

AJ Mine Infrastructure

The Alaska Juneau (AJ) Mine consists of significant existing underground infrastructure. Consideration of a future mine requires a close study and understanding of the AJ as it currently exists today. Historically, the AJ Mine operated from approximately 1893 to 1944. Over time, mining properties including the Ebner, Perseverance and Alaska Gastineau were consolidated into the into the AJ Mine.

In general, there are two areas within the mine that contain gold; they are referred to as the North Ore Body (NOB) and the South Ore Body (SOB). The SOB has been mined at higher elevations, between about 500 and 2500 feet above sea level. The extents of the NOB are from about 2000 feet above sea level to about 1000 feet below sea level. The depth of the NOB is not known. As an example, parts of the Treadwell mine extend to about 2,400 feet below sea level.

There are approximately 100 miles of tunnels in the AJ. In general, there are a series of vertical or near vertical tunnels (shafts, raises and winzes) that connect a series of horizontal tunnel “levels.” The levels are numbered and are spaced approximately 200 feet vertically apart. The main haulage level in the mine is called “4 Level” and is at an elevation of approximately 500’ above sea level.

Historically, the AJ ore was transported on rail cars on 4 Level, exiting the mountain next to the Mining Museum in Last Chance Basin. The tunnel extension of 4 Level that leads to the Mining Museum is referred to as the “Gold Creek Tunnel”. After exiting the mountain, the rail cars continued along the side of the mountain and through a shorter 2/3 mile long tunnel called the “Mill Tunnel” to the actual mill itself. The mill ruins can still be seen today above downtown Juneau. The actual ore bodies are two or more miles away from downtown and the mill.

Points of Access

There are a number of surface openings to the mine, but there are currently only two good access points. The gated Ebner Adit is at the beginning of the Perseverance Trail, at the end of Basin Road. The Ebner is only useful for foot traffic; after a walk of about one mile, there is a steep ladder that ascends approximately 100 feet up to 4 Level.

The Sheep Creek Adit is suitable for foot and motorized access and is located at an elevation of about 800’ in the Sheep Creek Valley. The road to Sheep Creek Valley is not suitable for year round, industrial or public access.

All of the other mine access points are remote, caved in or dangerous to use.

Gold Creek Drain Tunnel/Mine Drainage

In the initial days of the AJ, the workings would have been relatively dry. However, extensive mining created a number of openings into which rain and snow melt flow. The largest openings (Glory Holes) contribute the vast majority of this water. To deal with

the water, the AJ constructed a drainage tunnel called the Gold Creek Drain Tunnel. The Gold Creek Drain Tunnel is approximately 50' below 4 Level and the Gold Creek Tunnel.

Within the mine are a series of small ditches and drop tunnels "bean holes" that direct the water to the Drain Tunnel. The drainage system is well engineered and has functioned with little maintenance since the AJ shut down some 65 years ago.

The Gold Creek Drain Tunnel discharges from the mine upstream from the mining museum and can be seen from the lookout at the "Horn" on Perseverance Trail. All water that comes through the Drain Tunnel begins and ends in the Gold Creek watershed. Flows through the Drain Tunnel constitute about 15% of the flow in Gold Creek. The percentage of flow varies depending on the weather and the time of year and additional studies are needed to document percentage flows between Gold Creek and the Drain Tunnel.

Any water that is not captured and diverted to the Gold Creek Drain Tunnel ends up in the lower elevations of the NOB, often referred to as the "Deep North." The Deep North is very slowly filling up with water. Once filled with water, the Deep North will overflow into the Ebner and there will be a small flow out of the Ebner Adit at the Perseverance Trail Head. It is estimated that this process will take decades.

However, it is possible that a catastrophic event will change the mine drainage. Portions of the Drain Tunnel run through less competent rock. In these areas, rock is slowly collapsing into the Drain Tunnel. If the Drain Tunnel were to completely plug, the entire flow would find relief through the Ebner Adit.

Employment Stability by Alaska Industry			
(negative percentages indicate less stability)			
	<u>2005</u>		<u>2010</u>
Agriculture Forestry Fishing & Hunting	-20%	Agriculture Forestry Fishing & Hunting	-19%
Construction	-18%	Construction	-17%
Mining	-11%	Manufacturing	-5%
Arts Entertainment & Recreation	-9%	Mining	-8%
Unclassified	-8%	Arts Entertainment & Recreation	-8%
Manufacturing	-6%	Unclassified	-6%
Transportation & Warehousing	-6%	Health Care & Social Assistance	0%
Administrative & Waste Services	-3%	Utilities	-5%
Accommodations & Food Services	-3%	Accommodations & Food Services	-2%
Alaska Average	0%	Alaska Average	0%
Wholesale Trade	1%	Wholesale Trade	4%
Public Administration	1%	Management of Companies	5%
Professional & Technical Services	3%	Professional & Technical Services	2%
Retail Trade	3%	Retail Trade	4%
Educational Services	3%	Educational Services	-2%
Real Estate, Rental & Leasing	7%	Real Estate, Rental & Leasing	4%
Other Services except Public Administration	9%	Administrative & Waste Services	10%
Information	13%	Transportation & Warehousing	10%
Finance & Insurance	13%	Public Administration	10%
Utilities	15%	Other Services except Public Administration	14%
Health Care & Social Assistance	17%	Information	17%
Management of Companies	20%	Finance & Insurance	-2%

Source: Experience-based unemployment insurance rates published by the Alaska Dept. of Labor, *Unemployment Insurance Actuarial Study and Financial Handbook*, Dec. 2010, Table 3.4.

Historic Mill/Mill Tunnel

There is a common misperception that the historic mill above South Franklin Street downtown is synonymous with the AJ mine. It is not, the mill is simply the location where the ore was sorted, crushed and processed and is approximately two miles from the actual mine workings. Historically, the rock was sorted by hand, and white quartz rocks were sent to the mill and grey rock was sent by conveyors to the rock dump. The rock that was sent to the rock dump was used to fill large sections of downtown and is referred to variously as waste rock or country rock.

The Mill Tunnel was cleaned out in the mid 1970's and renovated for use as a drinking water reservoir. As such, it is no longer considered part of the mine infrastructure.