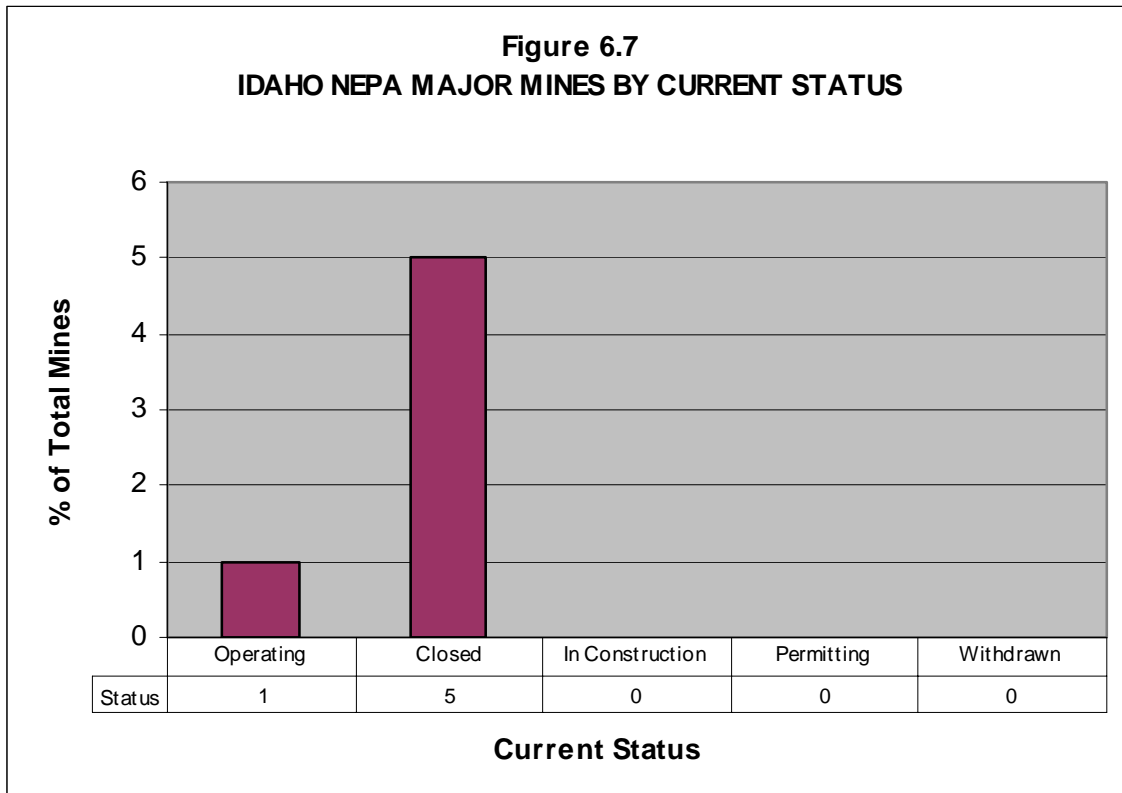


As indicated in Figure 6.6, four of the five primary gold or gold and silver mines use cyanide leach methods. Three mines use only heap leach methods only, while one uses only vat leach methods. Two of the mines in the state use flotation and gravity processing methods for beneficiation of molybdenum.



6.2.3. PRODUCTION STATUS

As shown in Table 6.2 and Figure 6.7, only one of the six mines (17%) is currently operating while six are closed.



6.3. NEPA AND WATER QUALITY DOCUMENTS

No state equivalent NEPA process exists for Idaho. Inquiries on water quality information revealed that water quality monitoring databases exist for most mines in the state and can be obtained from the Idaho Department of Environmental Quality upon request.

7. MICHIGAN

This section contains information on Michigan's Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

7.1. MAJOR MINES

One modern era major hardrock mine (White Pine) was identified in Michigan. The White Pine mine is a primary copper producer. The White Pine mine used a combination of open pit and underground mining methods and flotation beneficiation processing methods. The mine is not currently operating. The mine does have an NPDES discharge permit.

No disturbance or financial assurance information is available for the White Pine mine.

The mine is located on non-federal land and there have been no NEPA requirements.

7.2. WATER QUALITY

No water quality or other publicly available information relevant to water quality predictions is available for the White Pine mine.

8. MONTANA

This section contains information on Montana’s Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

8.1. MAJOR MINES

Fifteen modern era major hardrock mines were identified in Montana. These mines have been classified based on commodity, operation type, and current status as indicated in Table 8.0. Each of the categories is described in the following sections.

8.1.1. COMMODITY

As indicated in Figure 8.0, two (13%) of the fifteen major mines in the state are primary gold producers, while four (27%) are primary silver producers. Seven (47%) of the fifteen mines produce both gold and silver. Four (27%) mines are primary copper producers and one mine is a copper and molybdenum producer. One mine (6%) is a base metals lead and zinc producer while two (13%) of the fifteen mines produce platinum group minerals.

8.1.2. OPERATION TYPE

The fifteen current era major hardrock mines in Montana are operated by both open pit and underground mining methods, and employ heap or vat leaching, flotation and gravity process methods.

As shown in Figure 8.1, eight of the fifteen mines are underground mines, while six are open pit. One mine is a combination open pit and underground mine.

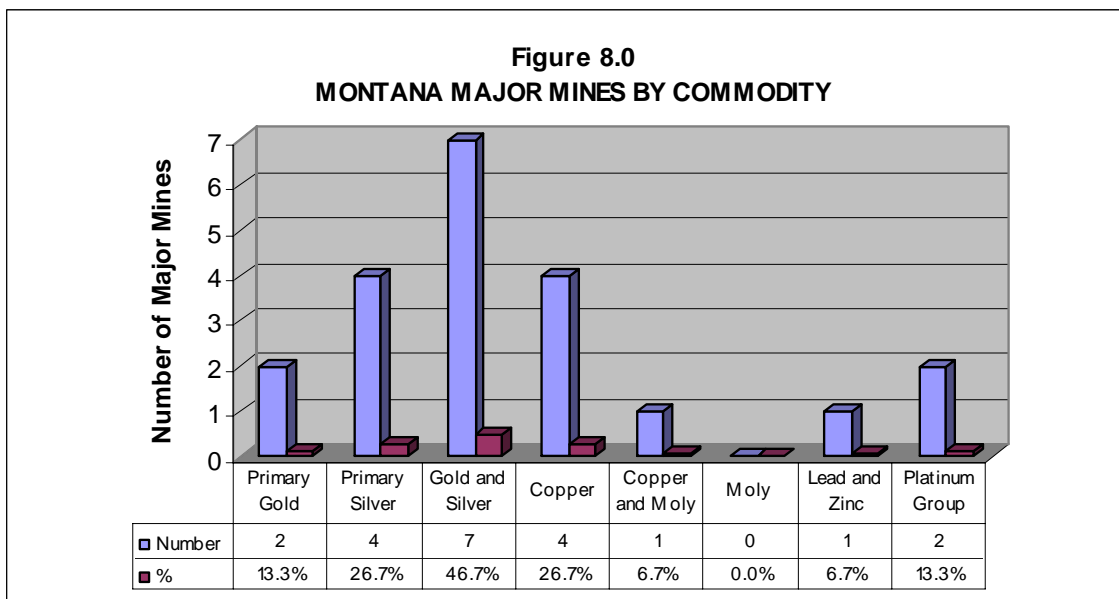
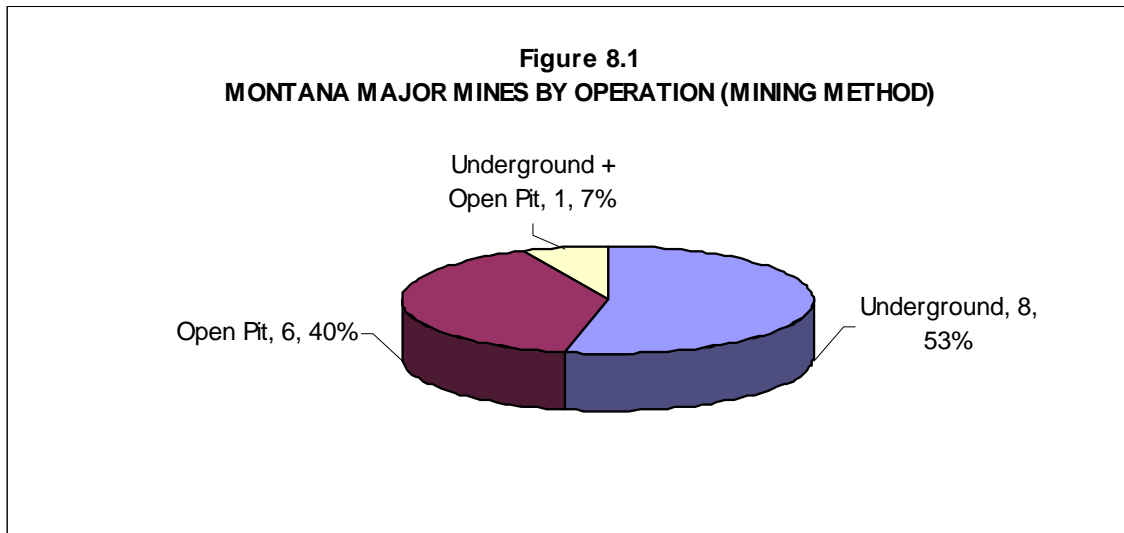
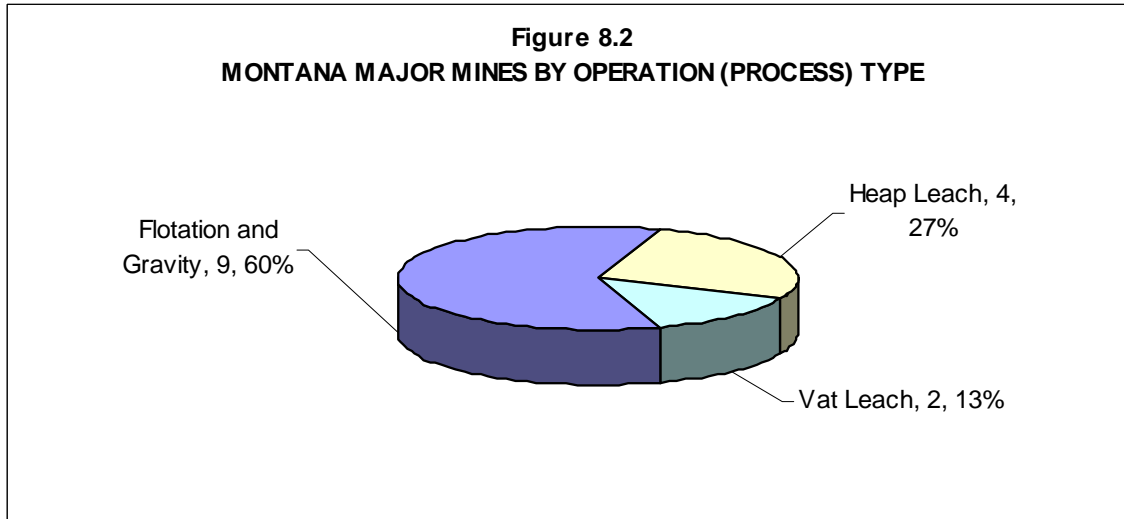


Table 8.0
Montana Major Mines Database

No	Major Mines		General Information																		
	Name	State	County	Ownership	Commodity								Operation Type							Year Production Initiated	Current Status
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S			
1	Basin Creek	MT	Jefferson	Pegasus Gold Co.	Y	Y								Y	Y					1988	Closed
2	Beal Mountain	MT	Silver Bow	Pegasus Gold Co.	Y	Y								Y	Y					1988	Closed
3	Black Pine	MT	Granite	ASARCO	Y	Y	Y					Y					Y			1974	Closed
4	Continental	MT	Silver Bow	Montana Resources International		Y	Y	Y					Y				Y			Historic	Operating
5	Diamond Hill	MT	Broadwater	Apollo Gold Co.	Y							Y					Y			1997	Closed
6	East Boulder	MT	Sweet Grass	Stillwater Mining Co.							Y	Y					Y			2001	Operating
7	Golden Sunlight	MT	Jefferson	Placer Dome, Inc.	Y							Y	Y		Y					1983	Operating
8	Kendall	MT	Fergus	Canyon Resources	Y	Y							Y	Y						1988	Closed
9	Mineral Hill	MT	Park	TVX Gold, Inc.	Y	Y						Y			Y					1989	Closed
10	Montana Tunnels	MT	Jefferson	Apollo Gold Corp.	Y	Y			Y	Y			Y				Y			1987	Operating
11	Montanore	MT	Sanders	Noranda		Y	Y					Y					Y			Proposed	Withdrawn
12	Rock Creek	MT	Sanders	Sterling Mining Co.		Y	Y					Y					Y			Proposed	Pending Appeals
13	Stillwater	MT	Stillwater	Stillwater Mining Co.							Y	Y					Y		Y	1986	Operating
14	Troy	MT	Lincoln	Sterling Mining Co.		Y	Y					Y					Y			1983	Closed
15	Zortman and Landusky	MT	Phillips	Pegasus Gold Co.	Y	Y							Y	Y						1979	Closed

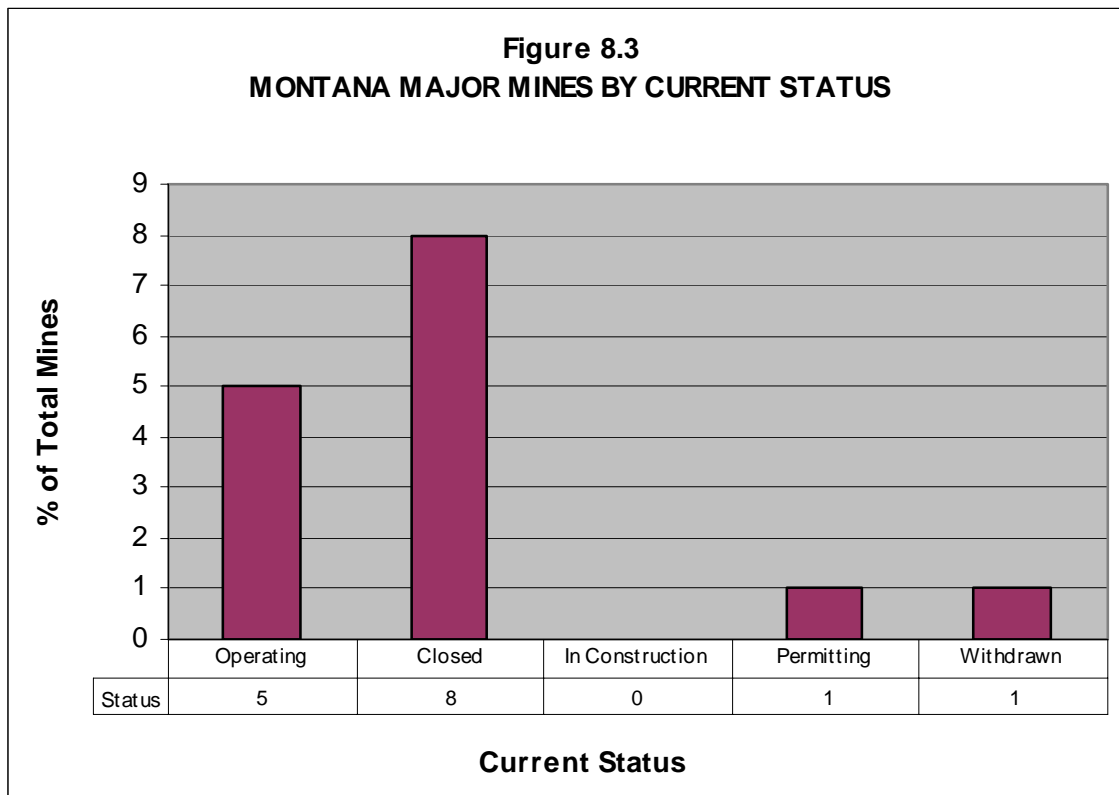


As indicated in Figure 8.2, six of the nine primary gold or gold and silver mines use cyanide leach methods. Four mines use only heap leach methods, while two mines use only vat leach methods. Nine of the mines in the state use flotation or gravity processing methods for beneficiation of copper, lead, zinc, molybdenum, platinum group minerals, silver and gold ores.



8.1.3. PRODUCTION STATUS

As shown in Table 8.0 and Figure 8.3, five (33%) of the fifteen mines are currently operating while eight (53%) are closed. One (7%) mine is in permitting and one (7%) has been withdrawn. There are no mines under construction in Montana at the current time.



8.2. MAJOR NEPA APPLICABLE MINES

All of the fifteen major current era mines identified in Montana meet the requirements to undergo the NEPA process as seen in Table 8.1. The following were the requirements determining the eligibility for NEPA:

- Three are located on BLM administered lands
- Nine (60%) are located on Forest Service administered lands
- None are located on both BLM and Forest Service administered lands
- One (7%) required 404 wetlands permits from the COE invoking NEPA
- Eleven (73%) required MPDES permits (like NPDES) from EPA invoking NEPA
- None are located on Indian Lands invoking NEPA

Three of the major mines are located on BLM land in Montana and nine mines are located on Forest Service administered lands.

One mine (Zortman and Landusky) has been the subject of Corp of Engineers NEPA analysis. All fifteen mines have had state EIS's.

None of Montana's NEPA eligible current era major mines were operating prior to the enactment of NEPA, with the exception of the historic Continental mine (adjacent to the Berkeley Pit). Three of the fifteen NEPA eligible mines were permitted as new mines with EA's (Basin Creek, Beal Mountain and Kendall). Basin Creek is the only mine with no subsequent EA's or EIS's. Beal Mountain had a state EIS for mine expansion following the initial EA. The Kendall mine has had multiple EA's for mine expansion and reclamation and closure, followed by a final reclamation EIS. Golden Sunlight, Stillwater, Rock Creek, Zortman and Landusky mines were all permitted with initial EIS's and have been the subject of several subsequent EA's and EIS's. The Montanore and Rock Creek Projects, which have not yet been permitted, have been the subject of several EIS's and an SEIS.

Commodity, operations and status of major mines in Montana as a whole that are NEPA eligible is the same as that of all major mines in the state, so separate statistics for Montana NEPA eligible mines are not provided.

8.3. NEPA AND WATER QUALITY DOCUMENTATION

The state of Montana has an equivalent Montana Environmental Policy Act (MEPA) process to NEPA. The purpose of MEPA is to ensure that state agencies integrate natural, social and environmental sciences and design arts for each proposed project that may significantly affect the quality of the human environment. The extent of environmental impact will determine the type of document to be produced (EA, EIS). An Environmental Assessment (EA) may be used independently or in conjunction with other agency planning and decision-making procedures to assist in developing reasonable alternatives to a proposed project; to determine if an Environmental Impact Statement (EIS) is necessary; and to provide for public review and comment on proposed actions, alternatives, and mitigations to the proposed action where the residual impacts do not warrant the preparation of an EIS. The agency may determine that an EA is sufficient where an EIS is required if the implementation of mitigations reduce impacts below the significant level. An EIS is prepared when it has been determined that the proposed action will have significant impacts on the human environment. An EIS must include a description of the proposed action including purpose and benefits; a description of current environmental conditions; a description of the impacts on the quality of the human environment; irreversible and irretrievable commitments of environmental resources; economic and environmental benefits and costs of the proposed action; the relationship between local short-term uses of man's environment and the effect on maintenance and enhancement of the long-term productivity of the environment; an analysis of reasonable alternatives to the proposed action, including the alternative of no action and the agency's preferred alternative. The agency must make the draft EIS available for public review and comment before a final decision is made.

The Montana Department of Environmental Quality cooperated in providing the Black Pine, East Boulder, Mineral Hill, Stillwater, Troy, Golden Sunlight, Kendall and Zortman and Landusky Mines NEPA documents upon request. Water quality information for mines in the state is maintained in electronic database form and is available on request.

Table 8.1
Montana Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?						NEPA Process			State EIS				
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
1	Basin Creek	MT		Yes	Deerlodge				Yes	1990	New Project	EA	Yes	same as NEPA		
2	Beal Mountain	MT		Yes	Deerlodge				Yes	1993	New Project	EA	Yes	same as NEPA		EA
	Beal Mountain	MT		Yes	Deerlodge				Yes	1993	Expansion	EIS	Yes	same as NEPA		EIS
	Beal Mountain	MT		Yes	Deerlodge				Yes	1998	Expansion	EIS	Yes	same as NEPA		EIS
3	Black Pine	MT		Yes	Deerlodge				Yes	1981	Mine Reopening	EA	Yes	same as NEPA		
	Black Pine	MT		Yes	Deerlodge				Yes	2003	Reclamation and Closure	EA	Yes	same as NEPA		
4	Continental	MT							Yes				Yes	1981	Expansion	EIS
5	Diamond Hill	MT							Yes				Yes	1996	New Project	EIS
6	East Boulder	MT		Yes	Gallatin				Yes	1992	New Project	EIS	Yes	same as NEPA		
7	Golden Sunlight	MT	Yes		Butte				Yes	1981	New Project	EIS	Yes	same as NEPA		
	Golden Sunlight	MT	Yes		Butte				Yes	1990	Expansion	EA	Yes	same as NEPA		
	Golden Sunlight	MT	Yes		Butte				Yes	1998	Expansion	EIS	Yes	same as NEPA		
	Golden Sunlight	MT	Yes		Butte				Yes	2004	Pit Backfill	SEIS	Yes	same as NEPA		
8	Kendall	MT	Yes		Lewistown				Yes	1989	New Project	EA	Yes	same as NEPA		
	Kendall	MT	Yes		Lewistown				Yes	1989	Expansion	EA	Yes	same as NEPA		
	Kendall	MT	Yes		Lewistown				Yes	1993, 1995	Expansion	EA	Yes	same as NEPA		
	Kendall	MT	Yes		Lewistown				Yes	2002	Reclamation and Closure	EA	Yes	same as NEPA		
	Kendall	MT	Yes		Lewistown								Yes	In process	Reclamation and Closure	EIS

Table 8.1 (continued)

Montana Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
9	Mineral Hill	MT		Yes	Gallatin				Yes	1986	New Project	EIS	Yes	same as NEPA		
	Mineral Hill	MT		Yes	Gallatin				Yes	2001	Reclamation and Closure	EIS	Yes	same as NEPA		
10	Montana Tunnels	MT			Jefferson				Yes	1986	New Project	EIS	Yes	same as NEPA		
	Montana Tunnels	MT			Jefferson				Yes	1995, 2002	Expansion	EA	Yes	same as NEPA		
11	Montanore	MT		Yes	Kootenai				Yes	1990	New Project	EIS	Yes	same as NEPA		
	Montanore	MT		Yes	Kootenai				Yes	1991	Project Alternatives	SEIS	Yes	same as NEPA		
12	Rock Creek	MT		Yes	Kootenai				Yes	1995	New Project	EIS	Yes	same as NEPA		
	Rock Creek	MT		Yes	Kootenai				Yes	1998	Additional Info	SEIS	Yes	same as NEPA		
	Rock Creek	MT		Yes	Kootenai				Yes	2001	New Project	EIS	Yes	same as NEPA		
13	Stillwater	MT		Yes	Custer				Yes	1985	New Project	EIS	Yes	same as NEPA		
	Stillwater	MT		Yes	Custer				Yes	1992	Expansion	EIS	Yes	same as NEPA		
	Stillwater	MT		Yes	Custer				Yes	1998	Hertzler Impoundment	EIS	Yes	same as NEPA		
14	Troy	MT		Yes	Kootenai				Yes	1978	New Project	EIS	Yes	same as NEPA		
15	Zortman and Landusky	MT	Yes		Lewistown								Yes	1979	New Project	EIS
	Zortman and Landusky	MT	Yes		Lewistown				Yes	1993	Modified Operating, Reclamation Plan and ARD Control and Remediation	EA	Yes	same as NEPA		
	Zortman and Landusky	MT	Yes		Lewistown	Yes			Yes	1996	Expansion	EIS	Yes	same as NEPA		
	Zortman and Landusky	MT	Yes		Lewistown				Yes	2001	Reclamation and Closure	SEIS	Yes	same as NEPA		

9. NEVADA

This section contains information on Nevada’s Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

9.1. MAJOR MINES

Seventy four modern era major hardrock mines were identified in Nevada. These mines have been classified based on commodity, operation type, and current status as indicated in Table 9.0. Each of the categories is described in the following sections.

9.1.1. COMMODITY

As indicated in Figure 9.0, three (4%) of the seventy four major mines in the state are primary gold producers, while sixty nine (93%) are primary gold and silver producers. Three (4%) mines are primary copper producers. There are no major base metals mines operating in the state.

9.1.2. OPERATION TYPE

The seventy four current era major hardrock mines in Nevada are operated by both open pit and underground mining methods, and employ dump, heap or vat leaching, flotation and gravity process methods.

As shown in Figure 9.1, three (4%) of the seventy four mines are underground mines, while fifty nine (81%) are open pit. Eleven (15%) mines are combination open pit and underground mines.

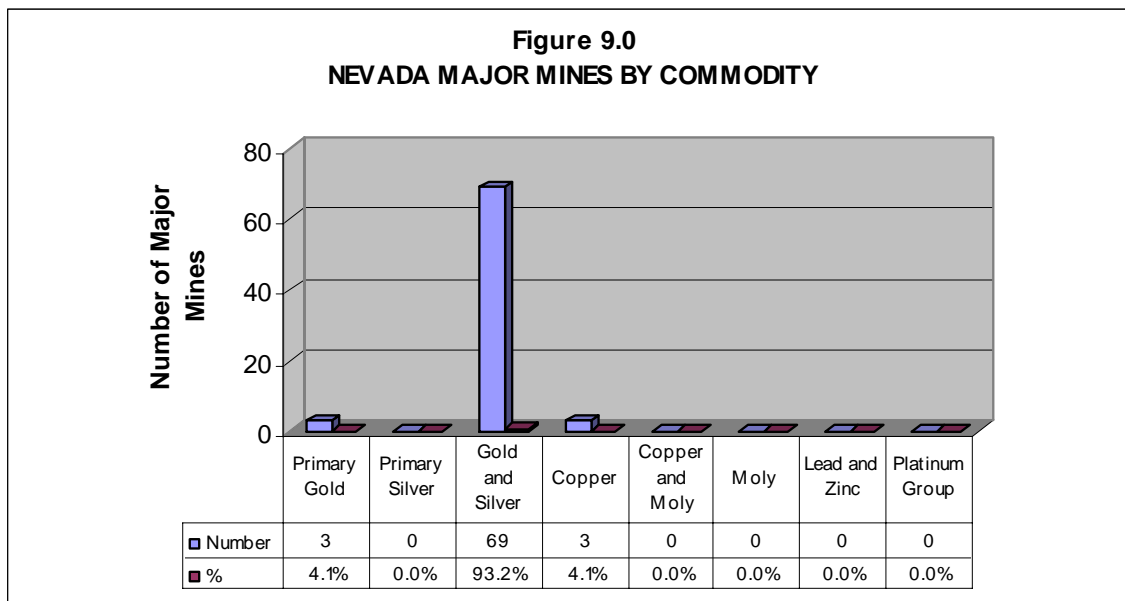


Table 9.0
Nevada Major Mines Database

No	Major Mines			General Information																	Year Production Initiated	Current Status
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	Alligator Ridge	NV	White Pine	Placer Dome U.S., Inc.	Y	Y								Y	Y						1990	Closed
2	Aurora Partnership (Mine)	NV	Mineral	Nevada Goldfields inc.	Y	Y								Y	Y						1987	Closed
3	Austin Gold Venture	NV	Lander		Y	Y							Y	Y		Y	Y				1985	Closed
4	Bald Mountain	NV	White Pine	Placer Dome U.S., Inc.	Y	Y								Y	Y						1986	Operating
5	Horseshoe/Galaxy	NV	White Pine	Placer Dome U.S., Inc.	Y									Y	Y						?	Closed
6	Battle Mountain Complex (Reona, Copper Basin, Copper Canyon, Iron Canyon, Shoshone-Eureka)	NV	Lander	Battle Mountain Gold Co.	Y	Y								Y	Y	Y					1979	Operating
7	Big Springs	NV	Elko	Independence Mining Co.	Y	Y								Y	Y	Y					1987	Operating
8	Blue Star (Genesis)	NV	Eureka	Newmont Gold Co.	Y	Y							Y	Y	Y	Y					?	Operating
9	Bootstrap/Capstone/Tara	NV	Elko	Newmont Gold Co.	Y	Y								Y	Y	Y					?	Operating
10	Borealis	NV	Mineral	Echo Bay Minerals Co.	Y	Y								Y	Y						?	Closed
11	Buckhorn	NV	Eureka	Cominco American Resources Inc.	Y	Y								Y	Y						?	Closed
12	Bullfrog	NV	Nye	Barrick Gold Corp. (100%)	Y	Y							Y	Y							1989	Closed
13	Candelaria	NV	Mineral		Y	Y								Y	Y						1979	Closed
14	Carlin Mine/Mill # 1	NV	Eureka	Newmont Gold Co.	Y	Y								Y	Y	Y					Historic	Operating
15	Casino/Winrock	NV	White Pine	Placer Dome U.S., Inc.	Y	Y								Y	Y						?	Closed
16	Rochester	NV	Pershing	Couer Rochester Inc.	Y	Y								Y	Y						?	Operating
17	Copper Leach Project (Equitorial Tonopah)	NV	Nye				Y							Y				Y			?	Closed

Table 9.0 (continued)
Nevada Major Mines Database

No	Major Mines		General Information																		Year Production Initiated	Current Status
	Name	State	County	Ownership	Commodity								Operation Type									
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
18	Cortez	NV	Eureka	Placer Dome U.S., Inc.	Y	Y								Y	Y	Y				?	Operating	
19	Cortez Pipeline	NV	Lander	Placer Dome U.S., Inc.	Y	Y								Y	Y					?	Operating	
20	County Line	NV	Nye	Arimetco International Inc.	Y	Y								Y	Y					?	Closed	
21	Crescent Pit	NV	Lander	Placer Dome U.S., Inc.	Y	Y								Y						?	Operating	
22	Crofoot/Lewis	NV	Humboldt	Hycroft Resources and Development Inc.	Y	Y								Y	Y					?	Operating	
23	Daisy	NV	Nye	Inter-Rock Gold Inc. (65%); Rayrock Yellowknife Resources Inc. (35%)	Y	Y								Y	Y					1996	Closed	
24	Dee	NV	Elko	Dee Gold Mining Co.	Y	Y								Y	Y					1984	Closed	
25	Denton Rawhide	NV	Mineral	Kennecott Rawhide Mining Co.	Y	Y								Y	Y					1990	Operating	
26	Easy Junior	NV	White Pine	Alta Gold Co.	Y	Y								Y	Y					1994	Closed	
27	Elder Creek	NV	Lander	Alta Gold Co.	Y	Y								Y	Y					?	Closed	
28	Florida Canyon	NV	Pershing	Florida Canyon Mining Co.	Y	Y								Y	Y					1986	Operating	
29	Fondaway Canyon	NV	Churchill	Tenneco Minerals Co.	Y	Y								Y	Y					?	Closed	
30	Getchell	NV	Humboldt	Getchell Gold Corp.	Y	Y							Y	Y	Y	Y				?	Operating	
31	Gold Acres	NV	Lander	Placer Dome U.S., Inc.	Y	Y								Y	Y					?	Operating	
32	Gold Bar	NV	Eureka	Atlas Gold Mining Co.	Y	Y								Y	Y	Y				?	Closed	
33	Gold Quarry/Maggie Creek	NV	Eureka	Newmont Gold Co.	Y	Y							Y	Y	Y	Y				1981	Operating	

Table 9.0 (continued)

Nevada Major Mines Database

No	Major Mines		General Information																				
	Name	State	County	Ownership	Commodity							Operation Type							Year Production Initiated	Current Status			
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S					
34	Golden Eagle	NV	Storey	American Eagle Resources Inc.	Y	Y									Y	Y						?	Closed
35	Goldfield	NV	Esmeralda	American Pacific Minerals Ltd.	Y	Y									Y	Y						1993	Operating
36	Goldstrike	NV	Elko, Eureka	Barrick Goldstrike Mines Inc.	Y	Y									Y	Y	Y					1982	Operating
37	Griffon	NV	White Pine	Alta Gold Co.	Y	Y									Y	Y						1997	Closed
38	Ivanhoe/Hollister	NV	Elko	Newmont Gold Co.	Y	Y									Y	Y						?	Operating
39	Jerritt Canyon	NV	Elko	Independence Mining Co.	Y	Y							Y	Y	Y	Y						1980	Operating
40	Dash	NV	Elko		Y	Y									Y		Y					1994	Operating
41	Kinsley Mtn.	NV	Elko	Alta Gold Co.	Y	Y									Y	Y						1995	Closed
42	Leeville	NV	Eureka	Newmont Mining Corp.	Y	Y							Y									?	Operating
43	Lone Tree	NV	Humboldt	Sante Fe Pacific Gold Corp.	Y	Y									Y	Y	Y					1991	Operating
44	Manhattan	NV	Nye	Round Mountain Gold Corp.	Y	Y									Y	Y	Y					1984	Closed
45	Marigold	NV	Humboldt	Marigold Mining Co.	Y	Y									Y	Y	Y					1989	Closed
46	McCoy/Cove	NV	Lander	Echo Bay Mines Ltd.	Y	Y							Y	Y	Y	Y	Y					?	Closed
47	Meikle	NV	Elko	Barrick Gold Corp. (100%)	Y	Y							Y				Y					?	Operating
48	Mineral Ridge	NV	Esmeralda	Mineral Ridge Resources Inc.	Y	Y									Y	Y						?	Operating
49	Mt. Hamilton	NV	White Pine	Rea Gold Corporation	Y	Y									Y	Y						1994	Closed
50	Mule Canyon	NV	Lander	Sante Fe Pacific Gold Corp.	Y	Y									Y	Y	Y						Operating
51	North Area Leach	NV		Newmont Gold Co.	Y	Y										Y							Operating

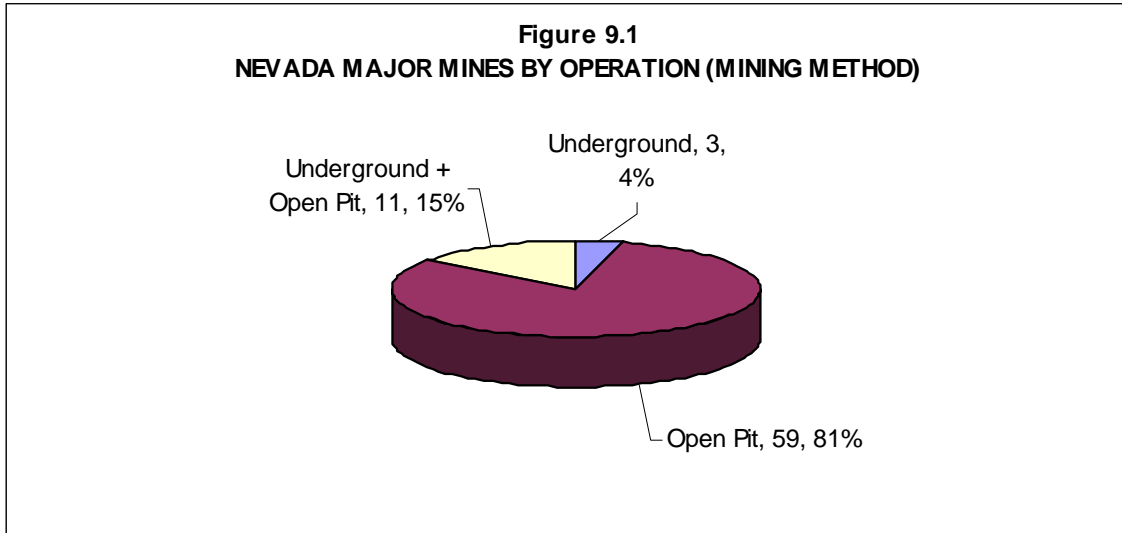
Table 9.0 (continued)

Nevada Major Mines Database

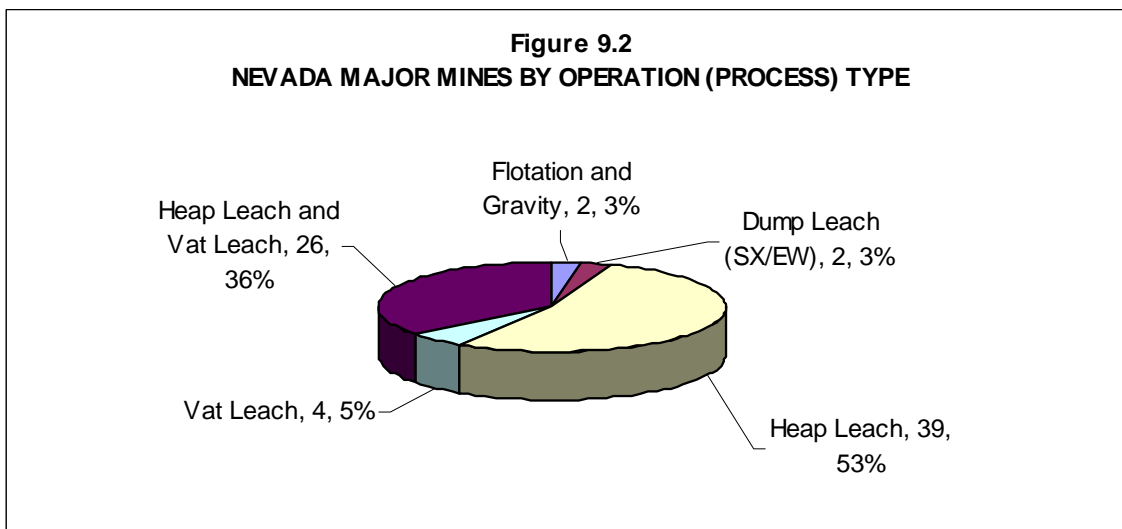
No	Major Mines		General Information																			Year Production Initiated	Current Status	
	Name	State	County	Ownership	Commodity								Operation Type											
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S						
52	Northumberland	NV	Nye	Western States Minerals Corp. (100%)	Y	Y									Y	Y							1985	Closed
53	Olinghouse	NV	Washoe		Y	Y									Y	Y							?	Closed
54	Paradise Peak/Ketchup Flat	NV	Nye	Arimetco International Inc.	Y	Y									Y	Y	Y						1985	Closed
55	Pete	NV	Eureka	Newmont Mining Corp.	Y										Y	Y							?	Operating
56	Pinson	NV	Humboldt	Pinson Mining Co.	Y	Y									Y	Y	Y						1981	Closed
57	Preble	NV	Humboldt	Pinson Mining Co.	Y	Y									Y	Y	Y						?	Closed
58	Post/Mill # 4	NV		Newmont Gold Co.	Y	Y							Y	Y	Y	Y							?	Operating
59	Rain	NV	Elko	Newmont Gold Co.	Y	Y							Y	Y	Y	Y							?	Operating
60	Robinson (Ruth)	NV	White Pine	BHP Copper	Y		Y								Y	Y	Y						Historic	Operating
61	Rosebud	NV	Pershing	Hecla Mining Co.	Y	Y							Y			Y							1997	Closed
62	Round Mountain	NV	Nye	Round Mountain Gold Corp.	Y	Y									Y	Y	Y						1977	Operating
63	Ruby Hill	NV	Eureka	Homestake Mining Co.	Y	Y									Y	Y							?	Operating
64	Santa Fe/Calvada	NV	Mineral	Homestake Mining Co.	Y	Y									Y	Y							?	Closed
65	Sleeper	NV	Humboldt		Y	Y							Y	Y		Y							1985	Closed
66	Sterling JV	NV	Nye	Cathedral Gold U.S. Corp.	Y	Y							Y	Y	Y								1980	Operating
67	Talapoosa	NV	Lyon	Miramar Mining Corp.	Y	Y									Y	Y							?	Withdrawn
68	Tonkin Springs	NV	Eureka	Tonkin Springs Venture, Ltd.	Y	Y									Y	Y	Y						?	Closed
69	Trenton Canyon	NV	Humboldt	Newmont Mining Corp.	Y	Y									Y	Y	Y						?	Operating
70	Triplet Gulch/Robertson	NV	Lander	Coral Resources Inc.	Y	Y									Y	Y							?	Closed

Table 9.0 (continued)
Nevada Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status
	Name	State	County	Ownership	Commodity							Operation Type									
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S			
71	Twin Creeks	NV	Humboldt	Newmont Mining Corp.	Y	Y								Y	Y	Y				?	Operating
72	Wind Mountain	NV	Washoe	AMAX Gold Inc.	Y	Y								Y	Y					?	Closed
73	Yankee	NV	White Pine	Placer Dome U.S., Inc.	Y	Y								Y	Y					?	Closed
74	Yerington	NV	Lyon	Arimetco International Inc.			Y							Y				Y		Historic	Closed

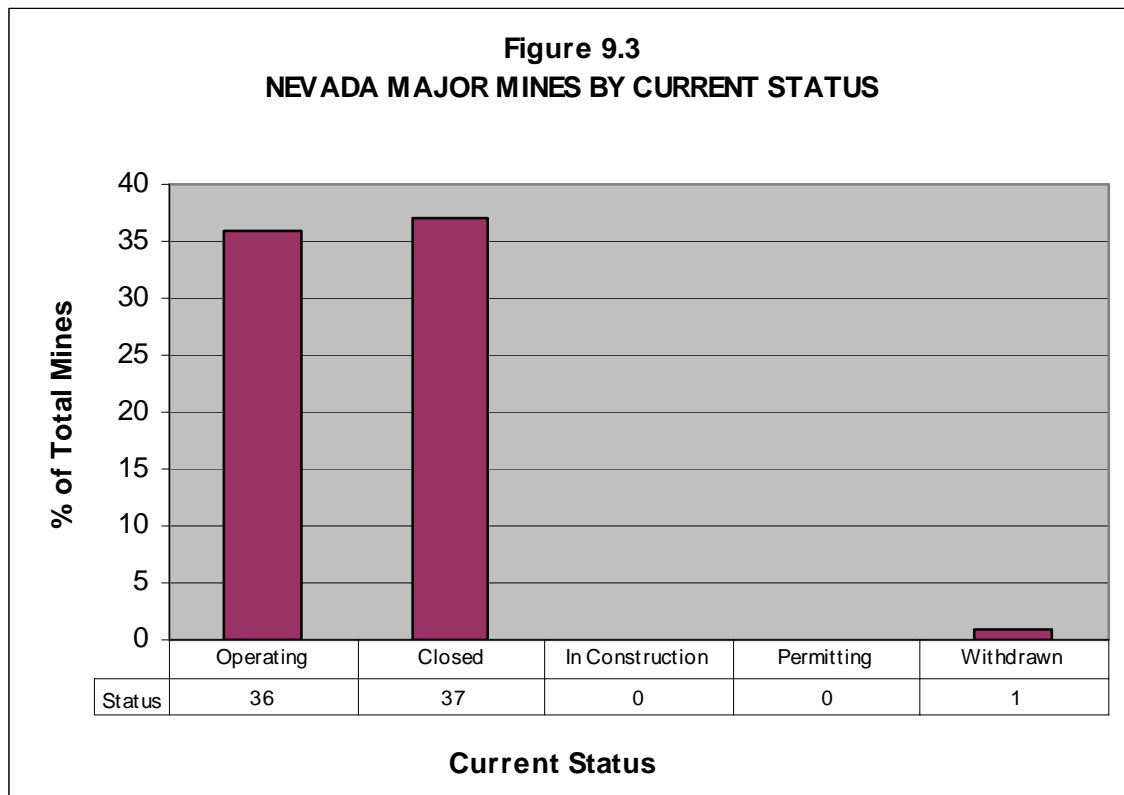


As indicated in Figure 9.2, all of the sixty nine primary gold or gold and silver mines use cyanide leach methods. Thirty nine (53%) mines use only heap leach methods, while four (5%) mines use only vat leach methods. Two (3%) of the mines in the state use flotation and gravity processing methods and two (3%) mines use dump leaching for beneficiation of copper ores.



9.1.3. PRODUCTION STATUS

As shown in Table 9.0 and Figure 9.3, thirty six (49%) of the seventy four major hardrock mines in Nevada are currently operating while thirty seven (50%) are closed and one (1%) mine has been withdrawn. There are no mines under construction in Nevada at the current time.



9.2. MAJOR NEPA APPLICABLE Mines

Sixty nine of the seventy four major current era mines identified in Nevada meet the requirements to undergo the NEPA process as seen in Table 9.1. The following were the requirements determining the eligibility for NEPA:

- Sixty one (88%) are located on BLM administered lands
- Eleven (15%) are located on Forest Service administered lands
- Three (4%) are located on both BLM and Forest Service administered lands
- None required 404 wetlands permits from the COE invoking NEPA
- Two (3%) required NPDES from EPA invoking NEPA
- None are located on Indian Lands invoking NEPA

Sixty one of the sixty nine NEPA applicable major mines in Nevada are located on BLM land and eleven mines are located on Forest Service administered lands. Three of the sixty nine mines are located on both BLM and Forest Service administered lands.

At least three (Cortez, Robinson, Yerington) of Nevada’s NEPA eligible current era major mines were operating prior to the enactment of NEPA. Forty nine of the sixty nine NEPA eligible mines were permitted as new mines with EA’s. Thirty seven of the forty nine mines permitted as new mines with EA’s had no subsequent EA’s or EIS’s. Fifteen mines were initially permitted as new mines with EA’s with one or more EA and/or EIS for mine expansion or closure and reclamation. Only eight of the sixty nine NEPA eligible mines in Nevada were permitted with an EIS and of those mines, four had multiple EIS’s and only one had a SEIS for mine expansion. The Lone Tree mine required an EIS when it expanded operations from private land onto public land.

Commodity, operations and status of major mines in Nevada as a whole that are NEPA eligible differ from that of all major mines in the state, so separate statistics for Nevada NEPA eligible mines are provided.

Sixty nine NEPA applicable modern era major hardrock mines were identified in Nevada. These mines have been classified based on commodity, operation type, and current status as indicated in Table 9.2. Each of the categories is described in the following sections.

9.2.1. COMMODITY

As indicated in Figure 9.4, two (3%) of the sixty nine major NEPA eligible mines in the state are primary gold producers, while sixty five (94%) are primary gold and silver producers. Three (4%) mines are primary copper producers. There are no major base metals mines operating in the state.

9.2.2. OPERATION TYPE

The sixty nine current era NEPA eligible major hardrock mines in Nevada are operated by both open pit and underground mining methods, and employ dump, heap and/or vat leaching, flotation and gravity process methods.

As shown in Figure 9.5, three (4%) of the sixty nine NEPA eligible mines are underground mines, while fifty seven (83%) are open pit. Nine (13%) mines are combination open pit and underground mines.

Table 9.1
Nevada Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
1	Alligator Ridge	NV	Yes		Ely				Yes	1990	New Project	EA				
2	Aurora Partnership (Mine)	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1986, 1987, 1989, 1991	New Project	EA				
3	Austin Gold Venture	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1985	New Project	EA				
4	Bald Mountain	NV	Yes		Ely				Yes	1986	New Project	EA				
	Bald Mountain	NV	Yes		Ely				Yes	1995	Expansion	EIS				
5	Battle Mountain Complex (Reona, Copper Basin, Copper Canyon, Iron Canyon, Shoshone-Eureka)	NV	Yes		Battle Mountain				Yes	1989 (CB/CC), 1990 (R/CC), 1991 (IC), 1993 (R)	Various	EA				
	Battle Mountain Complex (Phoenix)	NV	Yes		Battle Mountain				Yes	2001, 2002	Expansion (Phoenix)	EIS				
6	Big Springs	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1987	New Project	EA				
7	Blue Star (Genesis)	NV	Yes		Elko				Yes	?	New Project	?				
8	Bootstrap/Capstone/Tara	NV	Yes		Elko				Yes	1996	New Project	EIS				
9	Borealis	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1990, 1997	Exploration?	EA				
10	Buckhorn	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
11	Bullfrog	NV	Yes		Tonopah				Yes	1989	New Project	EA				
12	Candelaria	NV	Yes		Tonopah				Yes	1992, 1997	New Project	EA				
	Candelaria	NV	Yes		Tonopah				Yes	2000	Closure	EA				

Table 9.1 (continued)
Nevada Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process				State EIS		
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
13	Carlin Mine/Mill # 1	NV	Yes		Elko				Yes	?	Expansion	?				
14	Casino/Winrock	NV	Yes		Ely				Yes	?		?				
15	Rochester	NV	Yes		Winnemucca				Yes	2001	New Project	EA				
	Rochester	NV	Yes		Winnemucca				Yes	2003	Expansion	EA				
16	Copper Leach Project (Equitorial Tonopah)	NV	Yes		Tonopah				Yes	?		?				
17	Cortez	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
	Cortez	NV	Yes		Battle Mountain				Yes	1993	Expansion	EIS				
	Cortez	NV	Yes		Battle Mountain				Yes	2001	Reclamation and Closure	EA				
18	Cortez Pipeline	NV	Yes		Battle Mountain				Yes	1996	New Project	EIS				
	Cortez Pipeline (South Pipeline)	NV	Yes		Battle Mountain				Yes	2000, 2004	Expansion	EIS				
19	County Line	NV	Yes		Carson City				Yes	?	New Project	EA				
20	Crescent Pit	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
21	Daisy	NV	Yes		Tonopah				Yes	1996	New Project	EA				
22	Dee	NV	Yes		Elko				Yes	1984	New Project	EA				
	Dee	NV	Yes		Elko				Yes	1992, 1997	Expansion	EA				
23	Denton Rawhide	NV	Yes		Carson City				Yes	1990	New Project	EA				
	Denton Rawhide	NV	Yes		Carson City				Yes	1996	Expansion	EIS				
24	Easy Junior	NV	Yes		Ely				Yes	1994	New Project	EA				
25	Elder Creek	NV	Yes		Battle Mountain				Yes	?	New Project	EA				

Table 9.1 (continued)
Nevada Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process				State EIS		
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
26	Florida Canyon	NV	Yes		Winnemucca				Yes	1986	New Project	EA				
	Florida Canyon	NV	Yes		Winnemucca				Yes	1995	Expansion	EA				
	Florida Canyon	NV	Yes		Winnemucca				Yes	1997	Expansion and Reclamation	EIS				
	Florida Canyon	NV	Yes		Winnemucca				Yes	1999	Expansion	EA				
	Florida Canyon	NV	Yes		Winnemucca				Yes	2002	Amend Plan of Operations	EA				
27	Fondaway Canyon	NV	Yes		Carson City				Yes	1989	New Project	EA				
28	Gold Acres	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
29	Gold Bar	NV	Yes		Battle Mountain				Yes	1989	New Project	EA				
30	Gold Quarry/Maggie Creek	NV	Yes		Elko				Yes	1981	New Project	EA				
	Gold Quarry/Maggie Creek (South Operations Area Project)	NV	Yes		Elko				Yes	1993	Expansion	EIS				
	Gold Quarry/Maggie Creek (South Operations Area Project)	NV	Yes		Elko				Yes	1993	Expansion	EIS				
	Gold Quarry/Maggie Creek (South Operations Area Project)	NV	Yes		Elko				Yes	2002	Expansion	EIS				
31	Golden Eagle	NV	Yes		Ely				Yes	?	New Project	EA				
32	Goldfield	NV	Yes		Tonopah				Yes	1993	New Project	EA				

Table 9.1 (continued)

Nevada Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
33	Goldstrike	NV	Yes		Elko				Yes	1982	New Project	EA				
	Goldstrike (Betze)	NV	Yes		Elko				Yes	1991	Expansion	EIS				
	Goldstrike (Betze)	NV	Yes		Elko				Yes	2003	Dewatering	EIS				
34	Griffon	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1996	New Project	EIS				
	Griffon	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1998	Expansion	SEIS				
35	Ivanhoe/Hollister	NV	Yes		Elko				Yes	?	New Project	EA				
36	Jerritt Canyon	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1980	New Project	EIS				
	Jerritt Canyon	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1994	Expansion	EIS				
37	Dash	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1996	Expansion	EIS				
38	Kinsley Mtn.	NV	Yes		Elko				Yes	1995	New Project	EA				
39	Leeville	NV	Yes		Elko				Yes	1991	New Project	EIS				
	Leeville	NV	Yes		Elko				Yes	2002	Construction of ancillary mine	EIS				
	Leeville	NV	Yes		Elko				Yes	2003	Expansion and Water Impacts	SEIS				
40	Lone Tree	NV	Yes		Winnemucca				Yes		New Project	Private Land, no EA				
	Lone Tree	NV	Yes		Winnemucca				Yes	1996	Expansion	EIS				
41	Manhattan	NV	Yes	Yes	Tonopah				Yes	1984	New Project	EA				

Table 9.1 (continued)
Nevada Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
42	Marigold	NV	Yes		Winnemucca				Yes	1988	New Project	EA				
	Marigold	NV	Yes		Winnemucca				Yes	2001	Expansion	EIS				
	Marigold	NV	Yes		Winnemucca				Yes	2003	Expansion	EIS				
43	McCoy/Cove	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
44	Meikle	NV	Yes		Elko				Yes	1993	New Project	EA				
45	Mineral Ridge	NV	Yes		Tonopah				Yes	?	New Project	EA				
46	Mt. Hamilton	NV		Yes	Humboldt-Toiyabe				Yes	1994	New Project	EA				
47	Mule Canyon	NV	Yes		Battle Mountain				Yes	1996	New Project	EIS				
48	Northumberland	NV	Yes	Yes	Humboldt-Toiyabe				Yes	1985	New Project	EA				
49	Olinghouse	NV	Yes		Carson City				Yes	1997-1998	New Project	EIS				
50	Paradise Peak/Ketchup Flat	NV	Yes		Tonopah				Yes	1984	New Project	EA				
51	Pete	NV	Yes		Elko				Yes	2002	New Project	EA				
52	Pinson	NV	Yes		Winnemucca				Yes	1981	New Project	EA				
53	Preble	NV	Yes		Winnemucca				Yes	?	New Project	EA				
54	Rain	NV	Yes		Elko				Yes	1986	New Project	EA				
55	Robinson (Ruth)	NV	Yes		Ely				Yes	1993	Expansion	EA				
	Robinson (Ruth)	NV	Yes		Ely				Yes	1994	Expansion	EIS				
56	Rosebud	NV	Yes		Winnemucca				Yes	1997	New Project	EA				

Table 9.1 (continued)

Nevada Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
57	Round Mountain	NV	Yes	Yes	Battle Mountain				Yes	1977	New Project	EA				
	Round Mountain	NV	Yes	Yes	Battle Mountain				Yes	1987, 1992	Expansion	EA				
	Round Mountain	NV	Yes	Yes	Battle Mountain				Yes	1996	Expansion	EIS				
58	Ruby Hill	NV	Yes		Battle Mountain				Yes	1997	New Project	EIS				
59	Santa Fe/Calvada	NV	Yes		Carson City				Yes	?	New Project	EA				
60	Sleeper	NV	Yes		Winnemucca				Yes	?	New Project	EA				
61	Sterling JV	NV	Yes		Las Vegas				Yes	1980	New Project	EA				
62	Talapoosa	NV	Yes		Carson City				Yes	1996	New Project	EIS				
63	Tonkin Springs	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
64	Trenton Canyon	NV	Yes		Winnemucca				Yes	?	New Project	EA				
	Trenton Canyon	NV	Yes		Winnemucca				Yes	1998	Expansion	EIS				
65	Triplet Gulch/Robertson	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
66	Twin Creeks	NV	Yes		Winnemucca				Yes	1996	Expansion	EIS				
67	Wind Mountain	NV	Yes		Winnemucca				Yes	1988	New Project	EA				
	Wind Mountain	NV	Yes		Winnemucca				Yes	1999	Reclamation and Closure	EA				
68	Yankee	NV	Yes		Ely				Yes	?	New Project	EA				
69	Yerington	NV	Yes		Carson City				Yes							

Table 9.2
Nevada NEPA Eligible Major Mines Database

No	Major Mines		General Information																				
	Name	State	County	Ownership	Commodity								Operation Type							Year Production Initiated	Current Status		
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S					
1	Alligator Ridge	NV	White Pine	Placer Dome U.S., Inc.	Y	Y								Y	Y							1990	Closed
2	Aurora Partnership (Mine)	NV	Mineral	Nevada Goldfields inc.	Y	Y								Y	Y							1987	Closed
3	Austin Gold Venture	NV	Lander		Y	Y							Y	Y		Y	Y					1985	Closed
4	Bald Mountain	NV	White Pine	Placer Dome U.S., Inc.	Y	Y								Y	Y							1986	Operating
5	Battle Mountain Complex (Reona, Copper Basin, Copper Canyon, Iron Canyon, Shoshone-Eureka)	NV	Lander	Battle Mountain Gold Co.	Y	Y								Y	Y	Y						1979	Operating
6	Big Springs	NV	Elko	Independence Mining Co.	Y	Y								Y	Y	Y						1987	Operating
7	Blue Star (Genesis)	NV	Eureka	Newmont Gold Co.	Y	Y							Y	Y	Y	Y						?	Operating
8	Bootstrap/Capstone/Tara	NV	Elko	Newmont Gold Co.	Y	Y								Y	Y	Y						?	Operating
9	Borealis	NV	Mineral	Echo Bay Minerals Co.	Y	Y								Y	Y							?	Closed
10	Buckhorn	NV	Eureka	Cominco American Resources Inc.	Y	Y								Y	Y							?	Closed
11	Bullfrog	NV	Nye	Barrick Gold Corp. (100%)	Y	Y							Y	Y								1989	Closed
12	Candelaria	NV	Mineral	?	Y	Y								Y	Y							1979	Closed
13	Carlin Mine/Mill # 1	NV	Eureka	Newmont Gold Co.	Y	Y								Y	Y	Y						Historic	Operating
14	Casino/Winrock	NV	White Pine	Placer Dome U.S., Inc.	Y	Y								Y	Y							?	Closed
15	Rochester	NV	Pershing	Couer Rochester Inc.	Y	Y								Y	Y							?	Operating
16	Copper Leach Project (Equitorial Tonopah)	NV	Nye	?			Y							Y				Y				?	Closed
17	Cortez	NV	Eureka	Placer Dome U.S., Inc.	Y	Y								Y	Y	Y						?	Operating
18	Cortez Pipeline	NV	Lander	Placer Dome U.S., Inc.	Y	Y								Y	Y							?	Operating

Table 9.2 (continued)

Nevada NEPA Eligible Major Mines Database

No	Major Mines		General Information																					
	Name	State	County	Ownership	Commodity							Operation Type					Year Production Initiated	Current Status						
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG			DL-SX	S				
19	County Line	NV	Nye	Arimetco International Inc.	Y	Y									Y	Y						?	Closed	
20	Crescent Pit	NV	Lander	Placer Dome U.S., Inc.	Y	Y									Y								?	Operating
21	Daisy	NV	Nye	Inter-Rock Gold Inc. (65%); Rayrock Yellowknife Resources Inc. (35%)	Y	Y									Y	Y							1996	Closed
22	Dee	NV	Elko	Dee Gold Mining Co.	Y	Y									Y	Y							1984	Closed
23	Denton Rawhide	NV	Mineral	Kennecott Rawhide Mining Co.	Y	Y									Y	Y							1990	Operating
24	Easy Junior	NV	White Pine	Alta Gold Co.	Y	Y									Y	Y							1994	Closed
25	Elder Creek	NV	Lander	Alta Gold Co.	Y	Y									Y	Y							?	Closed
26	Florida Canyon	NV	Pershing	Florida Canyon Mining Co.	Y	Y									Y	Y							1986	Operating
27	Fondaway Canyon	NV	Churchill	Tenneco Minerals Co.	Y	Y									Y	Y							?	Closed
28	Gold Acres	NV	Lander	Placer Dome U.S., Inc.	Y	Y									Y	Y							?	Operating
29	Gold Bar	NV	Eureka	Atlas Gold Mining Co.	Y	Y									Y	Y	Y						?	Closed
30	Gold Quarry/Maggie Creek	NV	Eureka	Newmont Gold Co.	Y	Y							Y	Y	Y	Y							1981	Operating
31	Golden Eagle	NV	Storey	American Eagle Resources Inc.	Y	Y									Y	Y							?	Closed

Table 9.2 (continued)
Nevada NEPA Eligible Major Mines Database

No	Major Mines		General Information																		Year Production Initiated	Current Status		
	Name	State	County	Ownership	Commodity								Operation Type											
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S						
32	Goldfield	NV	Esmeralda	American Pacific Minerals Ltd.	Y	Y									Y	Y							1993	Operating
33	Goldstrike	NV	Elko, Eureka	Barrick Goldstrike Mines Inc.	Y	Y									Y	Y	Y						1982	Operating
34	Griffon	NV	White Pine	Alta Gold Co.	Y	Y								Y	Y								1997	Closed
35	Ivanhoe/Hollister	NV	Elko	Newmont Gold Co.	Y	Y								Y	Y								?	Operating
36	Jerritt Canyon	NV	Elko	Independence Mining Co.	Y	Y							Y	Y	Y	Y							1980	Operating
37	Dash	NV	Elko		Y	Y								Y		Y							1994	Operating
38	Kinsley Mtn.	NV	Elko	Alta Gold Co.	Y	Y								Y	Y								1995	Closed
39	Leeville	NV	Eureka	Newmont Mining Corp.	Y	Y							Y										?	Operating
40	Lone Tree	NV	Humboldt	Sante Fe Pacific Gold Corp.	Y	Y								Y	Y	Y							1991	Operating
41	Manhattan	NV	Nye	Round Mountain Gold Corp.	Y	Y								Y	Y	Y							1984	Closed
42	Marigold	NV	Humboldt	Marigold Mining Co.	Y	Y								Y	Y	Y							1989	Closed
43	McCoy/Cove	NV	Lander	Echo Bay Mines Ltd.	Y	Y							Y	Y	Y	Y	Y						1990	Closed
44	Meikle	NV	Elko	Barrick Gold Corp. (100%)	Y	Y							Y			Y							?	Operating
45	Mineral Ridge	NV	Esmeralda	Mineral Ridge Resources Inc.	Y	Y								Y	Y								?	Operating
46	Mt. Hamilton	NV	White Pine	Rea Gold Corporation	Y	Y								Y	Y								1994	Closed
47	Mule Canyon	NV	Lander	Sante Fe Pacific Gold Corp.	Y	Y								Y	Y	Y								Operating

Table 9.2 (continued)
Nevada NEPA Eligible Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status		
	Name	State	County	Ownership	Commodity							Operation Type											
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S					
48	Northumberland	NV	Nye	Western States Minerals Corp. (100%)	Y	Y									Y	Y						1985	Closed
49	Olinghouse	NV	Washoe		Y	Y									Y	Y						?	Closed
50	Paradise Peak/Ketchup Flat	NV	Nye	Arimetco International Inc.	Y	Y									Y	Y	Y					1985	Closed
51	Pete	NV	Eureka	Newmont Mining Corp.	Y										Y	Y						?	Operating
52	Pinson	NV	Humboldt	Pinson Mining Co.	Y	Y									Y	Y	Y					1981	Closed
53	Preble	NV	Humboldt	Pinson Mining Co.	Y	Y									Y	Y	Y					?	Closed
54	Rain	NV	Elko	Newmont Gold Co.	Y	Y							Y	Y	Y	Y						?	Operating
55	Robinson (Ruth)	NV	White Pine	BHP Copper	Y		Y								Y	Y	Y					Historic	Operating
56	Rosebud	NV	Pershing	Hecla Mining Co.	Y	Y							Y			Y						1997	Closed
57	Round Mountain	NV	Nye	Round Mountain Gold Corp.	Y	Y									Y	Y	Y					1977	Operating
58	Ruby Hill	NV	Eureka	Homestake Mining Co.	Y	Y									Y	Y						?	Operating
59	Santa Fe/Calvada	NV	Mineral	Homestake Mining Co.	Y	Y									Y	Y						?	Closed
60	Sleeper	NV	Humboldt	?	Y	Y							Y	Y			Y					1985	Closed
61	Sterling JV	NV	Nye	Cathedral Gold U.S. Corp.	Y	Y							Y	Y	Y							1980	Operating
62	Talapoosa	NV	Lyon	Miramar Mining Corp.	Y	Y									Y	Y						?	Withdrawn
63	Tonkin Springs	NV	Eureka	Tonkin Springs Venture, Ltd.	Y	Y									Y	Y	Y					?	Closed

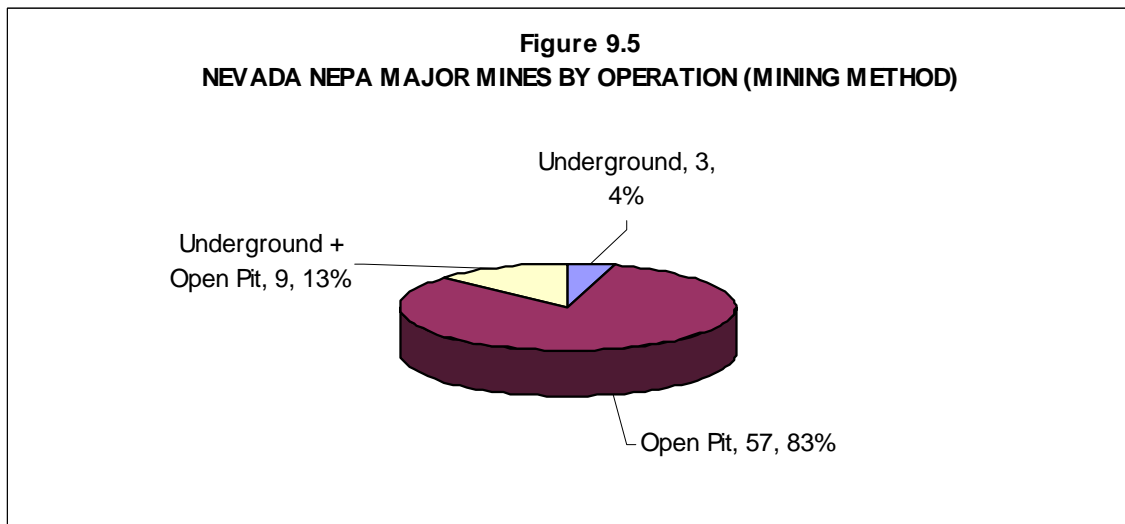
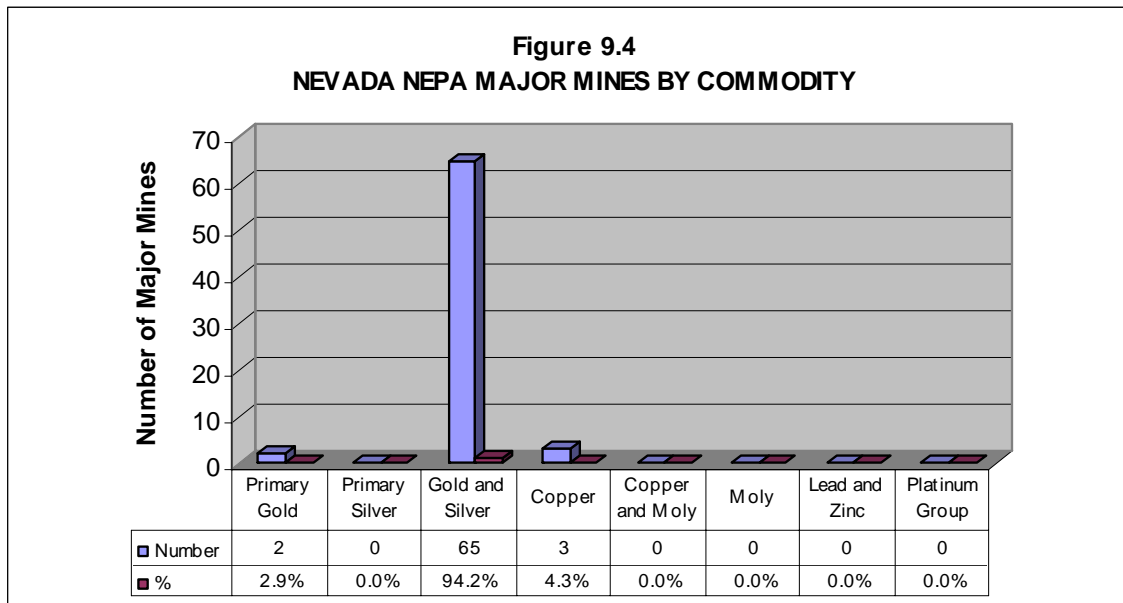
Table 9.2 (continued)
Nevada NEPA Eligible Major Mines Database

No	Major Mines	General Information
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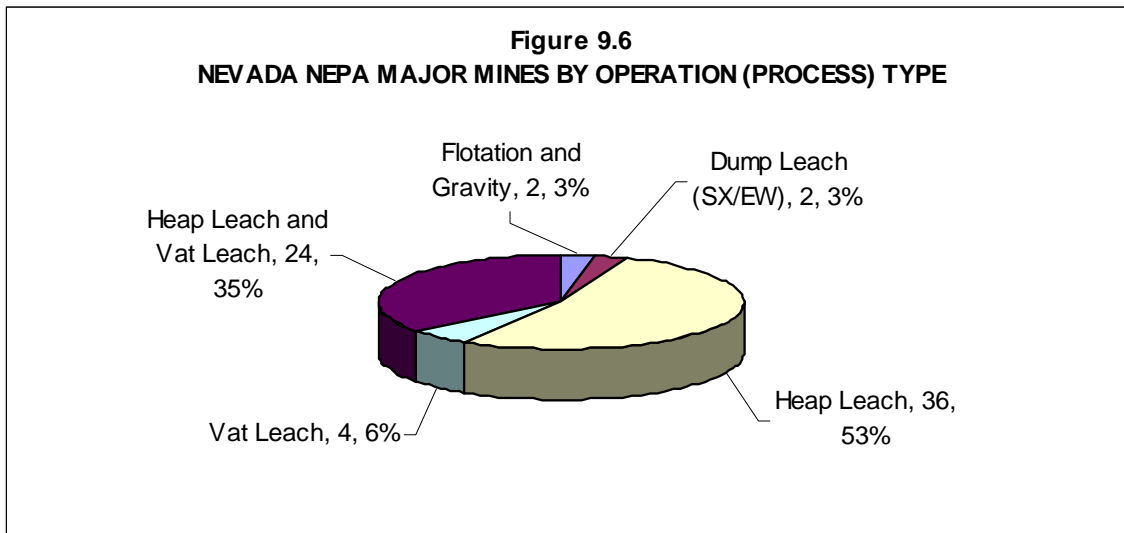
Comparison of Predicted and Actual Water Quality at Hardrock Mines – Appendix A

NEVADA

	Name	State	County	Ownership	Commodity							Operation Type						Year Production Initiated	Current Status	
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX			S
64	Trenton Canyon	NV	Humboldt	Sante Fe Pacific Gold Corp.	Y	Y							Y	Y	Y				?	Operating
65	Triplet Gulch/Robertson	NV	Lander	Coral Resources Inc.	Y	Y							Y	Y					?	Closed
66	Twin Creeks	NV	Humboldt	Newmont Mining Corp.	Y	Y							Y	Y	Y				?	Operating
67	Wind Mountain	NV	Washoe	AMAX Gold Inc.	Y	Y							Y	Y					?	Closed
68	Yankee	NV	White Pine	Placer Dome U.S., Inc.	Y	Y							Y	Y					1992	Closed
69	Yerington	NV	Lyon	Arimetco International Inc.			Y						Y				Y		Historic	Closed

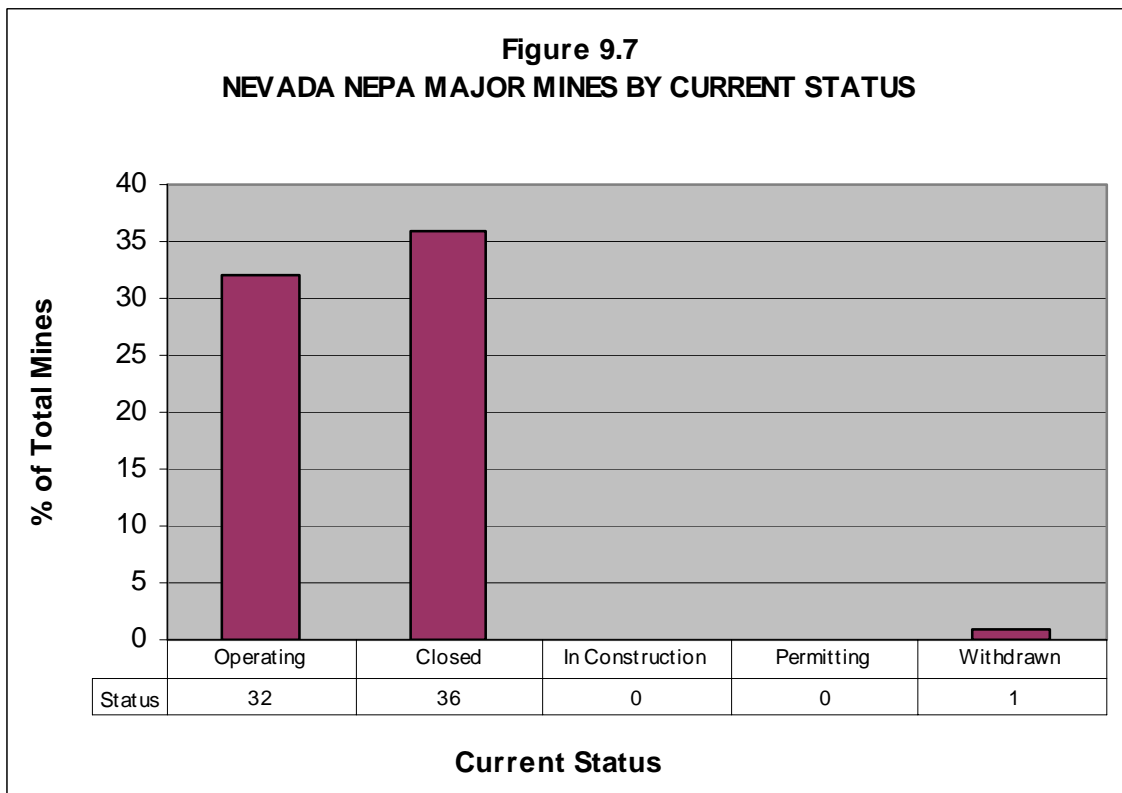


As indicated in Figure 9.6, all of the sixty five primary gold or gold and silver mines use cyanide leach methods. Thirty six (53%) mines use only heap leach methods, while four (6%) mines use only vat leach methods. Twenty four (35%) mines use both heap leach and vat leach methods for beneficiation of gold and silver ores. One mine (Austin Gold Venture) uses both flotation and gravity processing methods, while one mine (McCoy/Cove) uses a combination of heap leach, vat leach and flotation and gravity processing methods. Two (3%) of the mines in the state use dump leaching for beneficiation of copper ores.



9.2.3. PRODUCTION STATUS

As shown in Table 9.2 and Figure 9.7, thirty two (46%) of the sixty nine NEPA eligible mines are currently operating while thirty six (52%) are closed and one mine has been withdrawn. There are no mines in permitting or under construction in Nevada at the current time.



9.3. WATER QUALITY

No state equivalent NEPA process exists for Nevada. Water quality information for hardrock mines is available at the Bureau of Mining Regulation and Reclamation (BMRR) in Carson City. At the moment, no water quality data are available electronically, although there are plans to create a database in the future. NDEP personnel were helpful in providing information on the files and water quality at specific mine sites.

Information at the BMRR was mostly related to groundwater quality. Surface water quality information (for mines with NPDES permits) is available through the Nevada Bureau of Water Pollution Control but they did not respond to information requests.

10. NEW MEXICO

This section contains information on New Mexico’s Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

10.1. MAJOR MINES

Seven modern era major hardrock mines were identified in New Mexico. These mines have been classified based on commodity, operation type, and current status as indicated in Table 10.0. Each of the categories is described in the following sections.

10.1.1. COMMODITY

As indicated in Figure 10.0, only one (14%) of the seven major mines in the state is a primary gold and silver producer. Five (71%) mines are primary copper producers and one (14%) mine is a primary molybdenum producer.

10.1.2. OPERATION TYPE

The seven current era major hardrock mines in New Mexico are operated by both open pit and underground mining methods, and employ heap or dump leaching, flotation and gravity process methods.

As shown in Figure 10.1, six of the fifteen mines are open pit and one is a combination open pit and underground mine.

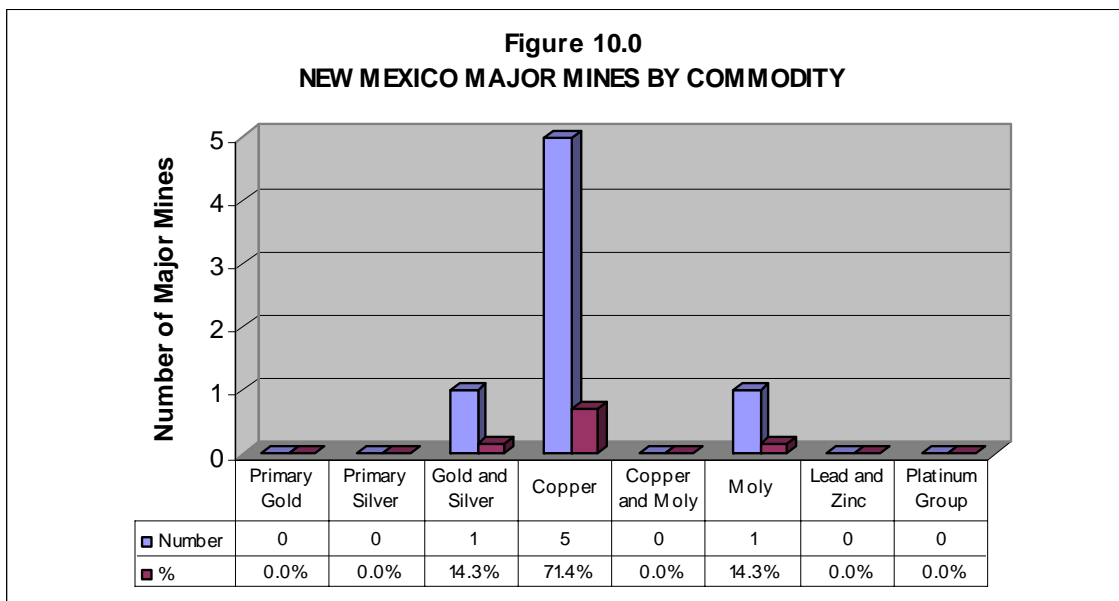
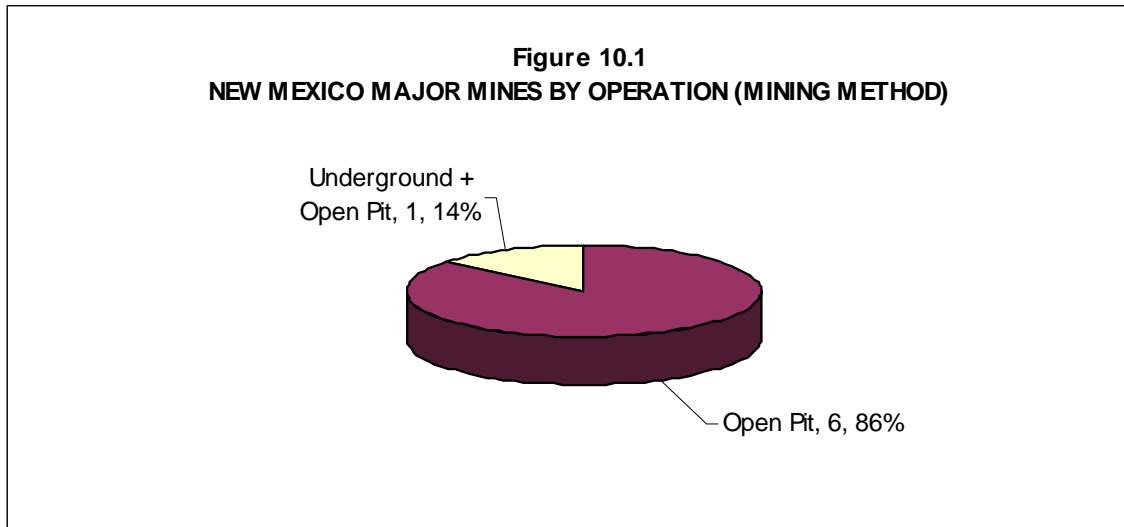
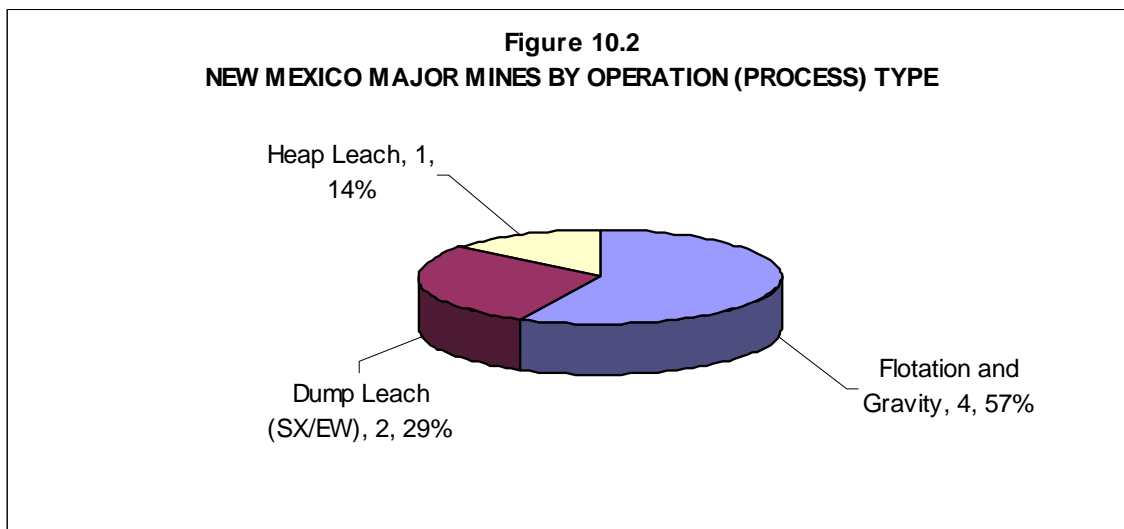


Table 10.0
New Mexico Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status	
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	Chino	NM	Grant	Phelps Dodge Corp.			Y							Y				Y	Y		Historic	Operating
2	Cobre (Continental Pit)	NM	Grant	Phelps Dodge Corp.			Y							Y							Historic	Closed
3	Copper Flat	NM	Sierra	Alta Gold			Y							Y				Y			1982	Closed
4	Cunningham Hill	NM	Santa Fe	LAC Minerals	Y	Y								Y	Y						Historic	Closed
5	Questa Mine	NM	Taos	Molycorp				Y					Y	Y				Y			Historic	Operating
6	Tyrone	NM	Grant	Phelps Dodge Corp.			Y							Y				Y	Y		Historic	Operating
7	Tyrone - Little Rock pit	NM	Grant	Phelps Dodge Corp.			Y							Y							Historic	Closed

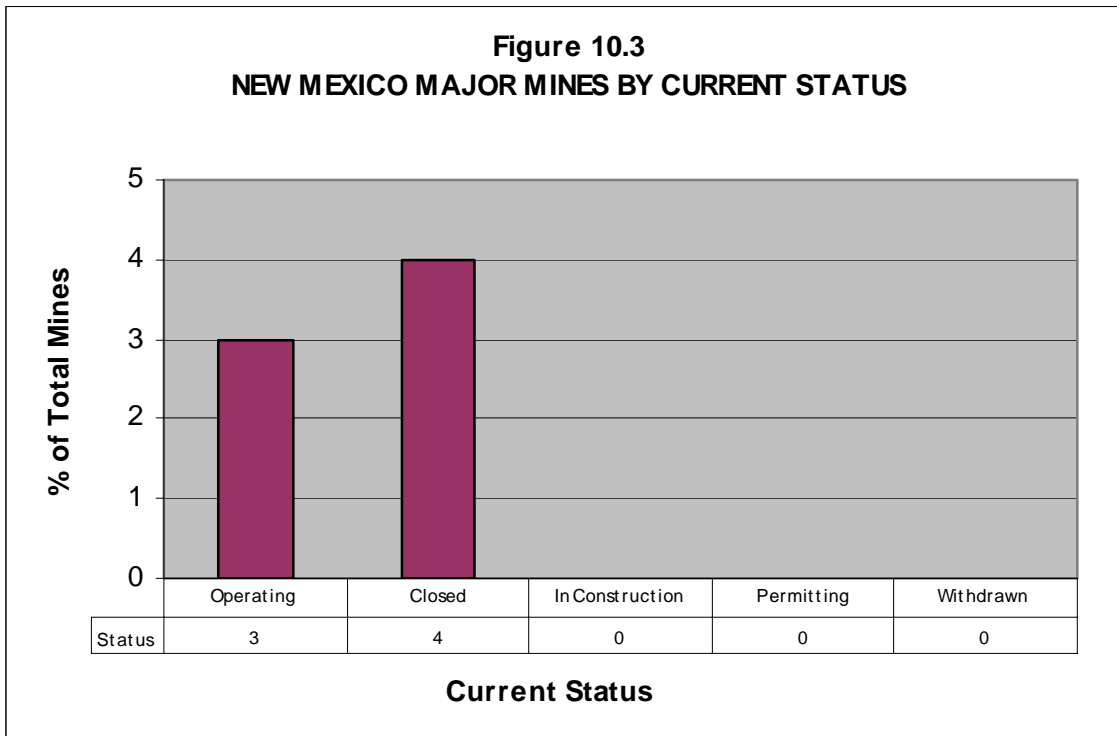


As indicated in Figure 10.2, the only gold and silver mine in New Mexico (Cunningham Hill) used cyanide heap leach methods. Two mines (Chino and Tyrone) use both dump leach and flotation and gravity methods while Copper Flat uses only flotation and gravity methods for beneficiation of copper ore. The Questa mine uses only flotation and gravity methods for beneficiation molybdenum ore.



10.1.3. PRODUCTION STATUS

As shown in Table 10.0 and Figure 10.3, three of the seven mines (43%) are currently operating while four (57%) are closed. No mines are in permitting or under construction in New Mexico at the current time.



10.2. MAJOR NEPA APPLICABLE MINES

All four of the major current era mines identified in New Mexico meet the requirements to undergo the NEPA process as seen in Table 10.1. The following were the requirements determining the eligibility for NEPA:

- Four (100%) are located on BLM administered lands
- One (33%) is located on Forest Service administered lands
- One (33%) is located on both BLM and Forest Service administered lands
- None (0%) required 404 wetlands permits from the COE invoking NEPA
- None (%) required NPDES from EPA invoking NEPA
- None are located on Indian Lands invoking NEPA

Three of the major mines are located on BLM land in New Mexico and one of these mines (Tyrone – Little Rock Pit) is located on both BLM and Forest Service administered lands.

Both the Chino Mine and Cobre (Continental Pit) were operating prior to the enactment of NEPA. Copper Flat is the only NEPA eligible mine in New Mexico to be permitted as a new mine with an EA followed by an EIS. Tyrone – Little Rock was permitted with an EIS and Cobre (Continental Pit) had an expansion EIS.

Commodity, operations and status of major mines in New Mexico as a whole that are NEPA eligible differ from that of all major mines in the state, so separate statistics for New Mexico NEPA eligible mines are provided.

Four modern era NEPA eligible major hardrock mines were identified in New Mexico. These mines have been classified based on commodity, operation type, and current status as indicated in Table 10.2. Each of the categories is described in the following sections.

10.2.1. COMMODITY

All four (100%) of the NEPA applicable major mines in the state are primary copper producers.

10.2.2. OPERATION TYPE

The four current era NEPA applicable major hardrock mines in New Mexico are operated by open pit mining methods and employ flotation and gravity process methods.

As indicated in Figure 10.4, two NEPA applicable primary copper mines in the state use flotation and gravity process methods and one uses both dump leach and floatation and gravity process methods.

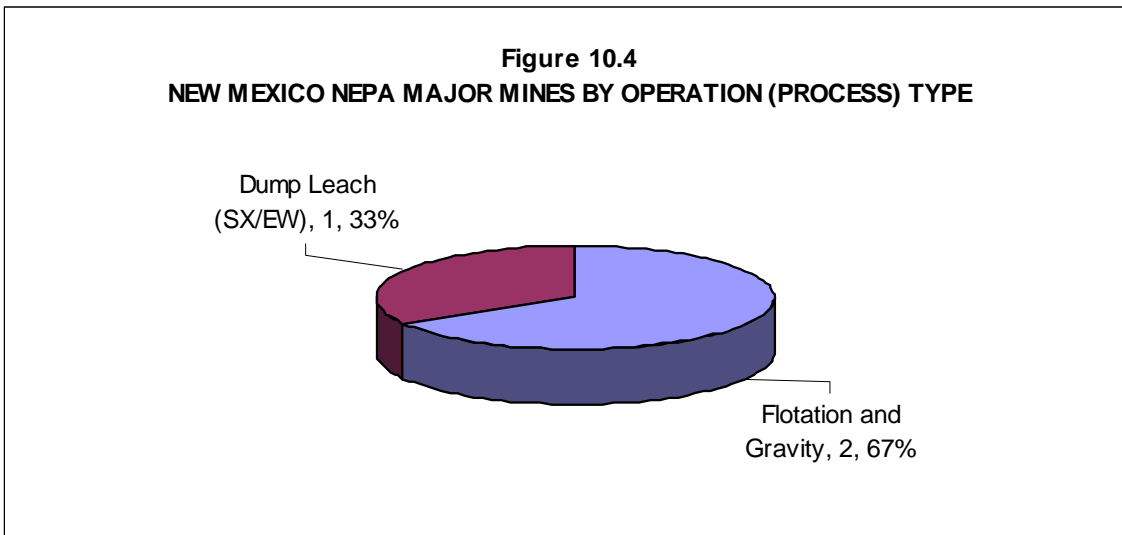


Table 10.1
New Mexico Major Mines NEPA Actions Database

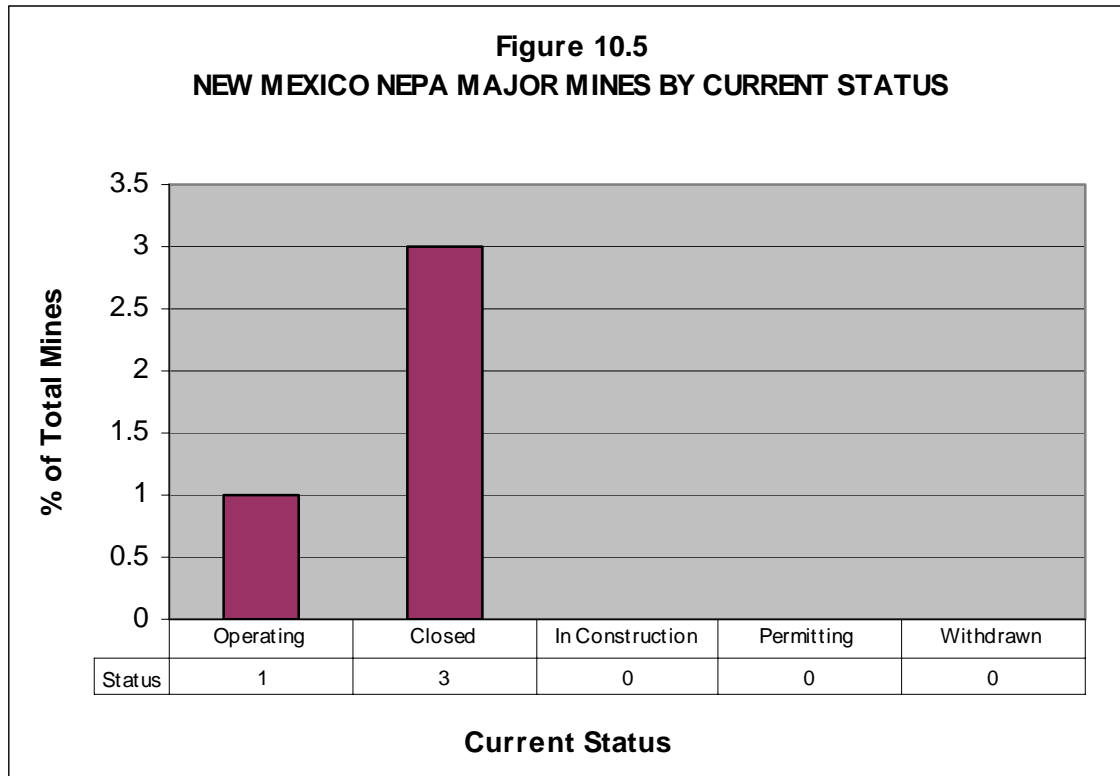
No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
1	Chino	NM	Yes*		Las Cruces				Yes	2007	Expansion	?				
2	Cobre (Continental Pit)	NM	Yes						Yes	In Process	Expansion	EIS				
3	Copper Flat	NM	Yes		Las Cruces				Yes	1996	Modified New Project	EIS				
4	Tyrone - Little Rock pit	NM	Yes	Yes	Gila				Yes	1997	New Project	EIS				
	Tyrone - Little Rock pit	NM	Yes	Yes	Las Cruces, Gila				Yes	2005	New Project	EA				

Table 10.2
New Mexico NEPA Eligible Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status	
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	Chino	NM	Grant	Phelps Dodge Corp.			Y							Y				Y	Y		Historic	Operating
2	Cobre (Continental Pit)	NM	Grant	Phelps Dodge Corp.			Y							Y							Historic	Closed
3	Copper Flat	NM	Sierra	Alta Gold			Y							Y				Y			1982	Closed
4	Tyrone - Little Rock pit	NM	Grant	Phelps Dodge Corp.			Y							Y							1998	Closed

10.2.3. PRODUCTION STATUS

As shown in Table 10.2 and Figure 10.5, three of the NEPA eligible mines are currently closed while one is operating. No NEPA eligible mines in New Mexico are in permitting or under construction at the current time.



10.3. NEPA AND WATER QUALITY DOCUMENTATION

No state equivalent NEPA process exists for New Mexico. Water quality information for the mines in the state in an electronic database form is not available.

11. SOUTH CAROLINA

11.1. MAJOR MINES

Three modern era major hardrock mines (Barite Hill, Brewer, Ridgeway) were identified in South Carolina. Two were primary gold producers and one was a primary gold and silver producer. They all used open pit mining and cyanide leaching process methods. None of the mines are currently operating. The Barite Hill and Ridgeway mines both have NPDES permitted discharges.

No disturbance or financial assurance information is available for the mines in South Carolina.

11.1.1. COMMODITY

As indicated in Figure 11.0, two mines (Barite Hill and Brewer) were primary gold mines while one mine (Ridgeway) was a primary gold and silver producer.

11.1.2. OPERATION TYPE

All three current era major hardrock mines in South Carolina were operated by open pit mining methods, and employed heap or vat leaching process methods.

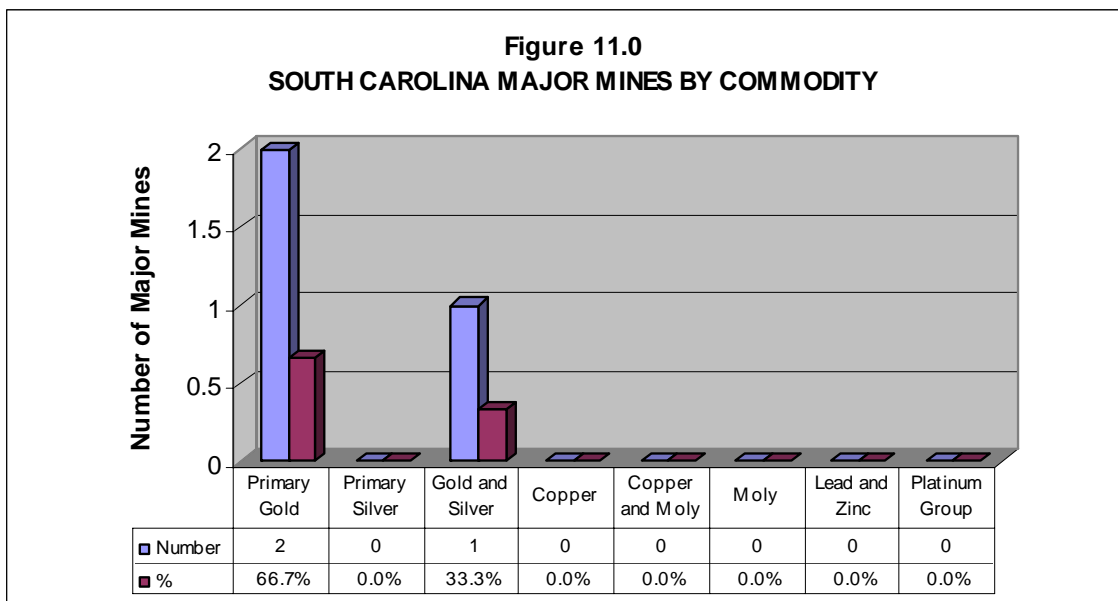
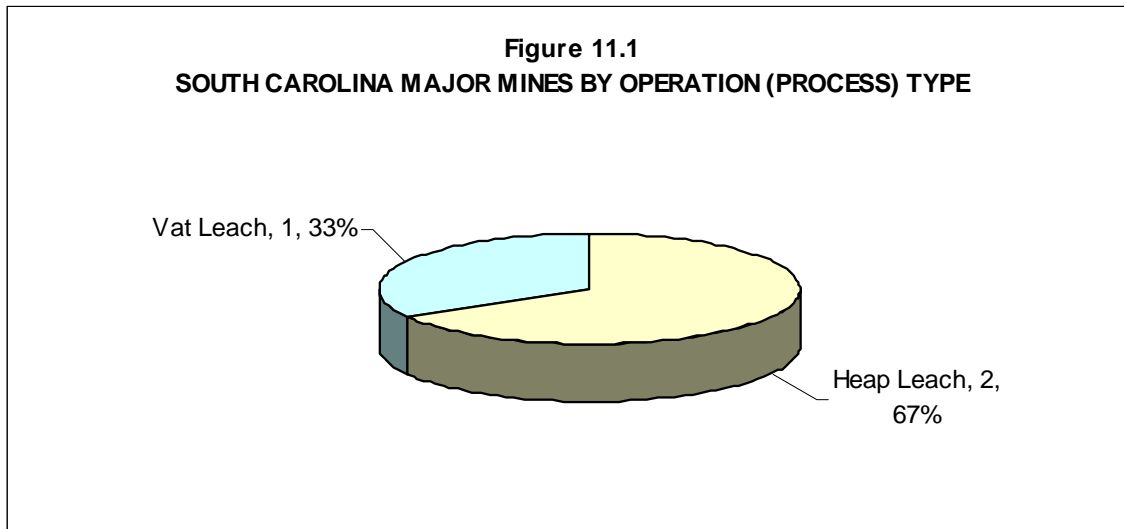


Table 11.0
South Carolina Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status		
	Name	State	County	Ownership	Commodity							Operation Type											
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S					
1	Ridgeway	SC	Fairfield	Kennecott	Y	Y								Y		Y					?	Closed	
2	Brewer	SC	Chesterfield		Y									Y	Y							?	Closed
3	Barite Hill	SC	McCormick	Nevada Goldfields	Y									Y	Y							?	Closed

As indicated in Figure 11.1, all three primary gold or gold and silver mines used cyanide leach methods. Two mines used only heap leach methods, while one mine used only vat leach methods for beneficiation of gold and silver ores.



11.1.3. PRODUCTION STATUS

As shown in Table 11.0, all three mines (100%) are currently closed and there are no mines in permitting or under construction at this time.

11.2. MAJOR NEPA APPLICABLE MINES

All of the major mines in South Carolina are located on non-federal land and there have been no NEPA requirements.

11.3. WATER QUALITY

No state equivalent NEPA process exists for South Carolina. NEPA was not performed for any of the identified large hardrock mines within the state of South Carolina.

12. SOUTH DAKOTA

This section contains information on South Dakota’s Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

12.1. MAJOR MINES

Five modern era major hardrock mines were identified in South Dakota. These mines have been classified based on commodity, operation type, and current status as indicated in Table 12.0. Each of the categories is described in the following sections.

12.1.1. COMMODITY

All of the major mines in the state are primary gold and silver producers.

12.1.2. OPERATION TYPE

The five current era major hardrock mines in South Dakota are operated by both open pit and underground mining methods, and employ heap or vat leaching, flotation and gravity process methods.

As shown in Figure 12.0, four of the five mines are open pit, while one (Homestake) is a combination open pit and underground mine.

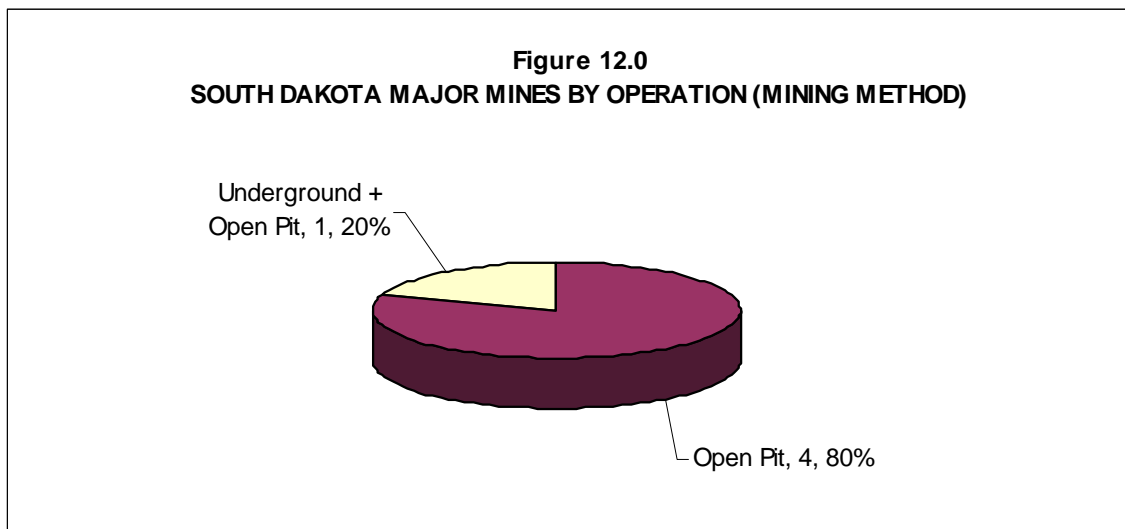
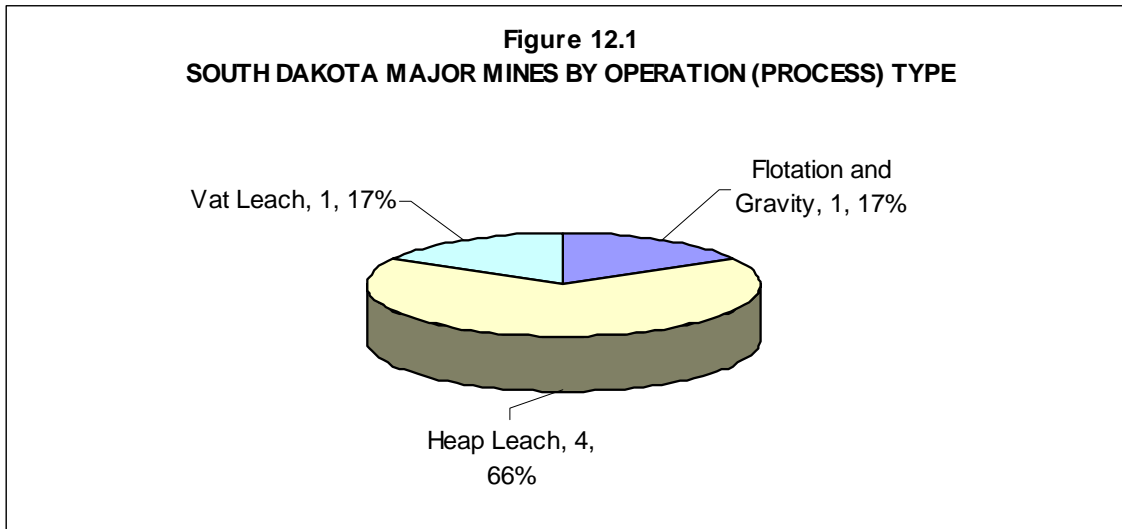


Table 12.0
South Dakota Major Mines Database

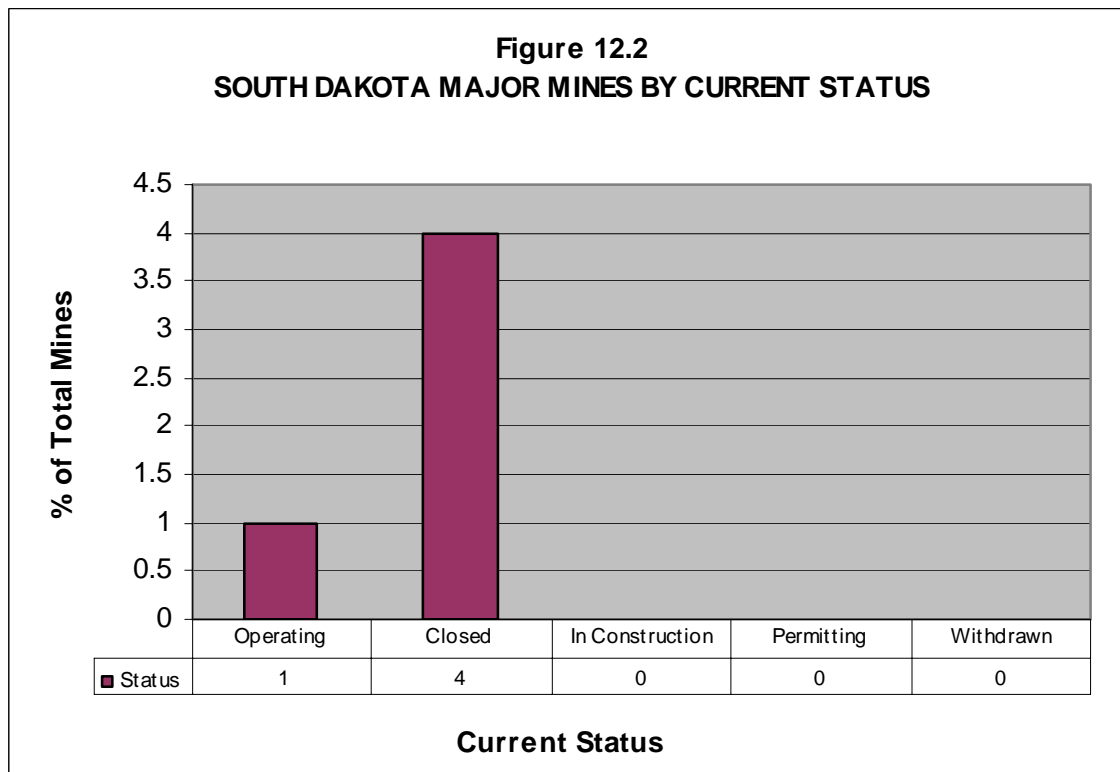
No	Major Mines		General Information																	Year Production Initiated	Current Status
	Name	State	County	Ownership	Commodity							Operation Type									
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S			
1	Gilt Edge (Anchor Hill)	SD	Lawrence	Brohm Mining Corp.	Y	Y								Y	Y					1986	Closed
2	Golden Reward	SD	Lawrence	Warf Resources (Gold Corp.)	Y	Y								Y	Y					1988	Closed
3	Homestake	SD	Lawrence	Barrick Gold Corp. (100%)	Y	Y							Y	Y		Y	Y			Historic	Closed
4	Richmond Hill	SD	Lawrence	LAC Minerals Inc., Barrick Gold Corp.	Y	Y								Y	Y					1988	Closed
5	Wharf	SD	Lawrence	Warf Resources, Barrick Gold Corp.	Y	Y								Y	Y					1982	Operating

As indicated in Figure 12.1, all five primary gold and silver mines use cyanide leach methods. Four mines use only heap leach methods, while one mine uses a combination of vat leach and flotation and gravity methods for beneficiation of the gold and silver ores.



12.1.3. PRODUCTION STATUS

As shown in Table 12.0 and Figure 12.2, one of the fifteen mines (20%) is currently operating while four (80%) are closed. There are no mines currently in permitting or under construction in South Dakota.



12.2. MAJOR NEPA APPLICABLE MINES

Only one mine is NEPA applicable in the South Dakota, the Gilt Edge (Anchor Hill) mine and it is currently closed.

12.3. WATER QUALITY

No state equivalent NEPA process exists for South Dakota.

Water quality information for mines in the state of South Dakota is not available in electronic database form although some information is available for the Gilt Edge mine as a result of CERCLA activities.

13. UTAH

This section contains information on Utah’s Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

13.1. MAJOR MINES

Seven modern era major hardrock mines were identified in Utah. These mines have been classified based on commodity, operation type, and current status as indicated in Table 13.0. Each of the categories is described in the following sections.

13.1.1. COMMODITY

As indicated in Figure 13.0, one (14%) of the major mines in the state is a primary silver producer, while five are primary gold and silver producers. One mine is a primary copper producer while one is a primary copper and molybdenum producer.

13.1.2. OPERATION TYPE

All seven current era major hardrock mines in Utah are operated by open pit and underground mining methods, and employ dump, heap and/or vat leaching, flotation and gravity process methods.

As shown in Figure 13.1, six (86%) of the seven mines are open pit, while one (Escalante Silver) is an underground mine.

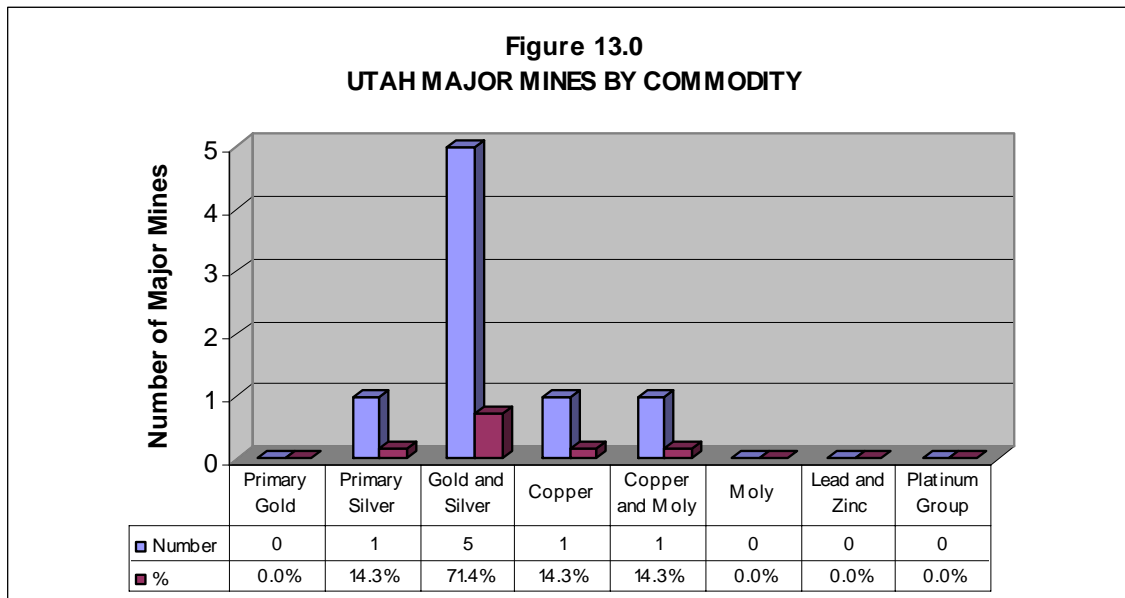
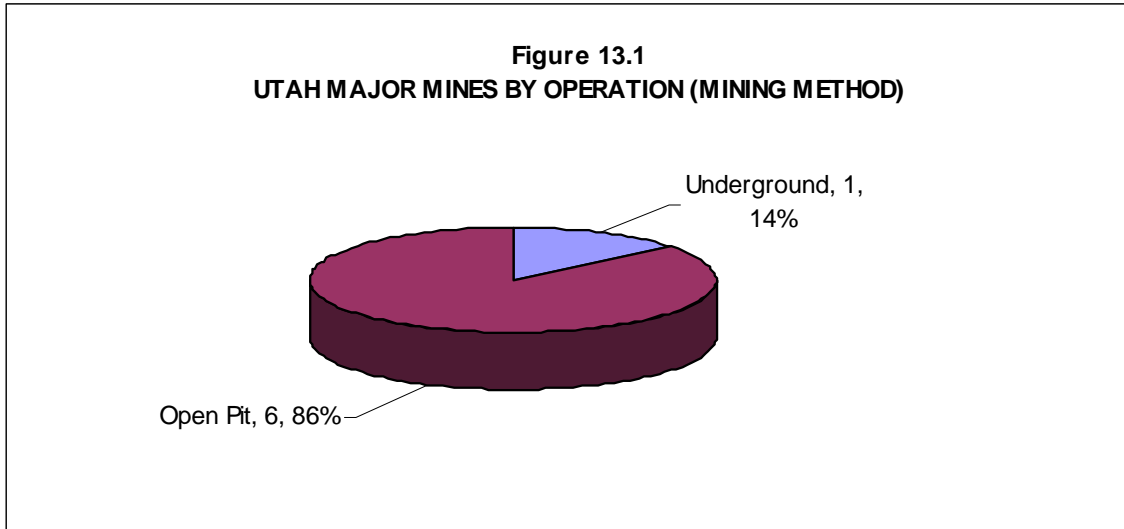
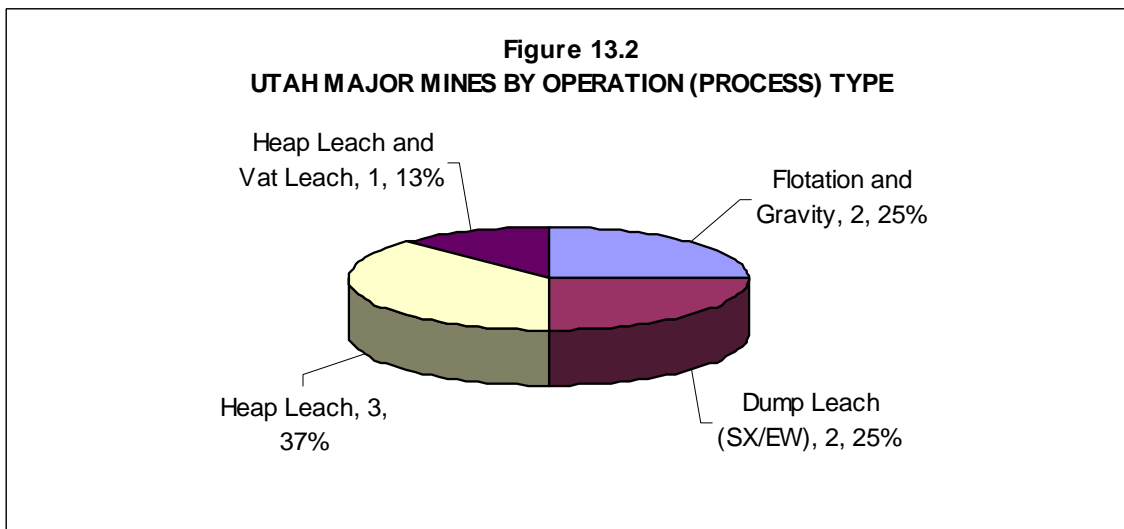


Table 13.0
Utah Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status	
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	Barneys Canyon	UT		Kennecott Barneys Canyon Mining	Y	Y								Y	Y						?	Operating
2	Bingham Canyon -	UT	Salt Lake	Kennecott Utah Copper	Y	Y	Y	Y						Y				Y	Y	Y	?	Operating
3	Drum Mine	UT	Beaver	Western States Minerals	Y	Y								Y	Y						?	Closed
4	Escalante Silver	UT		Hecla Mining Co.		Y							Y					Y			?	Closed
5	Goldstrike Project	UT		USMX Inc.	Y	Y								Y	Y						?	Closed
6	Lisbon Valley Copper	UT	San Juan	Summo USA Corp.			Y							Y					Y		?	Operating
7	Mercur Mine	UT	Tooele	Barrick Mercur	Y	Y								Y	Y	Y					?	Closed

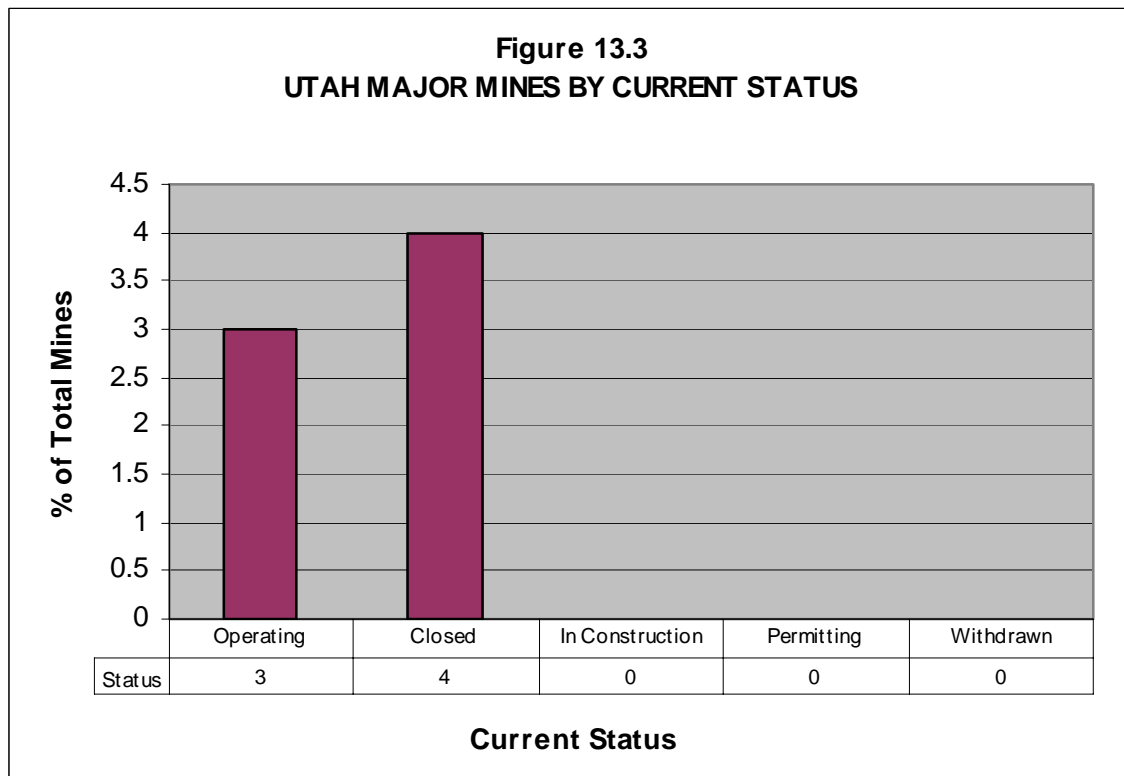


As indicated in Figure 13.2, four of the five primary gold and silver mines use cyanide leach methods. Three (37%) mines use only heap leach methods, while one (13%) mine uses heap leach and vat leach methods. Two mines use only flotation and gravity methods for beneficiation of silver ore. One mine uses only dump leaching methods for beneficiation of copper ore, while one mine uses a combination dump leaching and flotation and gravity for beneficiation of the gold, silver, copper and molybdenum ores.



13.1.3. PRODUCTION STATUS

As shown in Table 13.0 and Figure 13.3, three of the seven mines (43%) are currently operating while four (57%) are closed. There are no mines currently in permitting or under construction in Utah.



13.2. MAJOR NEPA APPLICABLE MINES

Four of the seven major current era mines identified in Utah meet the requirements to undergo the NEPA process as seen in Table 13.1. The following were the requirements determining the eligibility for NEPA:

- All four (100%) are located on BLM administered lands
- None are located on Forest Service administered lands
- None are located on both BLM and Forest Service administered lands
- None required 404 wetlands permits from the COE invoking NEPA
- None required NPDES from EPA invoking NEPA
- None are located on Indian Lands invoking NEPA

All four of the NEPA applicable major mines in Utah are located on BLM land.

One (Bingham Canyon) of Utah’s NEPA eligible current era major mines was operating prior to the enactment of NEPA. Two of the four NEPA eligible mines were permitted as new mines with EA’s while one was permitted with an EIS. One mine had an EA for reclamation.

Commodity, operations and status of major mines in Utah as a whole that are NEPA eligible differ from that of all major mines in the state, so separate statistics for Utah NEPA eligible mines are provided.

Four NEPA applicable modern era major hardrock mines were identified in Utah. These mines have been classified based on commodity, operation type, and current status as indicated in Table 13.2. Each of the categories is described in the following sections.

13.2.1. COMMODITY

As indicated in Figure 13.4, one (25%) of the four major NEPA eligible mines in the state is a primary silver producer, two (50%) are primary gold and silver producers and one (25%) mine is a primary copper producer. There are no major base metals mines operating in the state.

13.2.2. OPERATION TYPE

The four current era NEPA eligible major hardrock mines in Utah are operated by both open pit and underground mining methods, and employ dump, heap and vat leaching, flotation and gravity process methods.

As shown in Figure 13.5, one (25%) of the four NEPA eligible mines is an underground mine, while three (75%) are open pit.

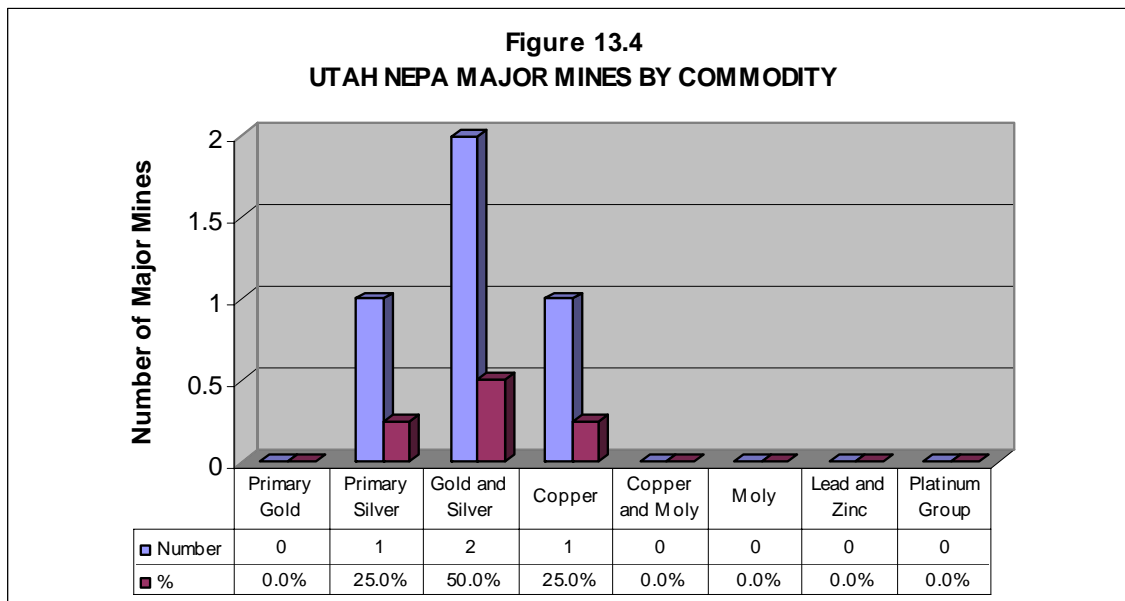
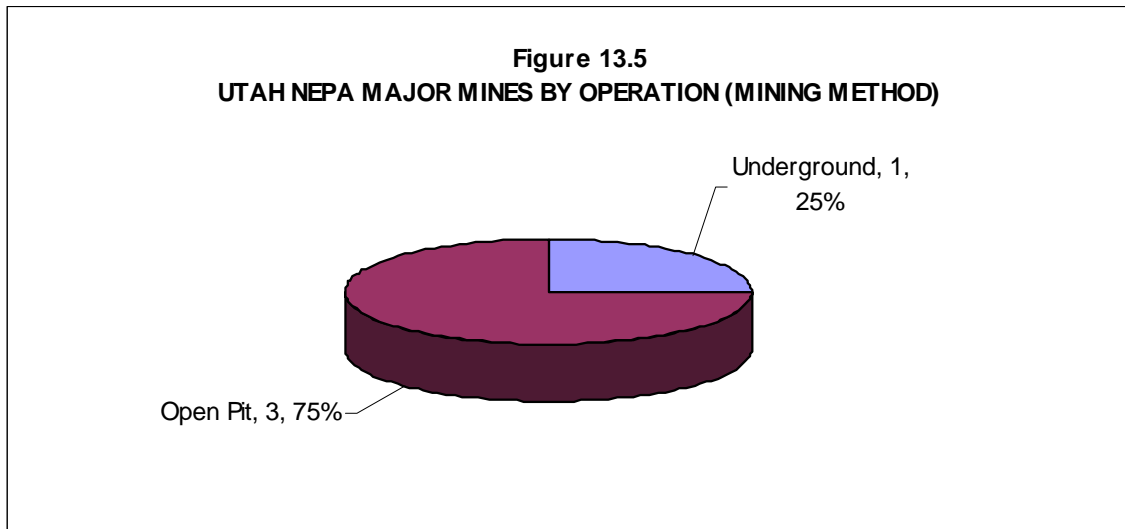


Table 13.1
Utah Major Mines NEPA Actions Database

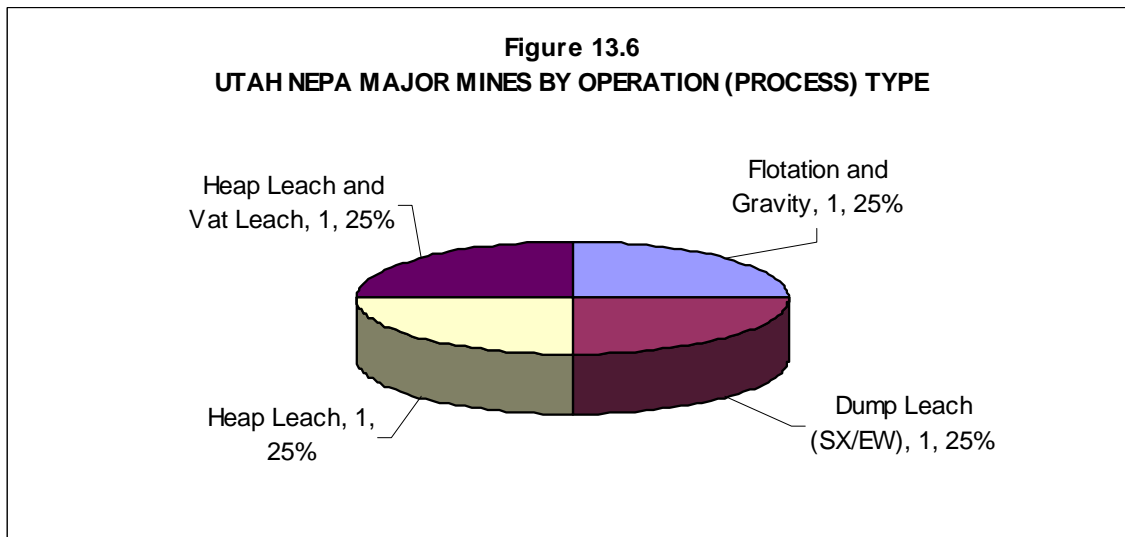
No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
1	Drum Mine	UT	Yes						Yes	1983	New Project	EA				
2	Escalante Silver	UT	Yes						Yes	1991	Reclamation	EA				
3	Lisbon Valley Copper	UT	Yes		Moab				Yes	1997	New Project	EIS				
4	Mercur Mine	UT	Yes						Yes	1986	New Project	EA				

Table 13.2
Utah NEPA Eligible Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status	
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	Drum Mine	UT	Beaver	Western States Minerals	Y	Y								Y	Y						?	Closed
2	Escalante Silver	UT		Hecla Mining Co.		Y							Y					Y			?	Closed
3	Lisbon Valley Copper	UT	San Juan	Summo USA Corp.			Y							Y					Y		?	Operating
4	Mercur Mine	UT	Tooele	Barrick Mercur	Y	Y								Y	Y	Y					?	Closed

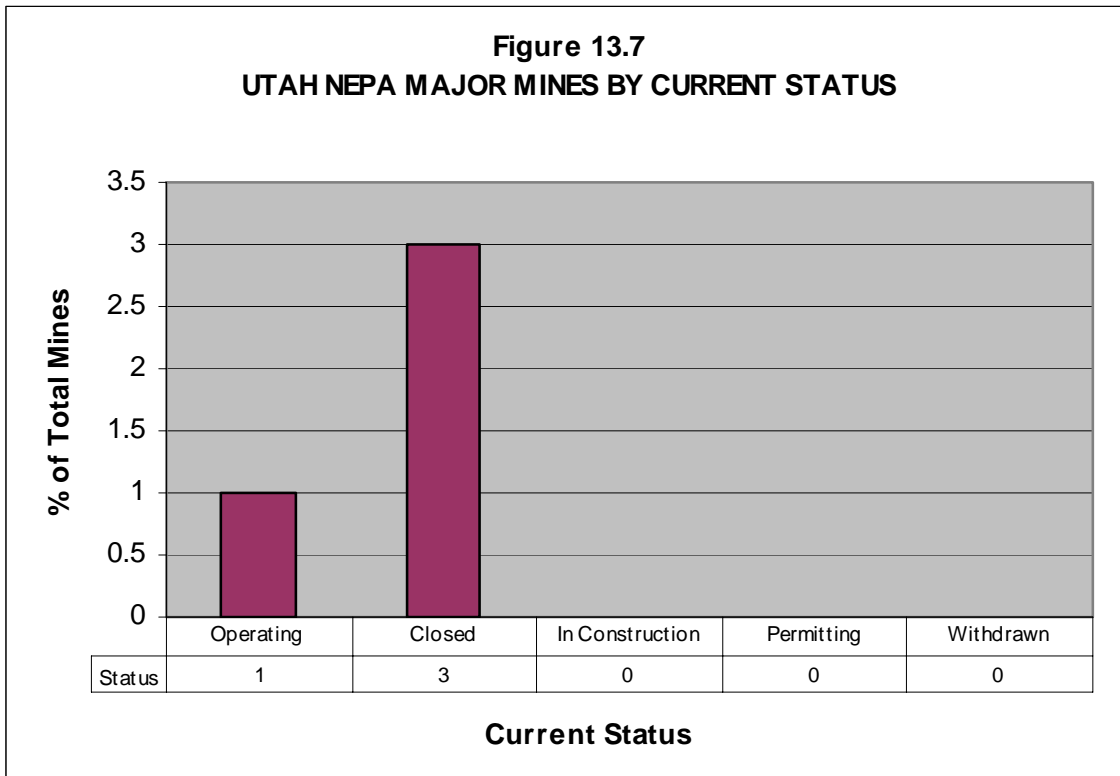


As indicated in Figure 13.6, the two primary gold and silver mines (Drum and Mercur) use cyanide leach methods. Drum mine uses only heap leach methods, while Mercur mine uses both heap leach and vat leach methods. Escalante Silver mine uses flotation and gravity methods for beneficiation of silver ore, while Lisbon Valley Copper mine uses dump leaching for beneficiation of copper ores.



13.2.3. PRODUCTION STATUS

As shown in Table 13.2 and Figure 13.7, one (25%) of the four NEPA applicable mines in Utah is currently operating while three (75%) are closed. There are no mines currently in permitting or under construction in Utah.



13.3. WATER QUALITY

No state equivalent NEPA process exists for Utah. Water quality information on the mines in the state in electronic database form is not available and no publicly available documents provide an in-depth water quality evaluation at any of the mines in Utah.

14. WASHINGTON

This section contains information on Washington’s Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

14.1. MAJOR MINES

Four modern era major hardrock mines were identified in Washington. These mines have been classified based on commodity, operation type, and current status as indicated in Table 14.0. Each of the categories is described in the following sections.

14.1.1. COMMODITY

As indicated in Figure 14.0, one (25%) of the major mines in the state is a primary gold producer, while two are primary gold and silver producers. One mine is a primary lead and zinc producer. One mine is a primary lead and zinc producer.

14.1.2. OPERATION TYPE

All seven current era major hardrock mines in Washington are operated by underground and open pit mining methods, and employ vat leaching, flotation and gravity process methods.

As shown in Figure 14.1, all four mines are underground mines, while one (Kettle River/Lamefoot/K2) is a combination underground mine and open pit.

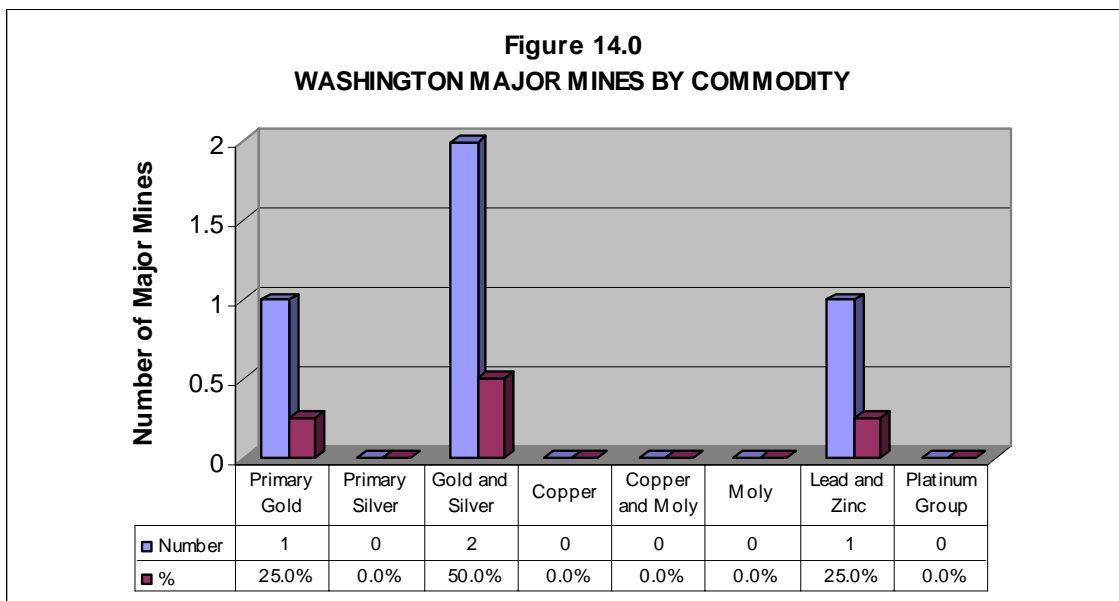
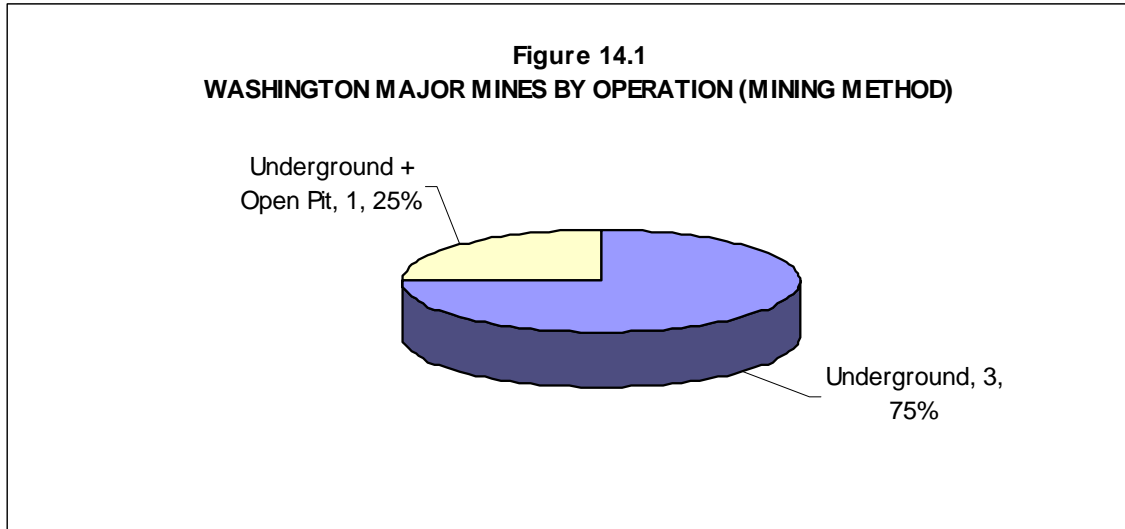
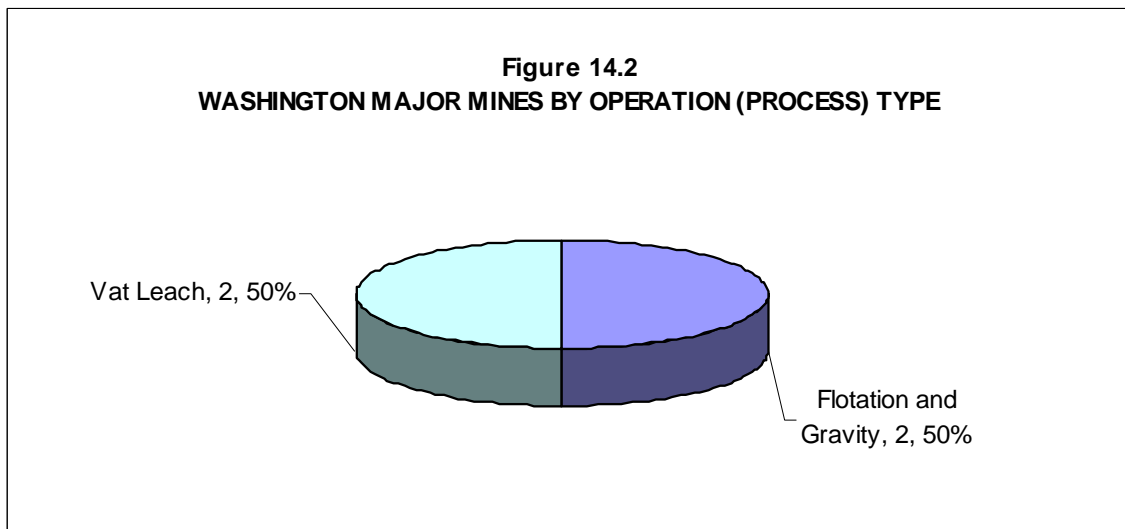


Table 14.0
Washington Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status	
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	Cannon	WA	Chelan	Asamera Minerals Inc.	Y	Y							Y					Y			?	Closed
2	Crown Jewel	WA	Okanogan		Y								Y				Y				Proposed	Permitting
3	Kettle River/Lamefoot/K2	WA		Echo Bay Mines Ltd.	Y	Y							Y	Y			Y				?	Operating
4	Pend Oreille	WA							Y	Y			Y					Y			?	Operating

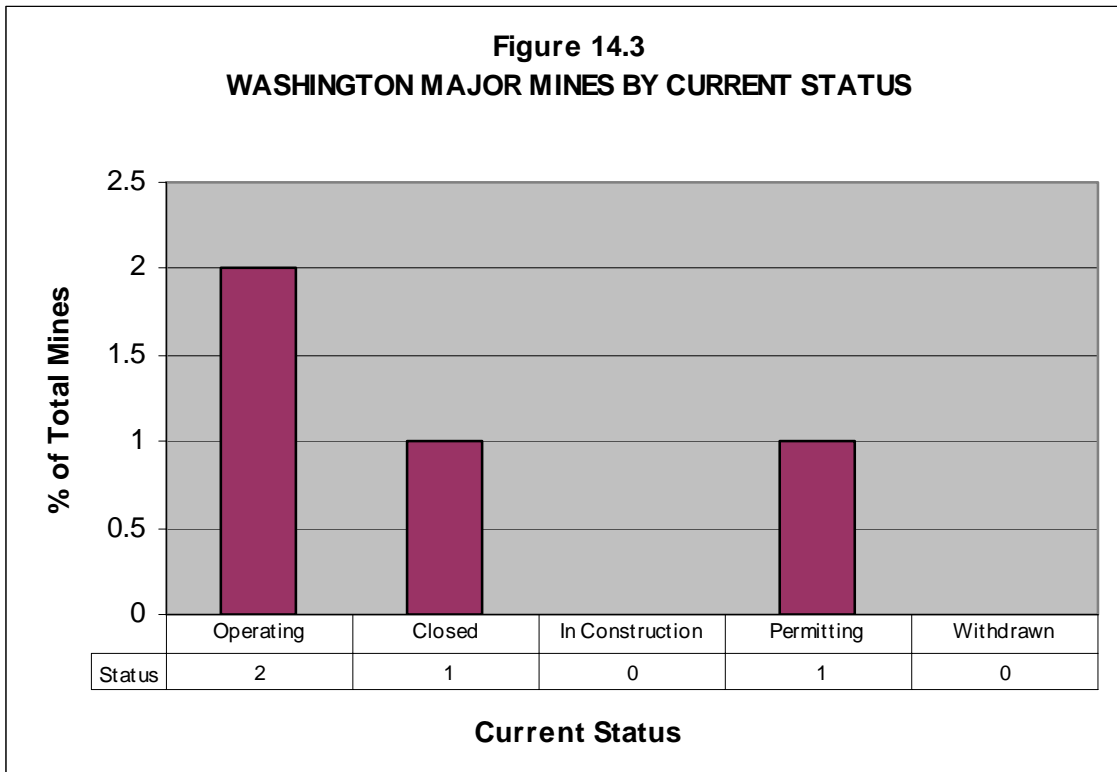


As indicated in Figure 14.2, two of the three primary gold and gold and silver mines use cyanide leach methods. Two mines use only vat leach methods. One mine uses flotation and gravity methods for beneficiation of gold and silver ores, while one mine uses flotation and gravity methods for beneficiation of lead and zinc ores.



14.1.3. PRODUCTION STATUS

As shown in Table 14.0 and Figure 14.3, two of the four mines (50%) are currently operating while one (25%) is closed and one (25%) is in permitting. There are no mines currently under construction in Washington.



14.2. MAJOR NEPA APPLICABLE MINES

All four of the identified major mines in Washington are NEPA applicable so separate statistics are not required for this section.

14.3. NEPA AND WATER QUALITY DOCUMENTATION

The state of Washington has an equivalent State Environmental Policy Act (SEPA) process to NEPA. The objectives of SEPA are to systematically integrate natural, social and environmental sciences and arts in decision making which may affect humans and the environment; to identify and develop methods and procedures which are technically and economically feasible and give appropriate consideration to the environment. Any action that will significantly affect the environment must have a detailed report that includes the nature of the environmental impact, unavoidable environmental impacts, alternatives to the proposed action, the short-term and long term impacts and any irreversible or irretrievable commitments of resources. Public agencies with jurisdiction or special expertise with respect to any environmental impact shall be consulted by the public official prior to making any public statements. The proposal must include appropriate alternatives where unresolved conflicts exist; lend support to programs designed to anticipate and prevent a decline in the human environment; be made available for government, state, other agencies and the public for comment.

No water quality or other publicly available information relevant to water quality predictions is available for the Washington major mines.

15. WISCONSIN

This section contains information on Wisconsin's Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in the state in terms of responsible regulatory agency or agencies and information with respect to accessibility to NEPA records and water quality data.

15.1. MAJOR MINES

One modern era major hardrock mine (Flambeau) was identified in Wisconsin. The Flambeau mine was a primary lead and zinc producer and used open pit mining methods and flotation and gravity beneficiation processing methods. The mine is currently closed and does not have a WPDES discharge permit.

No disturbance or financial assurance information is available for the Flambeau mine.

15.2. MAJOR NEPA APPLICABLE MINES

The mine is located on state land and has had NEPA requirements.

15.3. NEPA AND WATER QUALITY DOCUMENTATION

The state of Wisconsin has an equivalent Wisconsin Environmental Policy Act (WEPA) process to NEPA. The purpose of WEPA is to ensure governmental consideration of the short- and long-term environmental and economic effects on the human environment and to promote efforts to prevent or eliminate damage to the environment. The proposal must include a description of the environmental impact, including any unavoidable adverse environmental impact. The proposal must also study, develop and describe alternatives to help resolve conflicts in the proposed action; investigate the relationship between short-term uses and long term productivity; identify irreversible or irretrievable commitments of resources; provide details of both the short- and long-term beneficial aspects of the proposed project and the economic advantages and disadvantages of the proposed project; and identify major actions significantly affecting the quality of the human environment and the need for an EIS. The responsible official shall provide guidance for the applicant and early review of the proposed plan and provide an opportunity for public input into the decision-making process. The responsible official must consider the findings of EIS's and EA's and comments received from the public in making decisions on proposed actions.

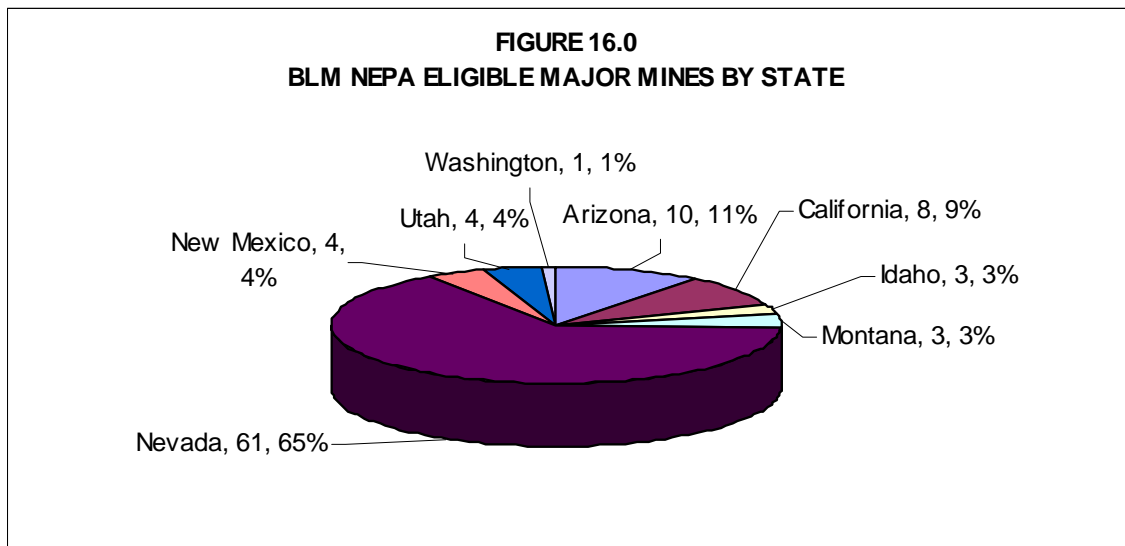
The Wisconsin Department of Natural Resources cooperated in providing Flambeau Mine NEPA documents upon request.

16. BUREAU OF LAND MANAGEMENT

This section contains information on the U.S. Department of Interior Bureau of Land Management’s Major mines and NEPA applicable mines in terms of commodity, operation type, and operating status. It also contains information on the NEPA applicable mines in terms of accessibility to NEPA records and water quality data.

16.1. MAJOR MINES

The U.S.D. I. BLM administers land involving 94 (69%) of the 137 current era NEPA eligible major mines as seen in Table 16.0. The mines are distributed among eight states as shown in Figure 16.0.



Sixty one (65%) of the BLM administered NEPA eligible mines are located in Nevada. This is followed by Arizona with ten (11%), California with eight (9%), New Mexico and Utah each with four (4%). Idaho and Montana both have three (3%) and Washington has one (1%) major mine administered by BLM.

Twelve BLM administered mines were either in operation prior to the enactment of NEPA or otherwise were new projects permitted without NEPA analysis. Seven of those projects have since been addressed by subsequent EA’s or EIS’s. However, four projects (Sierrita, Arizona, Twin Buttes, Arizona, Carlin, Nevada and Yerington, Nevada) have never had an EA or EIS to address either operations or reclamation and closure from a water quality standpoint.

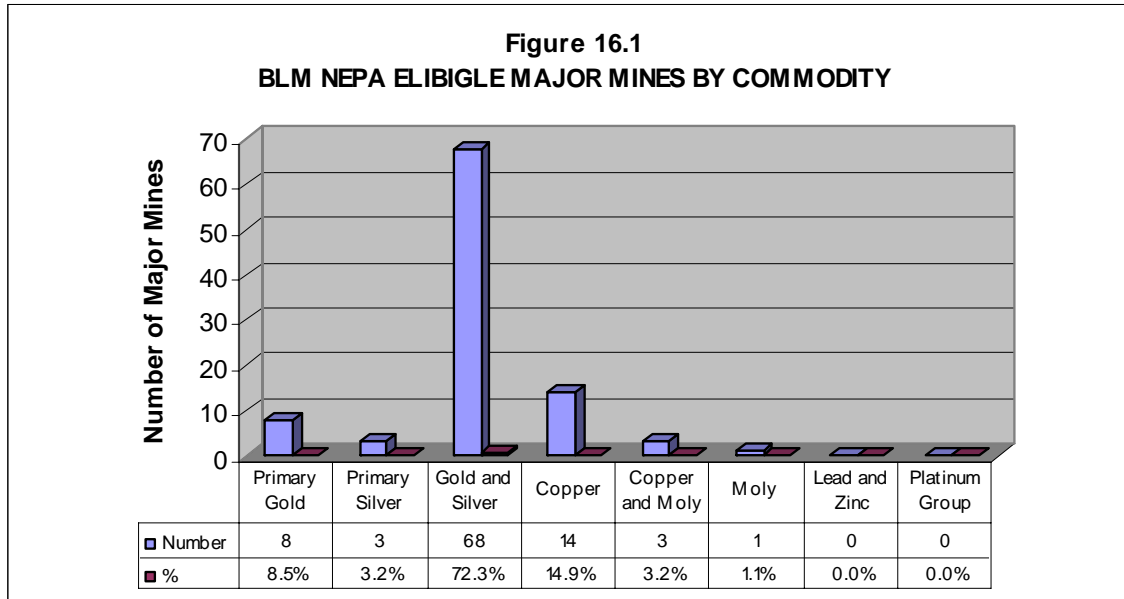
Fifty (53%) BLM administered major mines were permitted as new projects based on an EA. 17 of those have been the subject of subsequent expansion EIS’s.

Twenty two (23%) BLM administered major mines were permitted as new projects based on an EIS. **Seven** of those have been the subject of subsequent expansion EIS’s.

BLM has conducted a total of three SEIS analysis. The Thompson Creek, Idaho mine SEIS dealt with a change in operations of the tailings impoundment to address acid generation potential issues. The Zortman-Landusky, Montana mine SEIS dealt with reclamation and closure to address acid generation potential issues. The Goldstrike (Betze) SEIS dealt with regional groundwater issues.

16.1.1. COMMODITY

As indicated in Figure 16.1, eight (9%) of the 94 NEPA eligible mines administered by the BLM are primary gold producers, 3 (3%) are primary silver producers, 68 (72%) are both gold and silver producers, while 14 (15%) are primary copper producers and 3 (3%) produce both copper and molybdenum. Only one (1%) mine is a primary molybdenum producer.



16.1.2. OPERATION TYPE

The 94 NEPA eligible major hardrock mines administered by the BLM are operated by both open pit and underground mining methods, and employ heap and/or vat leaching, dump leaching, and flotation and gravity process methods.

As shown in Figure 16.2, five (5%) of the 94 mines are underground mines, while 80 (85%) are open pit, and 9 (10%) are a combination open pit and underground mines.

Table 16.0
BLM Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
1	Bagdad	AZ	Yes		Phoenix				Yes	1996	Expansion	EIS				
2	Miami - PD	AZ	Yes	Yes	Phoenix, R? - Tonto				Yes	1998	Expansion	EIS				
3	Mineral Park	AZ	Yes						Yes	?	New Project	EA				
4	Morenci	AZ	Yes		Safford				Yes	1996	Land Exchange	EIS				
5	Ray	AZ	Yes		Tucson				Yes	1999	Land Exchange	EIS				
6	Safford (Dos Pobres/San Juan)	AZ	Yes		Safford				Yes	2004	New Project & Land Exchange	EIS				
7	Sanchez	AZ	Yes		Safford				Yes	1992	New Project	EIS				
8	Sierrita	AZ	Yes		?				Yes							
9	Twin Buttes	AZ	Yes		?				Yes							
10	Yarnell	AZ	Yes		Phoenix				Yes	1998	New Project	EIS				
11	American Girl (Cargo Muchaco, Oro Cruz)	CA	Yes		El Centro				Yes	1988	Oro Cruz	EIS	Yes	same		
	American Girl (Cargo Muchaco, Oro Cruz)	CA	Yes		El Centro				Yes	1994	Oro Cruz	EIS	Yes	same		
12	Briggs	CA	Yes		Ridgecrest				Yes	1995	New Project	EIS	Yes	same		
13	Castle Mountain	CA	Yes		Needles				Yes	1990	New Project	EIS	Yes	same		
	Castle Mountain	CA	Yes		Needles				Yes	1997	Expansion	EIS	Yes	same		
14	Hayden Hill	CA	Yes	Yes	Susanville, R? Modoc				Yes	1991	New Project	EIS	Yes	same		
15	Imperial	CA	Yes		El Centro				Yes	2000	New Project	EIS	Yes	same		
16	McLaughlin	CA	Yes		Ukiah				Yes	1983	New Project	EIS	Yes	same		
17	Mesquite	CA	Yes		El Centro				Yes	1984	New Project	EIS	Yes	same		
	Mesquite	CA	Yes		El Centro				Yes	1987	Expansion	EIS	Yes	same		

Table 16.0 (continued)
BLM Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
	Mesquite	CA	Yes		El Centro				Yes	2000	Expansion	EIS	Yes	same		
18	Soledad Mountain	CA	Yes		Ridgecrest				Yes	1997	New Project	EIS	Yes			
19	Black Pine	ID	Yes	Yes	Sawtooth				Yes	1991	New Project	EA				
	Black Pine	ID	Yes	Yes	Sawtooth				Yes	1991	Supplement	EA				
	Black Pine	ID	Yes	Yes	Sawtooth				Yes	1994	Expansion	EIS				
20	Stone Cabin	ID	Yes		Boise				Yes	1994	New Project	EIS				
21	Thompson Creek	ID	Yes	Yes	Salmon-Challis				Yes	1980	New Project	EIS				
	Thompson Creek	ID	Yes	Yes	Salmon-Challis				Yes	1999	Plan of Operation Changes	SEIS				
22	Golden Sunlight	MT	Yes		Butte				Yes	1981	New Project	EIS	Yes	same		
	Golden Sunlight	MT	Yes		Butte				Yes	1990	Expansion	EA	Yes	same		
	Golden Sunlight	MT	Yes		Butte				Yes	1998	Expansion	EIS	Yes	same		
	Golden Sunlight	MT	Yes		Butte				Yes	2004	Pit Backfill	EIS	Yes	same		
23	Kendall	MT	Yes		Lewistown				Yes	1989	New Project	EA	Yes	same		
	Kendall	MT	Yes		Lewistown				Yes	1989	Expansion	EA	Yes	same		
	Kendall	MT	Yes		Lewistown				Yes	1993, 1995	Expansion	EA	Yes	same		
	Kendall	MT	Yes		Lewistown				Yes	2002	Reclamation and Closure	EA	Yes	same		
	Kendall	MT	Yes		Lewistown								Yes	In process	Reclamation and Closure	EIS
24	Zortman and Landusky	MT	Yes		Lewistown								Yes	1979	New Project	EIS

Table 16.0 (continued)
BLM Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
	Zortman and Landusky	MT	Yes		Lewistown				Yes	1993	Modified Operating and Reclamation Plan and ARD Control and Remediation	EA	Yes	same		
	Zortman and Landusky	MT	Yes		Lewistown	Yes			Yes	1996	Expansion	EIS	Yes	same		
	Zortman and Landusky	MT	Yes		Lewistown				Yes	2001	Reclamation and Closure	SEIS	Yes	same		
25	Alligator Ridge	NV	Yes		Ely				Yes	1990	New Project	EA				
26	Bald Mountain	NV	Yes		Ely				Yes	1986	New Project	EA				
	Bald Mountain	NV	Yes		Ely				Yes	1995	Expansion	EIS				
27	Battle Mountain Complex (Reona, Copper Basin, Copper Canyon, Iron Canyon, Shoshone-Eureka)	NV	Yes		Battle Mountain				Yes	1989 (CB/CC), 1990 (R/CC), 1991 (IC), 1993 (R)	Various	EA				
	Battle Mountain Complex (Phoenix)	NV	Yes		Battle Mountain				Yes	2001, 2002	Expansion (Phoenix)	EIS				
28	Blue Star (Genesis)	NV	Yes		Elko				Yes	?	New Project	?				
29	Bootstrap/Capstone/Tara	NV	Yes		Elko				Yes	1996	New Project	EIS				
30	Buckhorn	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
31	Bullfrog	NV	Yes		Tonopah				Yes	1989	New Project	EA				
32	Candelaria	NV	Yes		Tonopah				Yes	1992, 1997	New Project	EA				
	Candelaria	NV	Yes		Tonopah				Yes	2000	Closure	EA				
33	Carlin Mine/Mill # 1	NV	Yes		Elko				Yes	?	Expansion	?				

Table 16.0 (continued)
BLM Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
	Carlin Mine/Mill # 1	NV	Yes		Elko				Yes	?		?				
34	Casino/Winrock	NV	Yes		Ely				Yes	?		?				
35	Rochester	NV	Yes		Winnemucca				Yes	2001	New Project	EA				
	Rochester	NV	Yes		Winnemucca				Yes	2003	Expansion	EA				
36	Copper Leach Project (Equitorial Tonopah)	NV	Yes		Tonopah				Yes	?		?				
37	Cortez	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
	Cortez	NV	Yes		Battle Mountain				Yes	1993	Expansion	EIS				
	Cortez	NV	Yes		Battle Mountain				Yes	2001	Reclamation and Closure	EA				
38	Cortez Pipeline	NV	Yes		Battle Mountain				Yes	1996	New Project	EIS				
	Cortez Pipeline (South Pipeline)	NV	Yes		Battle Mountain				Yes	2000, 2004	Expansion	EIS				
39	County Line	NV	Yes		Carson City				Yes	?	New Project	EA				
40	Crescent Pit	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
41	Daisy	NV	Yes		Tonopah				Yes	1996	New Project	EA				
42	Dee	NV	Yes		Elko				Yes	1984	New Project	EA				
	Dee	NV	Yes		Elko				Yes	1992, 1997	Expansion	EA				
43	Denton Rawhide	NV	Yes		Carson City				Yes	1990	New Project	EA				
	Denton Rawhide	NV	Yes		Carson City				Yes	1996	Expansion	EIS				
44	Easy Junior	NV	Yes		Ely				Yes	1994	New Project	EA				
45	Elder Creek	NV	Yes		Battle Mountain				Yes	?	New Project	EA				

Table 16.0 (continued)
BLM Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
46	Florida Canyon	NV	Yes		Winnemucca				Yes	1986	New Project	EA				
	Florida Canyon	NV	Yes		Winnemucca				Yes	1995	Expansion	EA				
	Florida Canyon	NV	Yes		Winnemucca				Yes	1997	Expansion and Reclamation	EIS				
	Florida Canyon	NV	Yes		Winnemucca				Yes	1999	Expansion	EA				
	Florida Canyon	NV	Yes		Winnemucca				Yes	2002	Amend Plan of Operations	EA				
47	Fondaway Canyon	NV	Yes		Carson City				Yes	1989	New Project	EA				
48	Gold Acres	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
49	Gold Bar	NV	Yes		Battle Mountain				Yes	1989	New Project	EA				
50	Gold Quarry/Maggie Creek	NV	Yes		Elko				Yes	1981	New Project	EA				
	Gold Quarry/Maggie Creek (South Operations Area Project)	NV	Yes		Elko				Yes	1993	Expansion	EIS				
	Gold Quarry/Maggie Creek (South Operations Area Project)	NV	Yes		Elko				Yes	1993	Expansion	EIS				
	Gold Quarry/Maggie Creek (South Operations Area Project)	NV	Yes		Elko				Yes	2002	Expansion	EIS				
51	Golden Eagle	NV	Yes		Ely				Yes	?	New Project	EA				
52	Goldfield	NV	Yes		Tonopah				Yes	1993	New Project	EA				
53	Goldstrike	NV	Yes		Elko				Yes	1982	New Project	EA				
	Goldstrike (Betze)	NV	Yes		Elko				Yes	1991	Expansion	EIS				
	Goldstrike (Betze)	NV	Yes		Elko				Yes	2003	Dewatering	EIS				

Table 16.0 (continued)

BLM Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
54	Ivanhoe/Hollister	NV	Yes		Elko				Yes	?	New Project	EA				
55	Kinsley Mtn.	NV	Yes		Elko				Yes	1995	New Project	EA				
56	Leeville	NV	Yes		Elko				Yes	1991	New Project	EIS				
	Leeville	NV	Yes		Elko				Yes	2002	Construction of ancillary mine	EIS				
	Leeville	NV	Yes		Elko				Yes	2003	Expansion and Water Impacts	SEIS				
57	Lone Tree	NV	Yes		Winnemucca				Yes		New Project	Private Land, no EA				
	Lone Tree	NV	Yes		Winnemucca				Yes	1996	Expansion	EIS				
58	Manhattan	NV	Yes	Yes	Tonopah				Yes	1984	New Project	EA				
59	Marigold	NV	Yes		Winnemucca				Yes	1988	New Project	EA				
	Marigold	NV	Yes		Winnemucca				Yes	2001	Expansion	EIS				
	Marigold	NV	Yes		Winnemucca				Yes	2003	Expansion	EIS				
60	McCoy/Cove	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
61	Meikle	NV	Yes		Elko				Yes	1993	New Project	EA				
62	Mineral Ridge	NV	Yes		Tonopah				Yes	?	New Project	EA				
63	Mule Canyon	NV	Yes		Battle Mountain				Yes	1996	New Project	EIS				
64	Northumberland	NV	Yes	Yes	R4 - Humboldt-Toiyabe				Yes	1985	New Project	EA				
65	Olinghouse	NV	Yes		Carson City				Yes	1997-1998	New Project	EIS				
66	Paradise Peak/Ketchup Flat	NV	Yes		Tonopah				Yes	1984	New Project	EA				
67	Pete	NV	Yes		Elko				Yes	2002	New Project	EA				

Table 16.0 (continued)
BLM Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
68	Pinson	NV	Yes		Winnemucca				Yes	1981	New Project	EA				
69	Preble	NV	Yes		Winnemucca				Yes	?	New Project	EA				
70	Rain	NV	Yes		Elko				Yes	1986	New Project	EA				
71	Robinson (Ruth)	NV	Yes		Ely				Yes	1993	Expansion	EA				
	Robinson (Ruth)	NV	Yes		Ely				Yes	1994	Expansion	EIS				
72	Rosebud	NV	Yes		Winnemucca				Yes	1997	New Project	EA				
73	Round Mountain	NV	Yes	Yes	Battle Mountain				Yes	1977	New Project	EA				
	Round Mountain	NV	Yes	Yes	Battle Mountain				Yes	1987, 1992	Expansion	EA				
	Round Mountain	NV	Yes	Yes	Battle Mountain				Yes	1996	Expansion	EIS				
74	Ruby Hill	NV	Yes		Battle Mountain				Yes	1997	New Project	EIS				
75	Santa Fe/Calvada	NV	Yes		?				Yes	?	New Project	EA				
76	Sleeper	NV	Yes						Yes	?	New Project	EA				
77	Sterling JV	NV	Yes		?				Yes	1980	New Project	EA				
78	Talapoosa	NV	Yes		Carson City				Yes	1996	New Project	EIS				
79	Tonkin Springs	NV	Yes		Battle Mountain				Yes	?	New Project	EA				
80	Trenton Canyon	NV	Yes		Winnemucca				Yes	?	New Project	EA				
	Trenton Canyon	NV	Yes		Winnemucca				Yes	1998	Expansion	EIS				
81	Triplet Gulch/Robertson	NV	Yes		?				Yes	?	New Project	EA				
82	Twin Creeks	NV	Yes		Winnemucca				Yes	1996	Expansion	EIS				

Table 16.0 (continued)

BLM Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
83	Wind Mountain	NV	Yes		Winnemucca				Yes	1988	New Project	EA				
	Wind Mountain	NV	Yes		Winnemucca				Yes	1999	Reclamation and Closure	EA				
84	Yankee	NV	Yes		Ely				Yes	?	New Project	EA				
85	Yerington	NV	Yes		Carson City				Yes							
86	Chino	NM	Yes		Las Cruces				Yes	2007	Expansion	?				
87	Cobre (Continental Pit)	NM	Yes		Las Cruces				Yes	2007	Expansion	?				
88	Copper Flat	NM	Yes		Las Cruces				Yes	1996	Modified New Project	EIS				
	Copper Flat	NM	Yes		Las Cruces				Yes	1996	Modified New Project	EIS				
89	Tyrone - Little Rock pit	NM	Yes	Yes	Las Cruces, Gila				Yes	1997	New Project	EIS				
90	Drum Mine	UT	Yes						Yes	1983	New Project	EA				
91	Escalante Silver	UT	Yes						Yes	1991	Reclamation	EA				
92	Lisbon Valley Copper	UT	Yes		Moab				Yes	1997	New Project	EIS				
93	Mercur Mine	UT	Yes						Yes	1986	New Project	EA				
94	Crown Jewel	WA	Yes	Yes	Okanogan				Yes	1997	New Project	EIS	Yes			

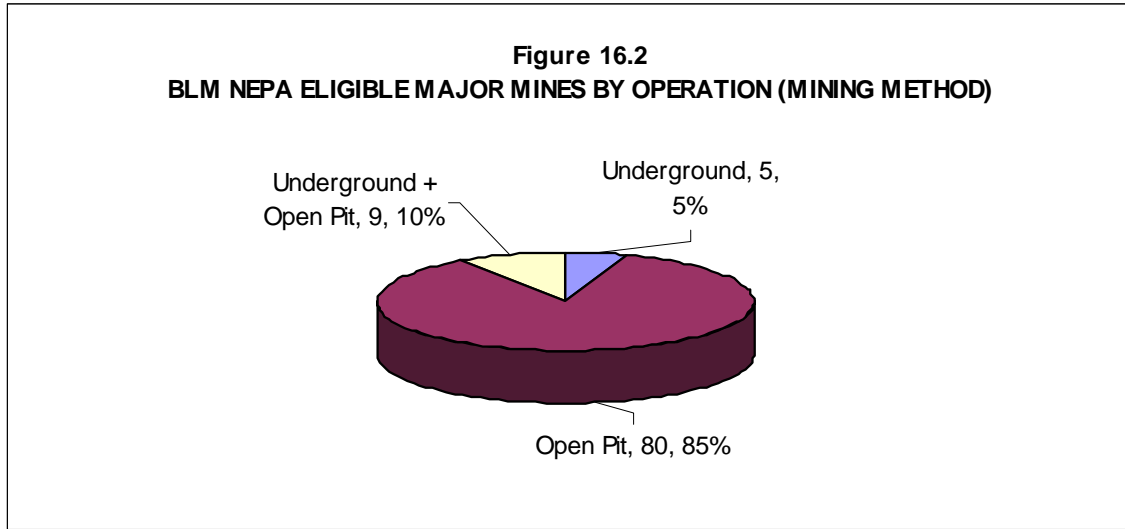


Figure 16.3 shows the process type used by the NEPA eligible major mines administered by the BLM. As indicated in Table 16.1 and Figure 13.3, seventy two (77%) of the primary gold or gold mines use cyanide leach methods. Forty one (43%) use heap leach processing only, while five (5%) mines use vat leach only and twenty six (27%) of the 94 BLM administered NEPA eligible mines use both heap leach and vat leach processing. Thirteen (14%) of the mines use dump leach processing for copper ores, while ten (11%) of the ninety four mines use flotation and gravity processing methods for beneficiation of lead, zinc, silver and gold ores.

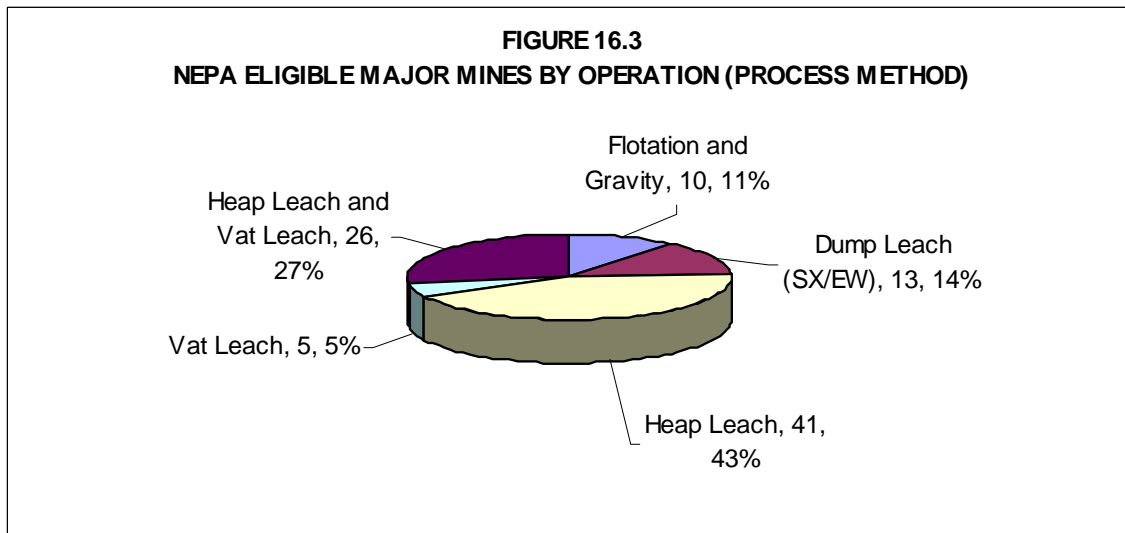


Table 16.1
BLM NEPA Eligible Major Mines Database

No	Major Mines			General Information																Year Production Initiated	Current Status	
	Name	State	County	Ownership	Commodity								Operation Type									
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	Bagdad	AZ	Yavapai	Phelps Dodge Corp.			Y	Y						Y			Y	Y		Historic	Operating	
2	Miami - PD	AZ	Gila	Phelps Dodge Corp.		Y	Y							Y				Y	Y	Historic	Operating	
3	Mineral Park	AZ	Mohave	Mercator Minerals			Y							Y				Y		1995	Operating	
4	Morenci	AZ	Greenlee	Phelps Dodge Corp.			Y							Y				Y		Historic	Operating	
5	Ray	AZ	Pinal	ASARCO		Y	Y							Y			Y	Y		Historic	Operating	
6	Safford (Dos Pobres/San Juan)	AZ	Safford	Phelps Dodge Corp.			Y							Y				Y		Proposed	Permitting	
7	Sanchez	AZ	Graham				Y							Y			Y	Y		Proposed	Withdrawn	
8	Sierrita	AZ	Pima	Phelps Dodge Corp.			Y	Y						Y			Y	Y		Historic	Operating	
9	Twin Buttes	AZ	Pima	Phelps Dodge Corp.			Y	Y						Y			Y	Y		Historic	Closed	
10	Yarnell	AZ	Yavapai	BEMA	Y									Y	Y					Proposed	Withdrawn	
11	American Girl (Cargo Muchaco, Oro Cruz)	CA	Imperial	MK Gold Co. (50%), Hecla Mining Co. (50%)	Y	Y							Y	Y	Y	Y				1995	Closed	
12	Briggs	CA	Inyo	Canyon Resources Corp.	Y									Y	Y					1997	Operating	
13	Castle Mountain	CA	San Bernardino	Viceroy Gold Corp. (75%), MK Gold Company (25%)	Y	Y								Y	Y	Y				1992	Closed	
14	Hayden Hill	CA	Lassen	Krinross Gold Corp.	Y	Y								Y	Y	Y				1992	Closed	
15	Imperial	CA	Imperial	Glamis Gold Inc.	Y									Y	Y						Proposed	
16	McLaughlin	CA	Napa, Sonoma, Yolo	Homestake Mining Co.	Y									Y		Y				1985	Closed	
17	Mesquite	CA	Imperial	Newmont Gold Company	Y	Y								Y	Y					1985	Operating	
18	Soledad Mountain	CA	Kern	Golden Queen Mining Co. Ltd.	Y	Y								Y	Y					1998	Closed	

Comparison of Predicted and Actual Water Quality at Hardrock Mines – Appendix A

BLM

Table 16.1 (continued)
BLM NEPA Eligible Major Mines Database

No	Major Mines			General Information															Year Production Initiated	Current Status		
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
19	Black Pine	ID	Cassia	Black Pine Mining (Pegasus Gold, Inc.)	Y	Y								Y	Y						1992	Closed
20	Stone Cabin	ID	Owyhee	Kinross DeLamar Mining Co.	Y	Y								Y							1995	Closed
21	Thompson Creek	ID	Custer	Thompson Creek Mining Co.				Y						Y			Y				1983	Operating
22	Golden Sunlight	MT	Jefferson	Placer Dome, Inc.	Y								Y	Y		Y					1983	Operating
23	Kendall	MT	Fergus	Canyon Resources	Y	Y								Y	Y						1988	Closed
24	Zortman and Landusky	MT	Phillips	Pegasus Gold Co.	Y	Y								Y	Y						1979	Closed
25	Alligator Ridge	NV	White Pine	Placer Dome U.S., Inc.	Y	Y								Y	Y						1990	Closed
26	Bald Mountain	NV	White Pine	Placer Dome U.S., Inc.	Y	Y								Y	Y						1986	Operating
27	Battle Mountain Complex (Reona, Copper Basin, Copper Canyon, Iron Canyon, Shoshone-Eureka)	NV	Lander	Battle Mountain Gold Co.	Y	Y								Y	Y	Y					1979	Operating
28	Blue Star (Genesis)	NV	Eureka	Newmont Gold Co.	Y	Y							Y	Y	Y	Y					?	Operating
29	Bootstrap/Capstone/Tara	NV	Elko	Newmont Gold Co.	Y	Y								Y	Y	Y					?	Operating
30	Buckhorn	NV	Eureka	Cominco American Resources Inc.	Y	Y								Y	Y						?	Closed
31	Bullfrog	NV	Nye	Barrick Gold Corp. (100%)	Y	Y							Y	Y							1989	Closed
32	Candelaria	NV	Mineral	?	Y	Y								Y	Y						1979	Closed
33	Carlin Mine/Mill # 1	NV	Eureka	Newmont Gold Co.	Y	Y								Y	Y	Y					Historic	Operating
34	Casino/Winrock	NV	White Pine	Placer Dome U.S., Inc.	Y	Y								Y	Y						?	Closed
35	Rochester	NV	Pershing	Couer Rochester Inc.	Y	Y								Y	Y						?	Operating
36	Copper Leach Project (Equitorial Tonopah)	NV	Nye	?			Y							Y				Y			?	Closed

Table 16.1 (continued)
BLM NEPA Eligible Major Mines Database

No	Major Mines			General Information																	Year Production Initiated	Current Status
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
37	Cortez	NV	Eureka	Placer Dome U.S., Inc.	Y	Y									Y	Y	Y				?	Operating
38	Cortez Pipeline	NV	Lander	Placer Dome U.S., Inc.	Y	Y									Y	Y					?	Operating
39	County Line	NV	Nye	Arimetco International Inc.	Y	Y									Y	Y					?	Closed
40	Crescent Pit	NV	Lander	Placer Dome U.S., Inc.	Y	Y									Y						?	Operating
41	Daisy	NV	Nye	Inter-Rock Gold Inc. (65%); Rayrock Yellowknife Resources Inc. (35%)	Y	Y									Y	Y					1996	Closed
42	Dee	NV	Elko	Dee Gold Mining Co.	Y	Y									Y	Y					1984	Closed
43	Denton Rawhide	NV	Mineral	Kennecott Rawhide Mining Co.	Y	Y									Y	Y					1990	Operating
44	Easy Junior	NV	White Pine	Alta Gold Co.	Y	Y									Y	Y					1994	Closed
45	Elder Creek	NV	Lander	Alta Gold Co.	Y	Y									Y	Y					?	Closed
46	Florida Canyon	NV	Pershing	Florida Canyon Mining Co.	Y	Y									Y	Y					1986	Operating
47	Fondaway Canyon	NV	Churchill	Tenneco Minerals Co.	Y	Y									Y	Y					?	Closed
48	Gold Acres	NV	Lander	Placer Dome U.S., Inc.	Y	Y									Y	Y					?	Operating
49	Gold Bar	NV	Eureka	Atlas Gold Mining Co.	Y	Y									Y	Y	Y				?	Closed
50	Gold Quarry/Maggie Creek	NV	Eureka	Newmont Gold Co.	Y	Y							Y	Y	Y	Y					1981	Operating
51	Golden Eagle	NV	Storey	American Eagle Resources Inc.	Y	Y									Y	Y					?	Closed
52	Goldfield	NV	Esmeralda	American Pacific Minerals Ltd.	Y	Y									Y	Y					1993	Operating
53	Goldstrike	NV	Elko, Eureka	Barrick Goldstrike Mines Inc.	Y	Y									Y	Y	Y				1982	Operating

Table 16.1 (continued)

BLM NEPA Eligible Major Mines Database

No	Major Mines		General Information																			
	Name	State	County	Ownership	Commodity							Operation Type							Year Production Initiated	Current Status		
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
54	Ivanhoe/Hollister	NV	Elko	Newmont Gold Co.	Y	Y								Y	Y						?	Operating
55	Kinsley Mtn.	NV	Elko	Alta Gold Co.	Y	Y								Y	Y						1995	Closed
56	Leeville	NV	Eureka	Newmont Mining Corp.	Y	Y							Y								?	Operating
57	Lone Tree	NV	Humboldt	Sante Fe Pacific Gold Corp.	Y	Y								Y	Y	Y					1991	Operating
58	Manhattan	NV	Nye	Round Mountain Gold Corp.	Y	Y								Y	Y	Y					1984	Closed
59	Marigold	NV	Humboldt	Marigold Mining Co.	Y	Y								Y	Y	Y					1989	Closed
60	McCoy/Cove	NV	Lander	Echo Bay Mines Ltd.	Y	Y							Y	Y	Y	Y	Y				1990	Closed
61	Meikle	NV	Elko	Barrick Gold Corp. (100%)	Y	Y							Y			Y					?	Operating
62	Mineral Ridge	NV	Esmeralda	Mineral Ridge Resources Inc.	Y	Y								Y	Y						?	Operating
63	Mule Canyon	NV	Lander	Sante Fe Pacific Gold Corp.	Y	Y								Y	Y	Y						Operating
64	Northumberland	NV	Nye	Western States Minerals Corp. (100%)	Y	Y								Y	Y						1985	Closed
65	Olinghouse	NV	Washoe		Y	Y								Y	Y						?	Closed
66	Paradise Peak/Ketchup Flat	NV	Nye	Arimetco International Inc.	Y	Y								Y	Y	Y					1985	Closed
67	Pete	NV	Eureka	Newmont Mining Corp.	Y									Y	Y						?	Operating
68	Pinson	NV	Humboldt	Pinson Mining Co.	Y	Y								Y	Y	Y					1981	Closed
69	Preble	NV	Humboldt	Pinson Mining Co.	Y	Y								Y	Y	Y					?	Closed
70	Rain	NV	Elko	Newmont Gold Co.	Y	Y							Y	Y	Y	Y					?	Operating
71	Robinson (Ruth)	NV	White Pine	BHP Copper	Y		Y							Y	Y	Y					Historic	Operating
72	Rosebud	NV	Pershing	Hecla Mining Co.	Y	Y							Y		Y						1997	Closed

Table 16.1 (continued)

BLM NEPA Eligible Major Mines Database

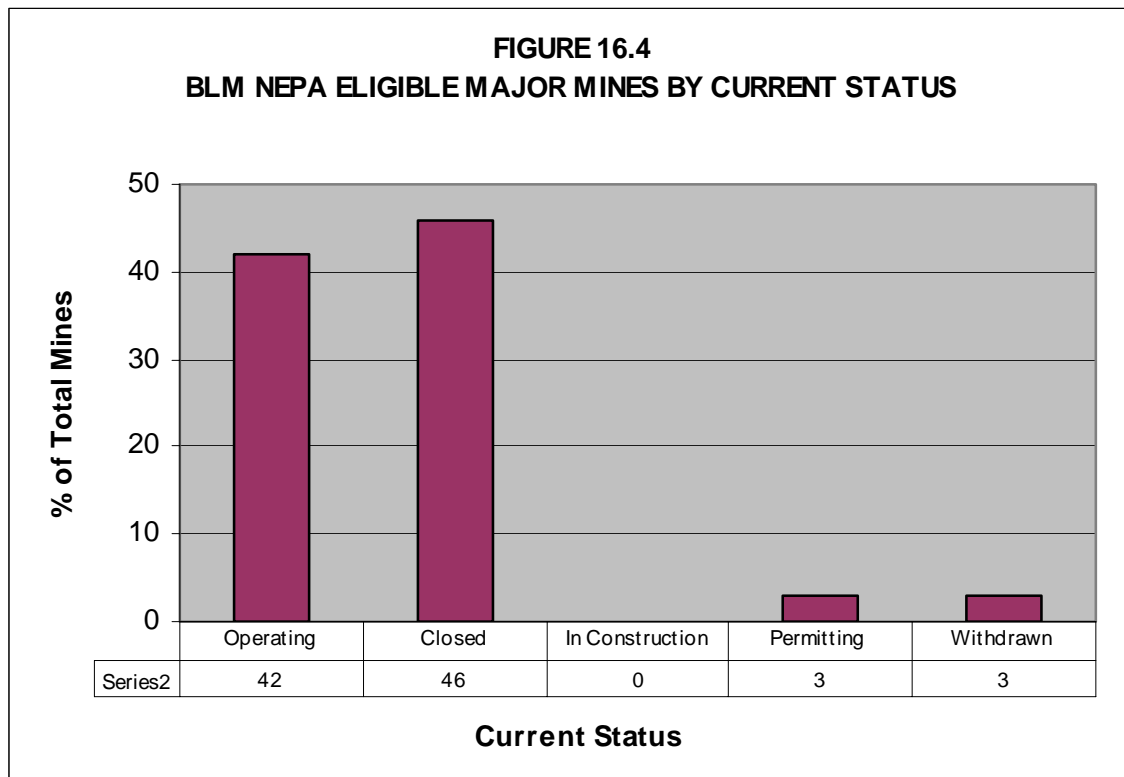
No	Major Mines		General Information																	Year Production Initiated	Current Status
	Name	State	County	Ownership	Commodity							Operation Type									
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S			
73	Round Mountain	NV	Nye	Round Mountain Gold Corp.	Y	Y								Y	Y	Y				1977	Operating
74	Ruby Hill	NV	Eureka	Homestake Mining Co.	Y	Y								Y	Y					?	Operating
75	Santa Fe/Calvada	NV	Mineral	Homestake Mining Co.	Y	Y								Y	Y					?	Closed
76	Sleeper	NV	Humboldt	AMAX Gold Inc.	Y	Y							Y	Y		Y				1985	Closed
77	Sterling JV	NV	Nye	Cathedral Gold U.S. Corp.	Y	Y							Y	Y	Y					1980	Operating
78	Talapoosa	NV	Lyon	Miramar Mining Corp.	Y	Y								Y	Y					?	Withdrawn
79	Tonkin Springs	NV	Eureka	Tonkin Springs Venture, Ltd.	Y	Y								Y	Y	Y				?	Closed
80	Trenton Canyon	NV	Humboldt	Sante Fe Pacific Gold Corp.	Y	Y								Y	Y	Y				?	Operating
81	Triplet Gulch/Robertson	NV	Lander	Coral Resources Inc.	Y	Y								Y	Y					?	Closed
82	Twin Creeks	NV	Humboldt	Newmont Mining Corp.	Y	Y								Y	Y	Y				?	Operating
83	Wind Mountain	NV	Washoe	AMAX Gold Inc.	Y	Y								Y	Y					?	Closed
84	Yankee	NV	White Pine	Placer Dome U.S., Inc.	Y	Y								Y	Y					1992	Closed
85	Yerington	NV	Lyon	Arimetco International Inc.			Y							Y				Y		Historic	Closed
86	Chino	NM	Grant	Phelps Dodge Corp.			Y							Y			Y	Y		Historic	Operating
87	Cobre (Continental Pit)	NM	Grant	Phelps Dodge Corp.			Y							Y						Historic	Closed
88	Copper Flat	NM	Sierra	Alta Gold			Y							Y			Y			1982	Closed
89	Tyrone - Little Rock pit	NM	Grant	Phelps Dodge Corp.			Y							Y						Historic	Closed
90	Drum Mine	UT	Beaver	Western States Minerals	Y	Y								Y	Y					?	Closed
91	Escalante Silver	UT		Hecla Mining Co.		Y							Y				Y			?	Closed

Table 16.1 (continued)
BLM NEPA Eligible Major Mines Database

No	Major Mines		General Information																		
	Name	State	County	Ownership	Commodity							Operation Type							Year Production Initiated	Current Status	
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S			
92	Lisbon Valley Copper	UT	San Juan	Summo USA Corp.			Y							Y				Y		?	Operating
93	Mercur Mine	UT	Tooele	Barrick Mercur	Y	Y								Y	Y	Y				?	Closed
94	Crown Jewel	WA	Okanogan		Y								Y			Y				Proposed	Permitting

16.1.3. PRODUCTION STATUS

As shown in Table 16.1 and Figure 16.4, forty two mines (45%) are currently operating and forty six (49%) are closed. Three (3%) mines are currently in the permitting phase (Safford, Arizona, Imperial, California, and Crown Jewel, Washington), while another three (3%) (Sanchez and Yarnell, Arizona, and Talapoosa, Nevada) have been withdrawn. There are no BLM administered NEPA eligible mines currently in construction.



16.2. NEPA DOCUMENTATION

Arizona BLM

The BLM has not performed NEPA processes on several the major historic mines in the state under their federal land management jurisdiction including Mission, Sierrita, and Twin Buttes.

California BLM

The California BLM El Centro Resource Area office cooperated in providing the American Girl (Cargo Muchaco, Oro Cruz) EIS. The same office did not provide the Mesquite Mine original new project or first expansion EIS/EIR’s as requested. The most recent Mesquite Mine expansion EIS was obtained from their website.

The BLM California State Office agreed to provide the 1990 Castle Mountain EIS/EIR but for only a fee of \$780. They denied our FOIA request to provide the document at no cost and the document was not obtained.

The BLM California Ridgecrest Resource Area office did not provide the Briggs, Rand and Soledad Mountain Mines NEPA documents requested.

Idaho BLM

The BLM Boise office cooperated in providing the Stone Cabin Mine NEPA documents upon request.

New Mexico BLM

The BLM Las Cruces District office cooperated in providing the Copper Flat and Tyrone - Little Rock pit NEPA documents upon request.

Nevada BLM

The BLM Elko District Office cooperated in providing the Goldstride (Betze), Leeville (Betze), South Operations Area, Leeville, Pete, Dee, and Carlin Mines NEPA documents upon request. The same office offered the additional Dee document, the Ivanhoe, Blue Star, Rain, Gold Quarry, Bootstrap/Capstone/Tara, and Meilke Mines NEPA documents for a copying fee. The Rain and Bootstrap/Capstone/Tara documents were obtained for a fee.

The BLM Ely Field Office cooperated in providing the Bald Mountain and Robinson (Ruth) Mines NEPA documents upon request.

The BLM Battle Mountain District office cooperated in providing the Battle Mountain Complex, Cortez, Cortez Pipeline, and Round Mountain Mines NEPA documents upon request. The same office did not provide the Buckhorn Mine NEPA documents.

The BLM Tonopah Resource Area Office cooperated in providing one of the Round Mountain Mine NEPA documents. The same office did not provide the Bullfrog and Candelaria Mines NEPA documents.

The BLM Winnemucca Field Office cooperated in providing the Rochester, Lone Tree, Marigold, Trenton Canyon and Twin Creeks Mines NEPA documents upon request.

The BLM Carson City District Offices did not provide the Talapoosa Mine documents.

Utah BLM

The BLM Fillmore Field Office cooperated in providing Drum Mine NEPA documents upon request.

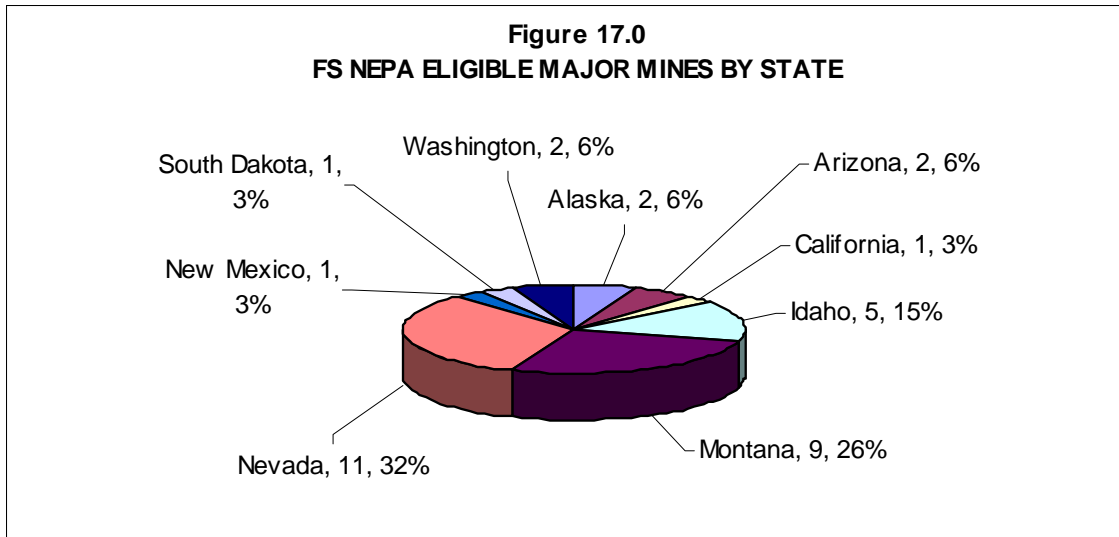
The BLM Cedar City Field Office cooperated in providing the Escalante Silver Mine NEPA documents upon request.

The BLM State Office cooperated in providing the Mercur Mine NEPA documents upon request.

17. FOREST SERVICE

17.1. MAJOR MINES

The U.S. Department of Agriculture Forest Service administers land involving 34 (25%) of the 137 current era NEPA eligible major mines. The mines are distributed among nine states as shown in Table 17.0 and Figure 17.0.



Eleven (32%) of the Forest Service administered NEPA eligible mines are located in Nevada, while nine (26%) are located in Montana and five (15%) in Idaho. Alaska, Arizona and Washington each have two (6%) major mines administered by the Forest Service, while California, New Mexico and South Dakota each have one major mine administered by the Forest Service.

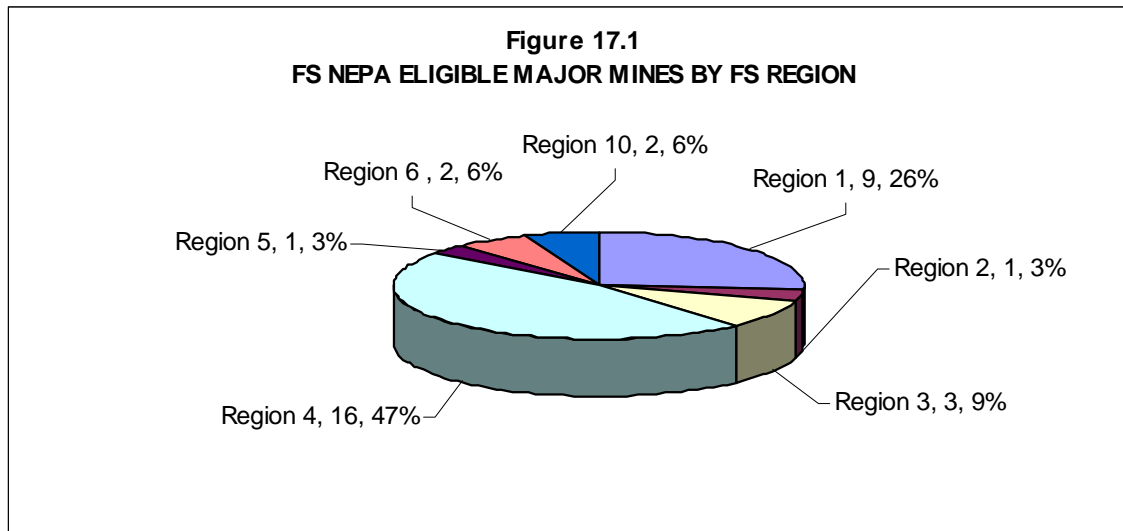
As seen in Figure 17.1, the NEPA eligible mines on USFS lands are distributed between seven different Forest Service Regions.

USDA Forest Service Region 1 includes the states of Montana, North Dakota and the pan handle of Idaho. Of the thirty four FS NEPA applicable mines identified, nine (26%) are located in Region 1.

USDA Forest Service Region 2 includes the states of South Dakota, Wyoming, Colorado, Nebraska and Kansas. Of the thirty four FS NEPA applicable mines identified, only one (3%) mine is located in Region 2.

USDA Forest Service Region 3 includes the states of Arizona and New Mexico. Of the thirty four FS NEPA applicable mines identified, three (9%) are located in Region 3.

USDA Forest Service Region 4 includes the states of Nevada, Utah and southern Idaho. Of the thirty four FS NEPA applicable mines identified, sixteen (47%) are located in Region 4.



USDA Forest Service Region 5 covers the state of California. Of the thirty four FS NEPA applicable mines identified, only one (3%) mine is located in Region 5.

USDA Forest Service Region 6 includes the states of Washington and Oregon. Of the thirty four FS NEPA applicable mines identified, two (6%) are located in Region 6.

USDA Forest Service Region 10 covers the state of Alaska. Of the thirty four FS NEPA applicable mines identified, two (6%) are located in Region 10.

Eleven (32%) Forest Service administered major mines were permitted as new projects based on an EA. Four of those have been the subject of subsequent expansion EIS's.

Eighteen (53%) Forest Service administered major mines were permitted as new projects based on an EIS. Nine of those have been the subject of subsequent expansion EIS's.

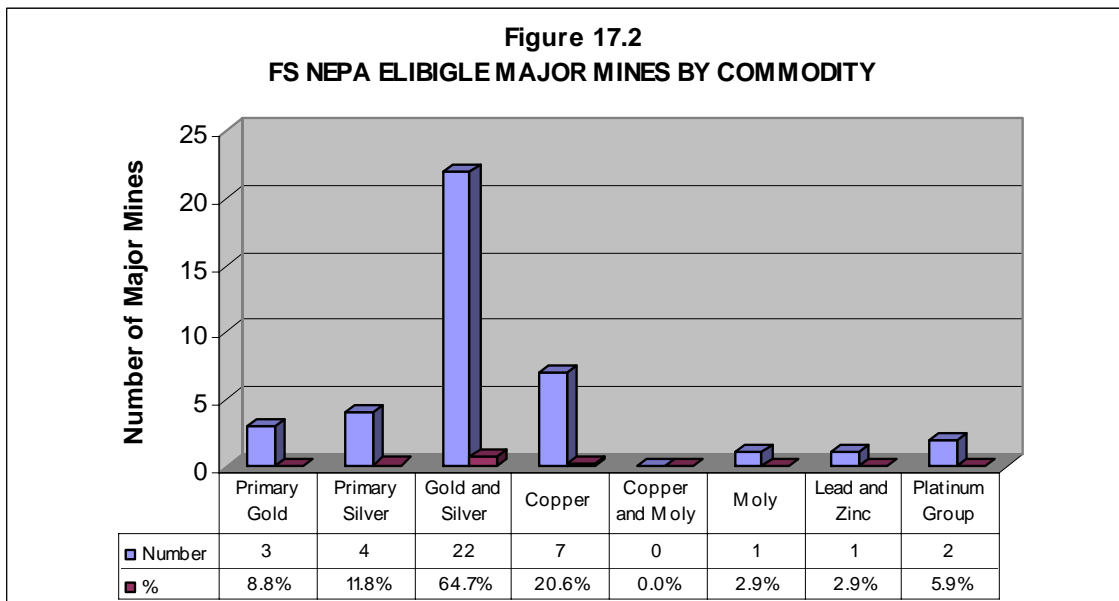
The Forest Service has conducted a total of seven SEIS analysis as seen in Table 17.0. The Kensington Project, Alaska, had two SEIS's that dealt with project modifications, Montanore, Montana, SEIS dealt with project alternatives, Rock Creek, Montana, had an SEIS for additional information, while Thompson Creek, Idaho, SEIS dealt with a change in operations of the waste rock and tailings impoundment to address acid generation potential issues. The Griffon, Nevada and Grouse Creek, Idaho SEIS's were for mine expansions.

Nine mines have joint Forest Service and BLM administration. The jointly administered mines are:

- Miami-PD, Arizona
- Hayden Hill, California
- Beartrack, Idaho
- Black Pine, Idaho
- Thompson Creek, Idaho
- Manhattan, Nevada
- Northumberland, Nevada
- Round Mountain, Nevada
- Tyrone – Little Rock Pit, New Mexico

17.1.1. COMMODITY

As indicated in Figure 17.2, three (9%) of the thirty four NEPA eligible mines administered by the Forest Service are primary gold producers, four (12%) are primary silver producers, while twenty two (65%) are both gold and silver producers. Seven (21%) mines are primary copper producers, one (3%) mine is a primary molybdenum producer, one (3%) mine is a primary lead and zinc producer, and two (6%) are primary platinum group minerals producers.



17.1.2. OPERATION TYPE

The thirty four NEPA eligible major hardrock mines administered by the Forest Service are operated by both open pit and underground mining methods, and employ heap and/or vat leaching, dump leaching, and flotation and gravity process methods.

As shown in Figure 17.3, ten (29%) of the thirty four mines are underground mines, while twenty one (62%) are open pit, and three (9%) are a combination open pit and underground mines.

Table 17.0
FS Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?						NEPA Process			State EIS				
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
1	Greens Creek	AK		Yes	R10 - Tongass				Yes	1983	New Project	EIS				
	Greens Creek	AK		Yes	R10 - Tongass				Yes	1988	General Operation Changes	EA				
	Greens Creek	AK		Yes	R10 - Tongass				Yes	1992	Waste Rock Expansion	EA				
	Greens Creek	AK		Yes	R10 - Tongass				Yes	2003	Tailings Disposal	FEIS				
2	Kensington Project	AK		Yes	R10 - Tongass				Yes	1992	New Project	EIS				
	Kensington Project	AK		Yes	R10 - Tongass				Yes	1997	Modified New Project	SEIS				
	Kensington Project	AK		Yes	R10 - Tongass				Yes	2004	Modified New Project	SEIS				
3	Carlotta	AZ		Yes	Tonto				Yes	1997	New Project	EIS				
4	Miami – PD	AZ	Yes	Yes	Phoenix, R? - Tonto				Yes	1998	Expansion	EIS				
5	Hayden Hill	CA	Yes	Yes	Susanville, R? Modoc				Yes	1991	New Project	EIS	Yes	same as NEPA		
6	Beartrack	ID		Yes	Salmon				Yes	1991	New Project	EIS				
7	Black Pine	ID	Yes	Yes	Sawtooth				Yes	1991	New Project	EA				
	Black Pine	ID	Yes	Yes	Sawtooth				Yes	1991	Supplement	EA				
	Black Pine	ID	Yes	Yes	Sawtooth				Yes	1994	Expansion	EIS				
8	Grouse Creek (Sunbeam)	ID		Yes	Challis				Yes	1984	New Project	EIS				
	Grouse Creek	ID		Yes	Challis				Yes	1992	Expansion	SEIS				
9	Stibnite	ID		Yes	Payette				Yes	1981	New Project	EIS				
	Stibnite	ID		Yes	Payette				Yes	1994	Expansion	EIS				
10	Thompson Creek	ID	Yes	Yes	Salmon-Challis				Yes	1980	New Project	EIS				

Table 17.0 (continued)
 FS Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?						NEPA Process			State EIS				
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
	Thompson Creek	ID	Yes	Yes	Salmon-Challis				Yes	1999	Plan of Operation Changes	SEIS				
11	Basin Creek	MT		Yes	Deerlodge				Yes	1990	New Project	EA	Yes	same as NEPA		
12	Beal Mountain	MT		Yes	Deerlodge				Yes	1993	New Project	EA	Yes	same as NEPA		EA
	Beal Mountain	MT		Yes	Deerlodge				Yes	1998	Expansion		Yes	same as NEPA		EIS
13	Black Pine	MT		Yes	Deerlodge				Yes	1981	Mine Reopening	EA	Yes	same as NEPA		
	Black Pine	MT		Yes	Deerlodge				Yes	2003	Reclamation and Closure	EA	Yes	same as NEPA		
14	East Boulder	MT		Yes	Gallatin				Yes	1992	New Project	EIS	Yes	same as NEPA		
15	Mineral Hill	MT		Yes	Gallatin				Yes	1986	New Project	EIS	Yes	same as NEPA		
	Mineral Hill	MT		Yes	Gallatin				Yes	2001	Reclamation and Closure	EIS	Yes	same as NEPA		
16	Montanore	MT		Yes	Kootenai				Yes	1990	New Project	EIS	Yes	same as NEPA		
	Montanore	MT		Yes	Kootenai				Yes	1991	Project Alternatives	SEIS	Yes	same as NEPA		
17	Rock Creek	MT		Yes	Kootenai				Yes	1995	New Project	EIS	Yes	same as NEPA		
	Rock Creek	MT		Yes	Kootenai				Yes	1998	Additional Info	SEIS	Yes	same as NEPA		

Table 17.0 (continued)
 FS Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?						NEPA Process			State EIS				
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
	Rock Creek	MT		Yes	Kootenai				Yes	2001	New Project	EIS	Yes		same as NEPA	
18	Stillwater	MT		Yes	Custer				Yes	1985	New Project	EIS	Yes		same as NEPA	
	Stillwater	MT		Yes	Custer				Yes	1992	Expansion	EIS	Yes		same as NEPA	
	Stillwater	MT		Yes	Custer				Yes	1998	Hertzler Impoundment	EIS	Yes		same as NEPA	
19	Troy	MT		Yes	Kootenai				Yes	1978	New Project	EIS	Yes		same as NEPA	
20	Aurora Partnership (Mine)	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1986, 1987, 1989, 1991	New Project	EA				
21	Austin Gold Venture	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1985	New Project	EA				
22	Big Springs	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1987	New Project	EA				
23	Borealis	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1990, 1997	Exploration?	EA				
24	Griffon	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1996	New Project	EIS				
	Griffon	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1998	Expansion	SEIS				
25	Jerritt Canyon	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1980	New Project	EIS				

Table 17.0 (continued)

FS Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?						NEPA Process			State EIS				
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
	Jerritt Canyon	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1994	Expansion	EIS				
26	Dash	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1996	Expansion	EIS				
27	Manhattan	NV	Yes	Yes	Tonopah				Yes	1984	New Project	EA				
28	Mt. Hamilton	NV		Yes	R4 - Humboldt-Toiyabe				Yes	1994	New Project	EA				
29	Northumberland	NV	Yes	Yes	R4 - Humboldt-Toiyabe				Yes	1985	New Project	EA				
30	Round Mountain	NV	Yes	Yes	Battle Mountain				Yes	1977	New Project	EA				
	Round Mountain	NV	Yes	Yes	Battle Mountain				Yes	1987, 1992	Expansion	EA				
	Round Mountain	NV	Yes	Yes	Battle Mountain				Yes	1996	Expansion	EIS				
31	Tyrone - Little Rock pit	NM	Yes	Yes	Las Cruces, Gila				Yes	1997	New Project	EIS				
	Tyrone - Little Rock pit	NM	Yes	Yes	Las Cruces, Gila				Yes	2005	New Project	EA				
32	Gilt Edge (Anchor Hill)	SD		Yes	Black Hills											
	Gilt Edge (Anchor Hill)	SD		Yes	Black Hills				Yes	1997	Expansion	EIS				
33	Crown Jewel	WA	Yes	Yes	Okanogan				Yes	1997	New Project	EIS	Yes			
34	Kettle River/Lamefoot/K2	WA		Yes					Yes	1994	Expansion	EIS	Yes			

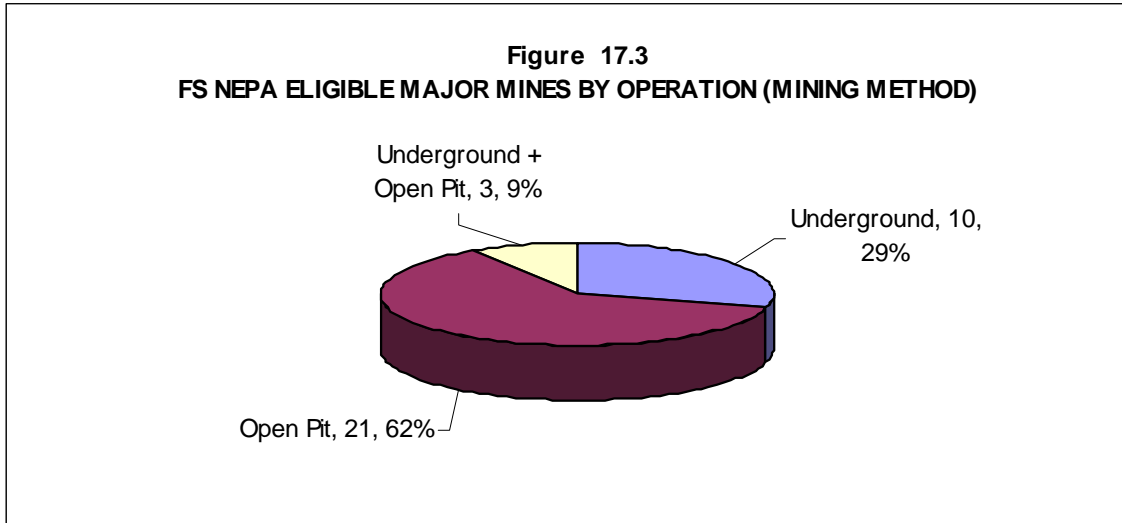


Figure 17.4 shows the process type used by the NEPA eligible major mines administered by the Forest Service. As indicated in Table 17.1 and Figure 17.4, twenty one (62%) of the primary gold or gold and silver mines use cyanide leach methods. Eleven (34%) use heap leach processing only, while six (18%) mines use vat leach only and five (15%) of the thirty four Forest Service administered NEPA eligible mines use both heap leach and vat leach processing. Two (6%) of the mines use dump leach processing for copper and silver ores, while nine (27%) of the thirty four mines use flotation and gravity processing methods for beneficiation of gold, silver, copper, platinum group minerals and molybdenum ores.

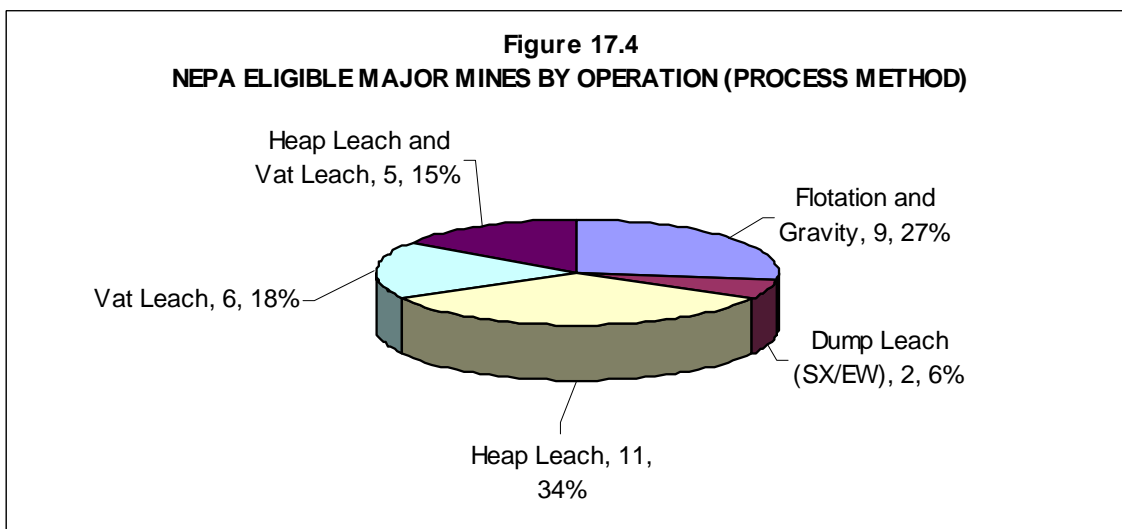


Table 17.1
FS NEPA Eligible Major Mines Database

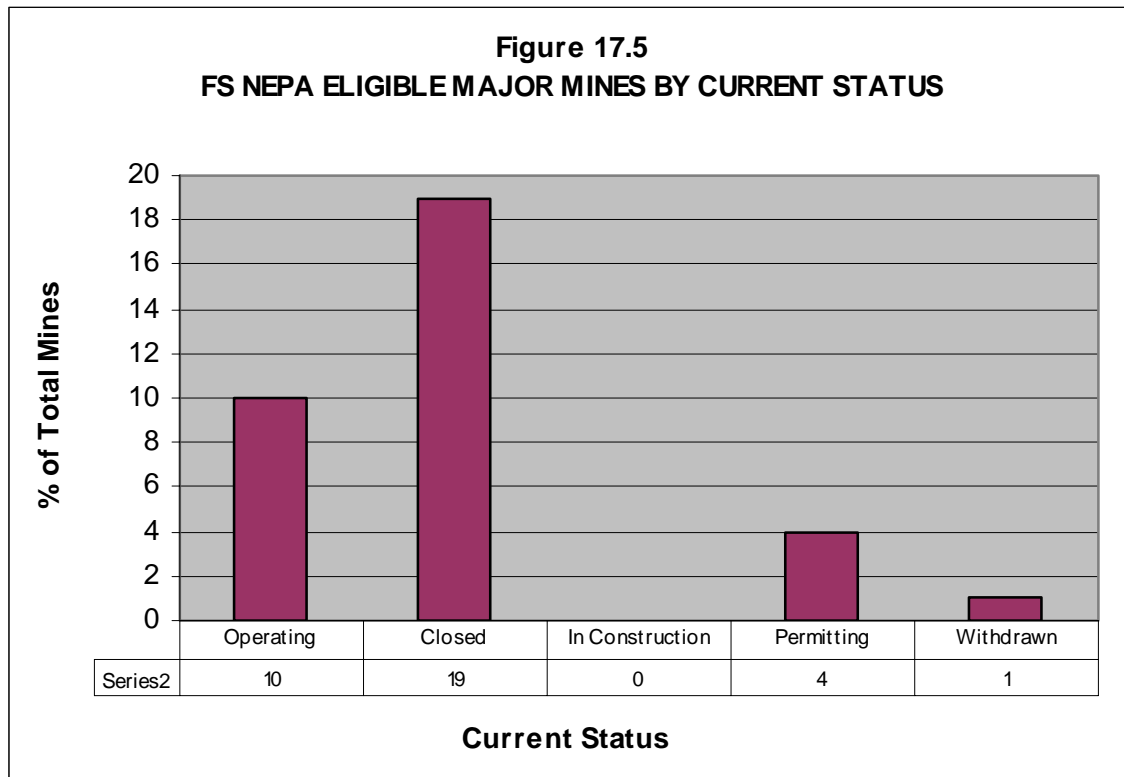
No	Major Mines		General Information																	Year Production Initiated	Current Status	
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	Greens Creek	AK		Kennecott Minerals (70%), Hecla Mining Co (30%)	Y	Y			Y	Y			Y								1984	Operating
2	Kensington Project	AK		Coeur D'Alene Mines Corp (100%)	Y								Y								Proposed	Permitting
3	Carlotta	AZ	Gila and Pinal	Carlotta Copper Co.			Y							Y					Y		Proposed	Pending Appeals
4	Miami - PD	AZ	Gila	Phelps Dodge Corp.		Y	Y							Y					Y	Y	Historic	Operating
5	Hayden Hill	CA	Lassen	Krinross Gold Corp.	Y	Y								Y	Y	Y					1992	Closed
6	Beartrack	ID	Lemhi	FMC Gold Co. (Meridian)	Y	Y								Y	Y						1995	Closed
7	Black Pine	ID	Cassia	Black Pine Mining (Pegasus Gold, Inc.)	Y	Y								Y	Y						1992	Closed
8	Grouse Creek (Sunbeam)	ID	Custer	Sunbeam Mining Corporation	Y									Y		Y					1985	Closed
9	Stibnite	ID	Valley	Dakota Mining Corp.	Y	Y								Y	Y						Historic	Closed
10	Thompson Creek	ID	Custer	Thompson Creek Mining Co.				Y						Y				Y			1983	Operating
11	Basin Creek	MT	Jefferson	Pegasus Gold Co.	Y	Y								Y	Y						1988	Closed
12	Beal Mountain	MT	Silver Bow	Pegasus Gold Co.	Y	Y								Y	Y						1988	Closed
13	Black Pine	MT	Granite	ASARCO	Y	Y	Y						Y					Y			1974	Closed
14	East Boulder	MT	Sweet Grass	Stillwater Mining Co.								Y	Y					Y			2001	Operating
15	Mineral Hill	MT	Park	TVX Gold, Inc.	Y	Y							Y			Y					1989	Closed
16	Montanore	MT	Sanders	Noranda		Y	Y						Y					Y			Proposed	Withdrawn
17	Rock Creek	MT	Sanders	Sterling Mining Co.		Y	Y						Y					Y			Proposed	Pending Appeals
18	Stillwater	MT	Stillwater	Stillwater Mining Co.								Y	Y					Y	Y		1986	Operating

Table 17.1 (continued)
FS NEPA Eligible Major Mines Database

No	Major Mines			General Information															Year Production Initiated	Current Status		
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
19	Troy	MT	Lincoln	Sterling Mining Co.		Y	Y						Y					Y			1983	Closed
20	Aurora Partnership (Mine)	NV	Mineral	Nevada Goldfields inc.	Y	Y								Y	Y						1987	Closed
21	Austin Gold Venture	NV	Lander		Y	Y							Y	Y		Y	Y				1985	Closed
22	Big Springs	NV	Elko	Independence Mining Co.	Y	Y								Y	Y	Y					1987	Operating
23	Borealis	NV	Mineral	Echo Bay Minerals Co.	Y	Y								Y	Y						?	Closed
24	Griffon	NV	White Pine	Alta Gold Co.	Y	Y								Y	Y						1997	Closed
25	Jerritt Canyon	NV	Elko	Independence Mining Co.	Y	Y							Y	Y	Y	Y					1980	Operating
26	Dash	NV	Elko		Y	Y								Y		Y					1994	Operating
27	Manhattan	NV	Nye	Round Mountain Gold Corp.	Y	Y								Y	Y	Y					1984	Closed
28	Mt. Hamilton	NV	White Pine	Rea Gold Corporation	Y	Y								Y	Y						1994	Closed
29	Northumberland	NV	Nye	Western States Minerals Corp. (100%)	Y	Y								Y	Y						1985	Closed
30	Round Mountain	NV	Nye	Round Mountain Gold Corp.	Y	Y								Y	Y	Y					1977	Operating
31	Tyrone - Little Rock pit	NM	Grant	Phelps Dodge Corp.			Y							Y							Historic	Closed
32	Gilt Edge (Anchor Hill)	SD	Lawrence	Brohm Mining Corp.	Y	Y								Y	Y						1986	Closed
33	Crown Jewel	WA	Okanogan		Y								Y			Y					Proposed	Permitting
34	Kettle River/Lamefoot/K2	WA		Echo Bay Mines Ltd.	Y	Y							Y	Y		Y					?	Operating

17.1.3. PRODUCTION STATUS

As shown in Table 17.1 and Figure 17.5, ten mines (29%) are currently operating and nineteen (56%) are closed. Four (12%) mines are currently in the permitting phase (Kensington, Alaska, Carlotta, Arizona, Rock Creek, Montana, and Crown Jewel, Washington), while one (3%) (Montanore, Montana) has been withdrawn. There are no Forest Service administered NEPA eligible mines currently in construction.



17.2. NEPA DOCUMENTATION

Region 1

The Beaverhead-Deerlodge National Forest in Montana cooperated in providing Basin Creek and Beal Mountain Mines NEPA documents upon request.

The Black Hills National Forest in South Dakota cooperated in providing Guilt Edge (Anchor Hill) Mine NEPA documents upon request.

Region 3

The Tonto National Forest in Arizona did not provide the Miami-PD EIS as requested.

Region 4

The Sawtooth National Forest in Idaho cooperated in providing the Black Pine Mine NEPA documents upon request for a copying fee.

The Salmon-Challis National Forest in Idaho cooperated in providing the Grouse Creek (Sunbeam), Grouse Creek, and Thompson Creek Mine NEPA documents upon request.

The Payette National Forest in Idaho cooperated in providing copies of the Stibnite Mine NEPA documents upon request.

The Humboldt-Toiyabe National Forest in Nevada cooperated in providing the Aurora and Borealis Mines NEPA documents upon request.

Region 6

The Okanogan National Forest in Washington cooperated in providing the Crown Jewel NEPA documents upon request. No contact was found for Kettle River – Lamefoot/K2 Mine NEPA documents.

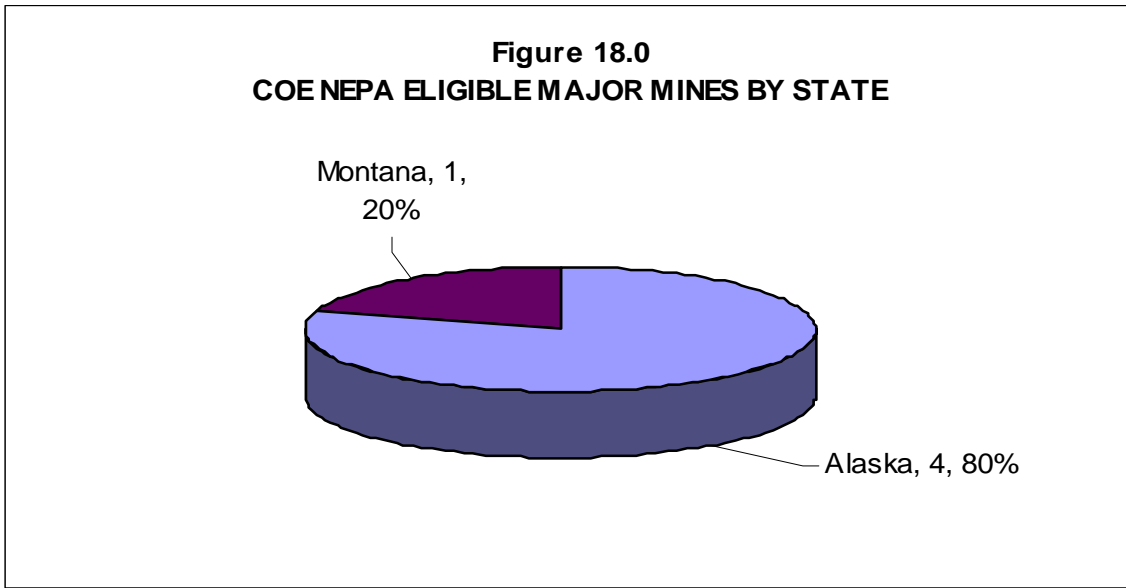
Region 10

The Tongass National Forest in Alaska cooperated immediately by providing the Greens Creek and Kensington NEPA documents upon request.

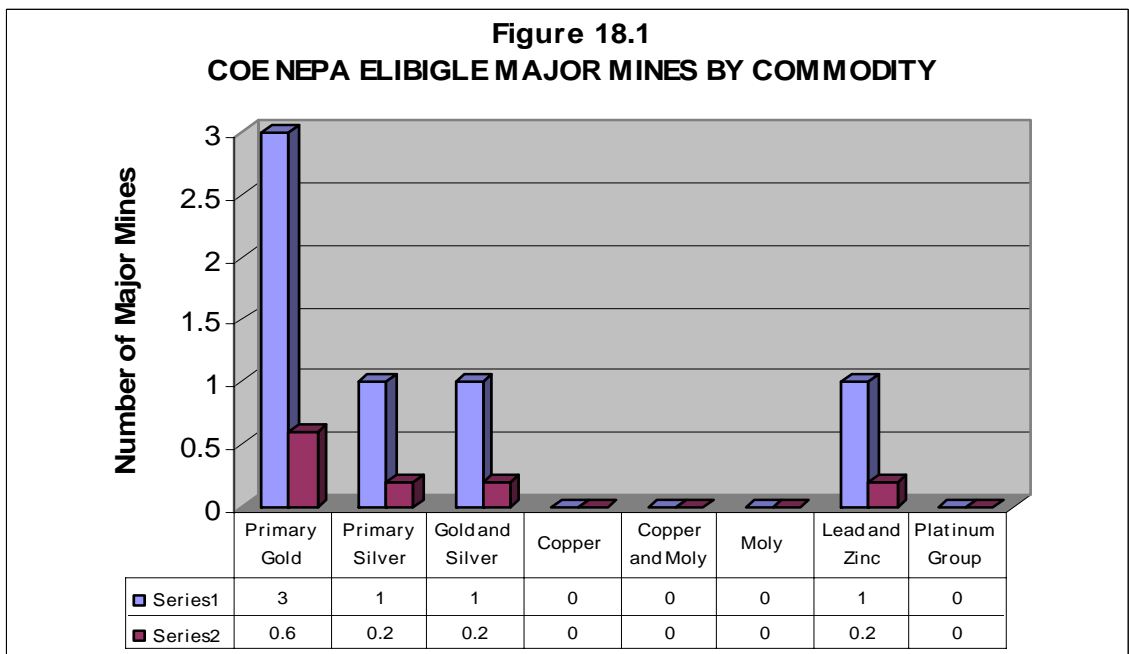
18. CORP OF ENGINEERS

18.1. MAJOR MINES

The Corp of Engineers administers land involving five (4%) of the 137 current era NEPA eligible major mines. The mines are distributed among two states as shown in Table 18.0 and Figure 18.0.



Four (80%) of the COE administered NEPA eligible mines are located in Alaska, while one (20%) is located in Montana.



Comparison of Predicted and Actual Water Quality at Hardrock Mines – Appendix A CORP OF ENGINEERS

Table 18.0
COE Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
1	Fort Knox	AK				Yes			Yes	1993	COE 404 Permit	EA				
2	Pogo Project	AK				Yes	Yes		Yes	2003	New Project NPDES	FEIS				
3	Red Dog	AK				Yes	Yes		Yes	1984	New Project NPDES	EIS				
4	True North	AK				Yes			Yes	2000	COE 404 Permit	EA				
5	Zortman and Landusky	MT	Yes		Lewistown								Yes	1979	New Project	EIS
	Zortman and Landusky	MT	Yes		Lewistown				Yes	1993	Modified Operating and Reclamation Plan and ARD Control and Remediation	EA	Yes	same as NEPA		
	Zortman and Landusky	MT	Yes		Lewistown	Yes			Yes	1996	Expansion	EIS	Yes	same as NEPA		
	Zortman and Landusky	MT	Yes		Lewistown				Yes	2001	Reclamation and Closure	SEIS	Yes	same as NEPA		

Comparison of Predicted and Actual Water Quality at Hardrock Mines – Appendix A CORP OF ENGINEERS

Table 18.1
COE NEPA Eligible Major Mines Database

No	Major Mines		General Information																	Year Production Initiated	Current Status	
	Name	State	County	Ownership	Commodity							Operation Type										
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX	S				
1	Fort Knox	AK		Kinross Gold Corp (100%)	Y									Y			Y				1994	Operating
2	Pogo Project	AK		Teck Corp (100%)	Y								Y					Y			2005	In Construction
3	Red Dog	AK		Cominco Alaska Inc.		Y			Y	Y			Y	Y				Y			1985	Operating
4	True North	AK		Kinross Gold Corp (100%)	Y									Y			Y				2001	Operating
5	Zortman and Landusky	MT	Phillips	Pegasus Gold Co.	Y	Y								Y	Y						1979	Closed

18.1.1. COMMODITY

As indicated in Figure 18.1, three (60%) of the five NEPA eligible mines administered by the COE are primary gold producers, one (20%) is a primary silver producer, and one (20%) is both a gold and silver producer. Only one (20%) mine is a primary lead and zinc producer. There are no copper or platinum group minerals mined on COE administered lands.

18.1.2. OPERATION TYPE

The five NEPA eligible major hardrock mines administered by the COE are operated by both open pit and underground mining methods, and employ heap or vat leaching, and flotation and gravity process methods.

As shown in Figure 18.2, one (20%) of the five mines are underground mines, while three (60%) are open pits, and one (20%) is a combination open pit and underground mine.

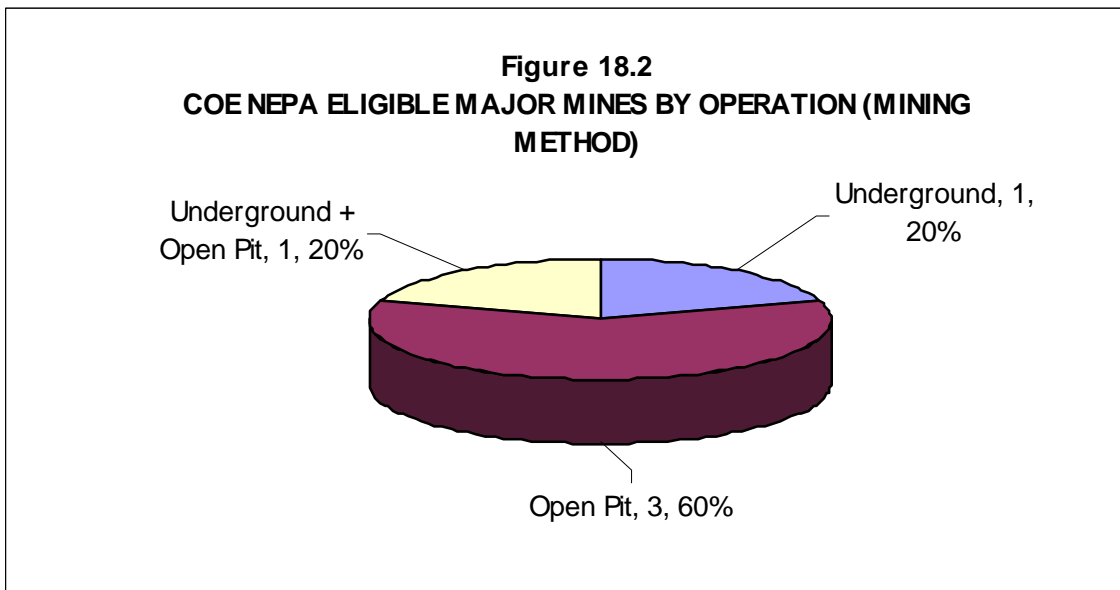
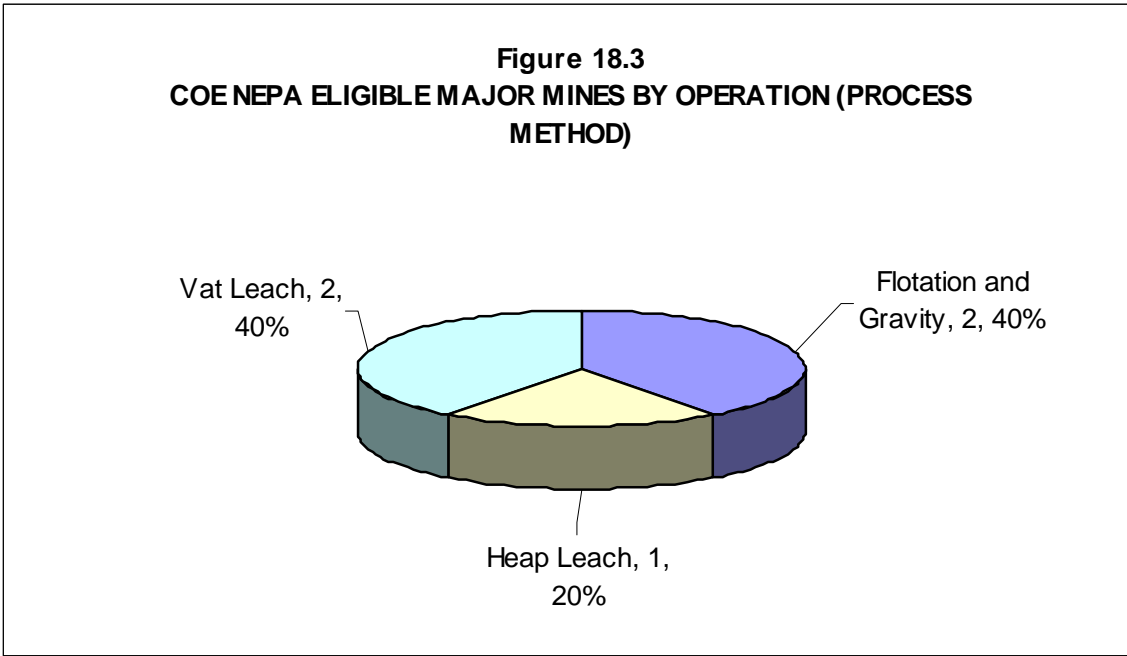
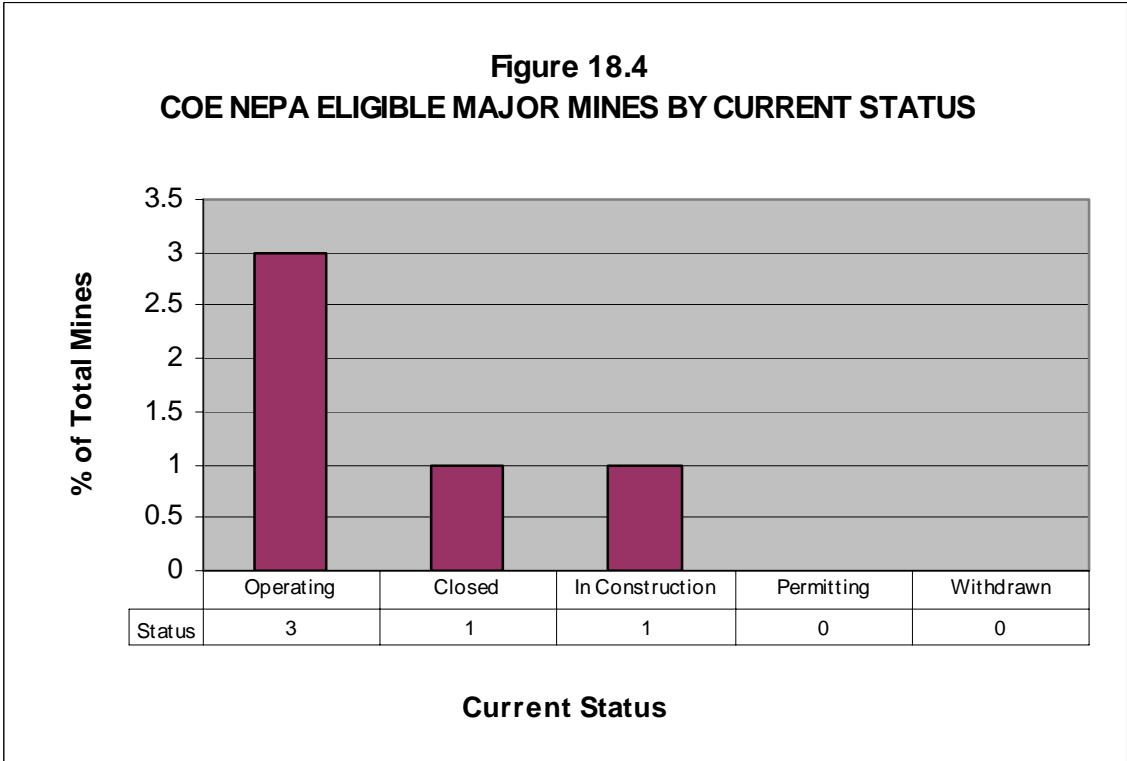


Figure 18.3 shows the process type used by the NEPA eligible major mines administered by the COE. As indicated in Table 18.1 and Figure 18.3, all three (60%) of the primary gold or gold and silver mines use cyanide leach methods. One (20%) use heap leach processing only, while two (40%) mines use vat leach processing only. None of the mines use dump leach processing. Two (40%) of the five mines use flotation and gravity processing methods for beneficiation of gold, silver, lead and zinc ores.



18.1.3. PRODUCTION STATUS

As shown in Table 18.1 and Figure 18.4, three (60%) mines are currently operating; one (20%) mine (Zortman and Landusky, Montana) is closed, while one (20%) mine (Pogo, Alaska) is currently under construction. There are no mines in permitting at the current time.



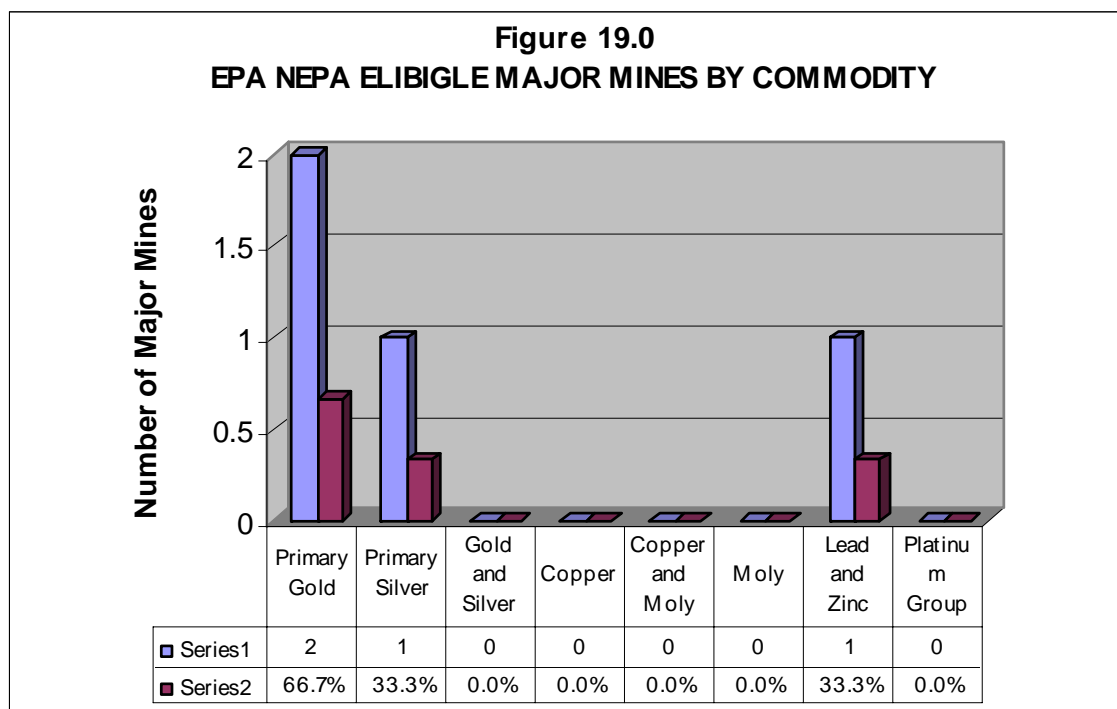
19. ENVIRONMENTAL PROTECTION AGENCY

19.1. MAJOR MINES

The Environmental Protection Agency solely administers permits involving three (2%) of the 137 current era NEPA eligible major mines. The mines are all located in the state of Alaska.

19.1.1. COMMODITY

As indicated in Figure 19.0, two (67%) of the three NEPA eligible mines solely administered by the EPA are primary gold producers, one (33%) is a primary silver producer, and one (33%) mine is a primary lead and zinc producer. There are no copper or platinum group minerals mined under EPA administered permits.



19.1.2. OPERATION TYPE

The three NEPA eligible major hardrock mines administered by the EPA are operated by both open pit and underground mining methods, and employ flotation and gravity process methods only.

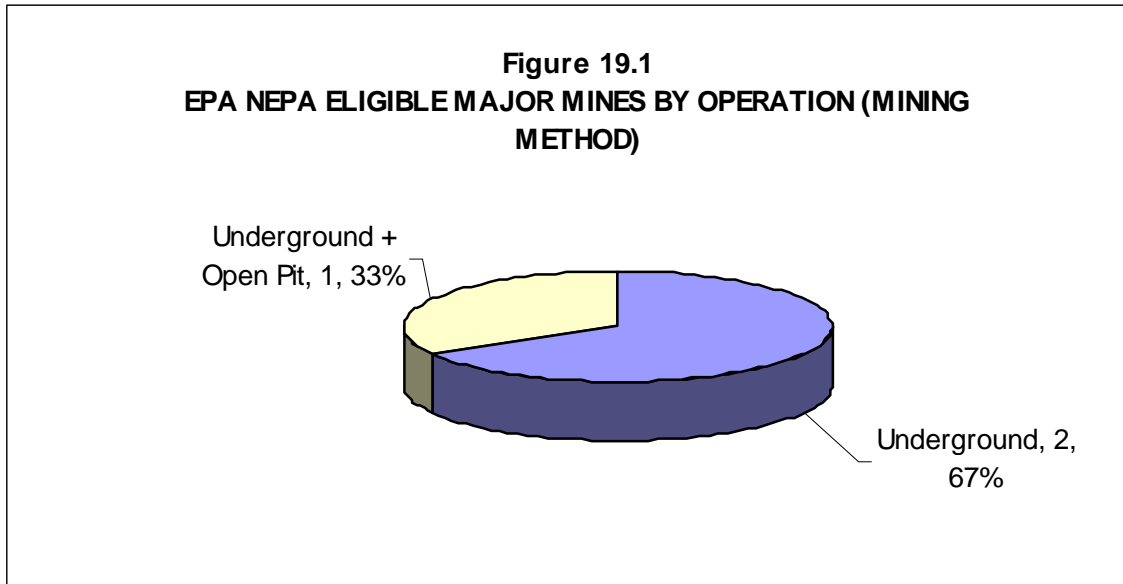
As shown in Figure 19.1, two (67%) of the three mines are underground mines, while one (33%) is a combination open pit and underground mine.

Table 19.0
EPA Major Mines NEPA Actions Database

No	Major Mines		NEPA/EIS Analysis													
	Name	State	NEPA Applicable?							NEPA Process			State EIS			
			Federal Lands			COE	EPA	Indian Lands	NEPA Required	Year	Proposed Action	EA,EIS, or SEIS	State EIS	Year	Proposed Action	EA,EIS, or SEIS
			BLM	FS	District or Forest											
1	AJ Project	AK					Yes		Yes	1992	Reopen existing mine	EIS				
2	Pogo Project	AK				Yes	Yes		Yes	2003	New Project NPDES	FEIS				
3	Red Dog	AK				Yes	Yes		Yes	1984	New Project NPDES	EIS				

Table 19.1
EPA NEPA Eligible Major Mines Database

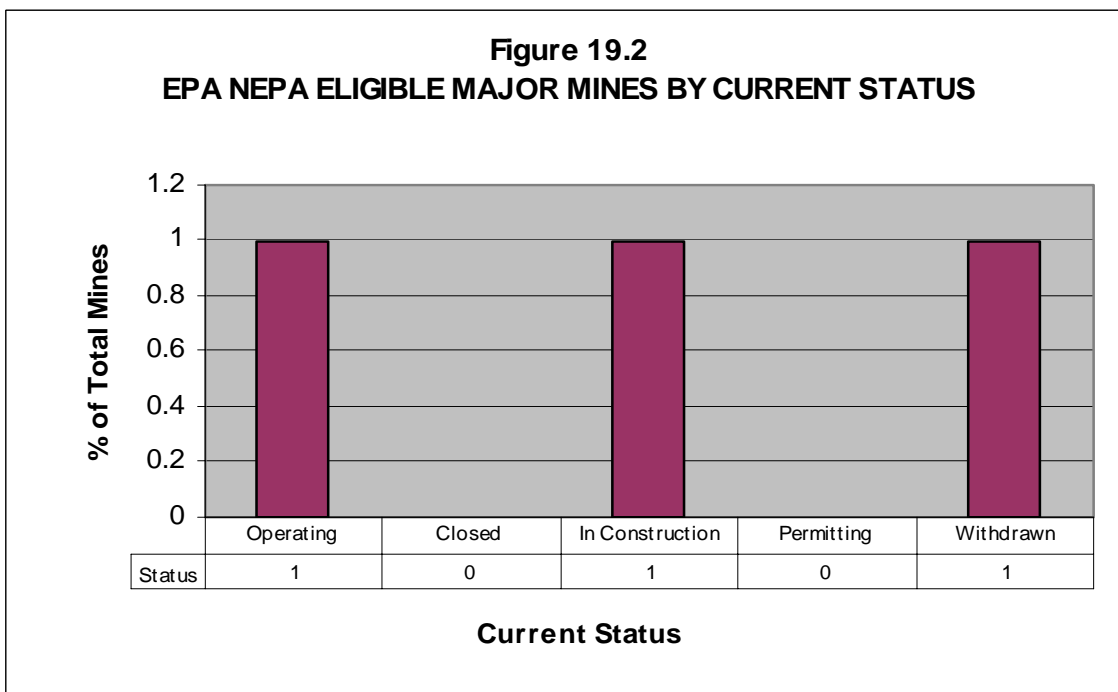
No	Major Mines		General Information																			
	Name	State	County	Ownership	Commodity							Operation Type						Year Production Initiated	Current Status			
					Au	Ag	Cu	Mo	Pb	Zn	PGM	UG	OP	HL	VL	FG	DL-SX			S		
1	AJ Project	AK		Echo Bay Mines Ltd. (100%)	Y								Y					Y			Proposed	Withdrawn
2	Pogo Project	AK		Teck Corp (100%)	Y								Y					Y			2005	In Construction
3	Red Dog	AK		Cominco Alaska Inc.		Y			Y	Y		Y	Y					Y			1985	Operating



All three mines (100%) use flotation and gravity processing methods for beneficiation of gold, silver, lead and zinc ores.

19.1.3. PRODUCTION STATUS

As shown in Table 19.1 and Figure 19.2, one (33%) mine (Red Dog, Alaska) is currently operating, one (33%) mine (Pogo, Alaska) is currently under construction and one (33%) mine (AJ Project, Alaska) has been withdrawn. There are no mines in permitting at the current time.



20. INDIAN LANDS

20.1. MAJOR MINES

Indian Lands administers land involving only two (1%) of the 136 current era NEPA eligible major mines. Both mines (*Cyprus Tohono and Mission) are located in the state of Arizona.

20.1.1. COMMODITY

Cyprus Tohono is a primary copper producer, while Mission is a primary silver and copper producer.

20.1.2. OPERATION TYPE

Cyprus Tohono is operated by open pit mining methods, and employs dump leach process methods only, while Mission is operated by both underground and open pit mining methods and employs flotation and gravity process methods.

20.1.3. PRODUCTION STATUS

Mission mine, a historic mine, is still operating and not projected to close until 2021, while Cyprus Tohono, also a historic mine, is currently closed. There are no mines in permitting at the current time on Indian Lands.