

520164  
82E/2

EXPLORATION PROPOSAL  
MIDWAY GOLD PROJECT  
South-Central British Columbia

May 1990

## SUMMARY

The Midway project located adjacent to the U.S. border west of Greenwood in south-central B.C. encompasses four claim blocks totalling 217 units (13,410 acres) which have been staked to cover a conceptual target based on favourable government geology and aeromagnetic data.

The project area is considered to have significant potential for discovery of an economic gold deposit similar to the recently discovered Key-Overlook and Crown Jewel deposits located across the international border in Washington State. These deposits each contain between 500,000 and 700,000 ounces of gold associated with quartz-pyrrhotite vein swarms cutting massive magnetite skarns. There is some evidence to suggest that the gold mineralization may be of Tertiary age and hence genetically linked to the famous epithermal vein deposits of the Republic District which have produced over 2 million ounces of gold and 13.4 million ounces of silver in the past. Current reserves at Republic are over 1 million ounces of gold. Echo Bay placed the Key-Overlook deposits in production this year and Battle Mountain Gold Corp. have just paid \$10 million and will supply all capital costs for 51% of the Crown Jewel deposit. All of these deposits lie adjacent to a major bounding fault of a large Tertiary Graben structure. The Republic and Key-Overlook deposits are associated with the Republic Graben and the Crown Jewel deposit is related to the Turoda Graben.

The Midway project covers a portion of the north end of the Turoda Graben and the south end of the (en-echelon) Kettle River Graben. The area contains the same Permian-Triassic age rocks which host the magnetite skarns in Washington State and these are overlain by Tertiary volcanic rocks similar to those which host the Republic deposits. Each of the four claim blocks was staked to include a significant Tertiary fault structure and each covers a bullseye type anomaly shown on government aeromagnetic maps. Little or no significant exploration work has been undertaken on these properties in recent years. A large

area to the east will be explored by Minnova this year.

A systematic exploration of the Midway project lands should commence with an airborne magnetic and EM survey to be followed up by ground surveys and drilling of defined targets. Anticipated budgets are as follows:

Phase	1 - Airborne surveys	- \$ 75,000
	2 - Ground surveys	- \$300,000
	3 - Initial drilling	- \$625,000

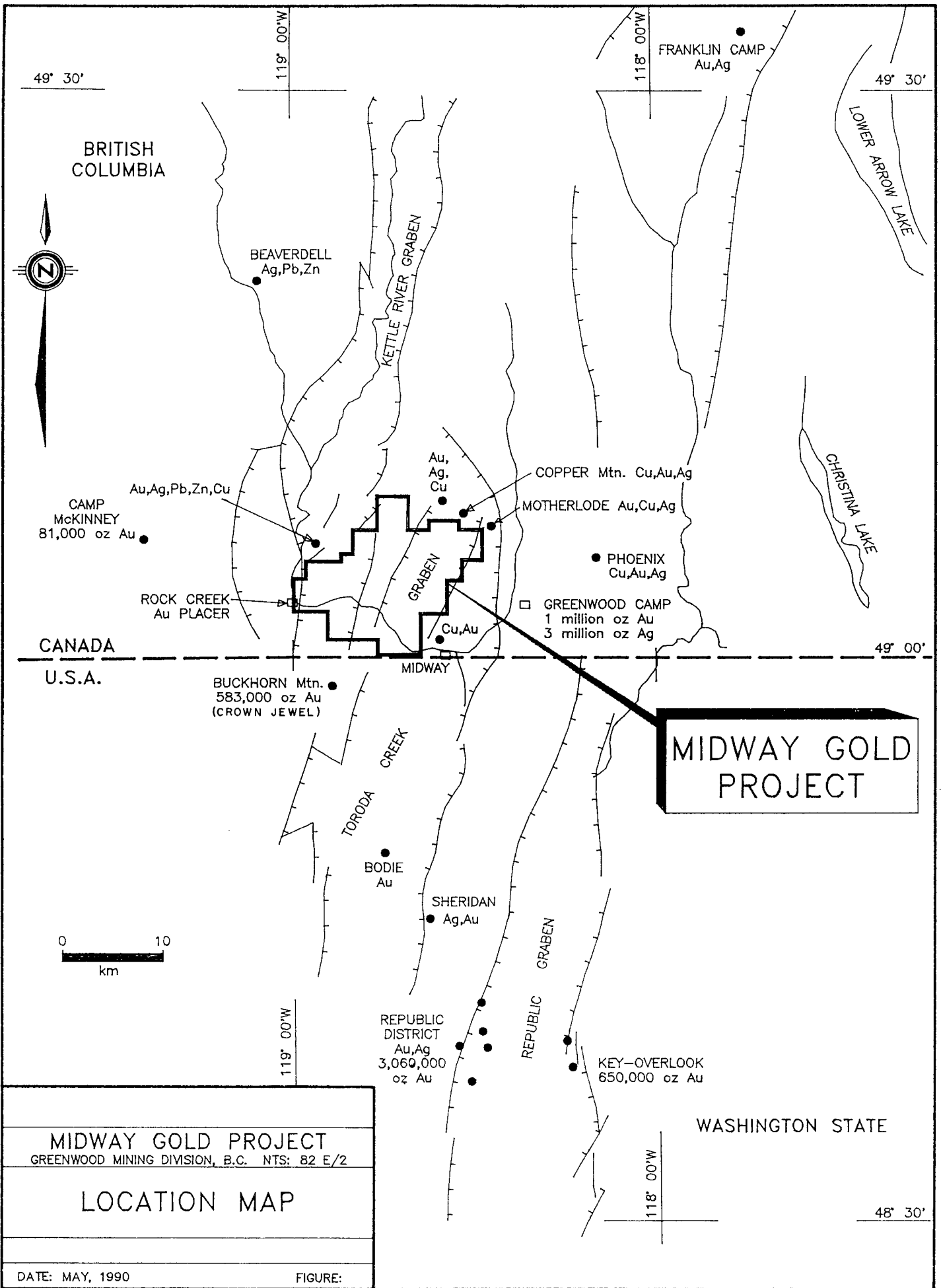
The project area is currently held by the Midway Joint Venture which contracted acquisition of the ground by staking in early March 1990. The project is offered for option under the following terms: A 100% working interest subject to a 5% NSR may be earned by cumulative in ground expenditures of \$1 million over 3 years, annual option payments starting at \$25,000 escalating to \$40,000 over 3 years and a commitment on signing to acquire by staking up to approximately 200 additional claim units.

Enquiries may be addressed to either:

C.J. Westerman, Ph.D.  
Terrane Resource Management Inc.  
1010 - 470 Granville Street  
Vancouver, B.C. V6C 1V5  
(604) 683-8617

or

J. Robertson, P.Eng.  
Midas Management Inc.  
306 - 850 West Hastings Street  
Vancouver, B.C. V6C 1E1  
(604) 669-8988

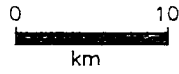


BRITISH COLUMBIA



CANADA

U.S.A.



MIDWAY GOLD PROJECT

<p><b>MIDWAY GOLD PROJECT</b> GREENWOOD MINING DIVISION, B.C. NTS: 82 E/2</p>	
<p><b>LOCATION MAP</b></p>	
<p>DATE: MAY, 1990</p>	<p>FIGURE:</p>

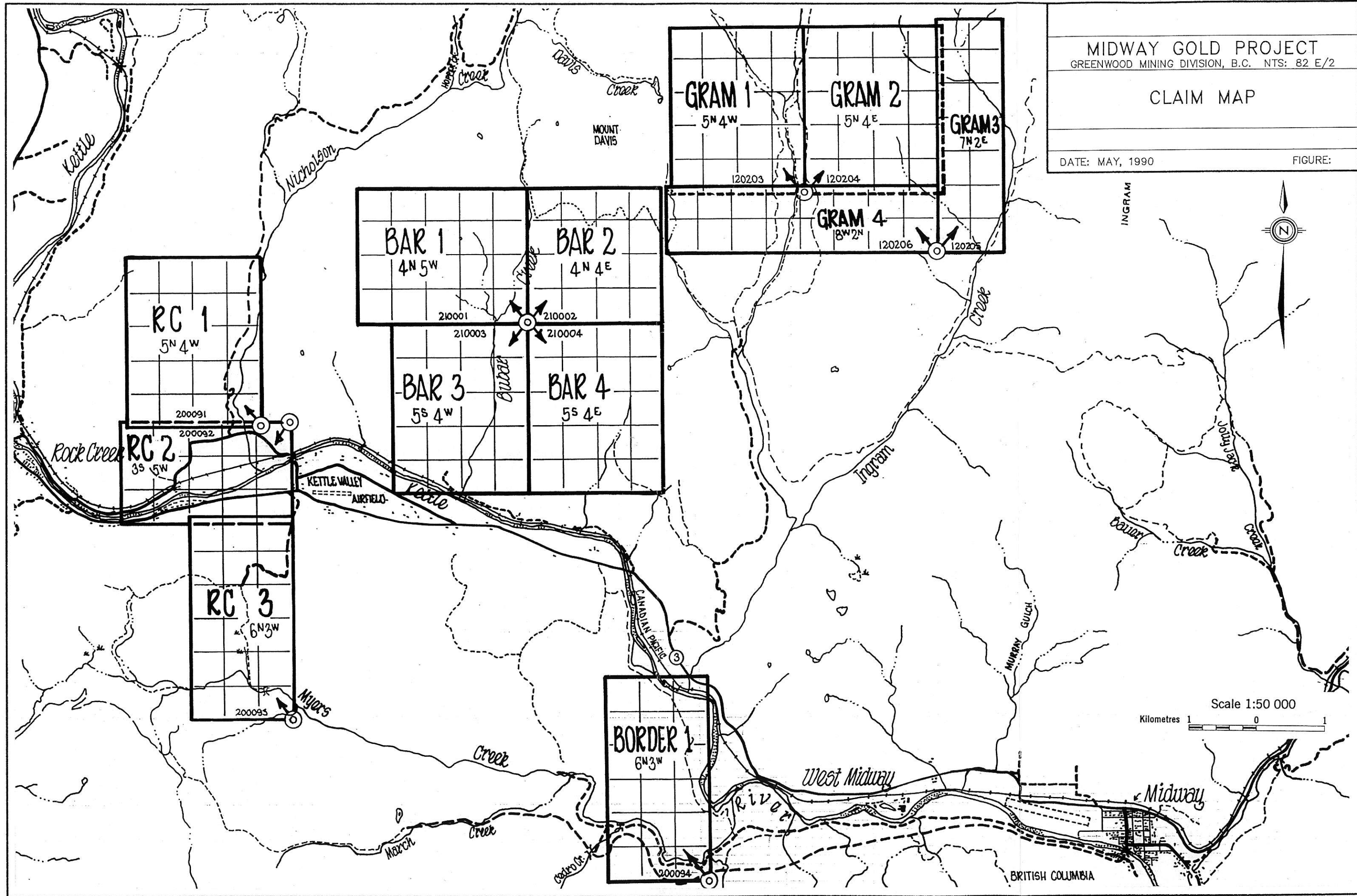
WASHINGTON STATE

MIDWAY GOLD PROJECT  
GREENWOOD MINING DIVISION, B.C. NTS: 82 E/2

CLAIM MAP

DATE: MAY, 1990

FIGURE:



MIDWAY GOLD PROJECT  
GREENWOOD MINING DIVISION, B.C. NTS: 82 E/2

AEROMAGNETIC MAP  
REPRODUCED FROM GCS MAP 8497G

DATE: MAY, 1990

FIGURE:

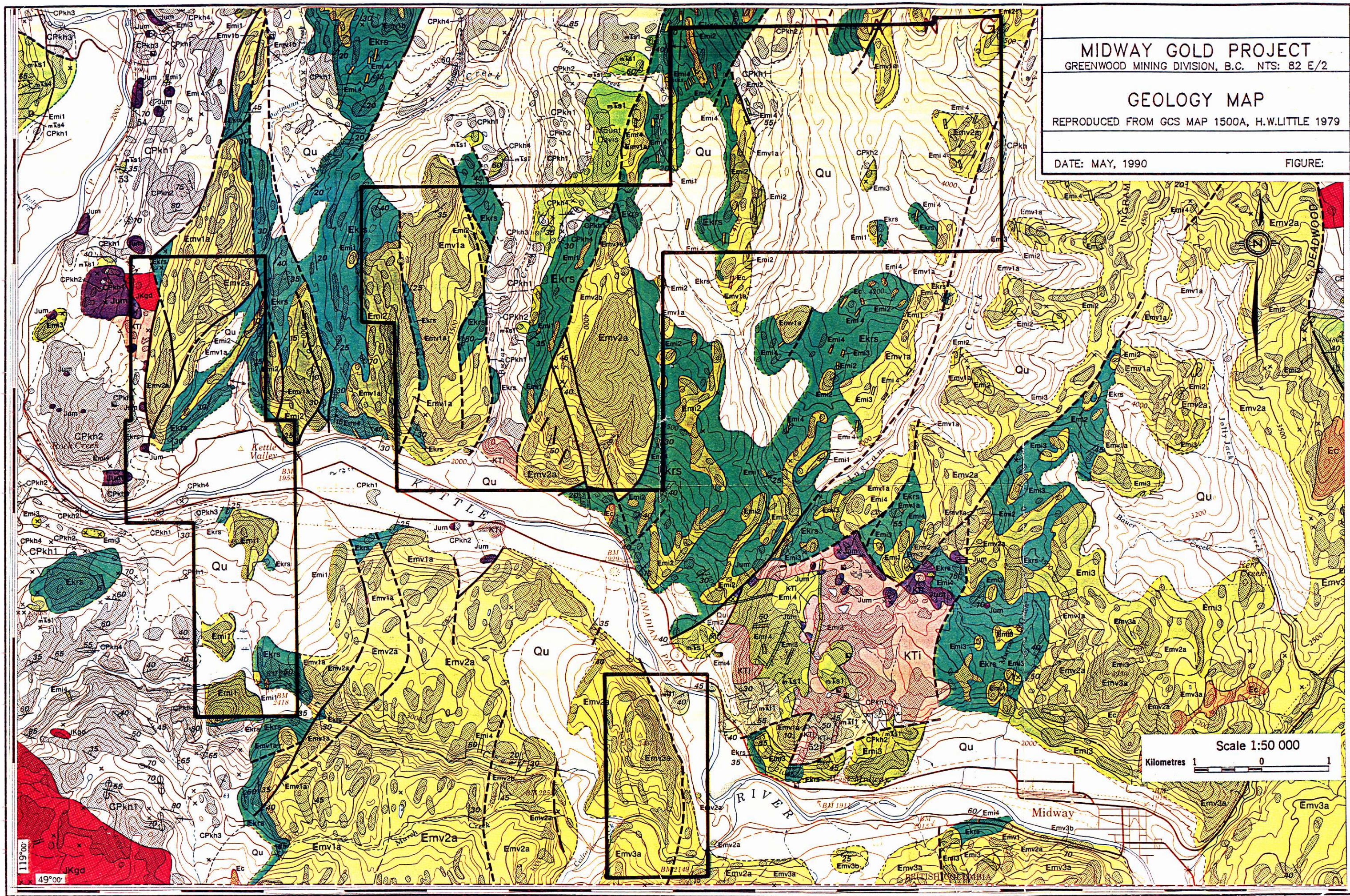


Scale 1:50 000  
Kilometres 1 0 1

MIDWAY GOLD PROJECT  
GREENWOOD MINING DIVISION, B.C. NTS: 82 E/2

GEOLOGY MAP  
REPRODUCED FROM GCS MAP 1500A, H.W.LITTLE 1979

DATE: MAY, 1990  
FIGURE:



LEGEND

MIDWAY GOLD PROJECT  
GREENWOOD MINING DIVISION, B.C. NTS: 82 E/2

GEOLOGY LEGEND  
REPRODUCED FROM GCS MAP 1500A, H.W.LITTLE 1979

DATE: MAY, 1990 FIGURE:

- QUATERNARY**
- Qu Unconsolidated sediments; till, sand, gravel and silt
- TERTIARY**
- EOCENE**
- MIDDLE EOCENE**
- EkM KLONDIKE MOUNTAIN FORMATION: heterogeneous non-volcanic epiclastic breccia
  - Ec CORYELL INTRUSIONS: syenite, quartz monzonite; minor granite and pulaskite
- MARRON FORMATION: INTRUSIVE ROCKS:**
- Emi Emi4, undivided dykes, largely intrusive equivalents of divisions Emv1, 2 and 3 but some of unknown affinity; Emi3, diorite and diorite porphyry (equivalent to lavas of division Emv1); Emi2, syenite and diorite (equivalent to lavas of division Emv2); Emi1, alkaline syenite, largely rhomb-porphyry (equivalent to lavas of division Emv1)
- LAYERED ROCKS (largely extrusive)**
- Emv Division Emv3; Emv3a, andesite; Emv3b, tuff
  - Division Emv2; Emv2a, andesite and trachyandesite; Emv2b, tuff
  - Division Emv1; Emv1a, sodic trachyte in part undersaturated and minor phonolite; Emv1b related rocks characterized by flow breccias and intercalated pyroclastics; Emv1c, related (?) trachyte
- Ekrs KETTLE RIVER FORMATION: feldspathic and lithic tuffaceous sandstone and siltstone; shale and conglomerate; minor acidic and intermediate pyroclastic and flow rocks
- CRETACEOUS OR TERTIARY**
- KTi Quartz-feldspar and quartz porphyry; minor porphyritic quartz diorite; KTi1, felsite
- CRETACEOUS (?)**
- Kvqm VALHALLA INTRUSIONS: granite and quartz monzonite, mainly porphyritic, some pegmatitic; Kvqm1, mainly pegmatite
- JURASSIC AND/OR CRETACEOUS**
- JKgd NELSON INTRUSIONS: granodiorite; minor quartz diorite and diorite
- JURASSIC (?)**
- Jum Peridotite, pyroxenite, dunite, serpentinite; Jum1, pyroxenite
  - Js Siltstone; minor phyllite, sandstone and conglomerate
  - Jph Black phyllite
  - Jv Flow breccia and massive greenstone; Jv1, basal (?) conglomerate with limestone clasts; Jv2, flow breccia, locally with some interbedded limestone

- TRIASSIC**
- UPPER TRIASSIC**
- uTsv White limestone, black limestone, grey, black, and buff shale, limestone breccia, purple or maroon agglomerate, commonly with limestone clasts; uTsv1, mainly limestone; uTsv2, mainly agglomerate; uTsv3, green cherty argillite
- MIDDLE AND (?) LOWER TRIASSIC**
- mTl BROOKLYN FORMATION (mTs-mTl)  
mTl1, limestone, mainly with some chert grains; skarn, minor chert sharpstone conglomerate, siltstone, and shale; mTl2, mainly skarn
  - mTs mTs1, sharpstone conglomerate with mainly chert clasts; local chert sandstone, and minor black argillite; mTs2, mainly buff chert sandstone with beds of sharpstone conglomerate and chert grit; mTs3, green argillite; mTs4, black argillite; mTs5, limestone conglomerate
  - mTr RAWHIDE FORMATION: black siltstone; minor black argillite and chert sharpstone conglomerate
- CARBONIFEROUS OR PERMIAN**
- CPkh KNOB HILL GROUP: massive chert, greenstone, and amphibolite; minor limestone or marble; locally tan or black argillite, fine-grained quartzite, conglomerate; CPkh1, mainly chert; CPkh2, mainly greenstone; CPkh3, mainly amphibolite; CPkh4, limestone or marble; CPkh5, quartzite; CPkh6, tan to green shale and metasiltstone
  - CPal ATTWOOD GROUP (CPas-CPal)  
Limestone, some with thin chert interbeds
  - CPas Black to grey bedded argillite; locally some grey chert and cherty siltstone; minor chert sharpstone conglomerate
- PRE-CARBONIFEROUS**
- Pm Pm1, quartz-chlorite schist, quartz-biotite-muscovite schist, greenstone, bedded chert with argillaceous partings; minor limestone; Pm2, quartz-biotite schist, hornfels, amphibolite, minor marble. May not be equivalent to unit Pm1. Both Pm1 and Pm2 probably include some metamorphosed unit CPkh
  - Pa Amphibolite; minor greenstone and bedded chert
- AGE UNKNOWN**
- Pm Paragneiss, migmatite; Pm1, layered granitoid gneiss; Pm2, granitoid gneiss; Pm3, amphibolite with pegmatite or aplite; Pm4, mafic layered gneiss; Pm5, layered amphibole-bearing gneiss, silicified, locally graphitic



## INTRODUCTION

Recent gold exploration successes in northeast Washington State have focused attention on a small area of south-central British Columbia located adjacent to the international border. In the past three years over two million ounces of new gold reserves have been discovered in geological environments related to the Republic and Turoda grabens. The Key-Overlook, Republic and Crown Jewel deposits all appear to have a Tertiary age gold event in common. Host rocks are either Eocene age volcanics or Permian-Triassic age metasediments, particularly magnetite skarns or replacements. With this situation in mind, the Midway Joint Venture has acquired by staking about 13,400 acres of geologically favourable mineral rights in southern B.C. This area, located west of the town of Midway and east of Rock Creek, has been the subject of very little previous precious metal exploration. Its location at the north end of the Turoda graben and the south end of the Kettle River graben indicates considerable exploration potential. An integrated exploration program starting with an airborne geophysical survey and progressing through drill testing of defined targets is proposed at a total cost of \$1,000,000. The area is currently offered for option to interested parties prepared to fund the cost of a staged exploration program in return for a 100% working interest.

## TECHNICAL BACKGROUND

### Regional Aspects

Gold production from the Republic District of northeast Washington State dates back to the 1890s. Through 1985, about 2.4 million ounces of gold and 13.9 million ounces of silver were produced from Tertiary epithermal veins and stockworks yielding grades averaging 0.56 opt Au and 3.02 opt Ag. Modern exploration by Hecla Mining Co. has led to the definition of a new reserve in the Gold Promise system of about 1 million tons averaging about 1.0 opt Au. The Republic District lies on the west margin of the Republic Graben which is a major N-S trough filled with Tertiary age clastic sediments and volcanics which host the gold deposits. This major structure can be traced north through the Greenwood District in Canada

which has produced about 1 million ounces of gold and 3.4 million ounces of silver from skarn and vein deposits.

Recent exploration activity in Washington by Crown Resources Corp. has discovered three significant gold deposits at the east margin of the Republic Graben at about the same latitude as the Republic District. These deposits were placed in production by Echo Bay Mines in February of 1990 at a rate of 1,500 tpd. The Overlook deposit contains 3.3 million tons grading 0.17 opt Au in four zones. Zone 4 is a flat lying magnetite replacement cut by a stockwork of pyrrhotite veins and has reserves of 850,000 tons at 0.30 opt Au. The zone averages 40 feet thick and has lateral dimensions of 700 feet by 350 feet. It is to be mined by modified room and pillar method with decline access. Above this are three flat lying zones of quartz-pyrrhotite vein swarms containing 2.5 million tons grading 0.13 opt Au. The largest of these (Zone 1) reaches a thickness of 120 feet and has lateral dimensions of 1,200 feet by 750 feet. The gold zones at Overlook are hosted by Permian clastic sediments and intercalated limestones within a flat laying cataclastic zone. There is no significant development of calc-silicate skarn minerals. Arsenic and bismuth are present in geochemically anomalous amounts. There is a probable genetic relationship to dykes and sills of Scatter Creek rhyodacite of Tertiary age (intrusive equivalents of the Sanpoil volcanics). The ore zones lie beneath 600 feet of Tertiary volcanic cover and have no surface expression. There is, however, a 500 gamma aeromagnetic anomaly at Overlook.

The Key East and Key West deposits contain a total of about 1 million tons grading 0.18 opt Au and are near surface with a waste to ore ratio of about 6.5 to 1. In general character they resemble the stockwork vein zones at Overlook but sufficient magnetite is present that they were mined for flux in the early 1900s. Bullseye aeromagnetic anomalies in the 10,000 gamma range correlate well with these deposits.

The Turoda Graben lies en-echelon to the northwest of the Republic Graben and extends across the international border in the area of Midway. At the west margin of the Turoda Graben and three miles south of the border, Crown Resources has rediscovered significant gold skarn system at Buckhorn Mountain. Gold production

here dates back to the 1920s. Current proven/probable mineable reserves in the Crown Jewel deposit are 5.5 m.tons at 0.106 opt Au with a 7:1 waste to ore ratio. Battle Mountain Gold Corp. have agreed to pay Crown \$10 million for the privilege of supplying all capital production costs for a 51% interest in this deposit. Gold is hosted by flat lying clastic sediments and limestones of inferred Permian (possibly Triassic?) age which are intruded by a diorite sill complex (?Jurassic?) and a granodiorite (?Cretaceous?) pluton. Clinopyroxene-garnet skarn is present but gold is primarily related to pyrrhotite net veining and replacement of magnetite skarn and magnetite matrix breccias. Late stage quartz-epidote-calcite veins carry gold values in excess of 2.0 opt Au. Some explorationists have suggested that the gold mineralization may be a Tertiary event overprinting an earlier (Jurassic?) skarn event). Surface surveys at the Crown Jewel deposit outlined an 8,000 foot by 2,000 foot gold soil anomaly coincident with several coalescing "bullseye" magnetic anomalies peripheral to a major magnetic anomaly. There is a minor bismuth and copper association with gold but there is no arsenic association.

### **Midway Project**

The Midway project lies astride the north end of the Turoda Graben and the south end of the Kettle River Graben which is located en-echelon to the northwest. The Project is underlain by Permian and Triassic age metasediments which are intruded by Cretaceous felsic stocks and overlain unconformably by Tertiary volcanics and sediments. The latter are best preserved in graben structures and may aggregate thicknesses well in excess of 300 metres. The older rocks are exposed at surface in adjacent upthrow fault blocks. A large Cretaceous intrusive on the northeast margin of the Project centered on Copper Mountain is related to several small skarn occurrences of copper, gold and silver. A second intrusion and associated gold-silver vein occurrences on the southeast margin of the District are within the Rainbow Project - a 40 square mile area from Midway to Greenwood which will be explored by Minnova in 1990 under option from Dentonia Resources and Kettle River Resources.

### Previous Work

Geologic mapping of the area of interest at a scale of 1:50,000 is provided by H.W. Little (1983) in Geology of the Greenwood Map Area - G.S.C. Paper 79-29. Basic aeromagnetic data is provided by GSC Map 8497G at a scale of 1:63,360 with flight lines spaced one-half mile apart at a survey altitude of 1,000 feet.

Very little exploration work has been undertaken in this area despite its location between the historic Greenwood and Rock Creek mining camps. There are no records of any work having been done on the area of the GRAM 1-4 claims. Radiometric and geologic surveys were undertaken on the BORDER claim area in 1977 by Harold Jones for Dolmage-Cambell & Associates. No anomalies were detected (MIDWAY 1-2 claims). About one-third of the area of the BAR 2 and 4 claims was covered by a wide spaced soil (400 samples) and Mag/VLF survey in 1983 by L. Sookochoff for Prominent Resources Corp. The report mentions the presence of Kettle River acid tuffs, north-south linear magnetic anomalies and five areas of significant geochemical anomalies. The data indicates the presence of erratic anomalous gold and arsenic values (Rock claim). A small area (500 metre square) of the BAR 3 claim was explored in 1984 by S.S. Tan for Rand Resources Inc. Geologic, VLF-EM and soil geochemical (158 samples) surveys were undertaken. The report mentions the presence of three areas of silica-pyrite boxworks in a "quartzite" unit situated between quartz-feldspar porphyry and altered granodiorite. Erratic anomalous gold values are reported (BETA claim).

Approximately two-thirds of the RC 1 claim was explored briefly for uranium in 1977 by John Kerr for Wespas Resources Ltd. Grid based scintillometer and rock geochemical surveys revealed no significant anomalies.

## EXPLORATION PROPOSAL

The current exploration program should be guided by the presence of two conceptual target types. (1) Gold-bearing magnetite skarns and (2) gold-bearing epithermal quartz vein stockworks. It is assumed that the area has received saturation prospecting in the past and that surface outcrops carrying ore grade gold values are not present. A rapid evaluation of new logging roads should, however, be completed. The magnetite skarn hosted gold deposit type is likely to be the easier to explore. This will be either a high grade underground target (Overlook type) or a moderate grade near surface open pitable target (Crown Jewel type).

The initial exploration phase should consist of a high resolution helicopter aeromagnetic survey on lines spaced at no more than 200 metres apart. Flight lines should be oriented east-west. A VLF-EM survey flown at the same time will provide data for structural interpretation which will be critical input in the search for Type 2 (epithermal stockwork) deposits. Even relatively weak aeromagnetic anomalies will require follow-up because some of the Type 1 targets may be buried by several hundreds of feet of Eocene volcanics as at the Overlook deposit.

The ground follow-up phase should start with preparation of a suitable topographic base map. Existing GSC geological mapping is high quality and rapid refinement of a strong geologic framework is anticipated. Ground follow-up of aeromagnetic anomalies will require construction of survey grids and these should be tied to a common reference system. Ground mag-VLF EM surveys are relatively rapid and there should not be any need for extensive line cutting - most survey lines can be simply blazed and flagged. Selected parts of some magnetic anomalies may be subjected to IP surveys to define drill targets.

It is difficult to make a case for extensive systematic geochemical grid surveys in areas underlain by Tertiary volcanic rocks. It is highly unlikely that a significant gold in soil anomaly will be generated but it is possible that indicator elements (Cu, As, Hg) could be present as definable anomalies. Rock geochemical surveys targeted on structures might provide some useful information. Specifically, mercury surveys of soil and rock samples from structures might provide an

effective method of searching for Type 2 quartz vein stockwork targets. Areas believed to be underlain by Pre-Tertiary (pre-mineral) rocks covered by a thin veneer of glacial debris should be tested by geochemical soil sampling along wide spaced survey lines. Definable gold anomalies might be present and if correlated with magnetic anomalies would provide first priority drill targets.

It is anticipated that a minimum of six drill targets will be defined by ground survey work. Each will require testing by at least 3 holes to depths of at least 300 metres. The initial drilling phase should therefore be budgeted at about 6,000 metres. This could be RVC drilling since the target types are visually distinctive and could be recognized in chips.

### BUDGET ESTIMATE

#### Phase 1

Helicopter magnetic-EM survey contract  
Area 10 km x 10 km at 200 m line spacing  
750 line km at \$100 per km

Total Phase 1      \$ 75,000

#### Phase 2

Base map, orthophoto	\$ 10,000
Geologic mapping	25,000
Geochemistry - sampling	15,000
Geochemistry - analyses 2,000 @ \$20	60,000
Survey Grids	40,000
Magnetic, VLF-EM surveys	15,000
IP surveys	60,000
Trenching (contingent)	10,000
Drafting, office and communication	5,000
Supplies and freight	2,500
Reporting	10,000
Government fees	12,500
	<hr/>
	\$265,000

Contingency, management and administration

Total Phase 2      \$300,000

Phase 3

6,000 m RVC drilling at \$95/m	\$570,000
including assays, supervision and reporting	
Contingency, management and administration	<u>55,000</u>
<b>Total Phase 3</b>	<b>\$625,000</b>

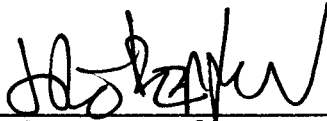
**FINANCIAL PROPOSAL**

A 100% working interest in the Midway Project may be earned by the optionee subject to the following:

1. Option payments - on signing \$25,000.00  
- annual 1991 - 30,000.00  
1992 - 35,000.00  
1993 - 40,000.00  
1994 - thereafter \$40,000.00
  2. Acquisition obligation - staking of approximately 200 additional claim units to create a single contiguous block of claims - all of which will be subject to the option agreement. (Estimated cost \$20,000.00.)
  3. Annual work commitments 1990 \$ 75,000  
1991 300,000  
1992 625,000  
1,000,000
- All available work will be filed for assessment credits.
4. On termination of the option agreement after the expenditure of \$1 million all claims must have at least five years of applied assessment work.

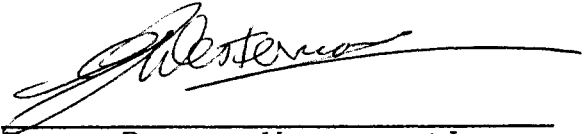
5. 5% NSR to be retained by Optionors.
6. Terrane Resource Management Inc. will manage the first \$1 million of exploration expenditures at competitive industry rates.

May 15, 1990



---

Midas Management Inc.  
J. Robertson, P.Eng.  
President



---

Terrane Resource Management Inc.  
C.J. Westerman, Ph.D.  
President