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BASELINE ENVIRONMENTAL STUDY

PRESENTATION SUMMARY

LA FORMA GOLD MINE

FOR
DIAND WASTE MANAGEMENT

BY
LABERGE ENVIRONMENTAL SERVICES
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Presentation Summary July 11, 2000

BACKGROUND AND HISTORY OF LA FORMA GOLD MINE

The first recorded claims on Freegold Mountain and were staked by Fred Guder in June 1930 (Bostock 1957). By early 1931 well over one hundred claims had been recorded. Work on the vein quartz deposits began on the Spruce, Goose, and Theodore claims, which comprise the currently defined La Forma property, by trenching and drifting on the G-3 vein. The No.1 Adit on the G-3 vein, also known as the La Forma vein, was collared in 1931 at 1188.7 m.

In 1935-1936 Mt Freegold Yukon ML optioned the property and in 1938 T. C. Richards and E. Koebke moved the 9 tonne mill to the G-3 vein. At the end of 1936 a total of approximately 1500 feet of underground workings had been developed on the La Forma vein. Below: Bill Langham and Napoleon Garand, La Forma vein, 1956.

Between 1946 to 1958 additional exploration and development included further underground development of 2525 ft on the No. 4 adit and raises totalling 1935 feet.

Selective high grade mining in the 1960's supplied a 100 ton/day mill for a brief period. In 1982-83 Teck Exploration Limited and in 1987 Tally-Ho Exploration Limited carried out additional underground diamond drilling and the No. 5 Adit was collared at 3000 ft and driven for a total of 2001 feet

The property was acquired by Redell Mining Corp in 1993. Over the next few years, Redell completed a diamond drilling program consisting of 23 holes totalling 6600 feet. The company established an extensive camp, constructed a new mill on top of the 1960s mill site, and was planning for full production when operations ceased in 1996. The company restructured and changed its name to FM Resources Corp.

TRADITIONAL / LOCAL KNOWLEDGE AND ARCHAEOLOGICAL RECORD

The study area is within the traditional territory of the Little Salmon Carmacks First Nation (LSCFN), a Northern Tuchone speaking people. The LSCFN people used an extensive area from the Nisling River in the east and as far north as Dawson City. Their subsistence patterns and seasonal rounds varied to take advantage of local availability of particular species.

No systematic archaeological surveys or detailed excavations of large sites have been carried out in the La Forma study area. The Freegold Road corridor was studied in general, but there were no specific surveys done near this mine site.

Mr. Johnny Sam of the LSCFN advises that the Freegold Road (or Casino Trail) follows a traditional Northern Tutchone trade route into the mountains (Dawson Range). There were no specific archaeological studies of this route in the Mount Freegold section that he was aware of, but he recalled extensive documentation of archaeological sites elsewhere in the corridor and in the nearby Mount Nansen and Big Creek areas. He also recalled an effort to document medicinal uses of plants and their Northern Tuchone names some time ago, and believed there was a report produced on that. Most of the elders with direct knowledge of the traditional use of the La Forma site are now deceased. He suggested that the La Forma site was subject to typical nomadic pursuits of the Northern Tuchone.

He recalls that the Mount Freegold area was previously rich in wildlife. The area to the north-east of Mount Freegold in particular was an excellent area for game until the proliferation of access roads during the past few decades resulted in overhunting and habitat disruption. The decline in the moose population has been especially notable. Mr. Sam has no recollections of sheep on Mount Freegold. He says some First Nation elders remember the great herd of caribou (Fortymile herd) that used to migrate through the area. Caribou sightings are now rare.

Mr. Sam says that although the Mount Freegold area is a still good area for trapping, particularly for wolverine, trails have been destroyed by mineral exploration activity and by fire. He adds that less effort is put into trapping these days because of the current low fur prices. Johnny and Kathleen Sam (holder of trapping concession 147) have no cabins in the area. They use wall tents during the trapping season. The only LSCFN buildings Mr. Sam is aware of in the La Forma area is the Fairclough cabin on Seymour Creek.

ENVIRONMENTAL SETTING

The La Forma mine site lies at the south-eastern limit of Klondike Plateau Ecoregion. Characteristic features of this Ecoregion include rolling, unglaciated topography with moderate to deeply incised valleys and large structural basins composed of level to undulating terrain.

The study area is situated on the southern slopes of Mount Freegold in the Dawson Range. The site is on a south-westerly aspect and ranges in elevation from about 830 m ASL at Seymour Creek to 1453 m ASL at the summit of Mount Freegold. The La Forma adits and mill site are located on Forrest Gulch, which drains an area of about 1.5 km^2.

Presentation Summary July 11, 2000

Geology

The La Forma Gold Mine is one of a number of epithermal vein occurrences and copper-gold porphyries localized near the Big Creek fault, a north-west trending fault that follows the east side of the Dawson Range. Others deposits/occurrences within this belt include the Rambler, Antoniuk, Revenue, Cash, Casino and others.

Gold is found in both magnetite bodies within gneisses and quartzites as well as in gold-quartz veins containing variable amounts of pyrite in numerous locations on Mt. Freegold. Magnetite hosted gold occurrences are found mostly on the north-west end and on the east side of Freegold Mountain. The magnetite occurs as lenses and pods within gneisses and quartzites.

The gold-quartz-veins are composed of grey vitreous and fractured quartz with coatings and fracture fillings of mainly pyrite but also containing arsenopyrite, galena, sphalerite, tourmaline and tennantite. Individual veins have been traced for up to 500 m in strike length. The veins are variable in width from a few inches to 1.5 m and more in places.

Surface hydrology and climate

The La Forma property is situated on a south flank of Mount Freegold within the upper drainage basin of Seymour Creek (259 km2), a small tributary of the Big Creek watershed (1,750 km2). Big Creek is a small drainage of the upper Yukon River basin and flows into the Yukon River near Minto, Yukon. The focus of mine development, and of this assessment, was the La Forma G3 vein which is located in a fault that transects Forrest Gulch (1.45 km2), an intermittent stream draining into Seymour Creek.

The adjacent Antoniuk, Ant, and Goldstar properties are also part of the current La Forma land package. A portion of the land area covered by these mineral properties drains north east to Stoddart Creek, also a tributary of Big Creek. There has been no mine development activity on lands draining to Stoddart Creek.

The basin yield of the study area streams is very low, a function of the local dry climate. The Mount Freegold area is included within the Central Yukon Basin climatic regime (Wahl *et al.* 1987). The cold, semiarid climate of the region has a mean annual temperature of approximately -5.5^{0}C, with a summer mean of 10.5^{0}C and a winter mean of -23^{0}C. The lowest precipitation in Carmacks, for the period 1963 to 1997, occurs in April, with a monthly mean of 6.7 mm, and the highest occurs in July, with a monthly mean of 54.8 mm.

Snow survey data, collected from Mount Nansen (62^0 02' N 137^0 03' W, elev. 1021 m ASL) shows a mean snow water equivalent of 66 mm on March 1st, 76 mm on April 1st and 12 mm on May 1st for the period 1976 to 1999 (Indian and Northern Affairs Canada 1999). Data from Casino Creek to the north (62^0 44' N 138^0 48' W, elev. 1065 m ASL) shows a significantly higher mean snow water equivalent (102 mm on March 1st, 124 mm on April 1st and 121 mm on May 1st) for the same period.

The region has a net water deficit. Annual evaporation significantly exceeds precipitation from May through August.

Terrestrial environment

The terrestrial biota of the Mount Freegold area is characteristic of the region's boreal, montane forests. There has been limited impact on this environment from mineral exploration activity during the past 70 years.

Vegetation

Four major vegetation types are found on the La Forma Gold Mine property:

1. Upland White Spruce Forest

The most common vegetation type on the La Forma property, upland white spruce forest is found on most of the lower slopes in the area. White spruce (*Picea glauca*) along with trembling aspen (*Populus tremuloides*) and Alaskan birch (*Betula neoalaskana*) are the dominant tree species.

2. South - Facing Grassland

Grassland, dominated by trembling aspen (*Populus tremuloides*), purple reed grass (*Calamagrostis purpurascens* ssp. *purpurascens*) and prairie sagewort (*Artemisia frigida*), occurs on steeper southerly-facing slopes. On the La Forma property, it is most common on the south-easterly-facing slopes along the tributary streams draining Mount Freegold.

3. Subalpine Transition

This vegetation type is found on the upper colluvial slopes of Mount Freegold. It forms the transition between the upland white spruce forest and the alpine tundra. It is characterized by intermittent stands of alpine fir (*Abies lasiocarpa*) and a dense shrub layer of dwarf birch (*Betula glandulosa*) and willows (*Salix* spp.). The Subalpine zone occurs on the south side of Mount Freegold at elevations above about 1200 m ASL.

4. Alpine Tundra

Alpine tundra vegetation is dominated by dwarf ericaceous shrubs, forbs and lichens. It is found on Mount Freegold at elevations above about 1370 m ASL (Oswald and Senyk 1977).

Natural Revegetation of Disturbed Sites

Most of the disturbed areas on the La Forma property appear to be revegetating naturally. Revegetation remains sparse, however, on steeper cutbanks, wasterock disposal dumps and the more compacted road surfaces.

The disturbed areas on the property have been invaded by some 25 colonizing plant species (see Appendix D). These include shrubs such as balsam poplar (*Populus balsamifera*), trembling aspen (*Populus tremuloides*), mountain alder (*Alnus crispa*), Alaskan birch (*Betula alaskana*), willow (*Salix* spp.) and white spruce (*Picea glauca*). Native graminoids colonizing these disturbed sites include northern rough fescue (*Festuca altaica*), spike trisetum (*Trisetum spicatum*), blue-joint (*Calamagrostis canadensis*), purple reed grass (*Calamagrostis purpurascens*), ticklegrass (*Agrostis scabra*) and slender wheatgrass (*Elymus trachycaulus*).

Wildlife

Caribou

Historically, the Dawson Range was occupied by portions of the Fortymile Caribou Herd, a large barrenground herd (>500,000 animals) that was decimated by uncontrolled hunting in early 1900s. The herd made extensive use of this area during winter, but was last recorded in the vicinity in 1942 (Farnell *et al.* 1991).

The Mount Freegold area is part of the home range of the Klaza Caribou Herd. This small woodland herd, last censused in 1995 at about 450 animals, is believed to be stable (Farnell 1996). The core winter range of this herd is in the Hayes Creek area north of Prospector Mountain. Harvest of this herd is through permit hunting only.

Moose

Moose densities in the Mount Freegold area are among the lowest in the Yukon. Last surveyed in 1987, the Casino Trail census area is estimated to have about 45 moose per 1000 km^2 (Ward 1997). Predation is believed to be a major factor in suppressing moose numbers in this area (Markel and Larsen 1987).

Thinhorn Sheep

A small population of Dall sheep (60-70 animals) occupy the alpine habitat of the Dawson Range (Hoefs and Lortie 1975), but there are no records of their occurrence on Mount Freegold.

Mule Deer

Mule deer have been observed in the Big Creek area. The number of deer resident to the area is not known, but is believed to be low.

Predators

Wolf densities in the Mount Freegold area are unknown, but are likely to be low based on an estimated density of 32 wolves / 1000 km^2 documented from the Nisling River area to the south (Baer and Hayes 1987). Grizzly bear densities are also unknown, but probably range from 10 bears / 1000 km^2 to 16 bears / 1000 km^2 (B. Smith pers. comm.). The relative abundance of black bears in the area is expected to

be moderate (MacHutchon and Smith 1990). Other mammalian predators expected to be in the Mount Freegold area include coyote, fox, wolverine, marten and lynx.

Wildlife Utilization

The Mount Freegold area is included in game management subzone 5-24. The annual big game harvest from this subzone is shown in the table below. As the table shows, big game harvest has been low. The largest moose harvest was in 1987 when 6 animals were taken from the area.

Yukon Hunting and Guiding Ltd. owned by Rod Hardie of Whitehorse, currently holds the outfitting concession (registered guiding area 13) affected by mine development in the study area.

The La Forma site is in registered trapping concession 147, currently held by Kathleen Sam of Carmacks.

Aquatic environment

The only significant water body in the study area is Seymour Creek, located west of the Freegold road and at the extreme south-west edge of the La Forma property. The Seymour creek valley is relatively narrow (< 500 meters), unglaciated and is characterized with steep valley walls. Seymour creek in the vicinity of the mine meanders slowly across the valley floor, occasionally abutting against the valley walls. The smaller drainages that dominate the valley walls, originating from higher elevations, tend to be intermittent and generally inaccessible to fish.

Fisheries surveys have confirmed the presence of juvenile Chinook salmon, arctic grayling, round whitefish and slimy sculpin throughout various reaches and tributaries of the Big Creek watershed (DIAND et al, 1985). More specifically, arctic grayling and juvenile Chinook salmon were found to inhabit the lower reach of Seymour Creek, downstream of the Bow Creek confluence. Fish utilization of the habitat on the upper reaches of Seymour Creek near the La Forma Mine remains unknown.

However, the excellent water quality and presence of benthic invertebrate fauna in this region suggest the upper reaches as fish rearing habitat. Barriers may prevent fish access.

The dominant issue with respect to fish habitat management of Seymour Creek at the time of the assessment was placer mining. The upper reach of Seymour Creek closest to the La Forma site (above the confluence with Bow Creek) is currently classified as Type III fisheries habitat under the Yukon Placer Authorization. Type III fisheries habitat are defined as streams that contain fish having significant use by First Nations, commercial, sport or domestic fisheries or contributing to biological diversity. The lower reach of Seymour Creek (below confluence with Bow Creek) is classified as a Type II or salmon rearing stream. Type II streams are defined as streams and/or stream reaches used for rearing by salmon, trout and char for all or part of the year. Water quality within Seymour Creek has been deferred of fish values to facilitate placer mining. The maximum allowable sediment discharge into the Seymour Creek drainage through placer mine effluent is to not exceed 1100 mg/l of suspended solids.

Apart from Seymour Creek, there is no fisheries habitat located on the La Forma site. All surface drainages associated with the site are seasonal, flowing perhaps only during heavy precipitation events or snowmelt. The Freegold road forms a boundary between the mine site and Seymour Creek. There is a small culvert that formerly directed seasonal flow from Forrest Gulch to Seymour Creek. The area is now filled with road material and soil from the No. Five adit waste dump. The channel of Forrest Gulch was examined for most of its length, and was dry except for a two hundred meter section directly downstream of No. Four adit discharge.

Seymour Creek was sampled and surveyed within a reach parallel to the Freegold Road and downstream of its confluence with Forest Gulch.

Water quality

Mine water seepage, flow from Level four adit, a water well near the Level four adit, and Seymour Creek were sampled for a suite of water quality parameters during the field investigation. Historic water quality records were examined.

During the latest period of activity at the La Forma mine, the Redell Mining Corporation was granted Water License QZ95-006 (Yukon Territory Water Board, October, 1995). Under the licence, water quality monitoring and discharge standards were set for the Level four adit discharge.

Current water quality analyses show seepage and discharge from adit workings, and a drilled well meet both drinking water and metal mining liquid effluent guidelines for all regulated parameters except arsenic. Arsenic levels in the Level Four Adit flow are above those levels recommended for drinking water, but are within metal mining liquid effluent regulations for a grab sample. Water quality guidelines for the protection of aquatic life were met in Seymour Creek for all parameters.

The long history of exploration in both quartz and placer deposits have caused many disturbances to the vegetative cover in the Seymour Creek valley. The cumulative effects of these disturbances on fish habitat in the Seymour Creek drainage is largely unknown.

Regional stream sediment geochemistry

Six stream silt samples were collected from creeks draining Freegold Mountain into Stoddard and Seymour creeks. The samples were collected for the GSC's Regional Geochemical Sampling program (OF 1220). The pH of water from these sample sites ranged between 6.3 and 7.5. One sample from a creek draining the north-east side of Mount Freegold was anomalous in antimony (Sb 2.2 ppm) and lead (Pb 23 ppm), two other samples were anomalous in antimony (Sb 3,4 and 3.6 ppm). Apart from this, the stream silt samples draining Mt Freegold are low in most elements associated with epithermal or contact metamorphic mineralization.

SITE DESCRIPTION

Buildings and infrastructure

There are fifteen buildings on the site. The majority of these are mobile trailer units and wood frame structures at the camp. One is a complete mill shelter and partial plant, and the rest of the site buildings are various storage and utility buildings and old log structures dating to the 1940s. The remains of the 1939 mill and log buildings can still be seen, although the mill is almost covered in waste rock. The 1966 mill at the No. Four adit was blasted, burned, and covered by fill to make way for the new mill buildings constructed on the site in 1996. The camp was powered by a diesel generator which has been removed. Garbage was incinerated and hauled out.

There was no litter or casual garbage dumps on site. The camp was served by an on site sewage disposal system which remains in place. There is very little in the way of equipment at this site, apart from some crushing circuit equipment in the 1996 mill buildings.

Camp Area

The main camp area was shut down in 1996, having been constructed to house a significant work force. An on site sewage disposal system was installed in 1995. See photos 1 through 5, Appendix A. Access to the buildings in the camp area is not restricted. Few doors were locked, and the access road was passable by conventional vehicle. There was no restriction to pedestrian traffic. The camp generator has been removed. Housekeeping issues appear to have been dealt with satisfactorily: there was no domestic garbage left on site and litter was minimal. There was approximately 100 litres of used oil left behind in plastic pails.

Level Four Adit and Mill Buildings

At the Level Four Adit there is a concentrator building with some crushing equipment and a conveyor belt system newly built in 1996. The area on which these buildings are located is the footprint of an earlier mill, constructed in 1964/5, which had produced

1,600 ounces of gold from 8,653 tonnes of ore. The original building was burned, blasted, and covered with fill to make room for the new mill. An assessment made in 1993 Shows the mill building and waste piles intact, while the recent assessment found these features to be totally buried.

Level Three Adit

This adit was collared in 1936. Development work occurred in recent years. The adit has small seeps but the flow is negligible. There is a broken beam near the opening, and access is not restricted. There is some metal waste and wood debris in the area.

Level Two Adit

The level two adit was also collared in the 1930s, and was the site of the most recent development. There is an open pit a few hundred meters above the adit where the G3 vein surfaced. Seepage of about 2 litres per minute resulted in a pond of water about 80 meters in. The opening is not restricted. There are some utility buildings at the opening, and a drum of waste diesel oil, apparently used as cleaning fluid, near the buildings. Metal waste is also located here in the form of steel pipe, scrap metal, and empty drums.

Core Storage

The modern day core storage is located at the former Archer Cathro camp one kilometre from the Freegold road. The storage is in a recently built metal roofed structure in a clearing on stable ground. There are several old tent frames, an old water tank, some metal waste is located here in the form of rail buckets, empty drums and discarded parts.

Inventory of access and exploration roads

The exploration activity by surface trenching was focussed on the G3 or La Forma vein and the Rambler vein. The trenches range from 70 years old to very recent. The oldest trenches were observed on the hill side near Mount Freegold on what is now called the Goldstar property. These were generally about 2 meters wide and ranged in

length from 10 to 60 meters with varying depths. All of the old trenches were well vegetated by numerous species of shrubs and grasses.

Access to this property from Km 66 of the Freegold road was partly obstructed by earthen berms pushed across the road. These were easily negotiable with a 4x4 vehicle. The entire site was accessible to pedestrian and off road vehicle traffic at the time of the site visit.

There was a network of access roads throughout the property. A crude estimate would be in the order of 10 kilometres. Roads were built mainly by sidecasting material downslope. Most of the roads were in fairly stable condition but one area above the Level Two Adit showed signs of serious erosion.

Waste rock and ore storage piles

There are waste rock piles at the Level two, Level three, Level four and Level five adits (No.s 2 through 5). The 1939 mill processed about 1,300 tonnes of ore, and must have deposited tailings between the Level two and Level three adits. All processed material, and even the mill itself, is now almost buried by waste rock from development of the No. 2 adit over the years.

The Level Four Adit area contains the most significant waste dump. The 1965 mill certainly would have generated tailings here when it processed 8,653 tonnes of ore. The site is now covered completely by waste rock and spoil from cutting the slope and levelling the site for the 1996 mill buildings. There is a pile of stockpiled ore located in the clearing next to the mill. None of the above materials appear to be currently affecting the environment through metals leaching or acid rock drainage. Erosion slope failures were observed on the dump, but transport of soils seems limited to the toe of the dump.

MINE OPERATIONS AND PROCESSES

Limited production began in 1939 on the La Forma Claims (892 tons produced 1146 ounces gold and 75 ounces silver) but was discontinued in early 1940 after producing 292 ounces of gold, (Bostock 1941, Cooke, 1960).

Between June 1965 and February 1966 Discovery Mines Limited produced 1,610 ounces of gold and 570 ounces of silver from 8,653 tonnes before terminating production because of increased operating costs, poor gold recovery and lower grades than expected (Findlay, 1967).

In total, over the past 70 years, some 10,000 tonnes of ore has been milled from the La Forma vein producing some 2750 ounces of gold.

The Antoniuk Deposit is located approximately 1 km east of the La Forma vein and was evaluated for its heap leach potential by Archer Cathro and Associates. This involves outlining oxidized ore that is amenable to heap leach extraction. Work on the Antoniuk deposit during 1985 indicated a geological reserve of 2.2 million tonnes grading 2.06 g/t au. Additional testing indicated that the ore could be leached with recoveries of 95.6 % in 15 days with cyanide consumption of 0.23 kg/tonne and an unusually low lime consumption of 0.23 kg/tonne (Eaton ands Main, 1985)

Another proposal, put forward by Redell, was to truck concentrate to the BYG mill at Mount Nansen.

QUALITATIVE IDENTIFICATION OF ENVIRONMENTAL AND/OR HUMAN HEALTH AND SAFETY CONCERNS

Hazardous / special waste inventory

Developed areas of the site were checked for storage or spills of petroleum products and other chemicals. One sample of oil was taken which was identified as a drum of waste diesel fuel. There was about 100 litres of used oil stored in small containers at the camp site. No evidence of spills or leaks were found except for the generator building at the main camp site where a 2 m by 3 m surface soil stain was noticed. The stain did not penetrate more than 10 cm indicative of a small volume release. There are about 50 tonnes of shotcrete cement mix in plastic sacks located between the camp and mill building, apparently in good condition. There were no compressed gases in cylinders and no remaining petroleum products or chemicals stored on site.

Geochemical stability assessment

A total of eight samples were submitted for Gold plus 31 element ICP analyses and four of these samples were also analysed for an Acid/Base accounting.

The 31 element ICP package shows that the ore materials at the La Forma site contain gold (0.84 to 36.96 g/t Au), silver (3.4- 709 g/t Ag) and have elevated arsenic (82- >10000 ppm As). One sample (128878) returned high values for antimony (2990 ppm Sb), copper (571 ppm Cu), lead (2030 ppm Pb), zinc (1040 ppm Zn), bismuth (222 ppm Bi) and cadmium (8 ppm Cd). This sample was collected from an abandoned trench on the Augusta claim north-west of Freegold mountain and is representative of the gold bearing magnetite bodies within the Yukon Tanana terrane metamorphic rocks. The sample collected from this mineralization type contains bismuth and cadmium, indicative of a metamorphic origin and they also contain higher arsenic, copper, lead, zinc and antimony than do samples collected from the La Forma vein proper.

Samples 12881-12883 were collected from ore dumps at the No 4 adit located beside the partially installed new mill. There are approximately 400 tonnes of ore stockpiled beside the No 4 Adit and mill. Samples were collected from the material that showed the greatest degree of weathered sulfides on surface. Of the three samples analysed, sample 12882 contained the highest gold value at 36.96 g/t Au and 3610 ppm As. The two other samples (12881 & 12883) contained 0.84 g/t and 2.03 g/t Au and 746 and 2430 ppm As.

For all samples analysed, copper ranged between 5 and 184 ppm, lead between 38 and 2030 ppm, zinc between 18 and 1040 ppm and total iron between 1.32 and 13.95 %. The highest total iron was from sample 12878 and is mostly accounted for by the oxide phase magnetite.

Metals leaching/acid rock drainage analysis

In 1995 Redell Mining reported: "The pH of the ore sample was 7.2 indicating that acid generation had not taken place prior to sampling. The sample had a total sulphur content 0f 0.48%, sulphide sulphur content of 0.18%. The acid generating potential of the sulphide sulphur portion of the rock is 5.6 kg $CaCo_3$/t. The net acid neutralizing potential was negligible (2 kg $CaCo_3$/t). With the exception of arsenic, which was present in an average concentration of 5000 μg/g over the interval, concentrations of heavy metals were low. Leachate from the leach extraction test had 0.430 mg/L of dissolved arsenic.

The waste rock sample had a paste pH of 8.4. Total sulphur was very low (0.092%) with much of it (0.08%) present as sulphide sulphur. The net acid generating potential was very low (3 kg $CaCo_3$/t) and the neutralizing potential was 19 kg $CaCo_3$/t. The ratio of neutralizing potential to acid generating potential is greater than 4, suggesting that the sample is not acid generating. Leachate from the waste sample had 0.174 mg/L dissolved arsenic."

Presentation Summary July 11, 2000

As part of the current assessment, a subset of four of the original eight samples were submitted to Chemex Labs Ltd., for acid/base accounting. Samples were tested for Paste pH, total Sulphur %, sulfate sulphur %, sulfide sulphur %, % inorganic CO_2. From these analyses the following were derived: measures of Maximum Potential Acid (MPA), Neutralisation Potential (NP), Net Neutralisation Potential and the ratio NP/MPA.

The maximum sulfide sulphur was 1.08% from sample 128880 from one of the ore dump samples. The other three samples from ore dumps contained < 0.03% sulfide sulphur. The highest calculated Maximum Potential Acid (S% x 31.25) was 33 kg $CaCo_3$ /tonne for sample #128880 from the Level Four Adit dump.

Based on limited sampling biased toward sulfide bearing materials, the ore material from the La Forma vein may have weak to moderate acid generating potential

The gold-quartz veins on the G-3 vein on the La Forma property are localized along 018° and 80°W dipping reidel shears. The vein system is exposed partially on surface over about 500 metres. The vein ranges between a few cm to a maximum of 2.5 m.

Although standard static tests to predict acid generating potential are moderately positive for one sample from the ore dump, other factors suggest that the potential for acid generation at the La Forma site are presently not significant; the study area appears to lack sufficient moisture to sustain a process of ARD, and the potentially acid generating material is not currently exposed to oxidation and weathering.

There is only water flow from the Level four adit - all others were negligible. All seepage water in the adits, and subsurface flow near Level four have neutral to slightly alkaline pH. There is a low total iron content to the veins, generally less than 2%, and is commonly in the pyrite form. Additionally, there is a small total volume of exposed sulfide bearing ore or waste rock at the site.

The sulfides at the site are associated with the vein and alteration envelope, most of which is not currently exposed. The magnetite-gold ore bodies located on the north side of Freegold mountain are composed of oxide iron minerals and are not likely to be of concern for ML/ARD.

Health and safety observations

The potential physical hazards and safety issues at this site are related to access. Access to mine openings, buildings, and unstable slopes was not restricted to pedestrians and only partly restricted to vehicles. All mine openings had unrestricted access. The Level # 2, #.3, # 4, and # 5 adits were not against unauthorised entry and no warning signs were posted to alert people of the potential hazard. The mill buildings at Level Four Adit, and buildings remaining at No. 2 adit and camp areas do not pose a significant public safety hazard. Unrestricted access to the property and its many roads could lead to accident or mischief. The access roads adjoining the Freegold was not made impassable so that the curious and casual visitor might be encouraged to wander around the property.

There is only one mine water discharge - the drainage from the No. Four adit. This water seems to flow at a fairly constant rate year round. The discharge contains traces of arsenic and zinc that exceed drinking water standards but do not exceed metal mine liquid effluent standards. Exposure to this water is limited to a 200 meter channel before the water reports to ground. The receptors would include humans as casual visitors, and wildlife drinking the water.

Literature review and sampling indicates that some ore materials and waste rock have a deficit in neutralization potential that could lead to acid generation. However, there is not currently any metals leaching or acid rock drainage associated with waste rock piles or stored ore on the site. There was mention of 25 tonnes of sulfide waste on the property, but it is assumed to have been buried by recent development, because no sign of it could be found.