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Strathcona Mineral Services Limited
12th Floor, 20 Toronto Street, Toronto, Ontario, Canada M5C 2B8

June 23, 2000

Cover letter by fax
Material sent by courier

Fred Privett
Manager, Socio-Economic Benefits
Indian and Northern Affairs Canada
#345 - 300 Main Street
Whitehorse, Yukon Y1A 2B5

Dear Fred:

Mt. Nansen Draft Material

Enclosed are contributions for the report on the Mt. Nansen property that we eventually will be providing that have been prepared by Doug Dumka on the geology and resources and by Eric Denholm on the environmental aspects. What is still missing is my involvement in putting these components together and coming up with the overall appraisal of the property. However, we have previously indicated to you what that was and that will not change.

Please treat both of these documents as very preliminary and as soon as I return from Australia on July 9 we will assemble the final package for delivery to you.

In the meantime thank you for your tolerance of our tardiness in completing this assignment.

Yours sincerely,

For Graham Farquharson

GF:jm
Enclosures: To be sent by courier

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→ FRED P.

F.Y.I. Julie

Dave S.
00/03/29

MAR 29 2000

March 24, 2000

BY FAX AND MAIL

David Sherstone
Indian and Northern Affairs Canada
Water Resources Division, Yukon Region
#310 - 300 Main Street
Whitehorse, Yukon Y1A 2B5

MT. NANSEN - DIAND

P/A
00/03/29

Dear David:

Mt. Nansen

This note is simply to confirm the initial impressions that we conveyed in our discussions last week in Whitehorse following our visit to the Mt. Nansen property.

We have done further work in reviewing the information available on the possible resources on the property and have had no difficulty in concluding that there is nothing of economic interest on the property at this time. Consequently, our recommendations still stand that we would suggest the process facilities and other infrastructure at the property be removed at the first convenient opportunity in order to avoid the necessity of incurring costs for the maintaining of the property and perhaps also having the opportunity of making a small recovery from the sale of the few items of equipment remaining. This excludes any equipment or facilities needed to complete the reclamation of the tailings area.

We have received an initial report from Eric Denholm on his thoughts and observations on environmental and reclamation issues at Mt. Nansen. We have not reviewed this material as yet but enclose for your information the summary page from his report.

As I am leaving today for South Africa and will be away all of next week we will not be delivering our final report by March 31 but we trust these notes will be sufficient to indicate which direction we are coming from in our report and this is most unlikely to change when we have completed our final assessment.

Yours sincerely,

For Graham Farquharson

RECEIVED
MAR 29 2000
WATER RESOURCES
DIVISION

GF:jm
cc: Fred Privett
Enc.

EXECUTIVE SUMMARY

The past environmental management of the minesite has been poor and there are several high priority environmental issues which must be addressed in the short term. Nonetheless, the reviewed literature indicates that the tailings dam does have an acceptable factor of safety regarding slope failure which should improve as the tailings pond water level is lowered. Additionally, in spite of the generally poor performance of the water treatment plant, there does not appear to have been a significant negative impact on downstream surface water in Victoria Creek where aquatic resources are known to exist.

The highest priority must be placed on immediately implementing improvements to the Water Treatment Plant such that the treatment and discharge of tailings pond water can resume as soon as possible. The initial work suggested by Mr. Tom Higgs of AGRA Simons Ltd. is realistic and Mr. Higgs should be consulted regarding the design, installation and start up of the necessary improvements to the plant.

Improvements to the tailings seepage water handling system share the highest priority with the necessary improvements to the water treatment plant. The current system of returning seepage water back into the tailings pond is exacerbating the physical stability concerns regarding the tailings dam.

Including the above two highest priority issues, the goal for 2000 should be the selection and design of a long term reclamation plan for the tailings impoundment. Some fundamental information is not available which should be collected in 2000 through engineering and field investigation programs.

The conceptual costs for the preferred long term reclamation plan for the entire minesite given the information currently available are $2.6 million capital plus $2.3 million for an operating fund earning 2.75% p.a. discounted interest.

It is essential that a coherent environmental management plan be prepared and adhered to regarding work performed at the minesite. This will ensure that the environmental goals for the minesite are achieved through a responsible expenditure of money.

REVIEW OF ENVIRONMENTAL AND RECLAMATION ISSUES AT THE MT. NANSEN MINE

Prepared for Graham Farquharson, Strathcona Mineral Services Ltd.

by Eric Denholm

March 2000

EXECUTIVE SUMMARY

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SUMMARY

Introduction

The purpose of this report is to fulfill the environmental review requirements of a contract between Strathcona Mineral Service Ltd. and DIAND as described in the "Statement of Work".

A site inspection and review of on-site environmental literature was conducted on March 12 and 13, 2000 by Eric Denholm, Graham Farquharson and Doug Dumqua of Strathcona Mineral Services Ltd., and Robert Stroshein of Protore Geological Services (previous manager of geology and exploration for BYG Natural Resources Inc.). The site inspection was followed by a meeting on March 14, 2000 with DIAND personnel from the Water Resources, Mineral Resources and Executive Services Departments. Additional literature was collected from the DIAND Water Resources office at that time. This report was prepared following a review of all of the available literature.

This summary contains the following four sections:
(1) Current and Short Term Environmental Issues,
(2) Longer Term Environmental and Reclamation Issues,
(3) Reclamation Costs, and
(4) Recommended Short Term Action Plan (2000).

Following the summary is a section titled "Description of Individual Issues" which describes individual issues in detail and which is intended to complement and support this summary.

1. Current and Short Term Environmental Issues

The most important current and short term environmental issues at the Mt. Nansen site revolve around the tailings impoundment and this is recognized in the existing literature and by the key persons involved with management of the site. The current issues involving the tailings impoundment include: (1) managing and treating the pond water and seepage water, and (2) ensuring that the dam meets appropriate physical safety standards by maintaining a low water level in the tailings pond.

The current management system of returning tailings seepage water back into the tailings pond for storage is self defeating in that this represents a closed loop for progressive leaching of contaminants into the groundwater system and progressive thawing of the foundation soils. Further, impacts to surface water in Dome Creek are occurring as a result of tailings seepage water which escapes the seepage collection system. For example, an accidental overflow from the seepage collection pond occurred in January 2000 (Whittley, 2000).

Improvements to the seepage water management system should be implemented immediately.

Recent (1999) treatment of the tailings pond and seepage water was not adequately performed and discharge was legally allowed during fall 1999 only because of a short term exemption from toxicity testing. Discharge for the 1999 treatment season was stopped in December because the term of the exemption had expired and toxicity tests could not be passed. Improvements to the water treatment plant should be implemented immediately and the discharge of effluent should be resumed as soon as possible.

Current professional engineering reviews of the physical stability of the tailings dam (EBA, 2000 and Klohn-Crippen, 2000) indicate that the dam has an acceptable factor of safety for slope failure provided that the pond water level is maintained low enough to provide a 50 metre wide tailings beach along the upstream face of the dam. The potential for liquefaction of the embankment and foundation soils under seismic stress is an outstanding factor which has not yet been analysed.

A second important short term environmental issue involves the Brown McDade open pit. The small amount of water observed to accumulate in the north section of the Brown McDade open pit is contaminated with metals (pers. comm. R. Stroshein) but there is no plan in place for management of this water. A simple water balance for the pit is required which will indicate the elevation to which the pit is expected to fill with water.

The presence of some residual containers of chemicals or used oil on the site is documented in Conor Pacific, 2000. Clean up of any chemical or petroleum products which have spilled onto the ground should be undertaken in 2000 and appropriate storage should be ensured such that contamination of the local area is not increased in the short term.

2. Longer Term Environmental and Reclamation Issues

The primary long term environmental issues revolve around the tailings impoundment.

There is some fundamental information which is required before conclusive evaluations of long term management alternatives for the tailings impoundment and open pit can be performed. The information required includes: (1) a simple water balance for the Brown McDade pit, (2) development of a hydrologic model for the tailings impoundment and Dome Creek, and (3) possible testing of the leaching characteristics of the tailings or other relevant support research.

The alternatives currently put forward for reclamation of the tailings impoundment include: (1) redistribution of tailings within the impoundment and construction of a low permeability cover over the tailings such that no water is impounded behind the existing tailings dam, (2) relocation of some tailings to the Brown McDade open pit such that tailings in the pit are flooded behind a new dam and the existing tailings dam is required to impound water over the long term, and (3) relocation of all tailings to the Brown McDade open pit such that the tailings are flooded behind a new pit dam and the existing tailings dam is removed. Alternative no. 1 is the preferred plan at this time due, in part, to the uncertainties regarding the ability to flood tailings in the Brown McDade open pit.

The Brown McDade open pit represents a second important long term issue. The north section of the pit currently holds a small amount of water and it is unclear as to whether additional water will accumulate in the pit or whether seepage losses through the lower walls and floor of the pit are great enough to prevent the accumulation of water. A simple water balance for the pit as described above is required to resolve this issue.

The rock dumps are not considered to be a high priority for reclamation planning or reclamation work at this time. Notwithstanding that some minor quantity of sulphidic waste rock was placed into the dumps, the potential for acid generation to become a significant water quality issue is considered to be remote. The preferred approach is to perform relatively minor surface reclamation work intended to improve land use values. This approach might change if on-going monitoring of toe seepage and surface water quality in Dome Creek were to indicate that the dumps were having a significant impact on surface water quality.

Reclamation of the exploration trenches on the site should be determined on a trench by trench basis. Careful consideration must be given to comparing the potential disturbances created by mobilizing heavy equipment with the potential benefits of filling or resloping trenches that may have stabilized with colonization by natural vegetation.

The environmental issues surrounding contaminated soils, residual chemical products, etc. at the plantsite would be dealt with at the time of dismantling of the mill. There is no advance planning work recommended here until such time as mill dismantling is underway.

Other long term environmental issues such as the powerline, old exploration sites, camp buildings, etc. are documented in the literature (esp. Conor Pacific, 2000) and are not described here in detail.

3. Reclamation Costs

The unit costs, material quantities and other costs which are presented in Brodie 1998 were used in this cost presentation as much as possible. This was done to maintain some consistency with the previous cost estimate in the format preferred by DIAND.

Fully one-half of the $8.0 million reclamation cost presented in Brodie 1998 is money required to build a fund earning discounted interest of 2.75% which will support water treatment from years 8 through 100 following the implementation of surface reclamation measures. This timeframe is an ultra-conservative assumption which must be investigated further before being used as the basis for a cost estimate. In other words, if all reclamation costs as presented in Brodie 1998 were used with water treatment planned for only 7 years following implementation of surface reclamation measures and 100 years of monitoring and water sampling were planned, then the total reclamation cost would be only $4.0 million.

If water treatment is deemed necessary for 100 years following implementation of surface reclamation measures as is allowed for in Brodie 1998, then the $2.1 million allotted for surface reclamation measures should be saved and used to build the fund since it would be apparent that the prescribed surface reclamation measures were not expected to significantly improve the long term environmental status of the site.

Since the tailings impoundment represents the dominant reclamation issue for the site, three alternatives are considered here for reclamation of the tailings impoundment as described below. The first reclamation plan is preferred at this time.

The first plan considered here for reclamation of the tailings impoundment involves the relocation of tailings within the existing impoundment such that no water is impounded behind the dam (fill in the pond) and such that surface contouring and a low permeability cover shed water into the Dome Creek diversion. This plan is based on the assumptions that: (1) a low permeability cover over the tailings (not flooded) will be adequate to reduce the release of contaminants from the tailings to the degree where there is not a significant impact on downstream surface water, and (2) long term physical stability standards could be met for the tailings dam in the case where no water is impounded behind the dam. In this plan groundwater seepage could be readily monitored and collected as required (as compared to the following two alternatives where tailings placed into the Brown McDade open pit could release seepage that would be more difficult to monitor and collect). This plan requires that the diversion of Dome Creek be upgraded and maintained.

The second plan considered here for reclamation of the tailings impoundment is the plan described in Brodie 1998 wherein some tailings are relocated into the Brown McDade open pit with the intention for flooding behind a small dam constructed at the south end of the pit while the majority of the tailings remain within the existing impoundment either beached or submerged. Dome Creek is re-routed back into the impoundment and a large spillway is constructed for the tailings dam. Because the tailings dam is required to impound water, a toe buttress is constructed to increase the physical stability. This plan is based on the assumptions that: (1) the pit will hold water sufficient to submerge the tailings, (2) the tailings dam (which is required to impound water over the long term) will meet long term physical stability standards with only minor upgrading, and (3) the tailings will not leach contaminants to a significant degree into the environment from the open pit or tailings impoundment. The plan suggests hydraulic monitoring to move the tailings but would need to address the potentially negative impacts of introducing a large amount of excess water into the tailings impoundment. This plan is not preferred at this time because (1) it is uncertain as to whether the pit can be flooded to an adequate elevation, (2) the plan may increase liabilities due to the possibility of developing groundwater contamination in a second location and due to the introduction of a second earth dam which is required to impound water over the long term, and (3) it is uncertain whether the tailings dam will meet long term stability standards with only minor upgrading given that water is required to be impounded behind the dam.

The third plan considered here for reclamation of the tailings impoundment is the complete relocation of all tailings into the Brown McDade pit. This plan represents the ultimate plan for long term physical stability of the tailings dam because the dam is removed. Another relatively large dam would be required, however, to create the necessary storage volume in the open pit. This plan is based on the assumptions that: (1) the pit will hold water sufficient to submerge the tailings, (2) adequate storage volume can be created in the pit with a dam, and (3) the tailings will not leach contaminants to a significant degree into the environment from the open pit once flooded. The plan requires reclamation of disturbed areas in the tailings impoundment area and the restoration of Dome Creek into it's original channel. This plan is not preferred at this time because of the large uncertainty regarding the flooding of tailings in the Brown McDade open pit. This would require the construction of a relatively large earth dam which would be required to impound water over the long term and this would largely offset the benefit gained by removal of the existing tailings dam.

In all of the three tailings impoundment reclamation alternatives described above, collection and treatment of the already contaminated seepage from the tailings will be required for an unknown length of time. In the absence of a hydrologic model of the tailings impoundment/Dome Creek area, an estimate of 3 years is used here for the length of time for contaminated seepage which is already in the groundwater system to pass through the system following the implementation of surface reclamation measures. Brodie 1998 suggests a timeframe of 7 years for the flushing of residual contaminants from the tailings solids for the flooded scenarios (alternatives no. 2 and 3) and this timeframe is used here for those alternatives.

The reclamation cost presented in Brodie 1998 included the placement of some waste rock into the Brown McDade open pit (assumed flooded) along with 2 tonnes lime per 100 tonnes rock. This work is considered unnecessary as the potential for acid generation in the waste rock piles is considered remote and this work is not included in the costs shown here. Brodie 1998 also included costs for placing fill material in the pit which is assumed to have been intended to improve the physical stability of the pit walls. This work is not considered necessary and is not included in the costs shown here.

There is no cost included regarding dismantling of the mill or camp buildings or their internal equipment although some costing is included for demolition of minor ancillary buildings.

The potential reclamation costs for the site are summarized below for each of the three reclamation alternatives described above and details of the cost calculations are shown on Tables 1, 2 and 3 attached. The most likely cost (related to the most likely treatment timeframe) for each alternative and the worst case cost allowing for 100 years of water treatment (as presented in Brodie 1998) for each alternative are shown.

Item	Cost (millions)		
	Capital	Treatment	Total
Alternative No. 1 (preferred) (redistribution within impoundment and low permeability cover)			
likely treatment timeframe: 7 yrs	$2.6	$2.3	$4.8
worst case treatment timeframe: 100 years	$2.6	$6.3	$8.9
Alternative No. 2 (tailings in both pit and tailings impoundment)			
likely treatment timeframe: 10 yrs	$2.1	$3.0	$5.1
worst case treatment timeframe: 100 years	$2.1	$6.7	$8.8
Alternative No. 3 (flooded tailings all in the pit)			
likely treatment timeframe: 7 yrs	$3.7	$2.3	$6.0
worst case treatment timeframe: 100 years	$3.7	$6.4	$10.0
Brodie 1998 (for comparison purposes) (similar to alternative no. 2)			
treatment timeframe: 100 years	$2.1	$5.9	$8.0

Notes:
1. All alternatives for all treatment timeframes include funding for 100 years of monitoring the site for physical stability and water chemistry and an allowance for a small amount of physical maintenance work as described in Brodie 1998.
2. "Capital" costs are incurred to develop and implement surface reclamation measures.
3. "Treatment" costs are required to build a fund earning 2.75% discounted interest to support water treatment and long term site monitoring and maintenance work.

4. Recommended Short Term Action Plan (2000)

A summary of the recommended short term action plan for 2000 is as follows:

1. institute a coherent environmental management system such that work is performed according to a site management plan
2. upgrade/modify the water treatment plant according to the options in Higgs 2000 such that compliant effluent can be produced
3. develop and implement an improved management plan for tailings seepage water wherein the seepage is not pumped in a closed loop through the tailings pond (in concert with recommendation no. 2)
4. treat and discharge as much water as possible to the point of draining the tailings pond dry if possible
5. prepare a simple water balance for the open pit and map the sulphide/oxide contact
6. prepare a hydrologic model for the tailings/Dome Creek area
7. conduct tailings leach testing or other research necessary to allow selection and design of the preferred reclamation alternative for the tailings impoundment

DESCRIPTION OF INDIVIDUAL ISSUES

Introduction

This section describes individual environmental issues in detail and is intended to complement and support the preceding summary. This section contains the following sub-sections:

(1) Recommended Short Term Action Plan (2000)
(2) Preferred Reclamation Plan
(3) Tailings Dam Physical Stability
(4) Water Treatment
(5) Short Term Management of Tailings Seepage Water
(6) Treatment of Tailings Seepage Water Following Surface Reclamation
(7) ARD Potential of Rock Dumps
(8) ARD Potential of Tailings
(9) Brown McDade Open Pit
(10) References
(11) Other Literature Reviewed

1. Recommended Short Term Action Plan (2000)

All of the following recommendations can and should be performed in 2000.

1.1. Environmental planning work must be managed under a coherent site plan. For example, analyses for dissolved metals should be performed in addition to total metals for all surface water samples because the concentrations of dissolved metals are essential for water treatment and reclamation research work. Additionally, costly field and consulting work for detailed investigation of specific components of possible future plans should not advance ahead of the development of an improved short term water treatment process or the development of alternate long term plans.

1.2. Improve the current short term water management and water treatment process. There are two issues here. First, ensure that the water is adequately treated to meet the terms of the water licence and this could be accomplished by modifications and upgrades to the existing treatment plant (as described in Higgs, 2000) or by applying for an amendment to the licence to move the compliance location <u>for toxicity testing only</u> to a downstream location such as the mouth of Dome Creek. Second, cease returning seepage water back into the tailings pond and this could be accomplished by providing continuous year round treatment or by providing an alternate storage location. Inherent in this recommendation is the necessity to treat as much tailings pond and seepage water as possible to the point of draining the tailings pond dry if possible.

1.3. Develop a simple water balance for the Brown McDade pit. This could be accomplished by a comparison of inflow rates from the observed low wall seep plus precipitation with observed changes in the in-pit water level. This water balance is required for both short term management of the pit and the evaluation of long term alternatives for the tailings impoundment.

1.4. Develop a hydrologic model of the tailings impoundment/Dome Creek area. This may require the installation of some additional boreholes for sampling of groundwater. Such a model will indicate the degree to which seepage from the tailings pond is currently escaping below the seepage collection pond and will also indicate the timeframe required for treatment of seepage water following implementation of surface reclamation measures.

1.5. Perform testing of the leaching characteristics of the tailings or other research appropriate to evaluation of various long term reclamation alternatives. The alternatives envisioned at this time include tailings exposed to the atmosphere, flooded tailings, or tailings under a low permeability cover. This work should not be performed until the various reclamation alternatives to be evaluated are defined.

2. Preferred Reclamation Plan

A summary of the preferred reclamation plan is as follows and cost details are shown on Table 1 attached:

1. redistribute tailings within the tailings impoundment such that surface contours do not contain any ponded water pond and such that surface water is shed into the Dome Creek diversion
2. construct a low permeability cover over the tailings
3. upgrade the Dome Creek and tailings west diversions to minimize seepage losses and pass appropriate flood events
4. collect and treat tailings seepage water until water chemistry is acceptable (say 7 years) including installation of pumping wells if necessary
5. treat pit pond water in-situ with lime on 2 to 4 occasions and monitor water chemistry
6. upgrade the existing water treatment and seepage handling systems
7. construct hydraulic bulkhead in Pony Creek adit if pit water balance indicates that flooding to this level is likely
8. provide funding for site monitoring for physical stability and water chemistry for 100 years including minor physical maintenance tasks
9. fund replacement/repair to low permeability tailings cover at 50% replacement each 25 years for 100 years
10. perform minor resloping followed by revegetation of rock dumps and monitor toe seepage
11. evaluate desirability of reclamation of individual exploration trenches and reclaim only those where benefit will be gained

12. perform appropriate clean up of contaminated soils and removal of hazardous/ special wastes at the time of dismantling of the mill

3. Tailings Dam Physical Stability

The original design of the dam including the site selection and the construction supervision were provided by Klohn-Crippen Consultants Ltd. Geotechnical inspections of the tailings facility were conducted in 1997 by Klohn-Crippen and in 1998 by EBA Engineering Consultants Ltd. (although no report was located regarding the 1998 inspection). Both of these firms were involved with a recent (2000) assessment of the dam physical stability. The operation of the tailings facility was not managed according to the design and this is well documented in the literature.

The dam consists of a geosynthetic clay liner installed within a compacted sand embankment. The design required that a 50 metre wide tailings beach be constructed along the upstream face of the dam at the start of operations to act as the primary seepage barrier. This beach was not constructed until well into operation of the facility and well after elevated pond water levels had occurred. The result of the delay in construction of the beach was that a high rate of seepage had already been established with negative consequences on foundation thawing and dam integrity.

A toe berm was constructed in 1997 by BYG in response to physical stability concerns. The pond water level has generally been maintained at a high elevation throughout the operation of the facility such that the high rate of seepage has continued. The tailings beach is currently not the required 50 metre width but this can be achieved by lowering the pond water level.

Seepage from the tailings pond is an order of magnitude greater than that anticipated in the design (Klohn-Crippen, 2000). This increased rate of seepage has impacted on the physical stability of the dam in several ways. Seepage has contributed to thawing of the frozen foundation permafrost soils which has and will continue to pose a threat of subsidence and deformation of the dam. The seepage may also develop into piping of dam construction soil which could result in failure of the dam structure.

Even in light of the above, Klohn-Crippen 2000 states that the dam currently has a satisfactory factor of safety for slope failure. Further reductions in the pond water level through treatment and discharge of pond water will result in an increase in this factor of safety. An analysis of the dam and foundation stability under seismic loading was intended to be performed following mine closure and Klohn-Crippen 2000 recommends that this study should be performed.

The dam design did not require excavation of the foundation soils to bedrock and this was not done. Limited stripping into the surficial organic layer was done

(EBA 2000) but the then frozen foundation soils were left largely intact. The native layer of organic soil underlying the dam has thawed in some locations since construction of the dam (EBA 2000). The native sand underlying the organic soil remains frozen but is generally warming with time at a slow rate (about 0.1 deg C per year (EBA 2000)).

The general conclusion regarding the dam physical stability in the short term is that the dam is acceptable provided that the pond water level is maintained at a low level such that a 50 metre wide beach along the upstream face of the dam exists. The seismic stability analysis should be done but professional consultation should first be sought to determine whether the analysis would be most beneficial if conducted immediately or after a long term reclamation scenario has been selected (i.e. dry pond or flooded pond).

Some confusion exists regarding the inlet invert elevation of the tailings dam emergency spillway which should be resolved. The literature suggests that there has been no overflow through the spillway and that the inlet invert elevation is higher than design. However, anecdotal evidence suggests that there has been some small amount of overflow in the spillway and that water enters the spillway at the elevation of the buried impermeable liner rather than at the observed surface elevation (pers. comm. R. Stroshein).

The tailings impoundment was designed to contain 240,000 m^3 (approx. 300,000 tonnes) of tailings. The actual volume of tailings in the impoundment quoted in Conor Pacific 2000 as gathered from various company reports is 258,174 m^3.

4. Water Treatment

The water treatment plant has not performed acceptably well at any time in its' operating history and this is well documented in the literature. In general, the plant has successfully reduced cyanide concentrations to within the licence limits. However, plant effluent has never consistently passed fish toxicity tests.

Prior to 2000, it appears that high concentrations of ammonia were generally considered to be the cause of the failed toxicity tests. Ammonia is not regulated in the water licence and is produced by the breakdown of cyanide compounds.

In Higgs 2000, however, an overview of typical contaminant concentrations and typical toxicity ranges indicates that ammonia may not be the primary cause of the failed toxicity tests. Higgs 2000 suggests that thiocyanates and copper may also be primary causes of the failed toxicity tests. Higgs 2000 should be followed up on and used in the design of any upgrades or modifications to the treatment plant.

Both the company (BYG) and DIAND have taken advantage of periods of allowed exemption from the toxicity test requirement to discharge as much effluent as possible during the exemption periods. While this practice is strictly legal, it disregards the environmental protection intended in the water licence and should not be followed as the normal manner of managing the site.

Treatment and discharge of the tailings pond water is critical in 2000. Therefore, a means of producing effluent which passes the toxicity test is essential. There are two approaches to achieving this goal. The first is suggested in Higgs 2000 and involves upgrading or modifying the existing plant to produce a better quality effluent. This is the preferred approach at this time. The second approach would be to apply for a licence amendment which allows compliance regarding the toxicity tests to be met at a downstream location such as the mouth of Dome Creek. This is reasonable given that there are no known fisheries resources in Dome Creek and it is likely that the toxicity test requirement could be met at the mouth of the creek (esp. if effluent discharge rates were matched to available dilution flows). This approach is not preferred in this case, however, because the time and effort inherent to obtaining a licence amendment would likely delay the start of the 2000 treatment season by an unacceptable length of time.

The most recent (January 2000) concentrations of total and WAD cyanide in the tailings pond water and seepage return water were 9.1 mg/L and 8.5 mg/L, and 12.2 mg/L and 11.3 mg/L, respectively (Whittley, 2000). The concentrations of total copper in the same two samples were elevated at 13.4 mg/L and 14.5 mg/L, respectively. The concentrations of total arsenic in the same two samples were less than the method detection limit of 0.02 mg/L. The maximum allowable licence discharge limits for total cyanide, WAD cyanide, total copper and dissolved arsenic are 0.3 mg/L, 0.1 mg/L, 0.2 mg/L and 0.15 mg/L, respectively.

5. Short Term Management of Tailings Seepage Water

The original intent for management of tailings seepage water was to collect a small amount of seepage in a collection pond downstream of the tailings dam which was constructed for this purpose and pump the seepage back into the tailings pond if required due to poor water chemistry. This approach has been followed to date.

However, this management approach is not suited to managing the large amount of seepage water which currently exists. The concerns regarding the physical stability of the dam including thawing of the foundation soils are exacerbated by the return of the large amount of seepage water back into the tailings pond. In other words, the existing closed loop system is part of the problem as regards the short term physical stability of the tailings dam.

A new management approach must be adopted for 2000. The two alternative approaches would be to (1) provide continuous treatment of seepage water such that storage is not required, or (2) provide alternate storage for seepage water for periods when the plant is not operating. Initially in 2000, the tailings seepage water return pipe should be tied directly into the water treatment plant feed water pipe so that the seepage water does not return into the tailings pond.

This issue must be addressed in concert with the design of modifications or upgrades to the plant as suggested in Higgs 2000.

6. Treatment of Tailings Seepage Water Following Surface Reclamation

The treatment of seepage water will be required for an unknown period of time following the implementation of surface reclamation measures at the tailings impoundment. The surface reclamation measures prescribed for the tailings impoundment will have the intention of preventing contaminated seepage from continuing. However, even if the source of contaminated seepage is cut off at that time, treatment of seepage which is already contaminated and already in the groundwater system will be required until that seepage passes through the system. This period of time is expected to be relatively short for this site due to the anticipated rapid flushing of the system resulting from the porous nature of the foundation soils and the generally shallow groundwater flow paths atop permafrost.

For conceptual reclamation costing here, a timeframe of 3 years has been used for flushing of existing contaminants from the groundwater system to the degree where no significant impacts on surface water are observed.

The timeframe required for treatment of seepage water following surface reclamation could be determined from a simple hydrologic model of the area. Development of such a model should be professionally completed in 2000 and this may require the collection of additional field information via new boreholes. Professional consultation should be sought immediately to determine the scope and cost of the work required.

A study of the mobility and attenuation of arsenic was performed by BYG (BYG, 1999) which indicated that (1) treatment of the tailing with ferric sulphate to a Fe:As ratio of 50:1 would largely immobilize arsenic and, (2) that arsenic released from the tailings impoundment into groundwater seepage would be removed from the seepage water by attenuation onto the natural soils. The work suggested that a followup study regarding the potential for redissolution of arsenic from the natural soils should be done. This work should be incorporated into future research projects as appropriate.

7. ARD Potential of Rock Dumps

The ARD potential of waste rock produced from mining of the oxide portion of the Brown McDade orebody is generally accepted in the literature as being a very low risk for acid generation and release of contaminants. The waste rock produced from mining of the sulphidic portion of the orebody undoubtedly has a negative NNP value and would be considered a potentially acid producing material.

Even though mining of the sulphidic portion of the orebody was prohibited in the water licence, some quantity of sulphidic material was mined. The actual quantity of ore and waste mined from the sulphidic portion of the orebody is unknown but is considered to represent a minor component of the total volume of rock mined. Brodie 1998 assumed a rock volume of 15,000 m^3 as sulphidic waste but there was no basis for this assumption.

Given that the quantity of sulphidic rock in the rock dumps is a minor component of the rock dumps, it is unlikely that contaminated seepage from the rock dump would develop to the degree where surface water was impacted.

The approach to the issue of potential acid rock drainage from the sulphidic waste rock should be as follows: (1) consult with previous mine operating personnel in an attempt to recreate the dump construction sequence and map out the most likely locations for sulphidic waste rock, (2) continue to monitor rock dump toe seepage (none observed to date) for flow rate and water chemistry, (3) do not consider moving waste rock into the open pit unless a surface water chemistry problem is observed and a water balance for the open pit confirms that the waste rock would be flooded, (4) consider reclaiming the sulphidic waste within the rock dump if practical and if surface water quality problems are observed.

8. ARD Potential of Tailings

Some quantity of sulphidic ore was processed through the mill even though this was prohibited by the water licence. The quantity of sulphidic ore which was processed is unknown but likely represents a minor portion of the total volume of tailings produced from the mill. Brodie 1998 assumes a volume of 25,000 m^3 of tailings which are sulphidic but there is no basis for this assumption. It does seem apparent that the sulphidic ore was processed late in the mine operation and that tailings during this period were deposited primarily on the beach at the upstream (west) end of the tailings impoundment.

The tailings produced from the milling of sulphidic ore is known to have a negative NNP and is a potential acid producing material.

The presence of some minor portion of sulphidic tailings within the tailings impoundment does not change the approach to managing this area. Reclamation alternatives must be developed and the preferred alternative selected and implemented as soon as possible. It may be possible to provide special handling for the sulphidic tailings if they are readily identified and located in the field. However, any special handling should not proceed ahead of the development of an overall reclamation plan for the entire tailings facility.

9. Brown McDade Open Pit

The Brown McDade open pit contains some sulphidic material exposed in the lower wall and floor of the north section of the pit. Additionally, there is some residual loose sulphidic material on the pit floor in the north section of the pit.

This material undoubtedly has a negative NNP and is a potentially acid generating material. The small amount of water which has accumulated in the north section of the pit to date is contaminated with metals and can not be discharged to the environment (pers. comm. R. Stroshein).

The elevation to which the open pit will fill with water is not known. Even though there is a known seepage inflow low on the north wall, it is suspected that the pit will not fill to any substantial degree due to large seepage losses through the lower pit walls and floor. This is supported by anecdotal evidence that dewatering of the pit was not required during mine operations and that the adit to Pony Creek was dry when encountered by open pit mining.

A simple water balance for the open pit is essential for any evaluation of management options for the pit. In the short term during 2000, monitoring should be conducted of inflow rates and chemistry, pond water chemistry, and changes in pond water level. The pit wall and floor should be mapped to identify the contacts between the upper oxide material and the lower sulphidic material.

Consideration could be given to liming the pond water immediately (2000) in order to maintain acceptable water chemistry if this is deemed necessary to protect the local environment from contaminated seepage. This could be readily accomplished by applying lime slurry mixed in the mill to the pond.

A long term reclamation plan for the pit is dependent on the results of the pit water balance and on the selection of a preferred reclamation alternative for the tailings. The preferred alternative for reclamation of the tailings does not involve the open pit. However, the alternative reclamation plans for the tailings involve the flooding of tailings in the pit behind pit dams. These alternative options obviously dictate the long term plan for the pit.

It is likely that the pit will be reclaimed as an isolated unit (in accordance with the preferred tailings reclamation plan). In this case, long term treatment of pit pond water will need to be avoided and the approaches could include (1) partial or complete filling of the pit with waste rock for increased land use values, (2) in-pit remediation of problematic sulphidic material in the bottom of the north section of the pit, and (3) periodic in pit treatment with lime until acceptable water chemistry is naturally maintained.

An observational approach must be adopted for the pit since the nature of the water balance and the pond water chemistry are not known. It is likely that the pond water balance will show that the pit will not fill to a significant degree but that loose sulphidic material will be submerged in the pit bottom. In this case, the pit pond water is likely to achieve and maintain acceptable water chemistry following several in pit batch treatments with lime.

10. References

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Whittley (DIAND Water Resources Division), February 22, 2000, Letter to Yukon Territory Water Board: QZ99-043 Sampling Results of January 17, 2000

11. Other Literature Reviewed

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BYG Natural Resources Inc., February 1998, *1997 Annual Report, Water Licence QZ94-004, Mount Nansen Mine*

BYG Natural Resources Inc., February 1999, *1998 Annual Report, Water Licence QZ94-004, Mount Nansen Mine*

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personal communication, DIAND Water Resources, Mr. Bud McAlpine and Mr. Gerry Whittley

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TABLE 1. CONCEPTUAL RECLAMATION COSTS FOR TAILINGS IMPOUNDMENT RECLAMATION ALTERNATIVE NO. 1 (preferred) (RELOCATION AND COVERING WITHIN EXISTING IMPOUNDMENT)

Item	unit	cost	quantity	amount	total	
relocation of tailings *	m3	2.65	25000	$66,250		
tailings cover	m2	20	50000	1000000		
Dome Creek diversion				100000		
adit bulkhead *				200000		
reclaim rock dumps *	ha	1100	6.35	6985		
reclaim pit bottom				25000		
expln trenches *		4100	10.1	41410		
buildings *				121130		
other tasks *				122808		
seepage collection *				34400		
WTP upgrade *				299620		
sub total				2017603		
contingency *		28%		564929		
Total Cost					**$2,582,532**	
intensive treatment *	year	167216	3	fund		
follow up treatment *	year	146870	4	fund		
replace/repair cover	each 25 yr	500000	50%	fund		
on-going monitoring *	year	23500	100	fund		
Fund Required at year 0	interest	2.75%	lump sum	**treat 7 years**	**$2,260,489**	** BEST
				treat 10 years	$2,605,732	
				treat 25 years	$3,966,959	
				treat 100 years	$6,323,154	
TOTAL RECLAMATION COST ESTIMATE				**treat 7 years**	**$4,843,021**	** BEST
				treat 10 years	$5,188,264	
				treat 25 years	$6,549,490	
				treat 100 years	$8,905,685	

Notes: * unit cost, quantity and amount taken from Brodie 1998
** BEST based on 7 years for contaminated groundwater to pass
Low permeability cover funded for 50% replacement each 25 years

PRIMARY ASSUMPTIONS: (1) That the low permeability dry cover on the tailings will reduce the transport of contaminants from the tailings to the degree where surface water is not significantly impacted.
(2) That long term physical stability standards for the tailings dam will be met when no water is required to be impounded behind the dam.

KEY POINTS: $66,250 for relocation of tailings within the impoundment
$1 million for low permeability cover over tailings
$25,000 for reclamation of pit water/pit bottom
$100,000 for upgrade to Dome Creek diversion
cover replacement funded at 50% replacement each 25 years
intensive treatment of tailings seepage for 3 years
followup treatment of tailings seepage for 4 years
monitoring of physical stability and water quality for 100 years

Review of the Resources and Economic Potential

of the Mt. Nansen Property

near Carmacks, Yukon Territory

for

DIAND

Toronto
March 2000

Doug Dumka
Strathcona Mineral Services limited

TABLE OF CONTENTS

LIST OF DIAGRAMS

Summary

The resources remaining on the Mt. Nansen property are contained within four main deposits, the Brown McDade, Flex, Huestis and Webber. In all of the deposits, uncertainties related to missing or incomplete geological and assay data, questionable metallurgy and potential assay problems prevented us from categorizing them as reserves.

A total of 288,900 tonnes of diluted indicated resources has been calculated at a grade of 9.1 g/t gold and 230 g/t silver. A further diluted inferred resource of 130,900 tonnes has been calculated at a grade of 9.2 g/t gold and 266 g/t silver. Previous attempts at processing this mineralization have shown that the metallurgy within these zones is both complex and difficult as they are at least in part refractory. Unless it can be demonstrated that better gold and silver recoveries are attainable then this mineralization can not be considered economically mineable.

The Mt. Nansen property lies within a large structural zone of regional extent called the Mt. Nansen Trend. Gold and silver mineralization occurs in a series of geological settings throughout the property. Most of the exploration over the years has been focussed on or around the near surface portions of the four main deposits. Although a significant amount of trenching has been carried out on several of the other zones and showings, only limited drilling has been done. The potential exists on the property for additions to the existing resource base at depth in the current deposits, within several of the lesser tested zones and possibly within some of the untested areas with associated anomalous soil geochemistry.

Introduction

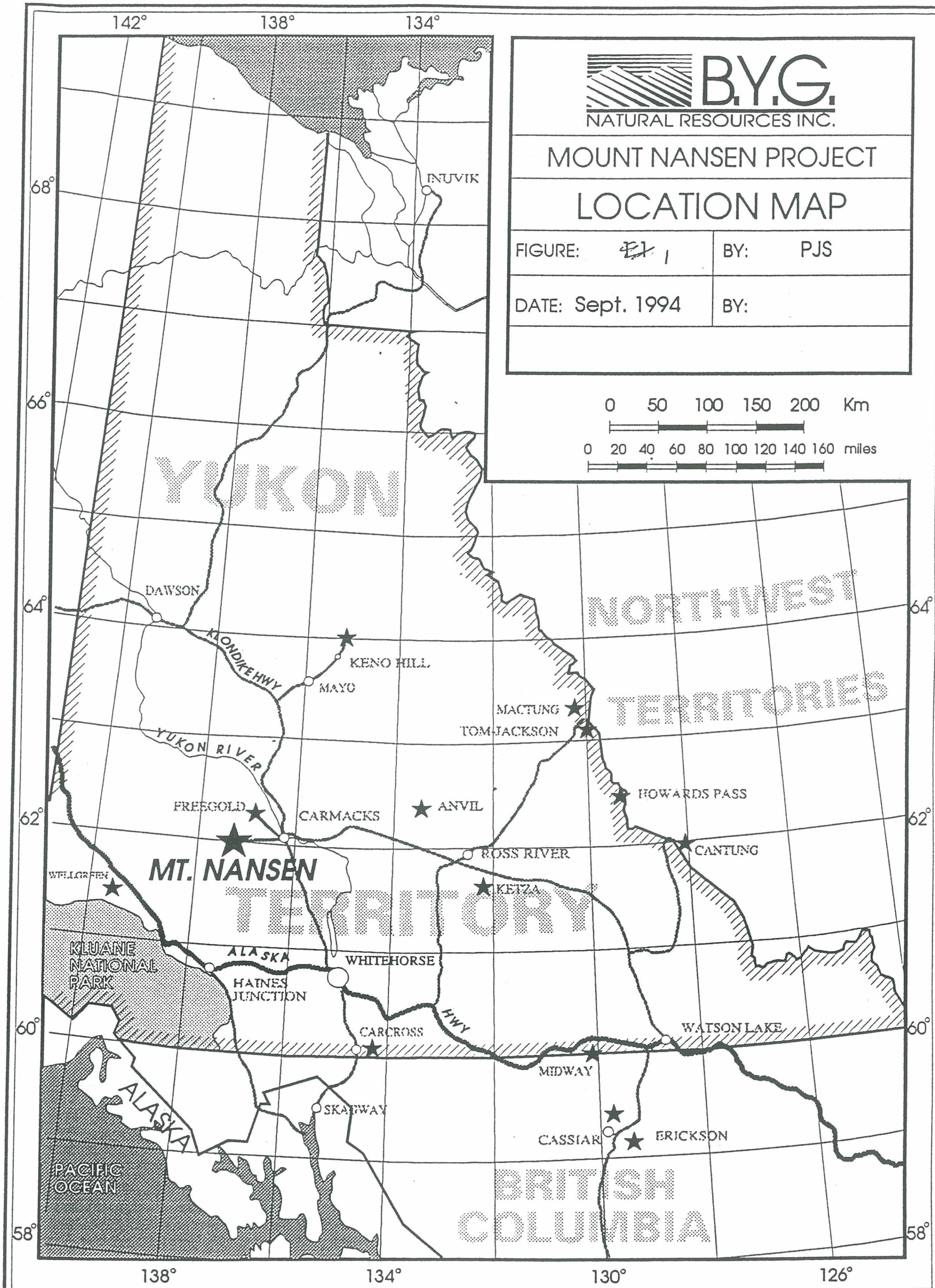
In March of 2000, Strathcona Mineral Services Limited (Strathcona) was retained by the Department of Indian and Northern Development (DIAND) to review the Mt. Nansen gold silver property near Carmacks in the Yukon Territory (figure 1). In the spring of 1999 the owner and operator of the property, BYG Natural Resources Inc (BYG) became insolvent and went into receivership. A potential contamination problem resulting from leakage from the tailings pond forced DIAND to step in and take control of the property. Strathcona was retained to evaluate the remaining resources, economic potential, and environmental status of the property and advise DIAND as to the best course of action. Graham Farquharson and Doug Dumka of Strathcona along with Eric Denholm, an independent environmental consultant from Faro, visited the property from March 12 to March 13. All surface facilities including the mill complex, mine offices, tailings pond and Brown McDade open pit were examined with Robert Stroshein, the former BYG chief geologist. The available data was collected and the group returned to Yellowknife, where a briefing of initial findings was given to DIAND personnel on the morning of March 14.

History

As early as 1917 both lode gold and placer mining were reported from the Mt. Nansen area.

In 1943 the first claims covering the current Brown McDade deposit were staked. Over the next twenty years several operators under various names explored and developed the Huestis, Webber and Brown McDade vein systems by underground development, surface trenching and surface and underground diamond drilling.

In 1964, all three properties were consolidated under a subsidiary of Peso Silver Mining Limited called Mt. Nansen Mining Ltd. Further underground development and exploration was carried out and in 1967 a 400 tonne per day flotation plant was constructed. Over the next two years 16,000 tonnes of ore from the Huestis deposit were processed with average gold recoveries of 65% achieved. No further work was done until 1975 when mining resumed at the Huestis and a further 5800 tonnes of ore were processed. In 1981 the property was sold to Mt. Nansen Mining Corporation


B.Y.G.
NATURAL RESOURCES INC.
MOUNT NANSEN PROJECT
LOCATION MAP
FIGURE: 1
BY: PJS
DATE: Sept. 1994
BY:
0 50 100 150 200 Km
0 20 40 60 80 100 120 140 160 miles
142°
138°
134°
130°
126°
68°
66°
64°
62°
60°
58°
INUVIK
YUKON
NORTHWEST
TERRITORIES
DAWSON
KLONDIKE HWY
KENO HILL
MAYO
MACTUNG
TOM JACKSON
YUKON RIVER
HOWARDS PASS
FREEGOLD
CARMACKS
ANVIL
CANTUNG
ROSS RIVER
WELLGREEN
MT. NANSEN
KETZA
TERRITORY
KLUANE NATIONAL PARK
ALASKA HWY
WHITEHORSE
HAINES JUNCTION
CARCROSS
WATSON LAKE
MIDWAY
SKAGWAY
ALASKA
CASSIAR
ERICKSON
PACIFIC OCEAN
BRITISH COLUMBIA

and in 1984 the properties were transferred to BYG Natural Resources Inc.

From 1985 to 1987, a large exploration program was undertaken on the property through a joint venture between BYG and Chevron Minerals Ltd with Chevron as the operator. The ~~actual~~ [Physical] work was ~~undertaken by~~ [contracted to] Archer Cathro and Associates (1981) Ltd and consisted of geological mapping, geochemical and geophysical surveys, significant surface trenching and limited diamond and percussion drilling.

In 1988, BYG continued exploration concentrating on defining the Brown McDade near surface oxide resource.

In 1994 a modest exploration program concentrating on defining the Brown McDade reserves was carried out. A feasibility study was completed and a production decision made.

From 1995 to 1998, BYG conducted exploration on the property concentrating on the four main deposits with limited work on other targets. From November 1996 to March 1999 BYG mined and processed approximately 350,000 tonnes of mixed oxide/sulphide ore from the Brown McDade open pit producing 37,500 ounces of gold and 142,000 ounces of silver.

In early 1999 BYG went into receivership and the property was taken over by DIAND.

Geology

The Mt. Nansen property is situated within the eastern part of the Yukon Crystalline Terrane between the Coast Plutonic Complex to the southwest and the Yukon Cataclastic Terrane to the northeast.

The oldest rocks in the area are strongly metamorphosed meta-sedimentary schists and gneissses of Paleozoic (early Mississippian) age. This assemblage was then intruded by early Cretaceous felsic plutonic rocks consisting of diorites, monzonites and syenites which in turn were intruded by younger mid-Creatceous mafic to intermediate volcanic rocks of the Mount Nansen Volcanic Suite.

On the Mt. Nansen property the older Paleozoic rocks cover the lower third of the claim group and are dominated by interlayered quartz felspar-chlorite gneiss, quartzite, amphibole and augen gneiss (see figure 2). These rocks , which host three of the main mineralized zones, the Webber, Huestis and Flex, have strong foliations which strike northeast and dip steeply to the northwest. To the northeast, locally foliated mid-Cretaceous granodiorite, quartz diorite and quartz monzonite rocks predominate and are host to the other main mineralized zone, the Brown McDade deposit. In the north of the claim group there is a large quartz-feldspar porphyry intrusive complex with flanking extrusive andesitic flow and tuffs units which unconformably cuts earlier units. Within this intrusive complex are small silicified breccia pipe zones which have local associated gold values. The intrusive complex has a copper, molybdenum and bismuth geochemical signature which may be indicative of porphyry style mineralization.

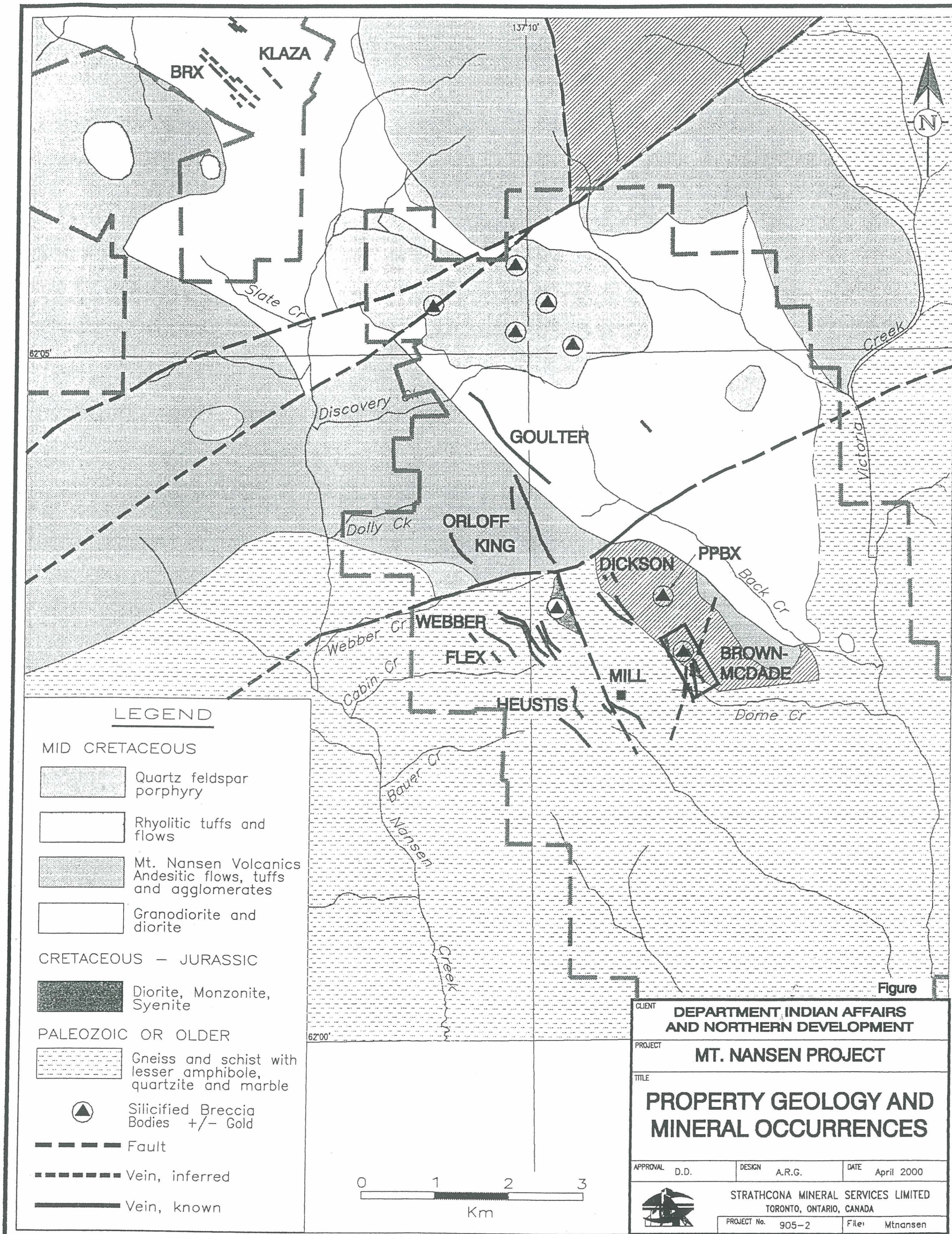
Propylitic alteration consisting of epidote, calcite, pyrite and magnetite replacement of horneblende is widespread. Local argillic alteration of host rocks occurs along vein contacts near surface.

Faulting is the main structural feature with two main fault sets occurring on the property. A north northwest trending set which dips from 50 to 70 degrees to the southwest parallels the main vein directions and is locally mineralized. A second southeast trending set is subvertical and locally cuts some of the mineralized zones. These faults form part of a larger regional structural corridor known as the Mt. Nansen Trend.

As the property was unaffected by recent glacial activity, weathering can reach depths in excess of 70 metres from the topographic surface altering sulphides in some of the mineralized zones to limonite.

Mineralization

There are two types of mineralization presently known on the property and both cut and are therefore younger than the enclosing host rocks.


137°10'
BRX
KLAZA
N
Slate Cr
Creek
62°05'
Discovery Cr
GOULTER
Victoria
Dolly Ck
ORLOFF
KING
DICKSON
PPBX
Back Cr
WEBBER
Webber Cr
FLEX
Cabin Cr
MILL
BROWN-
MCDADE
HEUSTIS
Dome Cr
Bauer Cr
Nansen
Creek
62°00'
LEGEND
MID CRETACEOUS
Quartz feldspar porphyry
Rhyolitic tuffs and flows
Mt. Nansen Volcanics Andesitic flows, tuffs and agglomerates
Granodiorite and diorite
CRETACEOUS — JURASSIC
Diorite, Monzonite, Syenite
PALEOZOIC OR OLDER
Gneiss and schist with lesser amphibole, quartzite and marble
Silicified Breccia Bodies +/- Gold
Fault
Vein, inferred
Vein, known
0 1 2 3
Km
Figure
CLIENT
DEPARTMENT INDIAN AFFAIRS AND NORTHERN DEVELOPMENT
PROJECT
MT. NANSEN PROJECT
TITLE
PROPERTY GEOLOGY AND MINERAL OCCURRENCES
APPROVAL D.D.
DESIGN A.R.G.
DATE April 2000
STRATHCONA MINERAL SERVICES LIMITED
TORONTO, ONTARIO, CANADA
PROJECT No. 905-2
File: Mtnansen

The most common are planar structurally controlled vein systems consisting of quartz, carbonate and varying amounts of sulphide. They can occur as simple quartz veins such as the Huestis and Webber or as a complex anastomosing series of veins and veinlets such as the Brown McDade. The individual vein systems can range up to 600 metres in length, from two to eight metres in width and are open to depth. The better gold values within these systems are restricted to steeply plunging shoots with stronger vertical rather than horizontal continuity which may indicate some structural control.

A less common type of mineralization observed are siliceous pipe like breccia zones which may be sulphide rich such at the north end of the McDade open pit or sulphide poor such as at the PPBX showing. Both types of breccia pipes are relatively narrow steeply plunging bodies with complex structural controls which are poorly understood at this time.

The main sulphides present are pyrite and arsenopyrite with lesser amounts of galena, sphalerite, chalcopyrite, stibnite and various sulfosalts.

Gold occurs as fine grained (5 to 40 micron sized) inclusions mostly in an early pyrite as well as in arsenopyrite although electrum has been reported in some zones. Silver occurs mostly as inclusions in galena and sphalerite although freibergite and miargyrite have been reported. Silver to gold ratios vary from 7 to 1 in the planar vein mineralization to 3 to 1 in the breccia pipe mineralization. This variation can be explained solely by the difference in base metal values between the two types.

The potential for a disseminated copper, molybdenum, gold and silver type of mineralization also does exist and this is discussed under the section dealing with economic potential.

Resource Calculation

The four main deposits were reviewed to determine if any potentially economic mineralization remains on the property. Resources were re-calculated for the material below the present Brown McDade pit as well for the Flex zone. Selected resource blocks were examined in the Webber deposit and grades from chip sampling of the drifts were compared to the quoted "reserve" grades. In the Huestis deposit, previous calculations were examined and the reserve numbers carried forward but down graded in category.

In all the zones examined, uncertainties as a result of incomplete data or suspect metallurgy prevented us from up grading the zones to the reserve category.

Data Base

A large amount of work has been done and data collected on the Mt. Nansen properties over the years by the various operators. Unfortunately the data available at the Mt. Nansen site for this review was somewhat disorganized and not easily accessible.

The data used in the resource calculations consisted of digital geological sections, digital assay logs and chip sample plans for some of the older underground workings. Data on previous resource calculations was taken from the 1994 Feasibility Study done by BYG Natural Resources Inc.

Information on the economic potential came from several internal BYG documents and data maps available from the site.

During the course of our review certain concerns about the data base were raised and they have been noted below.

From late 1996 till closure of the mine in February 1999, assaying of both production blast hole and drill core samples was done at the Little Salmon Analytical Lab in Carmacks which was operated by BYG. No organized quality control and assurance procedures with independent checking at outside labs on a regular basis appeared to be in place and so there is no way to check of the quality of the information that was produced. Examination of several duplicate samples assayed at the lab indicate there may have been problems with repeatability, especially of the gold. There are indications from previous reports that some check sampling was done on drill core assays from earlier drilling campaigns but no actual comparative data was available to check the quality of that assaying.

No reports describing the metallurgical test work done on the various deposits and the results of that work were available. Through verbal communication with Robert Stroshein it became obvious that BYG did not understand the metallurgy of the Brown McDade open pit ore they were processing as was evidenced by the generally poor recoveries in the mill.

No information on how capping levels for high gold and silver values were determined, if used at all, was available.

Limited specific gravity information was available only for the Flex mineralization.

A brief description of the of the data available, parameters used , and procedure for calculation of the remaining resources for each deposit follows.

<u>Brown McDade Open Pit</u>

For the purpose of this review it was assumed that any remaining ore in the bottom of the pit would be mined in conjunction with the underground resource. It is unlikely that the cost of further stripping to access the mixed sulphide/ oxide mineralization exposed in the bottom of the pit would be warranted.

<u>Brown McDade Underground</u>

There are two types of mineralization present in the unmined portion of the Brown McDade deposit. The more prevalent type consists of anastomosing veins and veinlets of quartz with minor carbonate and varying amounts of sulphides, mostly fine grained pyrite, arsenopyrite, galena, sphalerite and chalcopyrite. This mineralization occurs in structurally controlled fractures cutting coarse grained granodiorite and are associated with a series of quartz porphyry dykes injected along a major fault. This fault, known as the Footwall Fault, limits the mineralization to the northeast. Drilling to date has outlined a series of variably continuous steeply dipping structures over an area 500 metres long by 50 metres thick which in some cases are open to depth. Two of the structures, designated No. 1 (hangingwall) and No. 2 (footwall) were considered geologically continuous enough to warrant examination for potential resources.

A second type of mineralization, a sulphide rich siliceous breccia, was uncovered in the north end of the pit during mining. Bench plans created by combining bench face mapping and assaying of blast holes show this breccia pipe to be approximately 30 metres long by 12 metres wide in planar cross section with a different plunge than the mineralized ore shoots within the vein quartz structures. Subsequent re-logging of diamond holes in the area of this pipe indicate that it is strongly chopped up by faulting which may reflect a different timing of emplacement.

The data used in the calculation of the Brown McDade underground resource was taken from 18 computer generated cross sections at a scale of 1:250 spaced 33 metres apart over the length of the existing pit. These sections represented the most up to date information available on the deposit but were somewhat stylized as they showed only what were considered the most significant assays and generalized geology. They did however show the current depth of mining in the pit. Digital assay logs were available for most but not all of the drilling, however no digital geological logs were noted.

No specific gravity information was available for the area below the pit bottom therefore an arbitrary value of 2.5 used in previous calculations was carried over.

A rough calculation of a cut off grade for an underground operation indicated that 3.5 g/t gold equivalent was a reasonable number to use and is similar to the cutoff used in previous resource calculation exercises.

Individual high gold and silver assays were capped at 28 g/t and ~~600~~ 260 g/t respectively based on a statistical examination of the assay population for the Brown McDade structure (figures 3,4).

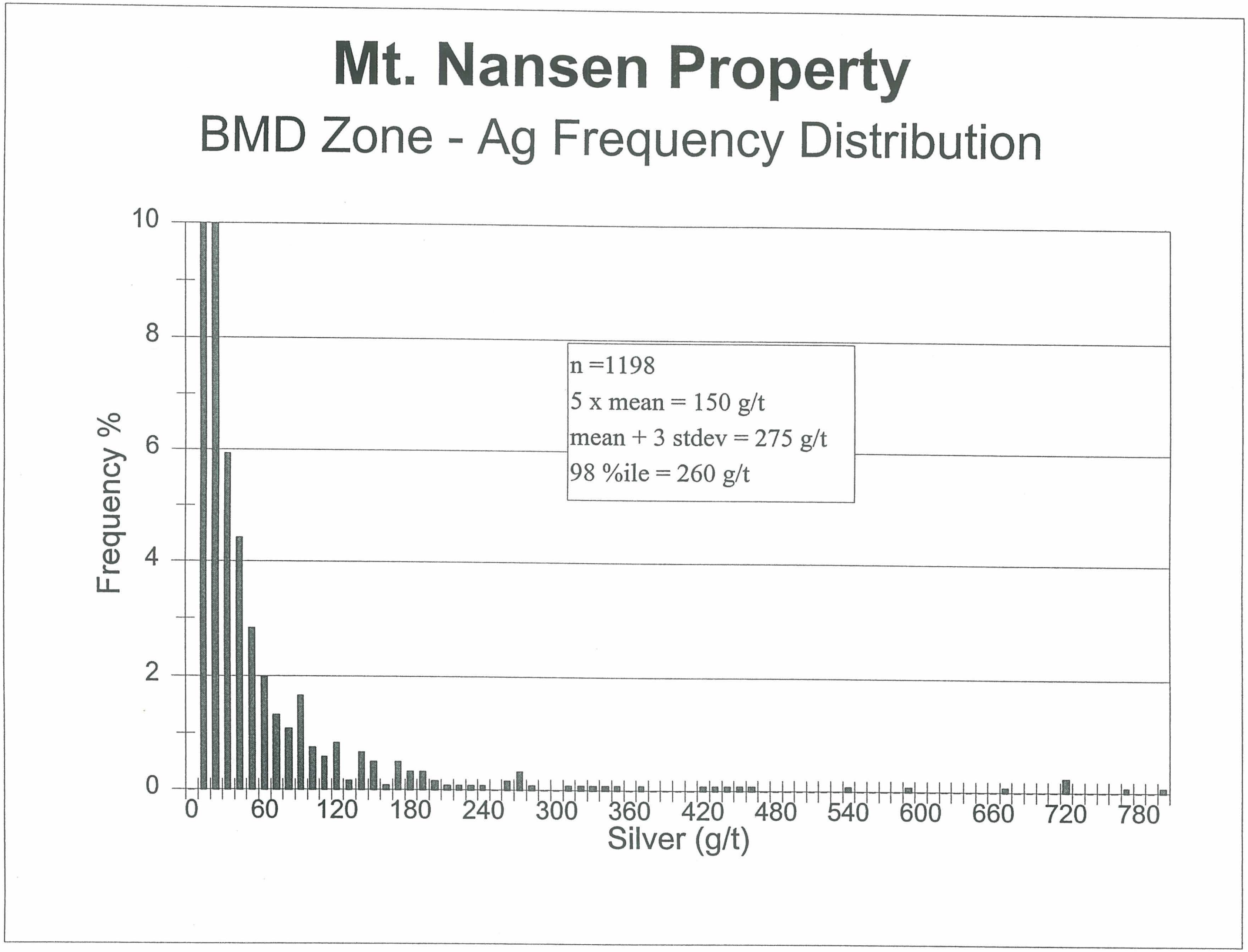

Mt. Nansen Property
BMD Zone - Ag Frequency Distribution
n =1198
5 x mean = 150 g/t
mean + 3 stdev = 275 g/t
98 %ile = 260 g/t
Frequency %
0
2
4
6
8
10
0
60
120
180
240
300
360
420
480
540
600
660
720
780
Silver (g/t)

fig 3

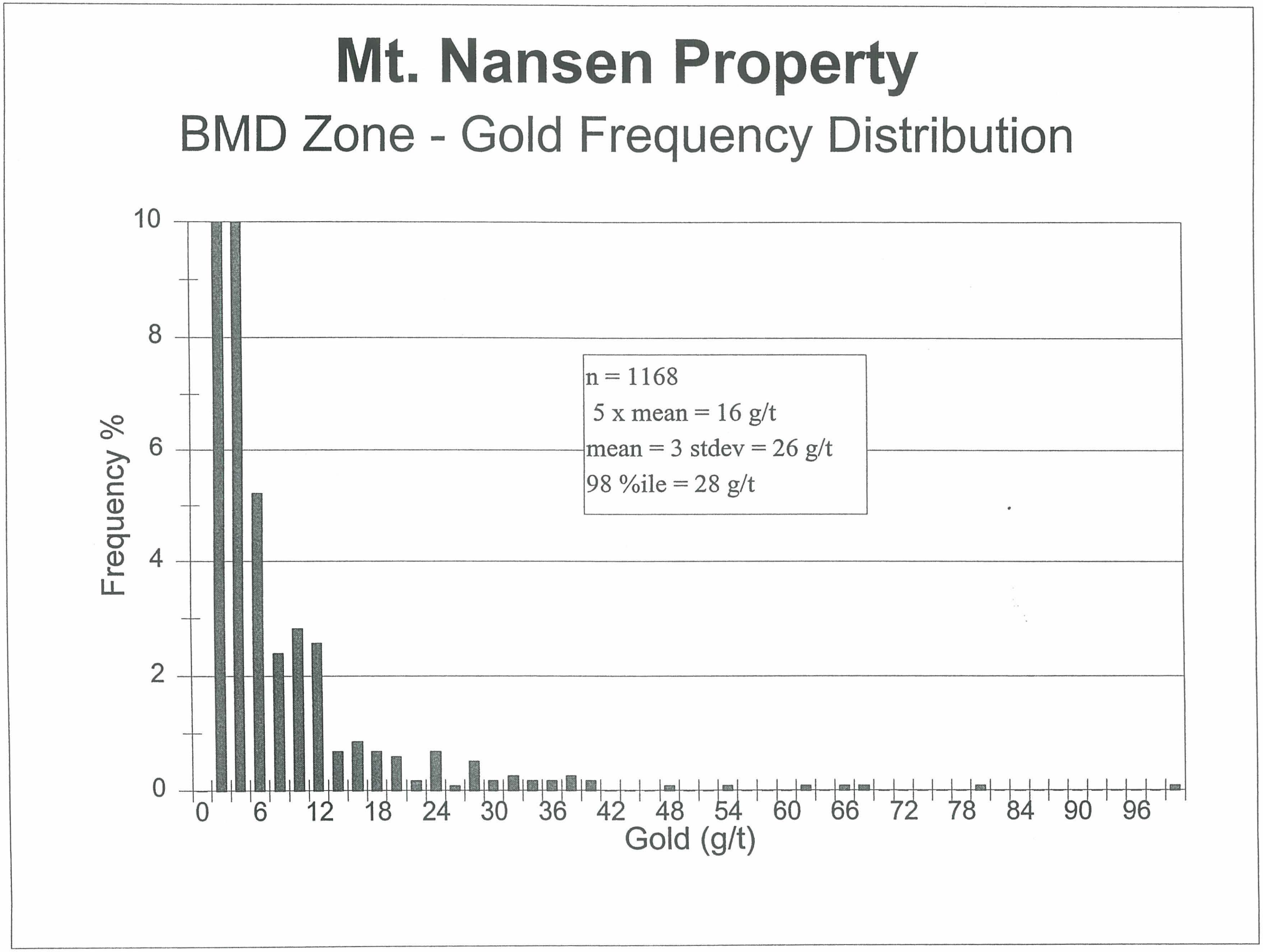

Mt. Nansen Property
BMD Zone - Gold Frequency Distribution
10
8
6
4
2
0
Frequency %
n = 1168
5 x mean = 16 g/t
mean = 3 stdev = 26 g/t
98 %ile = 28 g/t
0
6
12
18
24
30
36
42
48
54
60
66
72
78
84
90
96
Gold (g/t)

Fig 4

In order to allow a reasonable rate of production from this deposit, a long hole mining method was considered feasible given the dips and strike lengths of the shoots involved. Therefore a minimum mining width of 2.0 metres true width was used and intersections less than 2.0 metres were expanded using the surrounding assays. Then 0.25 metres of external dilution was applied to each side of the intersection to produce the diluted geological grade for that intersection.

Resource Calculation

Mineralized structures were correlated on section based on geometry and position relative to the Footwall Fault.

Individual intersections for each of the two main structures were expanded to the 2.5 metre minimum true width and the pierce points along with cut gold and silver values were plotted on vertical long sections.

A gold equivalent was created for each intersection using a ratio of 60 g/t silver equal to 1 g/t gold.

Intersections with a gold equivalent of greater than 3.5 g/t were grouped. In some instances lower intersections were included in order to mimic the realities of potential mining.

Grades were calculated by taking the length weighted average of the intersections within an outlined shoot. As the drill spacing was roughly equidistant no de-clustering of pierce points was required. No additional external dilution on the shoot edges was added to this procedure.

Tonnages for individual shoots were determined by calculating the area of each shoot on longitudinal section and multiplying it by the average thickness of the individual intersections within it. No allowance was made for crown pillars between the pit bottom and the top of the proposed underground mining blocks as that section is considered recoverable.

No diamond drill hole geological data was available which would enable one to properly distinguish breccia pipe mineralized intersections from quartz carbonate vein intersections as well as unravel the complex structural shape of the breccia pipe zone. Therefore the tonnage and grade for this part of the Brown McDade underground resource was carried forward from the work done by BYG geologists but categorized as a diluted inferred geological resource.

The outlined blocks in the No. 1 and No. 2 structures have been categorized as diluted indicated geological resources (figures 5,6). Further work would be required to determine the metallurgical characteristics of this mineralization in order to upgrade the categorization of this resource which given the small tonnages involved is unlikely.

Table 1 - Brown McDade Diluted Geological Resource

Zone	tonnes	Au (g/t)	Ag(g/t)	Category
~~No. 1 (HW)~~ No. 2 (FW)	~~113700~~ 105,400	~~5.4~~ 5.5	~~49.9~~ 51.6	indicated
~~No. 2 (FW)~~ No. 1 (HW)	20700	~~8.0~~ 9.8	~~50~~ 49.7	indicated
total indicated	~~134400~~ 126,100	~~5.8~~ 6.2	~~50~~ 51.3	indicated
Breccia Pipe	25000	10.7	158	inferred

Flex Zone

The Flex zone consists of a complex and convoluted series of anastomosing narrow quartz veins filling fractures in the Paleozoic metamorphic rocks on strike and between the Huestis and Webber vein systems. The zone has been defined by surface trenching and diamond drilling over an area 550 metres long by 65 metres wide and is open to depth. Sulphide minerals within the veins have been oxidized in the top 15 to 40 metres of the deposit.

The data used in the re-calculation of the resource consists solely of 20 sections at scale of 1:250 spaced 25 metres apart along the strike of the zone. These sections show mainly assay information on drill hole traces and surface trenches with little in

fig 5

ORE RESERVE long section

BMD - Vein #1

fig 6

ORE RESERVE LONG SECTION

BMD Vein #2.

the way of geology. Digital assay data was available for most of the holes.

Some recent specific gravity determinations were found indicating an average value of 2.5 tonnes per cubic metre for the Flex material and this was used in the calculations.

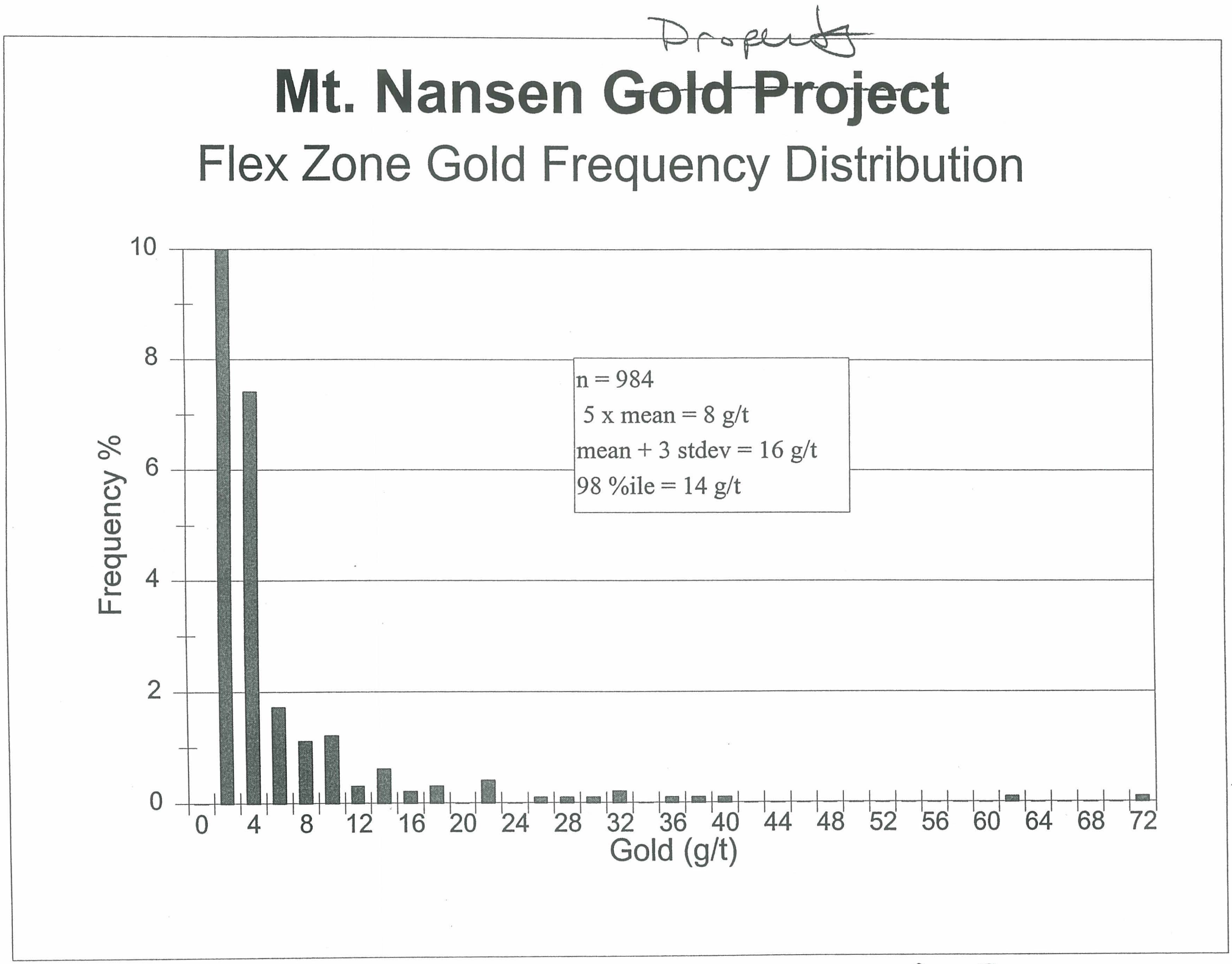
Individual high gold and silver assays were capped at 15 g/t and ~~700~~ 350 g/t respectively based on a statistical examination of the assay population for the Flex structure (figures 7,8).

The same cut off grades and minimum mining widths as applied to the Brown McDade deposit were applied to the Flex. A mining reserve calculated by BYG engineers using an open pit method resulted in a 16 to 1 waste to ore strip ratio. Given the narrow size of the veins and discontinuous nature of the gold values within the structures, this approach may have not been the correct one. Therefore we are assuming an underground mining scenario similar to the Brown McDade.

Resource Calculation

The lack of geological information for the drill holes and the trenching has made correlation of the various individual vein structures difficult at best. It is obvious from the sections there is a great deal of structural control on the direction and dip of the individual veins as well as the grade distribution within them. Therefore no attempt has been made to link intersections per say. Instead each mineralized intersection was expanded to the minimum 2.5 metre diluted true width. Gold equivalencies were calculated using the same ratio of 60 g/t silver equating to 1 g/t gold as used on the Brown McDade. Each diluted intersection with grade equivalencies above the incremental 3.5 g/t gold cutoff was given a minimum tonnage. The intersections were taken 6 metres either side of the section and given a minimum height of 10 metres. If there was another identifiable intersection within the same structure on the same section which graded above the 3.5 g/t gold cutoff then the block was taken half way to that intersection.

Tonnages and grades were calculated for each block and then the total was weight averaged by tonnage.



Property
Mt. Nansen Gold Project
Flex Zone Gold Frequency Distribution
n = 984
5 x mean = 8 g/t
mean + 3 stdev = 16 g/t
98 %ile = 14 g/t
Frequency %
10
8
6
4
2
0
0
4
8
12
16
20
24
28
32
36
40
44
48
52
56
60
64
68
72
Gold (g/t)

Fig 7

Mt. Nansen ~~Gold Project~~ Property

Flex Silver Frequency Distribution

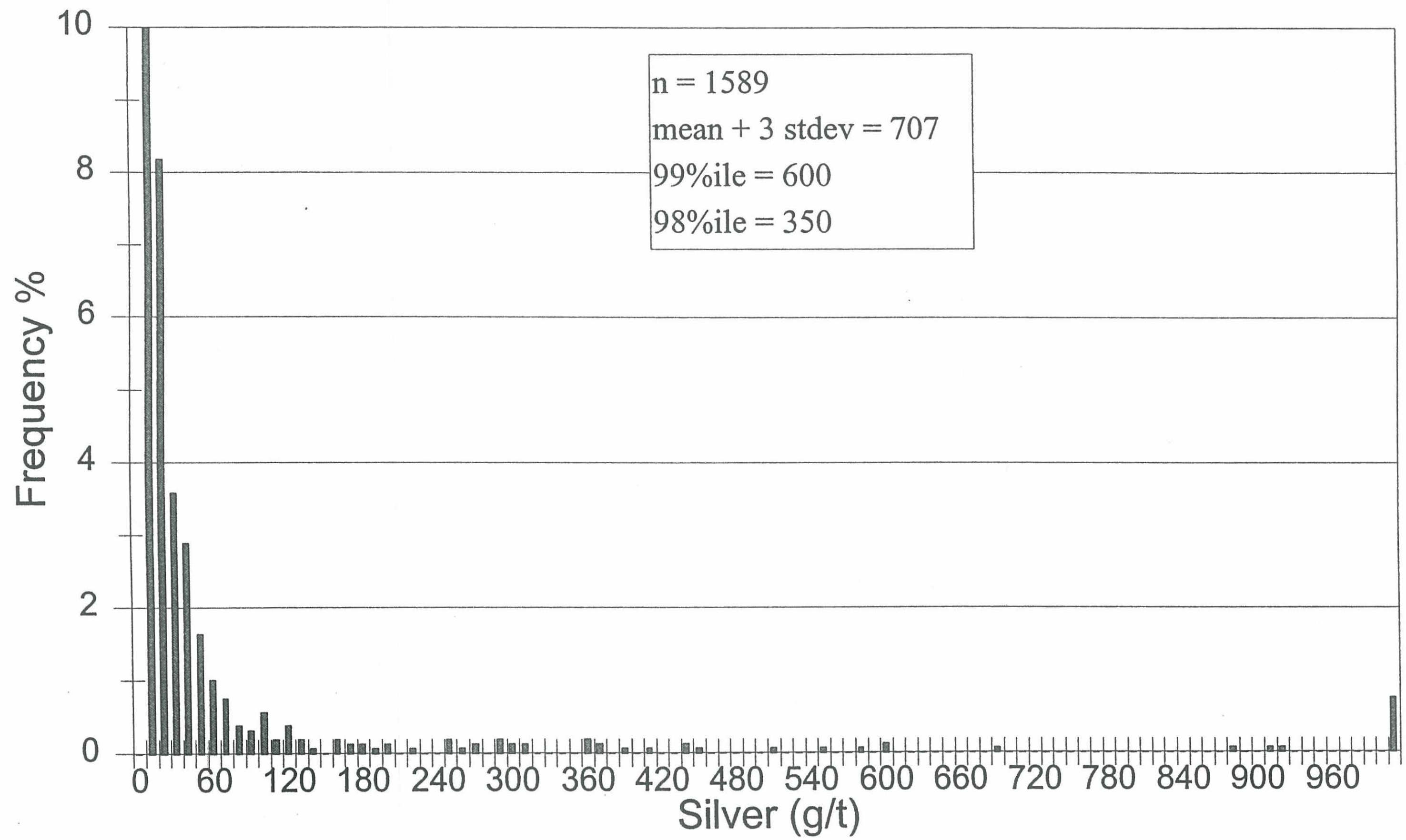


Fig 8

35 blocks which totalled 40,000 tonnes at 5.0 g/t gold and 116.0 g/t silver were calculated. Because none of the trench assay information was available for checking, it has not been included in this review.

Given the lack of geological data available for this review, this tonnage has been excluded categorized as a diluted inferred resource.

Webber Deposit

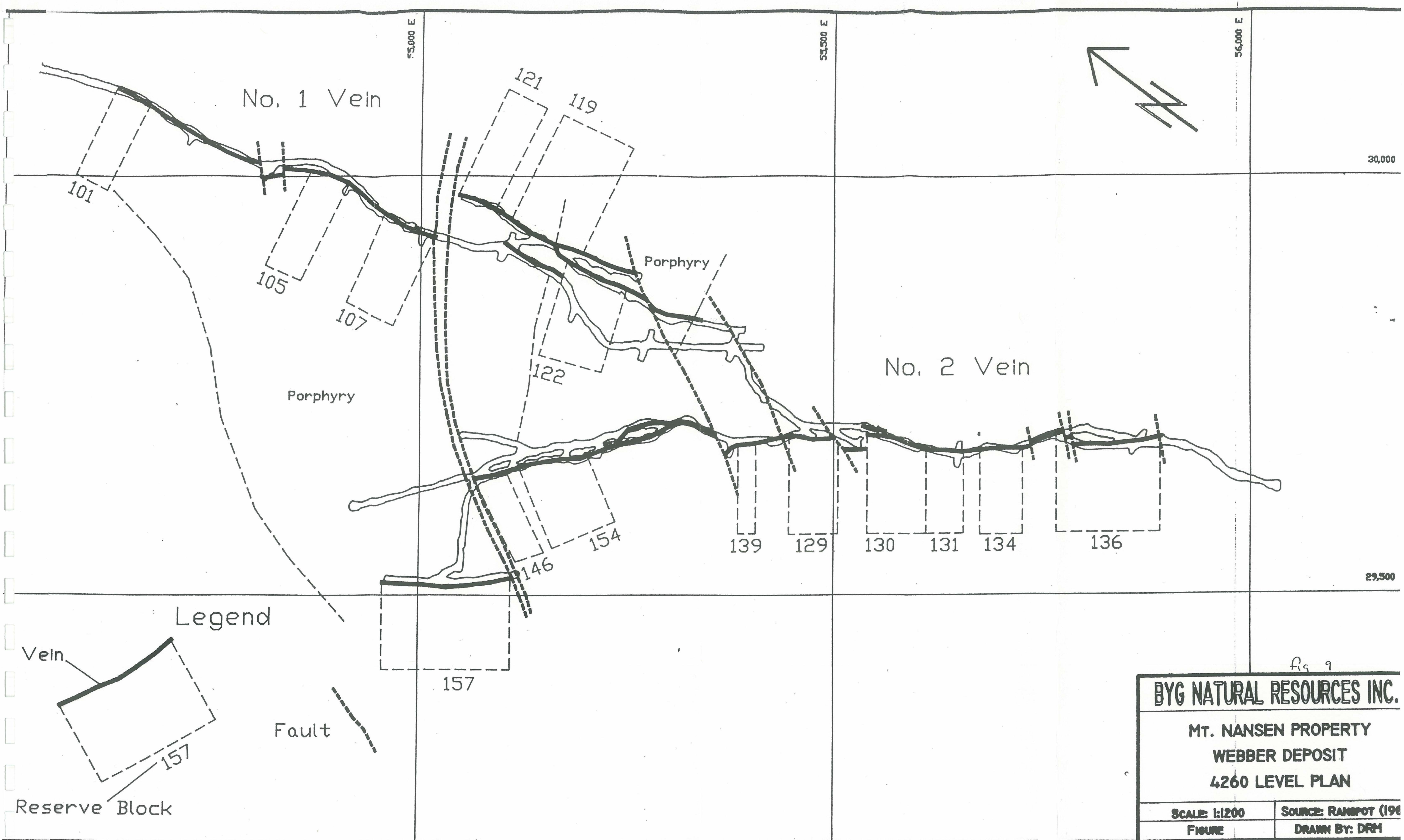
The Webber deposit consists of a west northwest striking quartz vein network which dips steeply to the west. The veins , which individually vary from 0.3 to 2.0 metres in width, occupy shear controlled fractures in metamorphic rocks and have been traced over 500 metres along strike by both underground development and surface trenching. Two main vein structures have been recognized, the No. 1 (Footwall) and the No. 2 (Hangingwall), and they have been developed and extensively chip sampled on one level, the 4300, over distances of 200 and 250 metres respectively. Individual mineralized shoots within each vein are typically 50 metres in strike length and 100 metres along the steep plunge direction with the main shoots open to depth (figures 9,10).

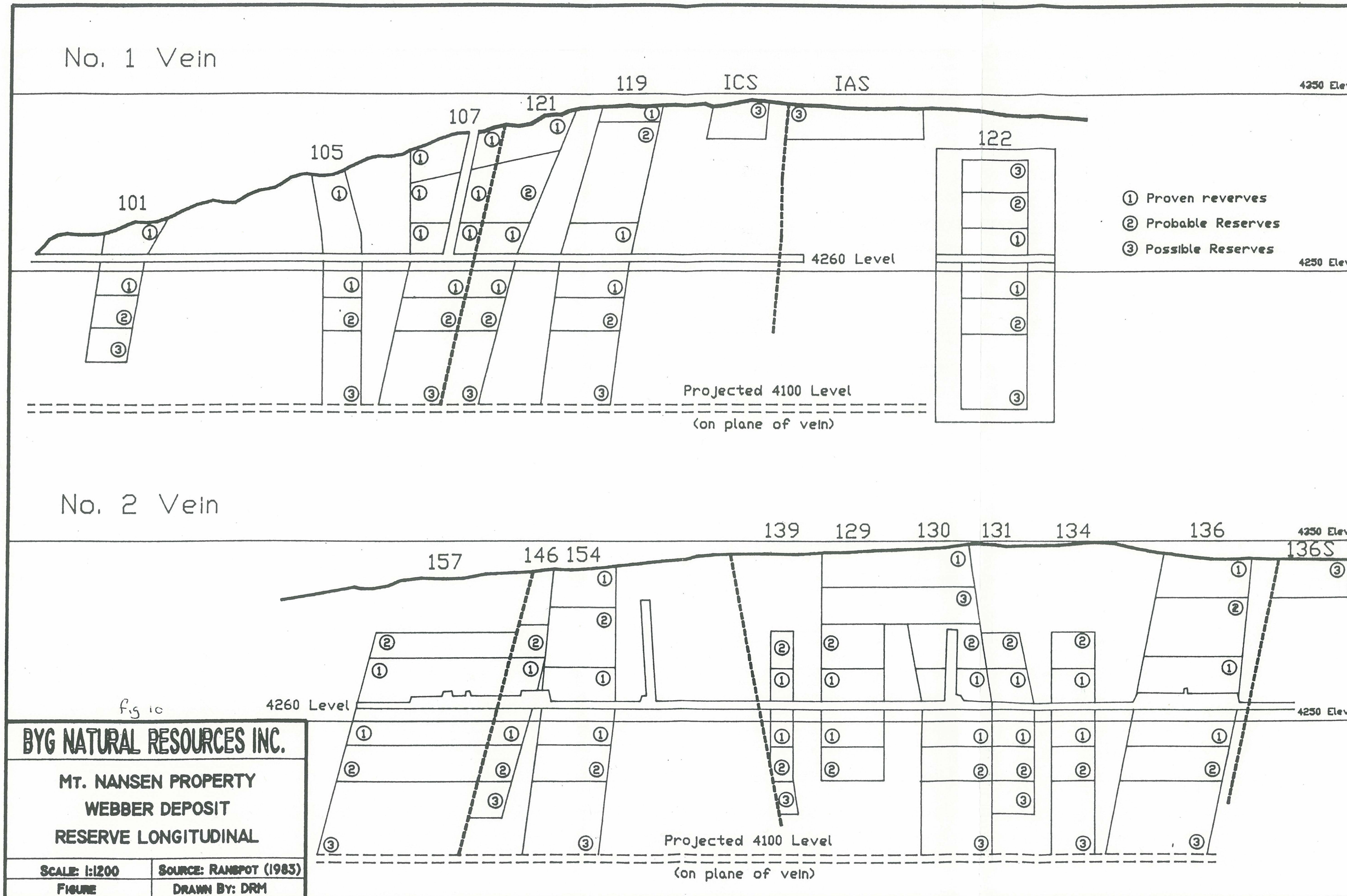
Better grade gold and silver mineralization is associated with fine grained sulphides with the highest values associated with the presence of arsenopyrite. Shoot boundaries between gold rich and barren vein are sharp and correlate well between the surface exposures and underground development.

Although some of the ores are oxidized in the surface trenches, no metallurgical data was available to determine the oxide/ sulphide boundary. The presence of significant amounts of arsenopyrite associated with better gold and silver values would indicate that the Webber ores are at least in part refractory.

Resource Calculation

Other than seven surface diamond drill holes drilled in 1985 and three in 1987, no additional work has been performed on the Webber deposit since a tonnage and grade estimate was calculated by H.W. Ranspot in 1983. A slight modification was made to the reserve by David Melling for a feasibility study done by BYG in 1994 which incorporated this drilling.


55,000 E
55,500 E
56,000 E
30,000
29,500
No. 1 Vein
No. 2 Vein
Porphyry
Porphyry
101
105
107
121
119
122
154
146
157
139
129
130
131
134
136
Legend
Vein
Reserve Block
157
Fault
fig 9
BYG NATURAL RESOURCES INC.
MT. NANSEN PROPERTY
WEBBER DEPOSIT
4260 LEVEL PLAN
SCALE: 1:1200
SOURCE: RANSPOT (19
FIGURE
DRAWN BY: DRM


No. 1 Vein
101
105
107
121
119
ICS
IAS
122
4350 Elev.
4260 Level
4250 Elev.
Projected 4100 Level
(on plane of vein)
① Proven reverves
② Probable Reserves
③ Possible Reserves
No. 2 Vein
157
146 154
139
129
130
131
134
136
136S
4350 Elev.
4260 Level
4250 Elev.
Projected 4100 Level
(on plane of vein)
BYG NATURAL RESOURCES INC.
MT. NANSEN PROPERTY
WEBBER DEPOSIT
RESERVE LONGITUDINAL
SCALE: 1:1200
SOURCE: RANSPOT (1983)
FIGURE
DRAWN BY: DRM

The data available for review consisted of the underground chip sample plan of the 4260 level and an incomplete set of chip sample maps for some of the stoping lifts. No underground diamond drill holes or chip samples from the raises were found.

A complete recalculation of the resources in the Webber deposit was not undertaken because of the incomplete data base and the time constraint for the project. Instead chip sample assays taken on the 4260 level were examined for the 105 stope in the No. 1 vein and the 157 stope in the No. 2 vein. An average length weighted uncut grade was calculated for the area of the drift which corresponded with the block outline on the ore reserve long sections provided. These grades were then compared to the grades as listed in the ore reserve tables (see table 3). Gold grades compared well, but there was some variation in the silver grades which in part is due to a lack of understanding of how the reserve was calculated in detail.

Questions have been raised about several of the parameters used in the original reserve calculation as included in the 1994 feasibility study by BYG. A minimum diluted mining width of 1.22 metres was used which would not be realistic in any present mining scenario and the final width probably would be closer to 2.0 metres. No capping of high gold or silver values was done which has been shown to be necessary in other deposits on the property. Increasing the mining width and capping the high values would in effect lower the overall grade and increase the tonnage. The categorization used in the calculation of the reserve , although appropriate for the time, is not necessarily applicable today.

Because of the above concerns and the uncertain metallurgy associated with this zone, we would utilize the numbers in the report but down grade the categorization, moving the proven and probable ore into the indicated resource category and the possible ore into the inferred resource (Table 4).

Huestis Deposit

The Huestis deposit consists of a north northwest striking quartz vein network which dips from 65 to 75 degrees to the east. The veins , which individually vary from 0.3 to 2.0 metres and average 1.0 metres in width, occupy shear controlled fractures in metamorphic rocks and have been traced over 500 metres along strike by both underground development and surface trenching. Three main vein structures have been recognized, the No. 11 (Hangingwall), the No. 12 (Intermediate) and the No. 13 (Footwall), and they have been developed and extensively chip sampled on two levels, the 4100 and 4300. Individual mineralized shoots within each vein are typically 100 metres in strike length and 170 metres along the steep plunge direction with the main shoots open to depth (figures 11,12).

Table 4 - Webber Diluted Geological Resource

Zone	tonnes	Au (g/t)	Ag(g/t)	Category
No. 1 (FW)	22811	13.1	561.0	indicated
No. 2 (HW)	35715	8.9	624.8	indicated
total indicated	**58526**	**10.5**	**600.0**	**indicated**
No. 1 (FW)	11949	6.8	379.6	inferred
No. 2 (HW)	14957	7.2	546.0	inferred
total inferred	26906	7.0	472.1	inferred

A deep hole, 94-151, confirmed the continuation of the mineralized structure up to a vertical depth of about 400 metres below surface.

The character and mineralogy of the Huestis veins are identical to the Webber veins with better grade gold mineralization again associated with arsenopyrite concentrations with the exception that stibnite appears more widespread in the Huestis. Little oxidation has been reported in the Huestis and the ores have been considered refractory by BYG geologists. No reports were available to review the metallurgy of the Huestis, but the large concentration of arsenopyrite and the reported historical problems in processing the ore lead us to believe the Huestis ores are in large part refractory.

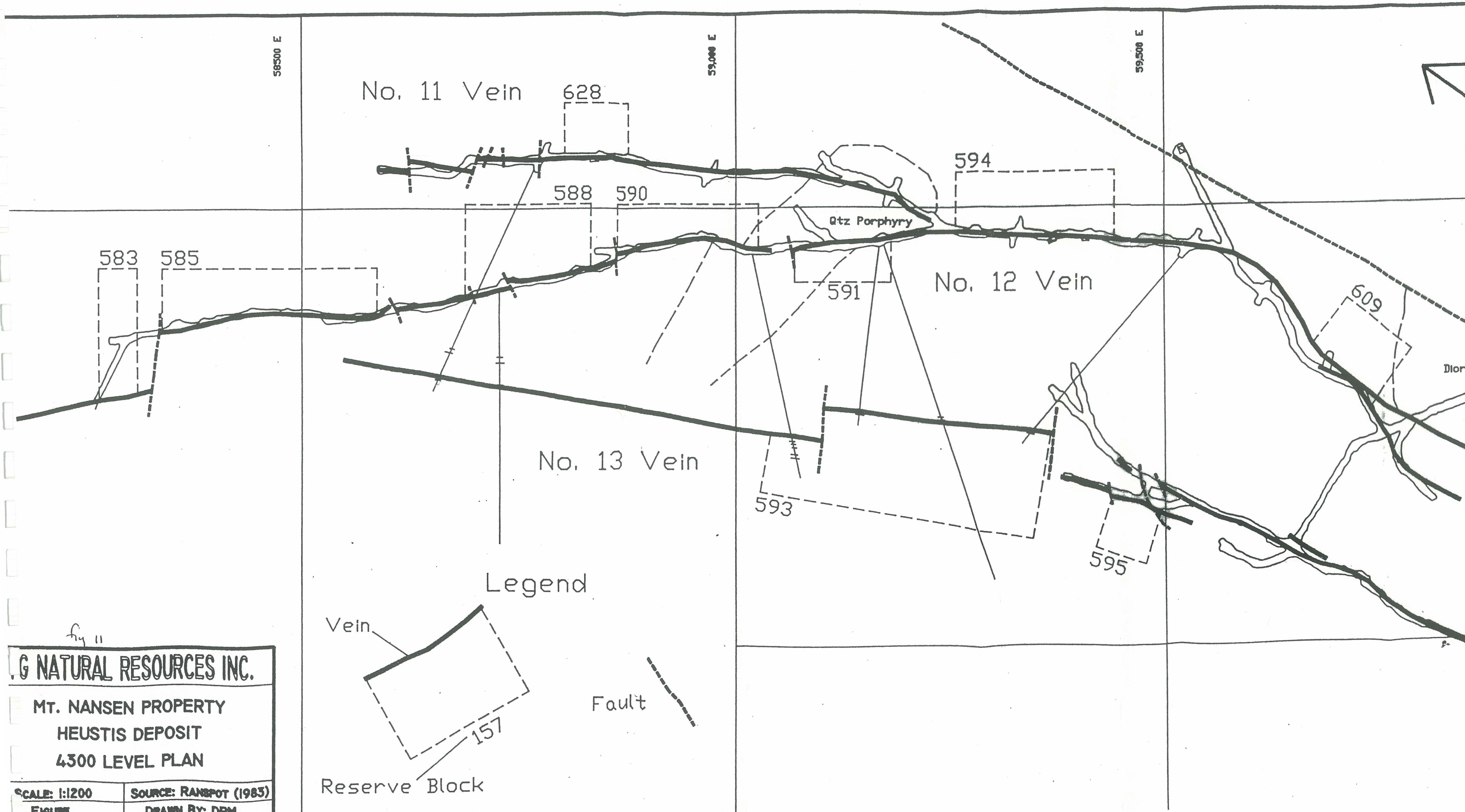


fig 11

.G NATURAL RESOURCES INC.

MT. NANSEN PROPERTY
HEUSTIS DEPOSIT
4300 LEVEL PLAN

SCALE: 1:1200	SOURCE: RANSPOT (1983)
FIGURE	DRAWN BY: DRM

Resource Calculation

Other than the one deep hole drilled in 1994 and several holes looking for extensions to the known mineralization to the north west, no additional work has been performed on the Huestis deposit since a tonnage and grade estimate was calculated by H.W. Ranspot in 1983.

The data available for review consisted of underground chip sample plans of the 4100 and 4300 levels and an incomplete set of chip sample maps for some of the stoping lifts and some of the raises. No underground diamond drill holes were found.

A recalculation of the resources in the Huestis deposit was not undertaken for the same reasons as for the Webber, lack of a complete data base and the time constraint for the project.

Concerns raised about several of the parameters used in the original reserve calculation for the Webber deposit as included in the 1994 feasibility study by BYG relating to mining width, capping of high gold or silver values and categorization of reserves also apply to the Huestis.

As with the Webber deposit, because of the above concerns and the uncertain metallurgy associated with this zone, we used the numbers in the 1994 BYG Feasibility Report but down grade the categorization, moving the proven and probable ore into the indicated resource category and the possible ore into the inferred resource (Table 4).

<u>Other Resources</u>

Several other smaller less well defined zones and showings occur on the property but not enough data was available to define resources. These zones will be discussed in the review of the economic potential.

Table 4 - Huestis Diluted Geological Resource

Zone	tonnes	Au (g/t)	Ag(g/t)	Category
No. 11 (HW)	1742	9.6	58.2	indicated
No. 12	72026	14.6	276.6	indicated
No.13 (FW)	10220	10.7	405.6	indicated
total indicated	**83988**	**14.0**	**287.7**	**indicated**
No. 11 (HW)	3484	9.6	58.2	inferred
No. 12	24415	16.5	304	inferred
No.13 (FW)	10219	10.7	405.6	inferred
total inferred	38118	14.3	308.8	inferred

Table 5 - Summary of Diluted Indicated Geological Resources

Zone	tonnes	Au (g/t)	Ag(g/t)
Brown McDade U/G	**134400**	**5.8**	**50**
Webber	58500	10.5	600.0
Huestis	84000	14.0	287.7
Brown McDade Ore Dump	12000	5.0	42
Total indicated	288900	9.1	230.2

Table 6 - Summary of Diluted Inferred Geological Resources

Zone	tonnes	Au (g/t)	Ag(g/t)
Brown McDade Breccia Pipe	25000	10.7	158
Flex Zone	40900	4.9	157.5
Webber	26900	7.0	472.1
Huestis	38100	14.3	308.8
Total	130900	9.2	266.3

Economic Potential

As stated earlier, the data base available for this review was not well organized or easily accessible. Over the last year of the mine life an attempt to compile all the data into an organized format was started by BYG personnel but cutbacks prevented this from happening. In order to properly assess the economic potential and hopefully attract further exploration, this process should be completed as soon as possible. All available data should be properly organized and catalogued into usable database formats. Comprehensive maps including plans, sections and long sections for all the drilling, and surface compilation maps showing the trenching results, soil geochemistry and any geophysical survey work covering each of the different zones and showings should be generated.

A brief description of potential target types and possible sources of new mineralization follows (figure 13).

The most important to date are the epithermal gold silver polymetallic quartz carbonate veins which comprise the bulk of mined reserves and remaining resources at the Brown McDade, Flex, Huestis and Webber deposits. All four zones are open to depth and as evidenced by the deep hole, 94-151, at the Huestis the gold enrichment processes are still at work up to 300 metres below the lowest workings. If the metallurgical concerns with these zones can be satisfactorily resolved, then the areas

fig 13

Plan showing property with geochem anomalies.

below the existing zones and immediately along strike have good potential to increase the resource base.

Several other zones and showings with similar mineralogy show some potential.

The Orloff King Zone which is on strike and to the northwest of the Dickson structure and has been drilled with a small number of shallow holes on wide spaced sections and extensively trenched, has the potential to host low grade near surface open pittable oxide reserves.

The BRX Zone which occurs on the Tawa Claim block to the northwest of the main Mt. Nansen claim block, is composed of multiple quartz sulphide veins exposed over 850 metres. Trenching reportedly has produced gold grades from 1.5 to 30 g/t over widths from 1 to 5 metres while the best drill intersection which was from hole 80-6 graded 6.3 g/t gold and 15.1 g/t silver over 8.9 metres (after R.Stroshein 1999) .

Many untested gold soil anomalies which may represent a similar type of target occur around the property and require more follow up which would include trenching, detailed mapping, possibly geophysical coverage and ultimately drilling if warranted. The most promising appear to be the Upper Back, Volcanic Basal Conglomerate and Upper Webber soil anomalies (see figure x).

A second target type are the sulphide rich breccia pipes such as in the north end of the Brown McDade pit and the sulphide poor quartz tourmaline breccias found at the PPBX showing northeast of the Dickson showing. At least eight breccia pipes have been identified on the property with most occurring within the main felsic porphyry complex. Although they appear to represent relatively small tonnages as compared to the epithermal vein targets, very little is known about their size, shape and the distribution of gold values within them. Further work is definitely required in order to assess the potential of this type of target.

The third type of target which potentially exists on the property is the porphyry style copper, molybdenum, gold, silver mineralization. Broad copper, molybdenum and bismuth soil geochemical anomalies exist over and flanking the main Mt. Nansen porphyry and creeks draining the porphyry are actively being mined for placer gold.

Cypress Exploration is reported to have carried out exploration for this type of target in the early 1970's using both diamond and percussion drilling. This target could represent a large tonnage style of mineralization which could be amenable to bulk mining methods.

Conclusions

A review of the existing mineralization on the Mt. Nansen property concludes that a diluted indicated resource of 288,900 tonnes at a grade of 9.1 g/t gold and 230 g/t silver and a further diluted inferred resource of 130,900 tonnes at a grade of 9.2 g/t gold and 266 g/t silver remains and is contained within the four main deposits of the Brown McDade, Huestis, Webber and Flex. Previous attempts at processing the material from these deposits by both BYG and earlier operators resulted in poor recoveries of gold and silver which illustrates the complex and difficult metallurgy of these "ores". Because limited metallurgical information was available for this review, it was impossible to determine the differences in metallurgical characteristics from deposit to deposit. The mineralogical descriptions of the zones would indicate that they all are in part at least refractory and for this reason they have not been classified as reserves.

At current gold and silver prices and given the complex metallurgy it is unlikely that this resource is sufficient to sustain a viable mining operation of any size.

However, the Mt. Nansen property occurs within an extensive regional scale structural corridor known as the Mt. Nansen Trend along which gold and silver mineralization occurs over a wide area in several types of discrete structurally controlled zones. Previous work has concentrated on the four main deposits as evidenced by the fact that since BYG took control of the property in 1984, approximately ~~80~~ 90% of the over ~~15,000~~ 16,470 metres of diamond drilling carried out has been on or around the near surface portions of those four deposits. Although trenching and some limited drilling has been done on many of the other zones and showings, in many cases their potential has not fully been explored. Therefore we believe that the potential to increase the resource base does exist and should be explored.

<u>List of References</u>

Mt. Nansen Gold Project - Feasibility Study by B.Y.G. Natural Resources Inc - November 1994

Curtis,L - Memorandum to Malcolm Slack Regarding Resource Potential of the BYG Mt Nansen Property, Yukon (February, 1996)

Stroshein, R - Tawa-Klaza Project (February 1999)

Resource Calculation Sheet - Brown McDade Underground

block	area (sq m)	avg tkns (m)	sg	tonnes	hole	from (m)	to (m)	length (m)	Au (g/t)	Ag (g/t)	
FW-1					88-97	15.3	19.2	3.9	13.8	111.8	*
FW-1					88-100	38.0	40.5	2.5	2.5	26.7	
FW-1					88-106	58.1	60.6	2.5	3.6	31.2	
FW-1					88-95	53.4	55.9	2.5	7.3	22.0	
Total FW-1	2350	2.9	2.5	16 744				2.9	7.7	55.8	
FW-2A					88-81	39.0	45.1	6.0	6.5	45.9	
FW-2A					88-78	40.1	44.9	4.9	4.9	38.5	
FW-2A					88-74	54.9	58.6	3.8	2.0	8.9	
FW-2A					88-117	80.8	84.4	3.5	3.9	14.3	
Total FW-2A	2920	4.6	2.5	33 580				4.6	4.6	30.1	
FW-2B					88-59	57.5	60.0	2.5	3.3	12.2	
FW-2B					88-130	62.3	64.8	2.5	17.3	52.3	*
FW-2B					88-58	64.9	67.4	2.5	2.6	103.8	
FW-2B					88-61	94.3	96.8	2.5	6.1	45.0	
FW-2B					88-62	48.5	51.0	2.5	3.8	81.5	
FW-2B					88-64	72.2	74.7	2.5	2.0	91.5	*
FW-2B					88-67	65.8	68.3	2.5	4.7	12.3	
Total FW-2B	4630	2.5	2.5	29 020				2.5	5.7	56.9	
FW-3					88-70	73.7	77.1	3.3	12.4	33.6	
FW-3					88-79	69.3	71.8	2.5	0.4	10.4	
FW-3					94-148	83.1	85.6	2.5	2.0	67.1	
FW-3					88-122	90.0	92.5	2.5	7.0	77.7	
FW-3					88-115	102.0	104.5	2.5	2.3	86.5	
FW-3					94-144	110.2	115.0	4.8	4.5	28.6	
FW-3					88-127	126.7	129.5	2.8	4.5	217.3	
FW-3					94-145	142.0	144.5	2.5	1.9	27.3	
FW-3					88-135	159.0	161.5	2.5	2.7	158.3	
FW-3					88-132	153.8	156.3	2.5	10.7	37.4	
Total FW-3	3660	2.8	2.5	26 023				2.8	5.0	70.8	
Total FW				105 400					5.49	51.6	

Resource Calculation Sheet - Brown McDade Underground

block	area (sq m)	avg tkns (m)	sg	tonnes	hole	from (m)	to (m)	length (m)	Au(g/t) (g/t)	Ag(g/t) (g/t)	
HW-1					88-58	49.1	53.4	4.3	15.2	60.6	*
HW-1					88-59	45.7	48.4	2.7	5.9	30.5	
Total HW-1	720	3.5	2.5	6 309				3.5	11.6	49.0	
HW-2					88-69	60.9	69.4	8.6	10.8	52.4	
HW-2					88-108	87.8	92.0	4.2	5.7	45.3	
Total HW-2	900	6.4	2.5	14 389				6.4	9.1	50.0	
Total HW				20 700					9.8	49.7	
FW + HW				**126 100**					**6.2**	**51.3**	

* denotes individual assays capped at 28 g/t gold and 260 g/t silver

Resource Calculation Sheet - Flex Zone

section	block	true tkns (m)	height (m)	length (m)	sg	tonnes	hole	from (m)	to (m)	length (m)	Au (g/t)	Ag (g/t)	
525N	525-1	2.5	10	12	2.5	750	98-195	74.5	77.0	2.5	3.0	139.3	*
500N	500-1	7	20	12	2.5	4200	98-193	60.0	67.9	8.0	6.0	141.5	*
	500-2	2.5	20	12	2.5	1500	98-188	90.2	97.2	7.0	4.6	128.8	*
	500-3	2.5	16	12	2.5	1200	98-190	18.5	21.0	2.5	5.0	142.9	
	500-4	2.5	10	12	2.5	750	98-183	13.4	15.9	2.5	3.7	55.6	
	500-5	2.5	10	12	2.5	750	98-184	36.8	39.8	3.0	2.4	101.4	
	500-6	2.5	10	12	2.5	750	98-190	35.3	37.9	2.7	2.6	74.8	*
	500-7	2.5	10	12	2.5	750	98-193	85.1	87.9	2.8	4.6	89.5	*
475N	475-1	2.5	10	12	2.5	750	98-185	19.5	22.0	2.5	5.3	66.3	
450N	450-1	2.5	20	12	2.5	1500	98-191	31.3	33.8	2.5	4.4	115.3	*
	450-2	2.5	23	12	2.5	1725	98-191	44.4	46.9	2.5	4.8	27.6	
	450-3	2.5	25	12	2.5	1875	98-194	81.9	84.4	2.5	4.2	145.6	*
425N	425-1	2.5	15	12	2.5	1125	87-41	38.7	41.2	2.5	4.6	222.8	*
	425-2	2.5	15	12	2.5	1125	98-227	9.0	11.5	2.5	6.4	40.1	*
375N	375-1	2.5	10	12	2.5	750	87-53	36.6	39.1	2.5	5.6	94.8	*
	375-2	2.5	10	12	2.5	750	95-157	9.1	12.2	3.1	3.1	77.1	*
350N	350-1	2.5	10	12	2.5	750	87-44	3.6	6.1	2.5	5.5	261.9	*
	350-2	2.5	10	12	2.5	750	86-34	34.3	36.8	2.5	4.5	234.9	*
	350-3	4	10	12	2.5	1200	86-34	58.0	63.0	5.1	3.2	42.0	
300N	300-1	3.5	12	12	2.5	1260	86-30	17.4	22.2	4.8	8.0	166.0	*
	300-2	3	12	12	2.5	1080	98-235	32.8	36.8	4.0	3.9	50.4	*
250N	250-1	2.5	10	12	2.5	750	98-234	53.4	56.0	2.6	3.4	22.8	
	250-2	2.5	10	12	2.5	750	86-33	13.5	16.5	3.0	6.6	163.7	*
200N	200-1	3	10	12	2.5	900	94-139	19.0	22.5	3.5	4.1	20.1	
	200-2	3	15	12	2.5	1350	94-139	34.2	37.7	3.5	8.1	304.0	*
	200-3	3	15	12	2.5	1350	95-163	13.5	17.0	3.5	4.2	65.0	
	200-4	2.5	10	12	2.5	750	87-48	21.1	24.1	3.0	9.6	177.5	*

175N	175-1						94-141	28.1	31.6	3.5	7.7	188.6	*
							95-166	43.1	47.7	4.5	3.6	66.8	*
	wt avg	3.5	20	12	2.5	2100				4.0	5.4	120.3	declustered
	175-2	2.5	20	12	2.5	1500	98-231	51.0	53.5	2.5	5.1	140.0	*
	175-3	3.5	10	12	2.5	1050	95-164	18.0	21.9	3.9	5.7	48.1	*
	175-4	3	10	12	2.5	900	98-231	17.5	20.5	3.1	6.8	130.0	*
	175-5	3.5	10	12	2.5	1050	95-164	12.3	15.8	3.5	3.4	124.8	
75N	75-1	2.5	10	12	2.5	750	96-174	6.3	8.9	2.6	3.9	9.5	
50N	50-1	2.5	10	12	2.5	750	98-239	38.9	41.4	2.5	3.7	17.8	
	50-2	2.5	10	12	2.5	750	98-239	46.3	48.8	2.5	4.4	148.0	*
Total Resource						**39990**					**5.0**	**116.0**	

* denotes that individual assays capped at 15 g/t gold and 350 g/t silver