

A stylized illustration of a gold miner in silhouette, holding a pickaxe. The miner is positioned in the center, with the pickaxe held diagonally across their body. The background consists of a light yellow square with a darker yellow shape behind the miner, and several yellow triangles of varying sizes radiating from the right side, suggesting a sun or a bright light. The overall color palette is warm and golden.

# **Gold in the Carolinas**

**Historic Period**

1779 - Gold discovered in Little Meadow Creek, Cabarrus County, N.C. by Conrad Reed.

1827 - Gold discovered in creek gravels on Benjamin Haile's property in Lancaster County, S.C.

1828 – Gold discovered in creek gravels on Burrell Brewer's property in Chesterfield County.

1837-1860 Workings go deeper at Haile, to 95 feet in some places. Increasing sulfide content of the ore makes gold recovery difficult. The easily worked gravels and weathered bedrock are exhausted.

# Haile

1861-1865 No gold mined; however pyrite mined and sulfur extracted to support war effort. General Sherman sacks the facilities at Haile Mine.

Post War - Mine reopens, pits enlarged, tunnels excavated, some to approximately 75 feet deep.

1880-1890 Various methods attempted to extract gold from pyrite, none economical.

1888 - German metallurgist named Adolph Theis introduced the Theis Barrel Chlorination Process to extract gold from sulfur.

# Haile

1888-1908 Mining by open pit and underground. In 1908 a boiler explosion killed two men, one of whom was Ernest Theis (son of Adolph). Gold mining ceased. Production for this period totals over 150,000 ounces of gold from 830,000 tons of ore averaging 0.22 ounces of gold per ton.

1916-1918 Pyrite mined and sulfur extracted to support the war effort (World War I).

1936-1942 Open pit mining until President Roosevelt designated U.S. gold mines as nonessential to the efforts of World War II and closed them.







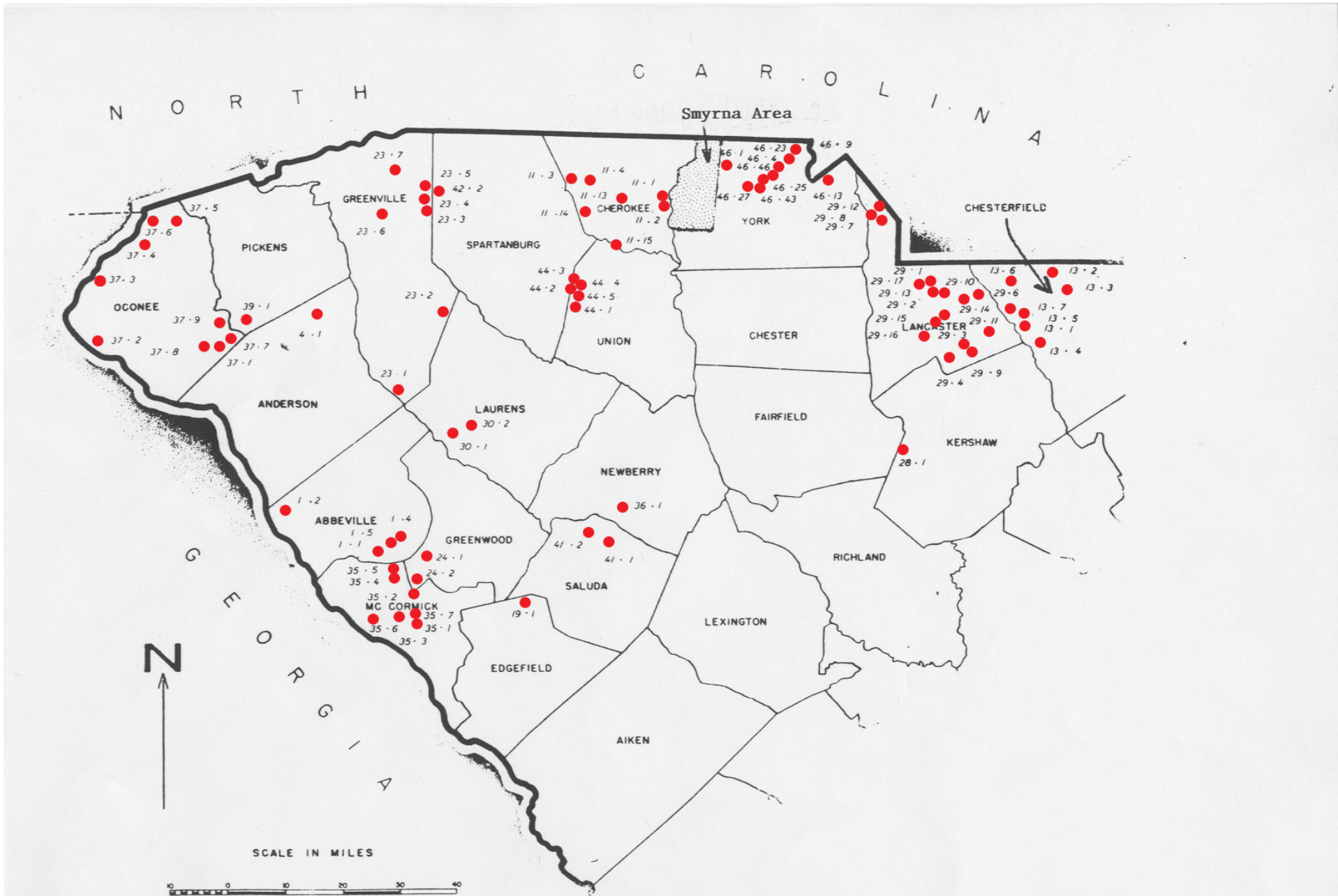


Figure 2. Gold localities of South Carolina. From McCauley C.K., and Butler, J.R., 1966, Gold Resources of South Carolina

### 10-Year Historical Daily Closing Prices

Last price as of 06-Nov-2012: \$1,710





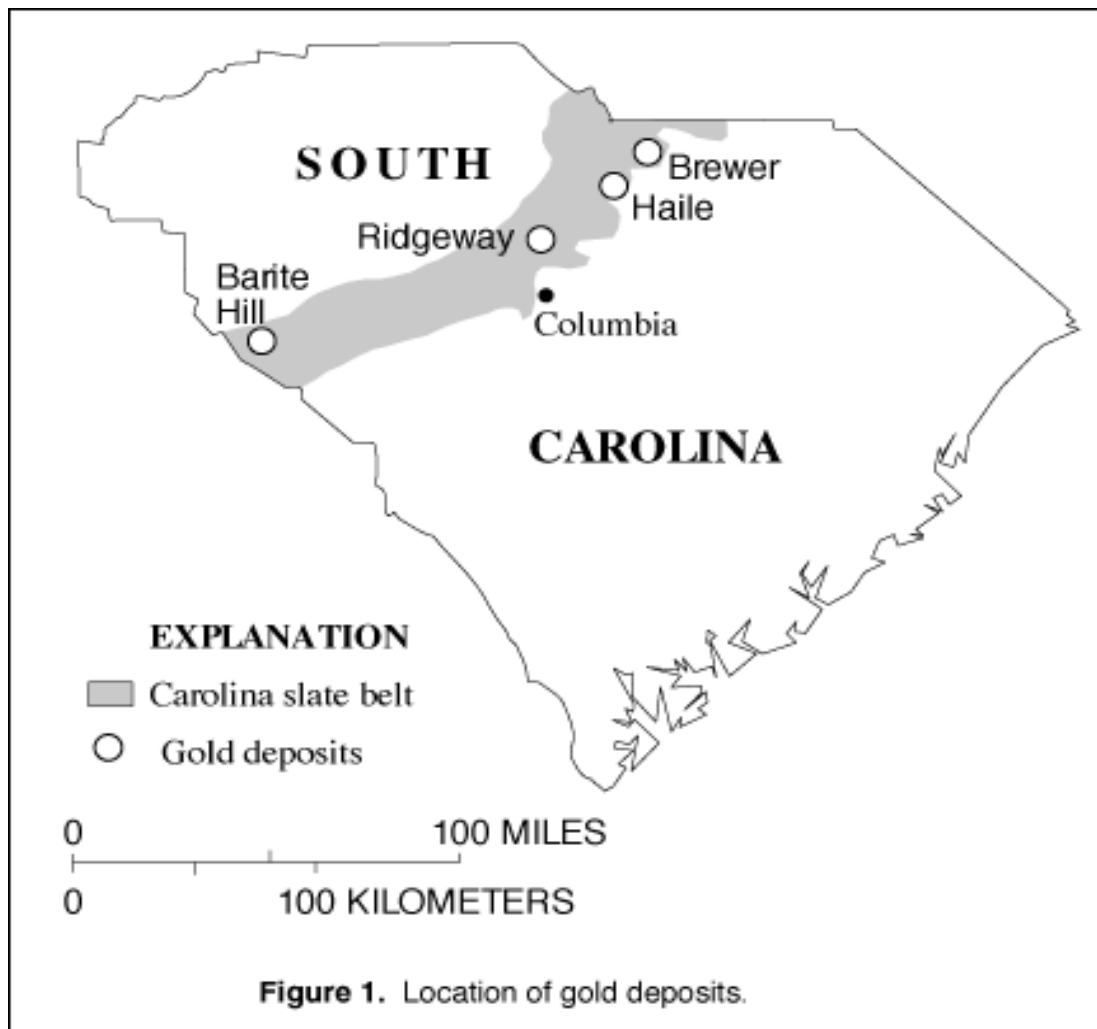
## Modern Era 1984-1999

The **first commercial application of heap leaching occurred in the late 1960's** in Nevada. By the mid-1970's, heap leaching technology was improved in order to handle low-grade clayey deposits. The improvements, called agglomeration-heap leaching were prompted by increased exploration for low grade deposits **as the price of gold increased** .

By the mid 1980's gold production from heap leaching had increased to over 30% of total U.S. gold production from an estimated 6% at the beginning of the 1980's.

The South Carolina Mining Act (Section 48-20-10) was promulgated in 1974.

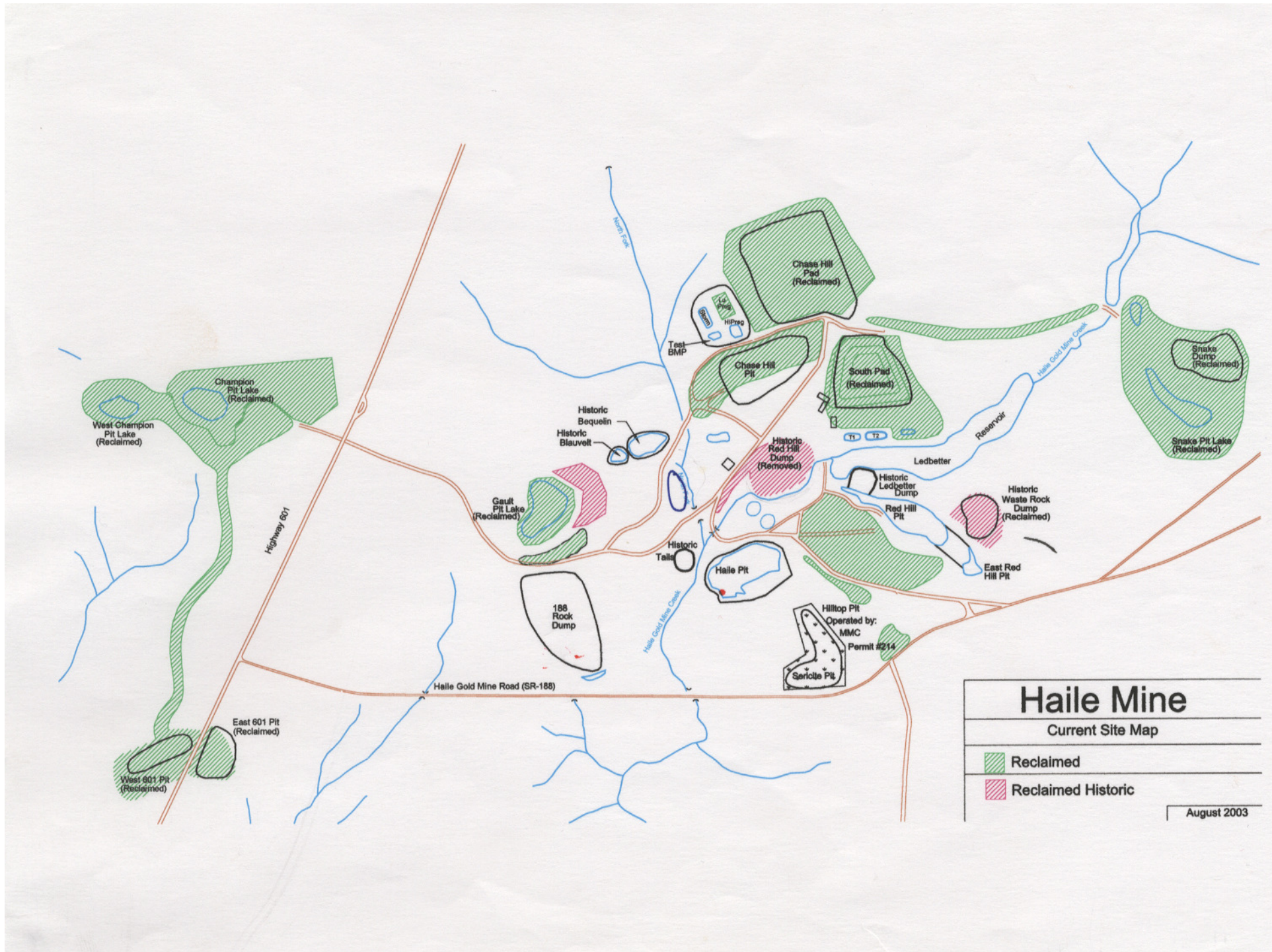




# Haile

1984 – Piedmont Mining Company purchased the Haile site. Mine operating permit (I-601) issued, NPDES discharge permit (SC0040479) issued in 1988.

The original mine operating permit included the construction of South Pad and mining in the historic Haile and Brumulo Pits. During mining, Permit I-601 was modified for each new pit or facility area. Each modification included an area-specific reclamation plan to comply with the S.C. Mining Regulations (R.89-220).



# Haile Mine

Current Site Map

- Reclaimed
- Reclaimed Historic

August 2003

# Haile

1992 – Amex Gold, Inc. acquired majority holding of the site and created Haile Mine Venture. NPDES stormwater coverage (SCR000388) obtained. Mining was terminated. Exploration conducted for possible site expansion. Based on gold prices at the time, expansion deemed unprofitable and the site was placed in care and maintenance mode (1995-1998).

Several small facilities were reclaimed concurrent with mining operations and prior to the care and maintenance period.



# Haile

1998 – Kinross Gold Corporation acquired a minority interest in the site through a merger with Amax Gold, Inc. Kinross subsequently acquired the entire interest with full ownership, simplified the venture and transferred all assets and permits to a wholly owned subsidiary – Haile Mining Company, Inc.

Kinross Gold Corporation evaluated the water balance site-wide and modified the reclamation approach at individual units, as needed, to prevent generation of acid mine drainage.

# Red Hill Pit (circa 1993 – 2003)





Figure 5.2 Northeast-southwest schematic section through Red Hill pit, post closure

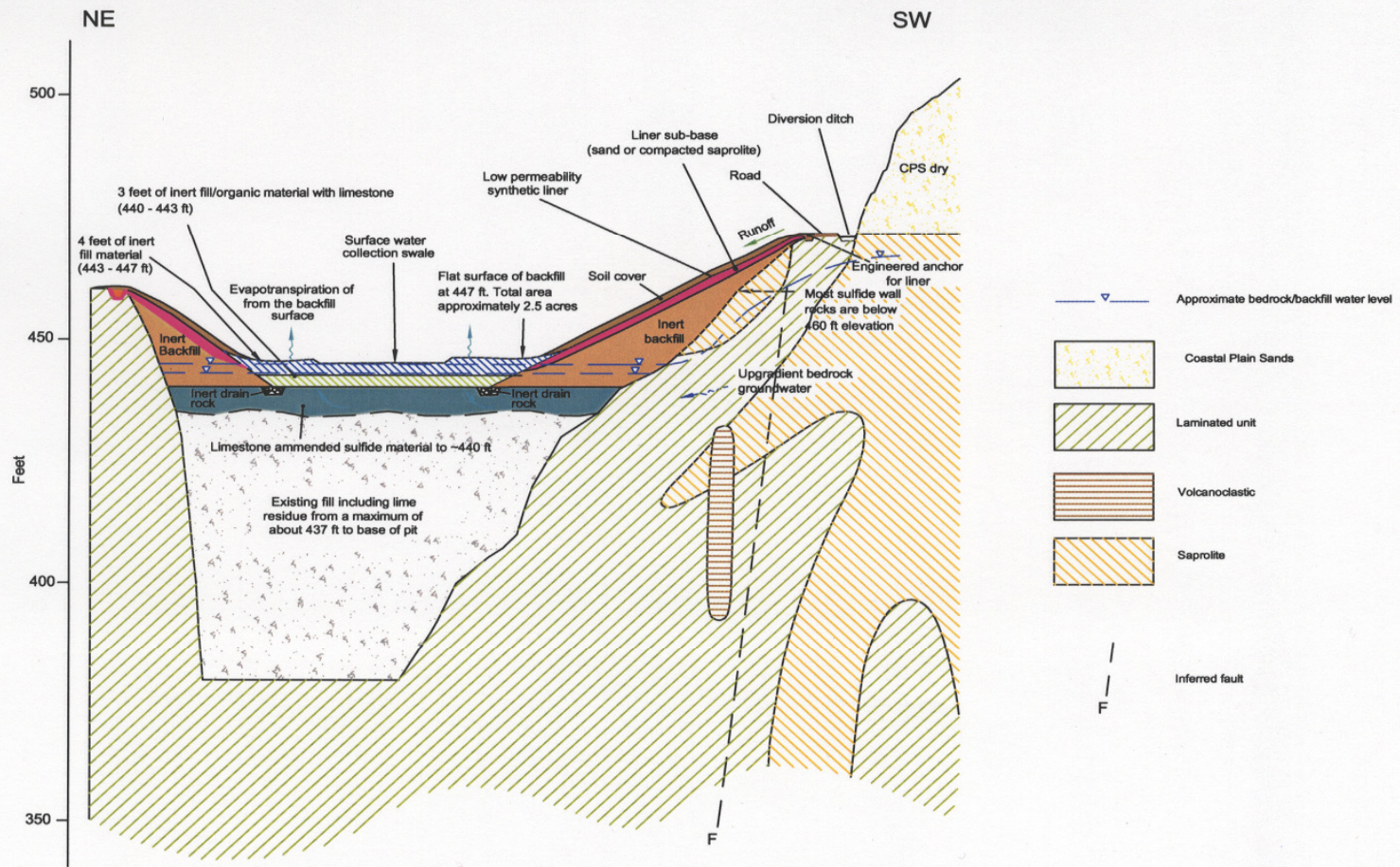


Figure 5.2

2285/R4



# Haile Gold Mine



05/14/2009



<b>Haile Gold Mine</b>				
		1994-2000		2009
	Year closed	Average pumped from Facility (gal/year)	Average gpm from Facility	Average gpm from Facility
Outfall 002				
Snake Pit	2003	20,097,714	38	0
Red Hill*	2006	3,032,000	6	0
Haile**	2005	29,715,200	57	3
188	2005	8,583,143	16	<0.5
Gault	2001	4,912,400	9	0
Chase Hill Pit	2004	6,879,143	13	~6
Champion	2000	14,359,929	27	0
W. Champion	1991	0	0	0
Blue Pool	2005	8,784,714	17	0
South Pad	2000	10,326,000	20	<0.03
Chase Pad	1999, 2004	10,692,667	20	<0.3
<b>NPDES discharges</b>		<b>117,382,910</b>	<b>223</b>	<b>~&lt;10</b>

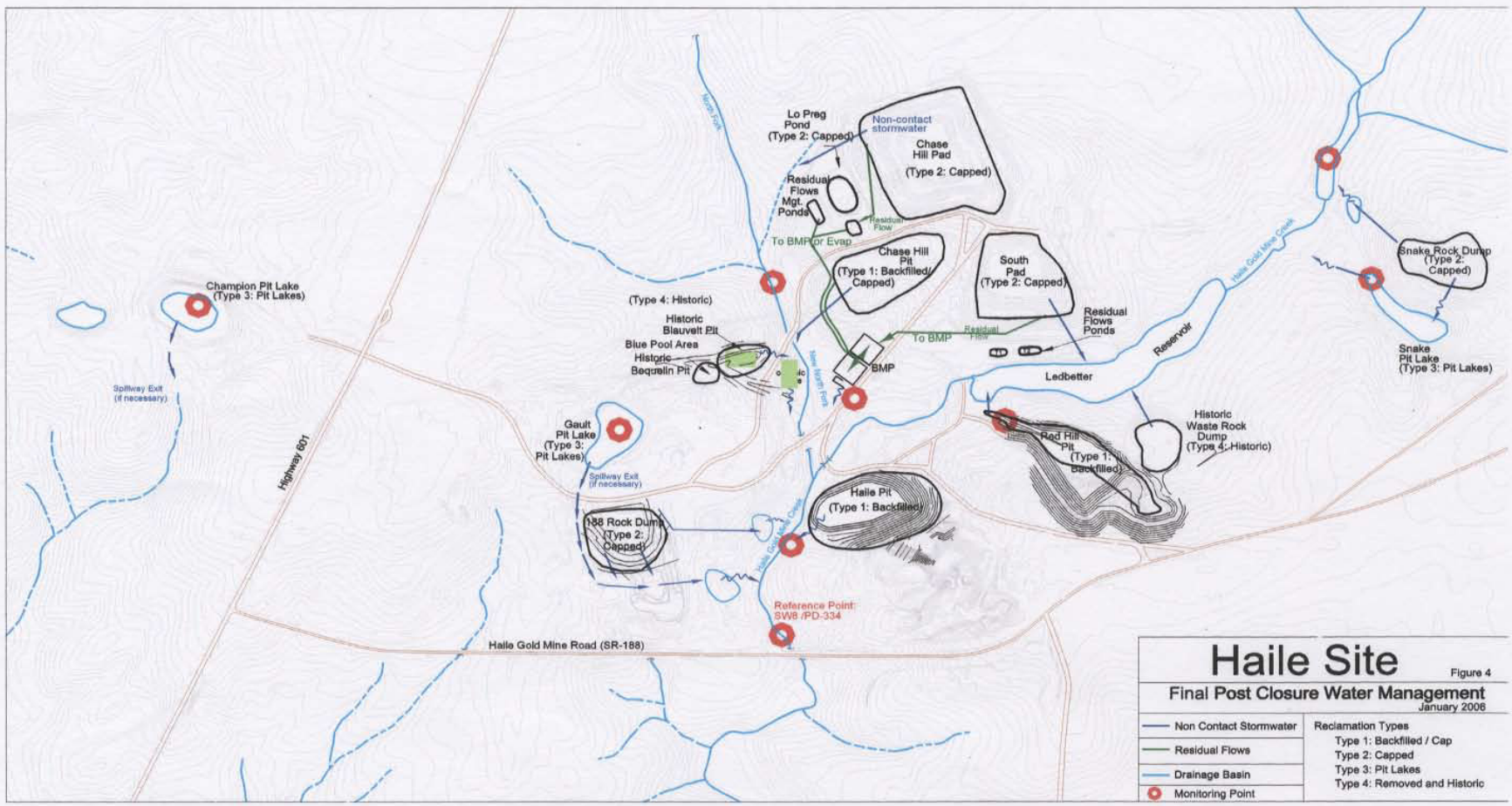
Major facility closure activities were initiated in 1999 and finished in 2006.

\* Red Hill: based on one year data. Facility used for water treatment in other years.

\*\* Haile: based on five years of data. Facility used for water treatment beginning in 1999.

**Figure 4. Post-closure Water Management & Monitoring Location Map**

A flow and monitoring diagram is present in Figure 4 to illustrate the final post-closure stormwater flows (indicated in blue) and reference points (in red).



# Water Quality – Red Hill Dump

<b>Parameter</b>	<b>Units</b>	<b>PRE - RECLAMATION</b>	<b>POST RECLAMATION</b>
pH	s.u	3.9	4.6
Acidity	mg/l	230	20
Sulfate	mg/l	430	29
Chromium in total	mg/l	<0.1	<0.01
Copper total	mg/l	<0.1	<0.01
Iron total	mg/l	11.9	1.9
Zinc total	mg/l	0.02	<0.01

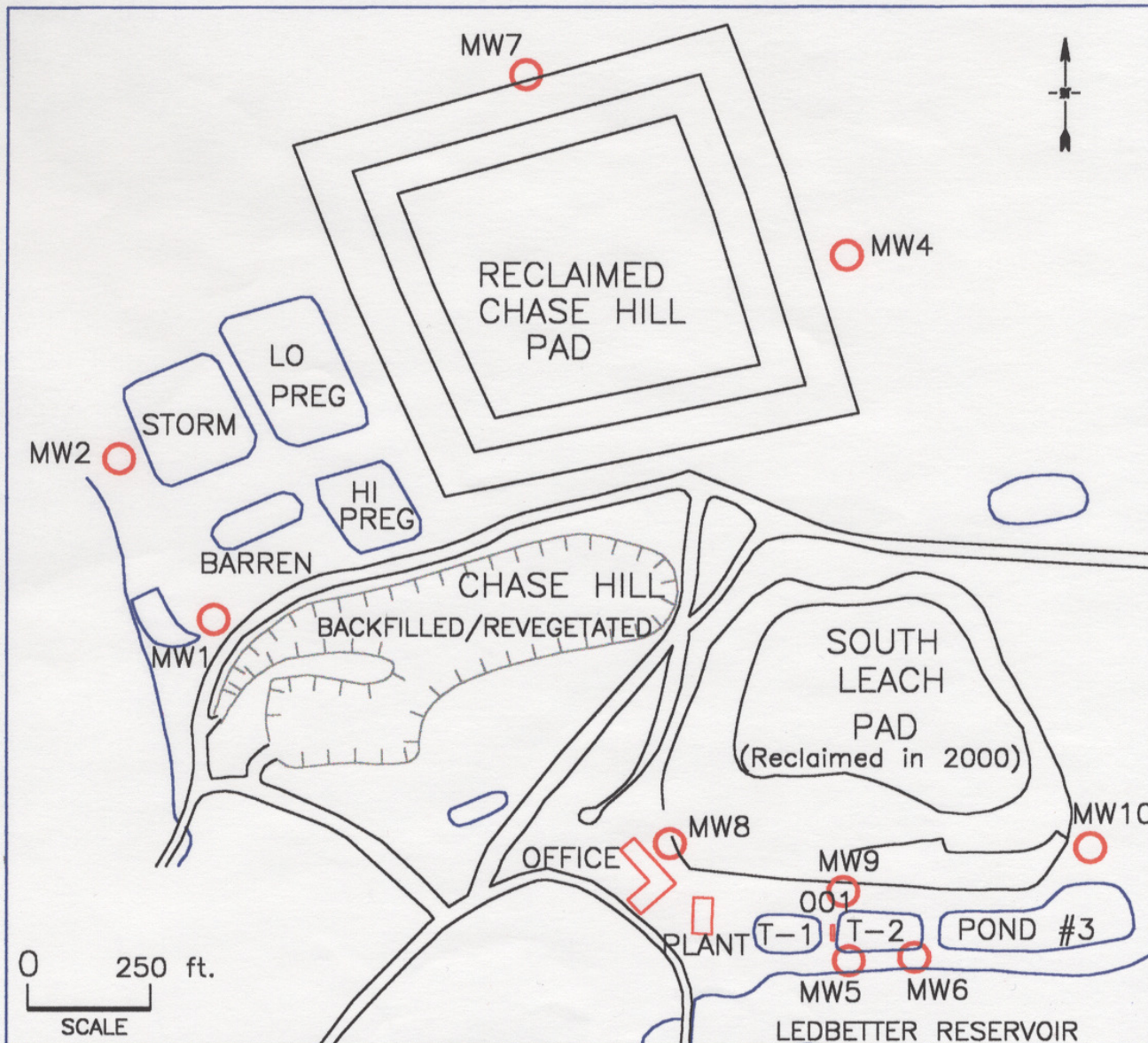
# Groundwater

Monitoring required by Bureau of Water construction permits #14534 and #15053. During active operations ten wells were sampled for 33 parameters on a quarterly basis.

Six wells are currently sampled, semiannually:  
GW from monitoring wells (MW-4, MW-7, MW-8, MW-9, and MW-10) surrounding the closed Chase Hill Pad/South Pad area is analyzed for pH, SpC, and temperature.

GW from monitoring well MW-1 is analyzed for pH, SpC, temperature, free cyanide, turbidity, TDS, sulfate, Cu, and Fe.





Haile Mining Company  
Monitoring Well Locations

## Groundwater Quality - Haile

	Upgradient CPS Seepage <sup>(1)</sup>	Deep bedrock groundwater <sup>(2)</sup>	Upstream surface water <sup>(3)</sup>
pH (su)	5.2, 5.8	5.4- 7.0	3.5- 4.5
Alkalinity, total (ppm as CaCO <sub>3</sub> )	5.9, 1.2	10- 80	<1- <1
TDS (mg/l)	32, 46	20- 140	15- 70
Chloride (mg/l)	2.4, 2.5	n/d- n/d	2.0- 3.0
Sulfate (mg/l)	5, 6	<2- 70	<2-5
Aluminum (mg/l)	<0.2, <0.2	<0.05- 2.5	0.2- 0.4
Barium (mg/l)	<0.01, 0.12	n/d- n/d	<0.02- 0.02
Cadmium	<0.005, <0.005	<0.001- <0.05	<0.001- <0.005
Calcium (mg/l)	0.53, <0.5	n/d- n/d	<5- <5
Copper (mg/l)	<0.01, <0.01	<0.002- <0.05	<0.02- 0.01
Iron (mg/l)	<0.05, 0.05	<0.002- 6	0.1- 0.3
Lead	<0.005, <0.005	<0.003- <0.01	<0.003- <0.01
Magnesium (mg/l)	<0.5, <0.5	n/d- n/d	<5- <5
Manganese (mg/l)	0.6, 0.62	<0.015- 1.1	<0.01- 0.03
Mercury	NA, NA	<0.0002- <0.0002	<0.0002- <0.0002
Potassium (mg/l)	1.4, <1	n/d- n/d	<1.0- <5
Sodium (mg/l)	0.93, 1.1	n/d- n/d	n/d- n/d
Zinc (mg/l)	<0.02, <0.02	<0.01- 0.05	<0.01- 0.02

(1) Based on data from temporary geotechnical holes RH-3-1 (12/11/02, 1/9/03)

(2) Range based on data from monitoring wells BMW -1, BMW -2, BMW -3. and BMW -6 (1994-2000)

(3) Range based on surface water monitoring point SW -1 (1993-2001)

from: Red Hill Pit Closure Approach, June 2003 by Water Management  
Consultants, Inc., Denver Colorado 80202

# Haile

October 16, 2007

Site transferred from Kinross Gold Corporation to Romarco Minerals, Inc. Romarco Minerals, Inc ([www.romarco.com](http://www.romarco.com)) initiates site exploration. Proven/probable reserves at 1.5 Million ounces at 1.3g/t gold.

October 22, 2008

With closure completed (i.e. earthmoving activities and vegetation established) during the 1999 to 2005 timeframe, Haile's reclamation bond decreased from \$6,128,400 to \$1,054,850.

# Ridgeway Gold Mine

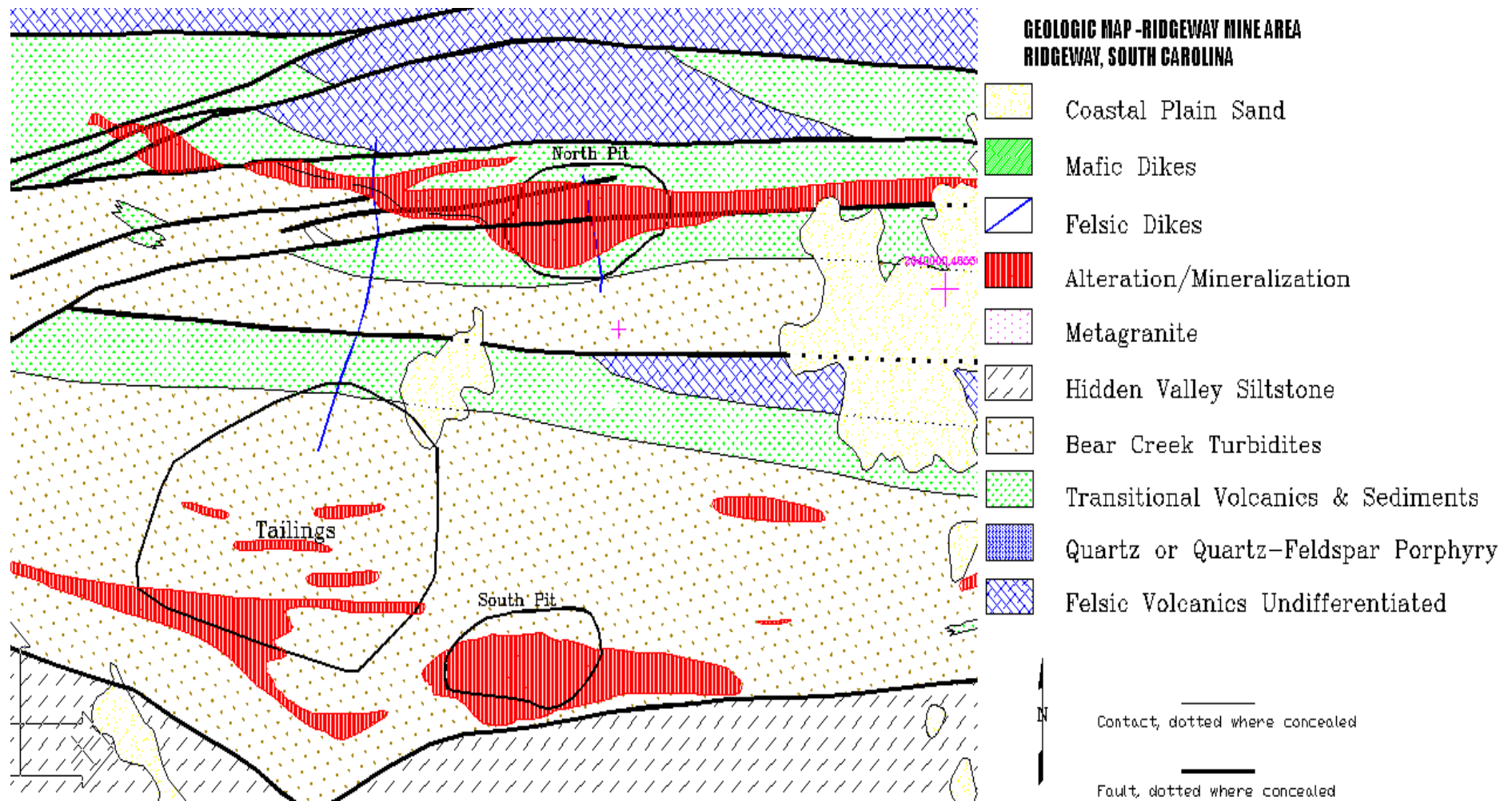
Located in Fairfield County, permit issued to Kennecott Mining Company ([www.kennecottminerals.com](http://www.kennecottminerals.com)) in 1987. Mine operated from 1988 through 1999. Closure completed in 2001,

Largest of the four modern mines – 919 acres affected and 1681 acres permitted (i.e. Haile Gold Mine affected 117 of the 294.5 acres permitted)

Most controversial of the gold mines due to size, location, and use of sodium cyanide as a leaching agent.



from: Geology of the Ridgeway Deposits, 1996, by Gillon, K.A.,  
 Spence, W.H., Duckett, R.P., Benson, C.H.

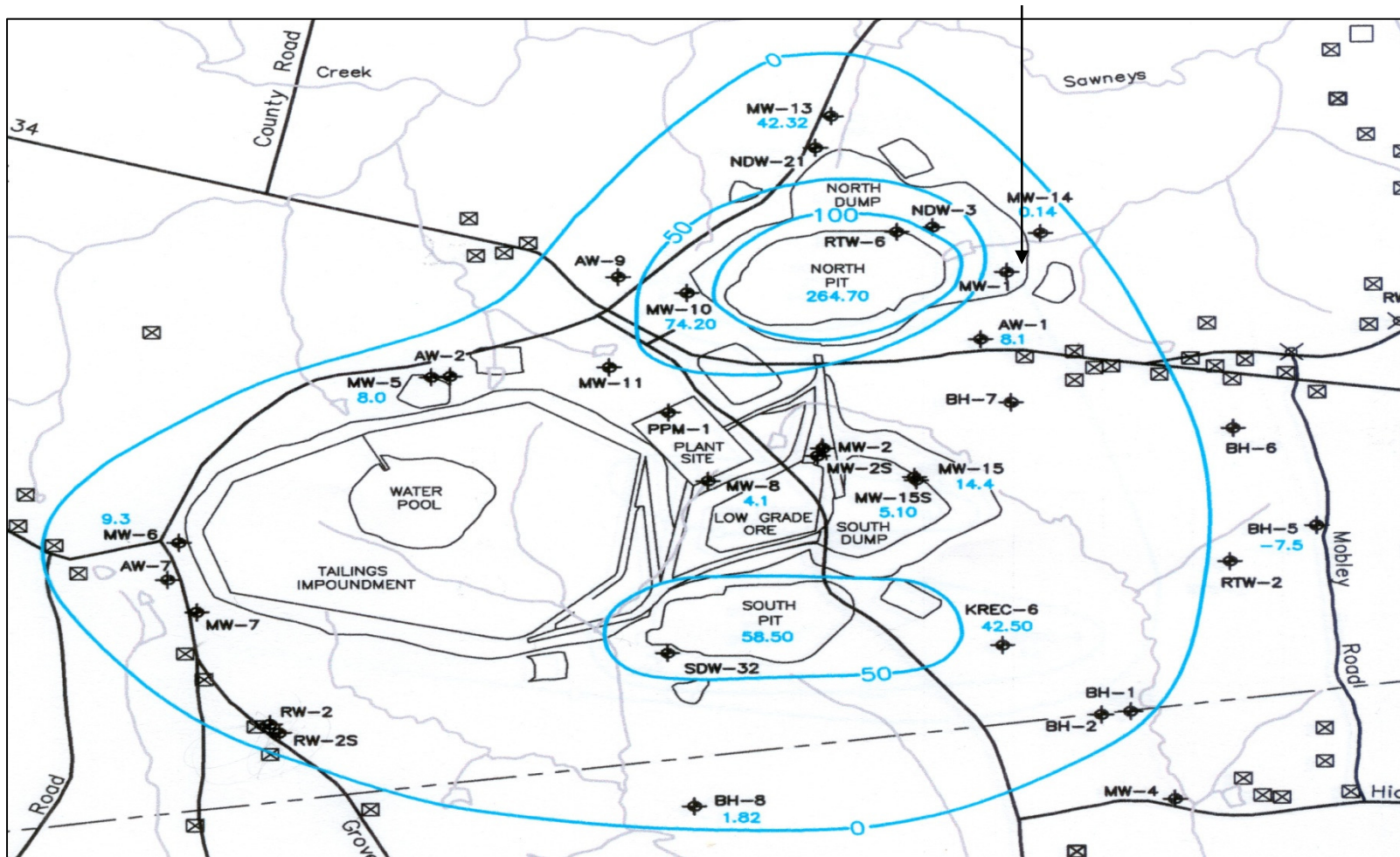






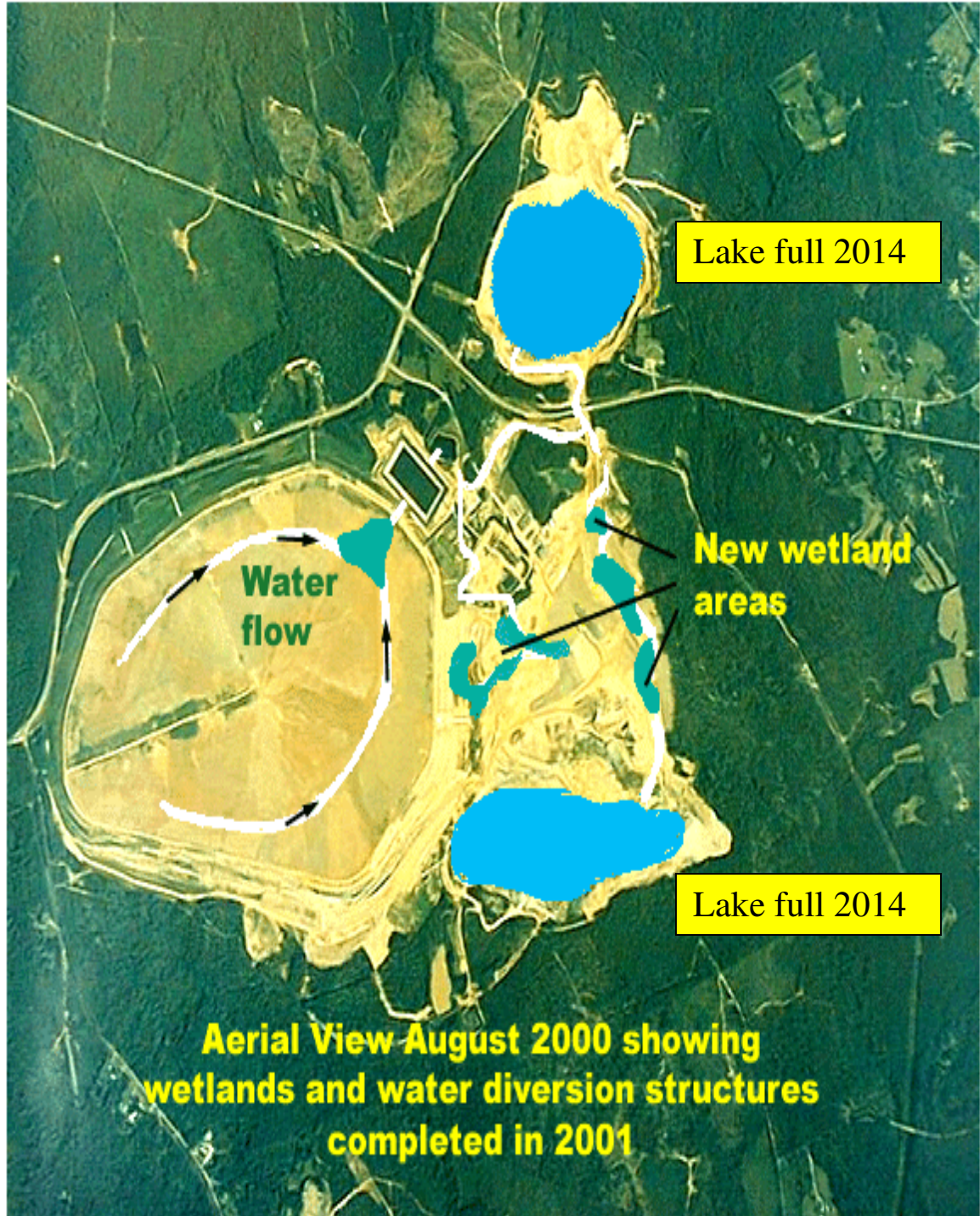


# Ridgeway Gold Mine



Contours represent average drawdown from pre-mining conditions as of January 2009. The zero contour marks the boundary where dewatering activities cease to have an effect on the potentiometric surface.





Lake full 2014

New wetland areas

Lake full 2014

Aerial View August 2000 showing wetlands and water diversion structures completed in 2001





**TAILINGS IMPOUNDMENT**

**NORTH PIT**

**SOUTH PIT**

600 yds











# Groundwater

Monitoring required by Bureau of Water construction permit #13546.

Twelve monitoring wells currently sampled on a semi-annual basis. Seven wells surround the Tailings Facility and the remaining five surround the pits.

GW from monitoring wells analyzed for water level, pH, SpC, temperature, free cyanide, turbidity, TDS, total hardness, total alkalinity, sulfate as  $\text{SO}_4$ , Cu, Ar, Pb, Hg, Zn and Fe.









# Ridgeway Gold Mine

February 8, 2005

Partial closure (i.e. earthmoving activities completed and vegetation established) approved for 302 acres of the 919 acres affected (i.e. approximately 1/2 area north of Hwy 34, plant site, low grade stockpile area, tailings impoundment, embankment and slopes of south pit).

Reclamation bond decreased from \$4,100,000 to \$1,000,000.

*Won the Bureau of Land Management's 2005 Hardrock Mineral Environmental Award*