

# Colorado

## The most abandoned vertical mine openings closed

Coal deposits are located beneath approximately 28 percent of Colorado's surface. The state's coal reserves total about 17.2 billion tons including approximately 4.2 billion tons of coal reserves under federal ownership. Commercial coal production began in 1864 with underground mines. Surface mining began in Colorado during the 1950's. Coal production peaked prior to the Depression, then increased again during the 1940 war efforts. Many of the pre-Surface Mining Law underground mines underlie current urban areas along the Front Range. Colorado is also known for its extensive non-coal mining industry and many abandoned precious and industrial mineral mines exist throughout the mountainous areas of the state, where they pose substantial hazard to residents and recreationists.

Colorado gained primacy when its regulatory program was conditionally approved December 15, 1980. The Abandoned Mine Land Program was approved June 11, 1982.

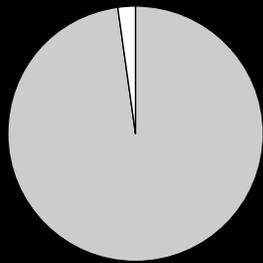
Since 1982, the Colorado Abandoned Mine Land Program has spent about \$14 million to eliminate high priority abandoned mine hazards. These reclamation projects have included closures of portals and vertical openings, backfilling of highwalls, and subsidence stabilization. In addition, the state has spent approximately \$7 million to close non-coal mine portals and vertical openings and \$3 million to eliminate coal-related environmental hazards.

All Abandoned Mine Land emergency projects in Colorado are completed by the Office of Surface Mining. Since 1977, more than 90 emergency projects have been completed at a cost of approximately \$1.6 million. These projects eliminated 68 subsidence hazards, 17 vertical openings, and five mine fires in populated areas.

Identified Abandoned Mine Land hazards remaining to be abated in Colorado include \$26 million in high-priority coal-related projects (largely subsidence and underground mine fires), \$600,000 in Priority 3 environmental hazards, and \$96 million in high-priority non-coal projects (portals and vertical openings). Colorado receives approximately \$2 million annually for Abandoned Mine Land reclamation.

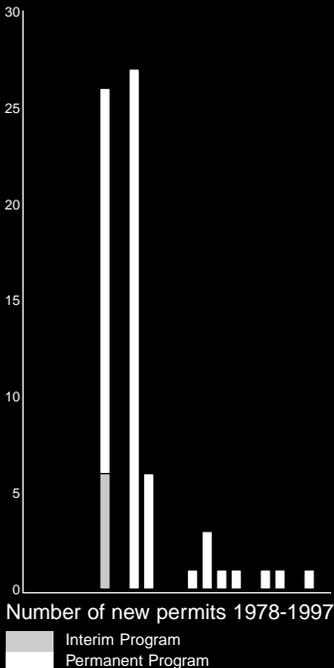
## coal production<sup>10</sup>

	1978		1997		1978-1997 Rank
	Amount	Percent U.S. Total	Amount	Percent U.S. Total	
<b>Tons Produced</b>					
Surface	5,848,896	2.3%	9,565,339	1.6%	12
Underground	2,766,467	1.8%	18,225,309	4.3%	9
Lignite	0	0%	0	0%	7
<b>Total</b>	<b>8,615,364</b>	<b>2.0%</b>	<b>27,790,648</b>	<b>2.5%</b>	<b>14</b>
<b>Number of Producing Mines</b>					
Surface (bituminous coal)	19	0.5%	7	0.2%	13
Underground	33	1.3%	12	0.7%	7
Lignite (surface)	0	0%	0	0%	5
<b>Total</b>	<b>52</b>	<b>0.8%</b>	<b>19</b>	<b>0.4%</b>	<b>11</b>
<b>Mine Production</b>					
Average	165,680	23.3%	1,462,665	555%	
>1,000,000 tons	1	2.0%	6	2.9%	
300,000-1,000,000 tons	6	2.9%	5	1.4%	
<300,000 tons	45	0.7%	8	0.2%	

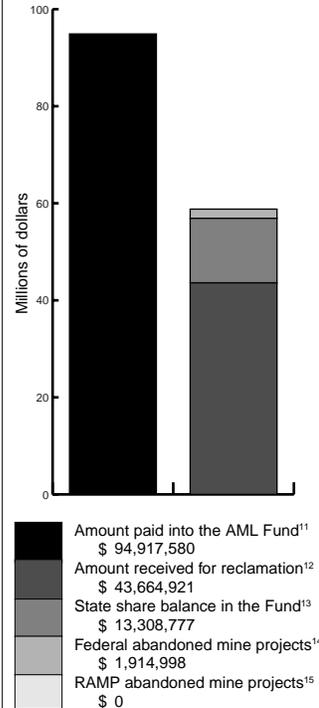


Production tonnage 1978-1997

U.S. Total  
Colorado Coal Production



Number of new permits 1978-1997  
Interim Program  
Permanent Program



# Active mining and reclamation<sup>16</sup>

	1978	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	Total
<b>Number of New Permits</b>																					
Surface Mining	NA	NA	NA	NA	NA	13	NA	11	3	0	0	0	1	1	1	0	0	1	0	0	26
Underground Mining	NA	NA	NA	NA	NA	13	NA	15	2	0	0	0	1	0	0	0	1	0	0	0	32
Other	NA	NA	NA	NA	NA	0	NA	1	1	0	0	1	1	0	0	0	0	0	0	1	5
<b>Acreage Permitted</b>																					
Surface Mining	1,134	2,158	9,094	10,751	25,700	1,030	2,441	3,590	0	0	193	0	0	39	720	0	0	591	0	0	57,441
Underground Mining	1,144	1,038	2,242	9,235	3,973	31,360	8,283	6,619	0	0	55	0	0	0	0	0	248	0	0	2,323	66,520
Other	0	0	0	0	0	0	0	126	0	0	0	0	4	0	0	0	0	0	0	0	130
<b>Acreage of Bond Release</b>																					
Interim Prog. (final)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 1	0	0	0	0	0	0	0	0	0	0	2,858	242	186	45	4	105	6	216	41	1272	4,975
Phase 2	0	0	0	0	0	0	0	0	0	0	50	34	20	0	4	0	0	151	35	476	770
Phase 3	0	0	0	0	0	0	0	0	0	0	0	34	24	0	4	0	3	0	38	296	399
<b>Inspections</b>																					
Complete	NA	NA	NA	NA	NA	187	171	343	239	233	229	180	224	251	224	244	236	217	178	240	3,396
Partial	NA	NA	NA	NA	NA	468	261	419	380	319	359	235	322	360	338	450	499	447	376	484	5,717
Oversight	0	0	0	NA	NA	47	110	49	NA	57	55	21	31	43	27	32	31	49	11	13	576
<b>Citations Issued</b>																					
NOV's	NA	NA	NA	NA	NA	57	29	172	63	50	44	23	41	36	37	129	63	39	16	19	818
CO's	NA	NA	NA	NA	NA	0	2	38	9	5	6	5	1	2	0	5	5	0	1	0	79

# Abandoned coal mine reclamation 1977-1997<sup>17</sup>

	Reclaimed Problems			Remaining Problems	
	OSM Emergency	State Emergency	Non-Emergency	Number	Estimated Cost
<b>Priority 1 &amp; 2 (Protection of Public Health, Safety, and General Welfare) and Emergency Projects</b>					
Clogged Streams (miles)	0	0	0	0	\$ 0
Clogged Stream Lands (acres)	0	0	0	0	0
Highwalls (feet)	0	0	52,142.0	1,030	30,000
Impoundments (count)	0	0	0	0	0
Piles & Embankments (acres)	0	0	18.6	0	0
Slides (acres)	10.0	0	0	0	0
Gases (count)	0	0	0	0	0
Equipment & Facilities (count)	0	0	1.0	1.0	2,000
Water Bodies (count)	0	0	0	0	0
Industrial Waste (acres)	0	0	2.0	0	0
Portals (count)	1.0	0	1,238.0	3,003.0	14,934,060
Polluted Water: Agriculture & Industrial (count)	0	0	4.0	0	0
Polluted Water: Human Consumption (count)	0	0	0	0	0
Subsidence (acres)	24.49	0	45.5	179.6	13,130,000
Surface Burning (acres)	0.3	0	31.0	8.0	75,000
Underground Mine Fires (acres)	0.3	0	179.5	216.5	11,100,000
Vertical Openings (count)	15	0	2,147.0	14,049.0	71,290,967
<b>Total</b>					<b>\$ 110,562,027</b>
<b>Priority 3 (Environmental Restoration)</b>					
Bench (acres)	0	0	3.0	58.0	\$ 201,500
Industrial Waste (acres)	0	0	5.0	3.0	13,000
Equipment & Facilities (count)	0	0	7.0	73.0	108,000
Gob (acres)	0	0	128.5	503.3	8,542,954
Highwall (feet)	0	0	2,027.5	1,100.0	82,500
Haul Road (acres)	0	0	0	4.0	13,000
Mine Opening (count)	0	0	21.0	303.0	725,000
Pit (acres)	0	0	82.9	98.0	441,900
Spoil Area (acres)	0	0	829.0	398.6	1,347,595
Slurry (acres)	0	0	0	0	0
Slump (acres)	0	0	0	25.0	804,000
Water (gallons/minute)	0	0	2.0	39.0	23,000
<b>Total</b>					<b>\$ 12,302,449</b>