

**1999 GEOLOGICAL and GEOCHEMICAL  
ASSESSMENT REPORT  
ON THE BACH PROPERTY**

**Quartz Claims**

**Bach 001-060 YB99785-99844**

March 6, 2000

**094 098**

Mayo Mining District  
N.T.S. 105N/07 & 08

Latitude: 63°24' North  
Longitude: 132°31' West

Owner: NovaGold Resources Inc. .

Author: Carl M. Schulze

Date of work: August, 1999

This report has been examined by  
the Geological Evaluation Unit  
under Section 53 (4) Yukon Quartz  
Mining Act and is allowed as  
representation work in the amount  
of \$ 2000.

*M. Bush*  
for Regional Manager, Exploration and  
Geological Services for Commissioner  
of Yukon Territory.

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## SUMMARY

The Bach Property, consisting of the Bach 1-60 Claims located in Central Yukon on NTS sheets 105N/07 and 105N/08, was staked in 1997 by Viceroy Exploration (Canada), Inc. In 1999, Viceroy transferred its 100% interest in the property to NovaGold Resources Inc.

The Bach Property is located within the Paleozoic Selwyn Basin which consists of a broad package of Paleozoic sediments extending ESE from north-west of Dawson City to the Yukon-NWT border north of the major NW-SE trending Tintina Fault Zone. This stratigraphy consists of shallow shelf to off-shelf marine clastic and chemical sediments, as well as basinal clastic sediments derived from the Ancient North American Platform to the north-east. Several episodes of continental uplift have led to periods of increased erosion and resulting continental margin or miogeosynclinal deposition, resulting in formation of comparatively high energy, shallow water sediments, often coarsely grained and variably calcareous. These are separated by strata formed under deeper, quieter water conditions, resulting in formation of fine clastic sediments and chert. The Mid-Cretaceous Tombstone-Tungsten Suite (95-89 Ma) has been emplaced within the Selwyn Basin. Members of this suite occur along an ESE trending belt extending for over 500 kilometres from north-west of Dawson City, Yukon to the Yukon-NWT border. Tombstone Suite intrusives are believed to control much of the economic gold mineralization within the Selwyn Basin.

Extensive thrust faulting along the entire extent of the Selwyn Basin began during Late Jurassic time, resulting in creation of a compressional regime. Most thrust faults are oriented roughly ESE, dipping to the south-west, subparallel to the overall ESE trend of stratigraphy. This regional lineation has been overprinted by a slightly less pronounced NE-SW lineation, marked by high angle orthogonal faults suggesting the compressional regime was followed by an extensional tectonic regime. The Bach Property occurs along the western limit of a broad deformation belt unofficially called the "Gold River Fold Belt". Several WNW trending thrust faults, reactivated as strike-slip faults associated with fairly intense folding extend ESE from the Bach Property area south of the Hess River.

The Bach Claims are underlain by an ESE trending package of Road River Group shale with minor chert extending along contact with a broad package of Road River Group chert with lesser shale and siltstone to the north. Earn Group chert pebble conglomerate underlies extreme southern areas. Two lineament sets are recognized from drainage orientations: a north-south lineation shown by a significant north-central drainage, and a WNW trending lineation controlling minor drainages within western property areas.

Previous exploration revealed a one-kilometre wide ESE trending belt of anomalous soil and silt values extending along the ESE trending shale-chert contact. Consistently anomalous gold in silt values to 35 ppb Au were returned from the central drainage, with values to 75 ppb Au returned from side drainages. A soil sample profile of 66 ppb Au over 600 metres was returned west of the central drainage. Gold in silt values to 85 ppb Au along a western lineament also suggest a strong structural control of mineralization.

The 1999 program revealed a coincident gold in soil and silt anomaly returning a value of 36 ppb Au/ 300 metres, with anomalous silver and antimony values, within the previously delineated geochemical anomaly covering roughly three square kilometres. The highest gold values obtained by NovaGold Resources Inc. and many of the high values from nearby sampling by Viceroy Exploration (Canada) Inc. were obtained from areas of deep cover and permafrost, with lower portions covered by glacial till. Values across lower areas may be partly caused by a glacial "smear effect", and may reflect a significant gold source to the east. The coincident gold-mercury-arsenic values suggest an epithermal, sediment-hosted gold source.

Exploration expenditures in 1999 amounted to \$2,004.

The large geochemically anomalous area suggests a significant gold source. However, due to deep surface cover, permafrost and limited exposure across much of the anomaly, a detailed, intensive exploration program is required to properly assess mineral potential. Exploration in 2000 shall focus on establishment of a cut grid across the central part of the property, followed by systematic soil sampling, geological mapping and rock sampling, to delineate presently recognized soil anomalies.

## **CHAPTER 1: INTRODUCTION**

### **1.1 Introductory Statement**

The Bach Property consists of 60 contiguous quartz mining claims (Bach 1-60 claims) covering a 13.5 square kilometre area measuring 4.5 by 3 kilometres within NTS Sheets 105 N/07 & 08, in the Mayo Mining District (Figure 1).

The 1999 exploration program involved reconnaissance style systematic soil and silt sampling, and limited geological mapping.

### **1.2 Location and Access**

The Bach Property is located 160 kilometres north of the town of Ross River, in the Yukon Territory. It is centered at 63° 24' N latitude, 132° 31' W longitude on NTS Map Sheets 105 N/07 and 105N/ 08 (Fig. 2).

Access is by helicopter from Fairweather Lake roughly 15 kilometres to the southeast.

### **1.3 Physiography and Vegetation**

The Bach Property occurs within moderately rolling terrain with limited outcrop exposure attaining elevations of 3,500 feet. The entire property is covered by typical northern boreal spruce and fir forest.

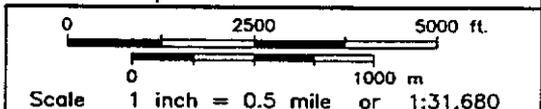
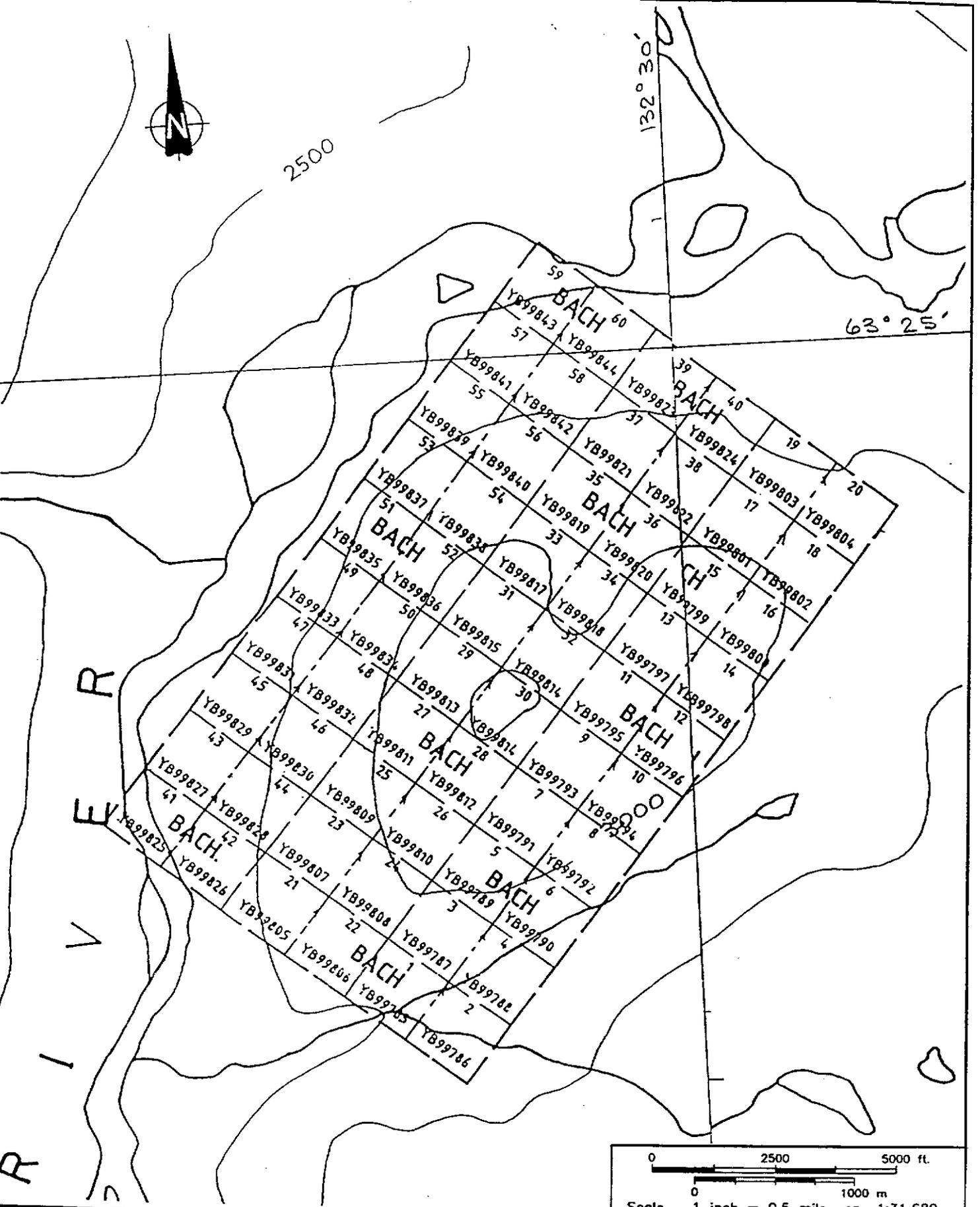
### **1.4 Regional Exploration History and Competitor Activity**

Little past exploration has occurred in the immediate Bach Property area. The JET Claims held by the Archer-Cathro Group located roughly fifty kilometres east-southeast overlie barite occurrences within Earn Group sediments. Several claim blocks overlie Tombstone Suite stocks and associated gold mineralization and gold in silt anomalies. These include: the YZ, NID, EM, and CYP Claims, held by Alliance Pacific Gold Ltd., which added the WEAS Claims onto the CYP Block in 1998; and the NUG Claims held by Bernard Kreft. The PLATA lead-zinc-silver prospect, held by Alliance Pacific, is located thirty-five kilometres to the north-east. The TOM and JASON lead-zinc-silver Sedex-style deposits, held by Cominco, are located roughly ninety kilometres to the east.

### **1.5 Property Exploration History**

The Bach Property area was targeted by Viceroy Exploration (Canada) Inc. due to several coincident gold-arsenic-mercury-antimony anomalies from RGS silt sampling across Earn Group stratigraphy. The BACH 1-60 claims were staked by Viceroy in late 1997 to cover significant gold values from systematic soil sampling, and several closely spaced coincident gold-mercury silt anomalies from streams overlying Earn and Road River Group stratigraphy. Soil and silt sampling in 1998 continued to substantiate the presence of widespread coincident gold-mercury-arsenic anomalies across the property.

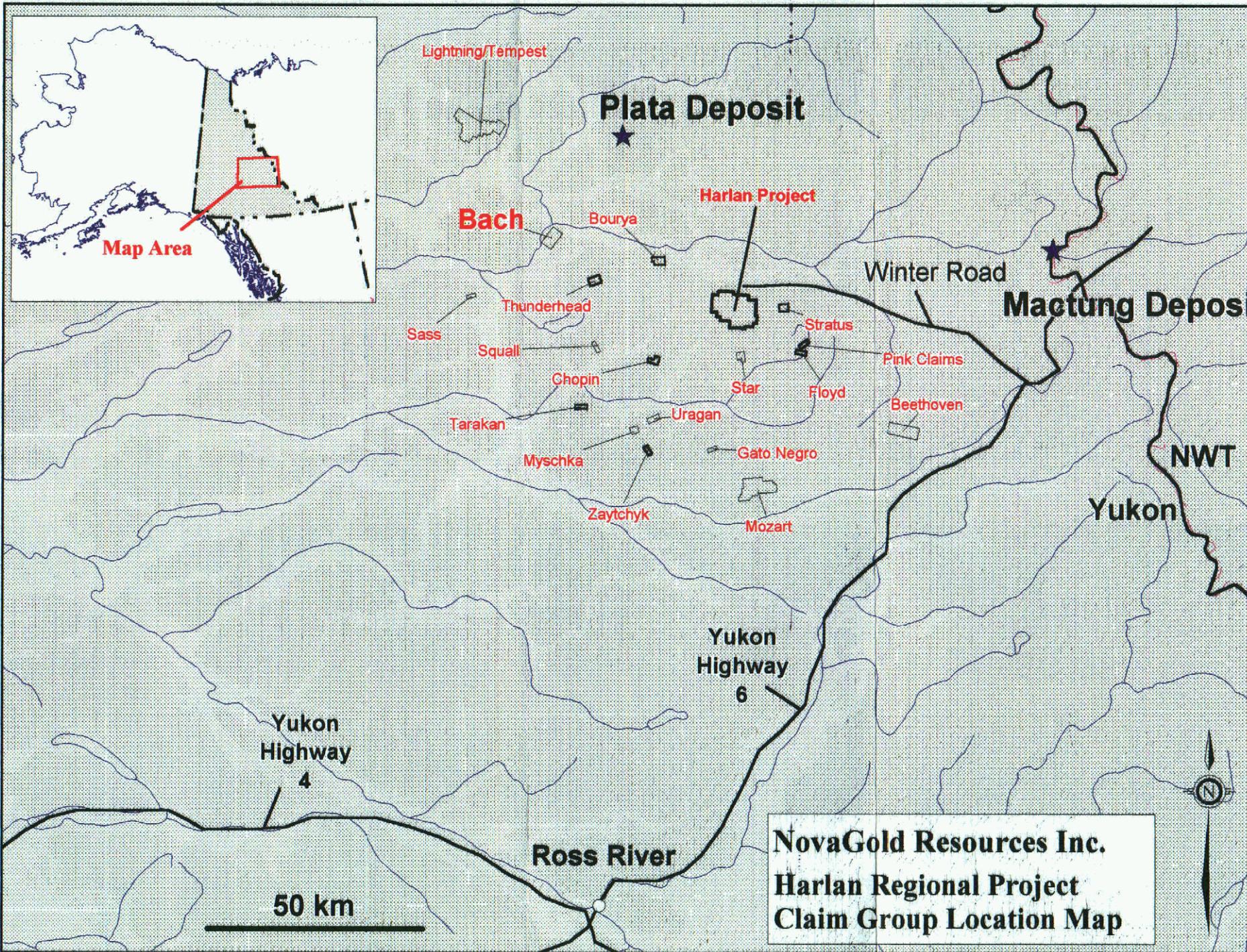
In early 1999, Viceroy transferred its 100% interest in the BACH 1-60 claims to NovaGold Resources Inc. which performed further reconnaissance-style traverses focusing on systematic soil and silt sampling, and limited geological mapping.



NOVAGOLD  
RESOURCES  
INC.

**BACH PROPERTY CLAIM  
LOCATION MAP**

DRAWN BY:	SCALE:	1/2 Mile:1"
DATA BY:	C.S., S.C.	NTS: 105N/7&N/8
DATE:	03/20/00	FIGURE: 2



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Table 1 below lists detailed claim status, including assessment status and expiry dates following the 1998 filing.

<b>Table 1. Status of Bach Property claims after 1999 filing</b>				
<b>Claim Name</b>	<b>Grant No.</b>	<b>Owner</b>	<b>New expiry date</b>	<b>Work completed By</b>
Bach 001-003 Bach 005 Bach 007 Bach 009 Bach 011-013 Bach 015 Bach 017 Bach 019 Bach 021-040 Bach 042 Bach 044 Bach 046 Bach 048 Bach 050 Bach 052 Bach 054 Bach 056 Bach 058 Bach 060	YB99785-87 YB99789 YB99791 YB99793 YB99795-97 YB99799 YB99801 YB99803 YB99805-24 YB99826 YB99828 YB99830 YB99832 YB99834 YB99836 YB99838 YB99840 YB99842 YB99844	NovaGold Resources Inc.	October 27, 2000	Viceroy Exploration (Canada), Inc.
Bach 004 Bach 006 Bach 008 Bach 010 Bach 014 Bach 016 Bach 018 Bach 020 Bach 041 Bach 043 Bach 045 Bach 047 Bach 049 Bach 051 Bach 053 Bach 055 Bach 057 Bach 059	YB99788 YB99790 YB99792 YB99794 YB99798 YB99800 YB99802 YB99804 YB99825 YB99827 YB99829 YB99831 YB99833 YB99835 YB99837 YB99839 YB99841 YB99843	NovaGold Resources Inc.	October 27, 2000	NovaGold Resources Inc.

### 1.6 Work Program

In 1999, limited geological mapping of the property was undertaken, as well as soil and silt sampling. Sample locations for 1999 and prior years are shown on Fig. 3. A total of eighteen soil and one silt sample was taken. Please note that the appendices contain only 1999 sample information.

### **1.6.1 Sample Preparation and Assay Procedure**

Samples taken in 1999 were sent to NAL Laboratories of Whitehorse for gold fire assay analysis, then sent to IPL Laboratories in Vancouver for 30-element ICP analysis. At NAL, samples were pulverized to -100 mesh, then subject to 30 gram fire assay analysis with AA (atomic absorption) finish.

All rock, soil and silt sampling was quantifiably recorded in the field to ensure a high degree of quality control, and entered into standardized spreadsheet programs. Criteria for each sample included: sample type, width of chip sampling, lithology, alteration and mineralization, and "UTM" location. All sample locations have been tied into UTM co-ordinates and have been plotted. A sample database in Microsoft Excel format is included and can be interfaced with Autocad Map or MapInfo software programs.

### **1.6.2 Personnel**

All applicable assessment work was done by Carl Schulze, Project Manager. Fireweed Helicopters of Dawson City, Yukon, provided helicopter services.

## CHAPTER 2: GEOLOGY

### 2.1 Regional Geology

The Bach Property is located within the Selwyn Basin which consists of a broad package of Paleozoic sediments extending ESE from north-west of Dawson City to the Yukon-NWT border north of the major NW-SE trending Tintina Fault Zone. This stratigraphy consists of shallow shelf to off-shelf marine clastic and chemical sediments, as well as basinal clastic sediments derived from the Ancient North American Platform to the north-east. Age of deposition ranges from Late Precambrian to Permian. At least two major episodes of rifting have occurred: the first during deposition of the Late Precambrian Hyland Group sediments, and the second during deposition of the Devonian-Mississippian Earn Group sediments (Table 2, Figure 3). These major rift zones often host poorly sorted coarse clastic sediments, such as debris flows or turbidite horizons. Several episodes of continental uplift have led to periods of increased erosion and resulting continental margin or miogeosynclinal deposition, resulting in the creation of sequences of comparatively high energy, shallow water sediments, often coarsely grained and variably calcareous. These are separated by strata formed under deeper, quieter water conditions, resulting in formation of fine clastic sediments and chert. The Mid-Cretaceous Tombstone-Tungsten Suite (95-89 Ma) has been emplaced within the Selwyn Basin. Intrusives of this suite occur along an ESE trending belt extending for over 500 kilometres from north-west of Dawson City, Yukon to the Yukon-NWT border. Intrusives are believed to control much of the economic gold mineralization within the Selwyn Basin.

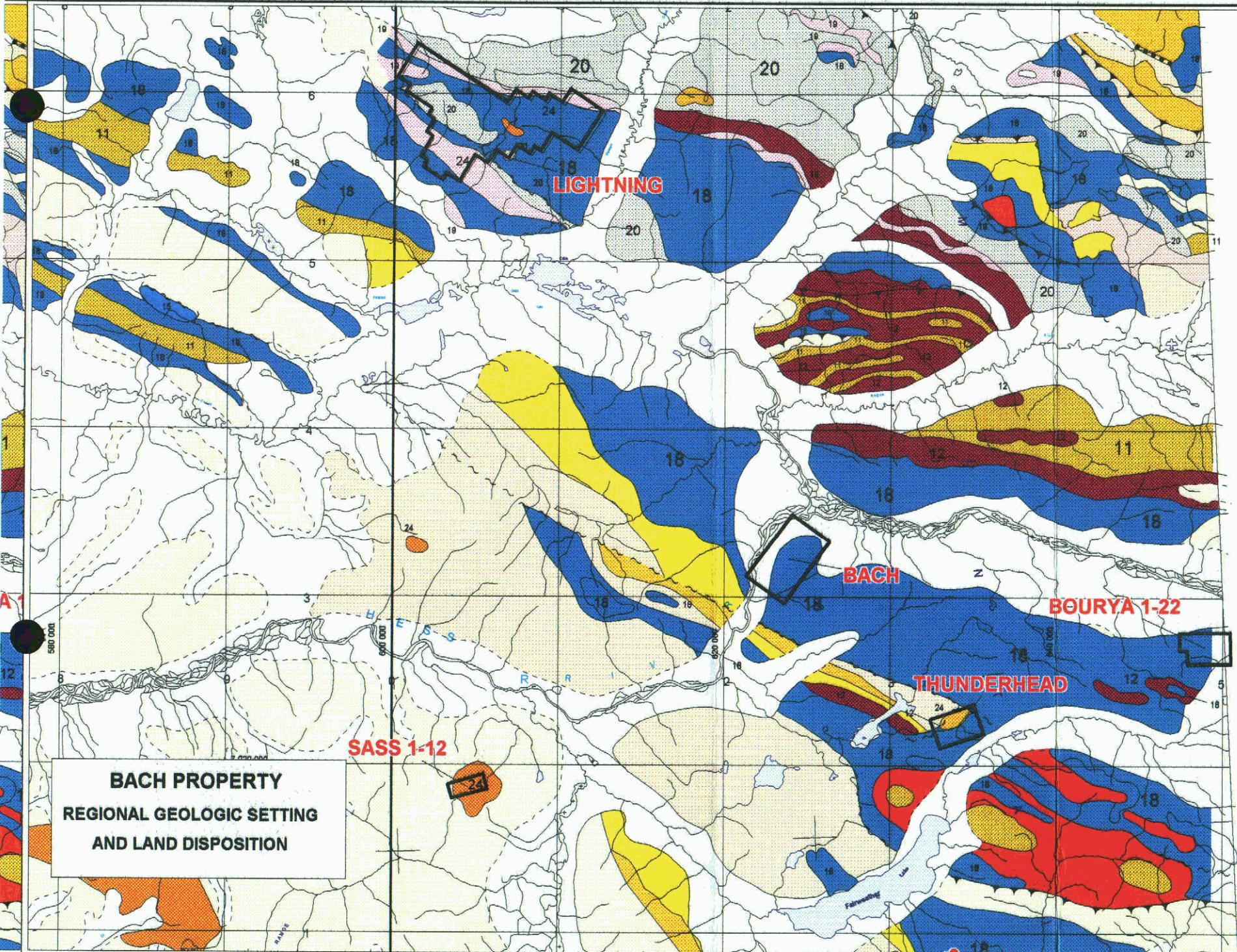
Extensive thrust faulting along the entire extent of the Selwyn Basin began during Late Jurassic time, resulting in creation of a compressional regime. Most thrust faults are oriented roughly ESE, dipping to the south-west, subparallel to the overall ESE trend of stratigraphy. Several major regional thrust faults were formed including the Dawson Thrust, Tombstone Thrust, and Robert Service Thrust. This regional lineation has been overprinted by a slightly less pronounced NE-SW lineation, marked by high angle orthogonal faults suggesting the compressional regime was followed by an extensional tectonic regime.

The Bach Property occurs along the western limit of a broad deformation belt unofficially called the "Gold River Fold Belt" (Figure 3). Several WNW trending thrust faults, reactivated as strike-slip faults associated with fairly intense folding extend ESE from the Bach Property area south of the Hess River. Several Tombstone Suite monzonite stocks occur within this belt within twenty kilometres of the property.

### 2.2 Property Geology

The Bach Claims are underlain by an ESE trending package of Road River Group shale with minor chert extending along an ESE trending contact with a broad package of Road River Group chert with lesser shale and siltstone to the north (Fig. 4). The southern shale package, which contains a small phyllite member, lies in contact with a unit of Earn Group chert pebble conglomerate to the south. A smaller unit of Earn Group conglomerate extends along western portions of the shale-chert contact.

Two lineament sets are recognized from drainage orientation: a north-south lineation shown by a significant drainage towards the north, as well as drainages east of the property; and a WNW trending lineation controlling minor drainages within western property areas. Mapping in 1999 indicate bedding of Road River group chert and shale across central areas strikes east-southeast, and dips steeply to the south-southwest.



**BACH PROPERTY  
REGIONAL GEOLOGIC SETTING  
AND LAND DISPOSITION**

**GEOLOGICAL LEGEND**

- CENOZOIC**  
Quaternary  
26 [white box] Unconsolidated till, and alluvium
- MESOZOIC**  
Cretaceous  
24 [red box] granite, quartz monzonite, syenite
- PALEOZOIC**  
Permian  
22 [yellow box] Chert, cherty limestone, limestone  
21 [tan box] Shale, siltstone, limy siltstone
- Upper Pennsylvanian to Permian  
\*27 [stippled box] basalt flows, tufts, slate, phyllite, chert, carbonaceous shale.
- Carboniferous to Permian  
20 [light blue box] Thin bedded limestone, minor black shale, chert, chert pebble conglomerate
- Mississippian ?  
19 [pink box] Kenp Hill quartzite: quartzite, minor slate phyllite, argillaceous quartzite
- Devonian  
18 [dark blue box] "Lower Schist" argillite, slate, phyllite, minor phyllite, limy quartzite (probably Earn Group equivalent)  
17 [light blue box] EARN GROUP: Black shale, argillite, slate, limestone, chert, quartzite, chert-pebble conglomerate  
16 [green box] Felsic metavolcanics, quartz porphyry (part of lower schist?)  
15 [blue box] Black platy limestone, argillite, and, interbedded chert  
14 [light blue box] Limestone, massive to thin bedded  
13 [light blue box] Limestone, dolomite
- Ordovician - Silurian  
12 [red box] ROAD RIVER FORMATION: Interbedded chert and argillite, minor quartzite, chert pebble conglomerate, Steele Formation (siltstone)  
RABBITKETTLE FORMATION  
11 [yellow box] Dolomite and limestone, black platy argillaceous limestone and dolomite  
10 [orange box] Varicoloured slate  
9 [orange box] Quartzite, slate, phyllite, limestone
- LATE PRECAMBRIAN - EARLY CAMBRIAN**  
[white box] HYLAND GROUP: phyllite, calcareous phyllite, limestone, quartzite



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**TABLE 2: STRATIGRAPHIC COLUMN, BACH PROPERTY**

<b>Age</b>	<b>Group</b>	<b>Formation (Lithology)</b>	<b>Geology Map Designation</b>	<b>Rock Code</b>	<b>Description</b>
Mid-Late Cretaceous (95-89 Ma)	Tombstone-Tungsten Plutonic Suite	Diorite through Granite (Most commonly Quartz Monzonite), minor Syenite	Kg, Kqm, Ks		Felsic to intermediate dioritic to granitic intrusives, most commonly monzonitic, quartz monzonitic to quartz dioritic, Commonly feldspar to quartz-feldspar porphyritic within upper emplacement levels and dykes.
Devonian - Mississippian	Earn Group	<b>Prevost Formation</b>	DMp (Dme)	CPC, GW	Grey chert-pebble-conglomerate to greywacke, locally fairly large clasts.
Devonian - Mississippian	Earn Group	<b>Portrait Lake Formation</b>	Dme	SH, CH	Black shale, minor chert.
Ordovician - Early Devonian	Road River Group	<b>Steel Formation</b>	SS (OSDr)		Siltstone to mudstone, commonly weakly to moderately calcareous, lesser sandstone to calcareous sandstone, all members commonly limonitic; minor limestone
Ordovician - Early Devonian	Road River Group	<b>Duo Lake Formation</b>	OSDr	CH	Thin bedded light grey chert, minor shale horizons. Weakly to moderately limonitic near intrusive contacts; local weak argillic alteration, silicification.
Ordovician - Early Devonian	Road River Group	<b>Duo Lake Formation</b>	OSDr	SH, SLT	Grey shale to siltstone, minor chert horizons.

## CHAPTER 3: MINERALIZATION

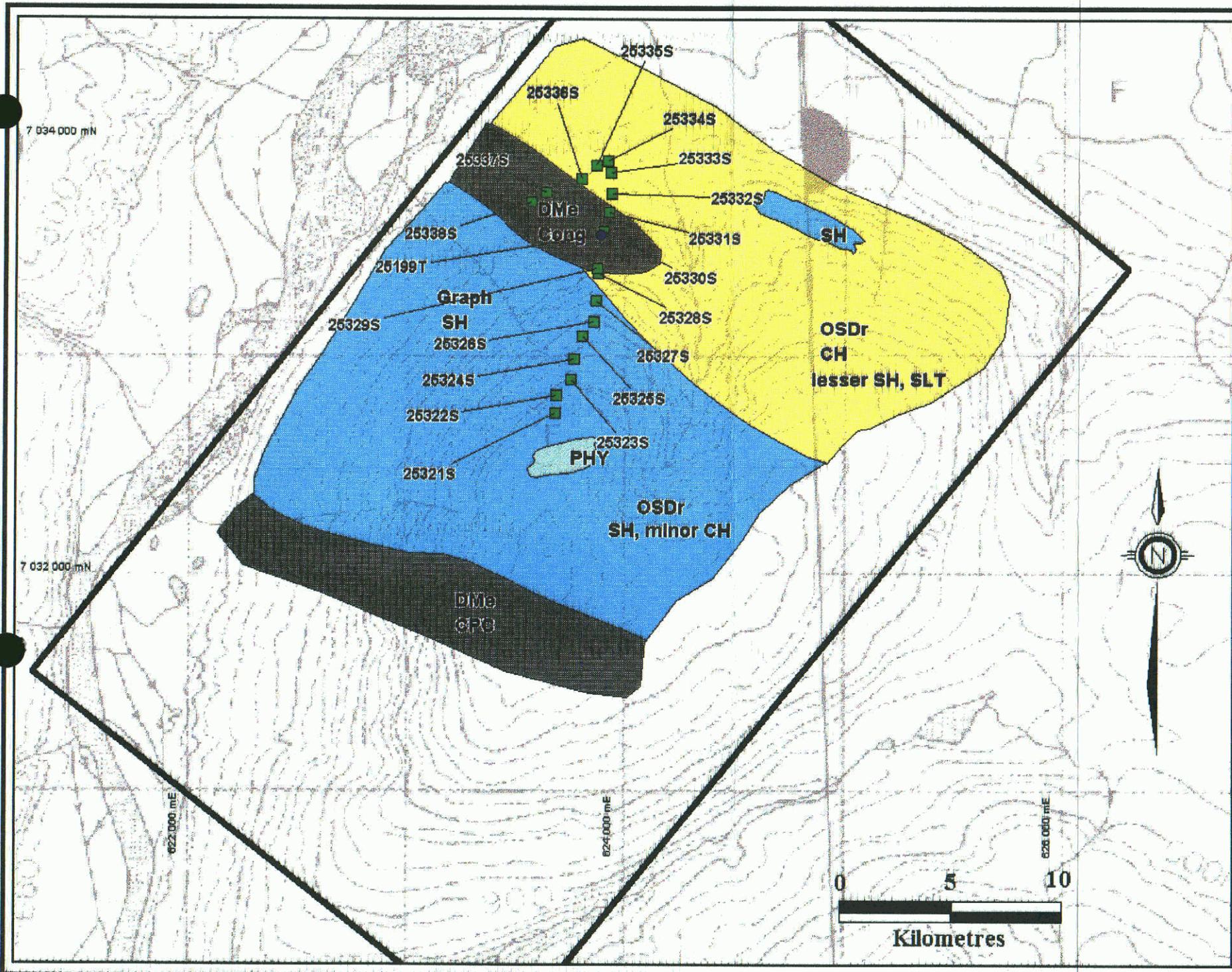
### 3.1 Property Mineralization

Consistently elevated gold values were returned from soil and silt sampling across a roughly one kilometre wide zone centered along the ESE trending shale-chert contact. The north-south and WNW trending lineations also affect mineral emplacement within this zone. Soil sampling roughly 300 metres west of the northern stream returned 66 ppb Au/ 600 metres, with mercury values exceeding 1,000 ppb. A value of 44 ppb Au/ 400 metres was returned from sampling roughly 200 metres east of the stream. Silt sampling along the northern stream returned consistently anomalous values to 35 ppb Au with mercury values ranging from 290 to 1560 ppb Hg, weakly anomalous silver values to 5.4 gpt Ag, and antimony values from 4-12 ppm Sb. Gold values to 75 ppb Au were returned from tributaries draining the east side. Anomalous geochemical values have been returned across roughly three square kilometres.

The 1999 program focused on in-fill sampling between previous traverses by Viceroy, as well as across areas to the north and west. A coincident gold in soil and silt anomaly returning a value of 36 ppb Au/ 300 metres was delineated roughly 100 metres west of the significant soil intersection returning 66 ppb Au/ 600 metres. The 1999 intersection included pathfinder values to 2.0 ppm silver and 5 ppm antimony. A silt sample of a small seepage returned 38 ppb Au and 5 ppm antimony. This anomaly occurs within an area of deep cover and permafrost, with lower portions covered by glacial till. Values across lower areas may be partly caused by a glacial "smear effect", and may reflect a significant gold source to the east. This hypothesis is supported by strongly anomalous 1997 sample results, which have similar pathfinder signatures.

The coincident gold-mercury-arsenic values suggest an epithermal, sediment-hosted gold source. Structural control is inferred along a lineament within western areas of the property. Silt sampling approximately 1.2 kilometres west of the stream revealed a cluster of moderately anomalous gold values to 85 ppb Au, associated with weakly anomalous gold in soil values to 25 ppb Au, along a WNW trending lineament. Anomalous values along the main north trending drainage may also be partially structurally controlled.

Further surface exploration is necessary to determine whether mineralization occurs as replacement zones in reactive sediments, or within stockwork or veins within brittle sediments.



**LEGEND**

- Silt Sample
- Soil Sample
- △ Rock Sample
- xxxxxxx Sample Number

Map Datum : UTM Zone 8 (NAD27)

**GEOLOGICAL LEGEND**

- Devono-Mississippian: Earn Group
  - DMe - Chert pebble conglomerate(CPC), other conglomerate
- Ordovician to Devonian: Road River Group
  - OSDr - Shale(SH), chert(CH), siltstone(SLT)
  - OSDr - Chert(CH), minor shale
  - OSDr - Phyllite(PHY)
- Geological contact

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**NOVAGOLD RESOURCES INC.**

**BACH PROPERTY  
Sample Location and  
Property Geology**

## CHAPTER 4: CONCLUSIONS

The Bach Property, consisting of the Bach 1-60 Claims located in Central Yukon on NTS sheets 105N/07 and 105N/08, was staked in 1997 by Viceroy Exploration (Canada), Inc.

The Bach Property is located within the Selwyn Basin which consists of a broad package of Paleozoic sediments extending ESE from north-west of Dawson City to the Yukon-NWT border north of the major NW-SE trending Tintina Fault Zone. This stratigraphy consists of shallow shelf to off-shelf marine clastic and chemical sediments, as well as basinal clastic sediments derived from the Ancient North American Platform to the north-east. Age of deposition ranges from Late Precambrian to Permian. Several episodes of continental uplift have led to periods of increased erosion and resulting continental margin or miogeosynclinal deposition, resulting in formation of comparatively high energy, shallow water sediments, often coarsely grained and variably calcareous. These are separated by strata formed under deeper, quieter water conditions, resulting in formation of fine clastic sediments and chert. The Mid-Cretaceous Tombstone-Tungsten Suite (95-89 Ma) has been emplaced within the Selwyn Basin. Members of this suite occur along an ESE trending belt extending for over 500 kilometres from north-west of Dawson City, Yukon to the Yukon-NWT border. Tombstone Suite intrusives are believed to control much of the economic gold mineralization within the Selwyn Basin.

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Previous exploration revealed a one-kilometre wide ESE trending belt of anomalous soil and silt values extending along the ESE trending shale-chert contact. Consistently anomalous gold in silt values to 35 ppb Au were returned from the central drainage, with values to 75 ppb Au returned from side drainages. A soil sample profile of 66 ppb Au over 600 metres was returned west of the central drainage. Gold in silt values to 85 ppb Au along a western lineament also suggest a strong structural control of mineralization.

The 1999 program revealed a coincident gold in soil and silt anomaly returning a value of 36 ppb Au/ 300 metres between previous Viceroy traverses returning anomalous results. An area of anomalous geochemical values covering roughly three square kilometres has been defined. The 1999 intersection included anomalous silver and antimony values. A silt sample of a small seepage along the 1999 intersection returned 38 ppb Au and 5 ppm antimony.

The highest gold values obtained by NovaGold, and many of the high values from nearby sampling by Viceroy Exploration (Canada) Inc. were obtained from areas of deep cover and permafrost, with lower portions covered by glacial till. Values across lower areas may be partly caused by a glacial "smear effect", and may reflect a significant gold source to the east. This hypothesis is supported by strongly anomalous 1997 sample results, which have similar pathfinder signatures. The coincident gold-mercury-arsenic values suggest an epithermal, sediment-hosted gold source.

## CHAPTER 5: RECOMMENDATIONS

Geochemical results suggest the Bach property overlies or is proximal to a significant gold source. However, due to deep cover and limited exposure across lower elevations where much of the anomaly occurs, a detailed, intensive exploration program is required to properly assess mineral potential.

Exploration in 2000 shall concentrate on soil geochemical surveying across the ESE trending anomalous belt along the shale-chert contact. A grid across north-central areas will be established, consisting of cross lines established at 200 metre spacings. Systematic B-horizon soil sampling at 50 metre station spacing will be done across the grid to determine extent of geochemical anomalies. Detailed geological mapping and rock chip sampling will also be conducted. Geophysical surveying, particularly ground electromagnetic and "induced polarization" surveying, are recommended if favourable surface results are returned. Reconnaissance style traversing involving systematic soil sampling, geological mapping and rock sampling shall be done across areas south of the proposed grid.

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Schulze, C. 1998: 1998 Geological and Geochemical Assessment Report on the Bach Property; Viceroy Exploration (Canada) Inc.

## STATEMENT OF QUALIFICATIONS

I, Carl Schulze, of the City of Whitehorse, Yukon Territory, Canada, do hereby certify that:

- 1) I held the position of Project Manager with NovaGold Resources Inc. during the 1999 exploration and remain as agent for NovaGold through Wolf Star Resources.
- 2) I graduated from Lakehead University with a Bachelor of Science Degree in Geology in 1984.
- 3) I have been continually active in mineral exploration since 1984.
- 4) I supervised the exploration program and performed part of the work described in this report.
- 5) I am the immediate past- president of the Yukon Chamber of Mines and a member of the Yukon Prospectors' Association.



Carl M. Schulze  
Consulting Geologist  
Wolf Star Resources

**APPENDIX 1**

**APPLICABLE EXPENDITURES FOR ASSESSMENT CREDITS**

<b>Bach Property Expenditures</b>	
<b>Description</b>	<b>Expenditure</b>
Labor	\$ 300
Helicopter	403
Geochemical Analyses	361
Compilation, Map. Preparation	190
Report Writing	750
<b>Total</b>	<b>\$2,004</b>

## APPENDIX 2: SOIL SAMPLE GEOCHEMICAL RESULTS

### 2a) SOIL SAMPLE DESCRIPTION SHEET

Sample No.	Easting	Northing	Traverse	Zone	Horizon	Depth (cm)	Slope Angle	Colour	Berms/rost (yes/no?)	% Coarse Fragments	Vegetation	Surface Geology	Frag. Lithology	% Organics	Date	Sampler	Comments
25321 S	623682	7032740	99B1		S B	20	gen	red/ben	N	20	bb		sh	10	2/8/99	C.S.	Bedrock at approx 25 cm
25322 S	623688	7032822	99B1		S C	30	mod	red/gy	N	35	sc	cov	sh	5	2/9/99	C.S.	Abnl. shale outcrop
25323 S	623752	7032893	99B1		S C	30	mod	gy	N	40	con	cov	sh	<5	2/10/99	C.S.	Duff overlying C-horizon
25324 S	623767	7032991	99B1		S C	25	st	gy	N	65	con	cov	sh	<5	2/11/99	C.S.	Poor soil dev; duff over C-hor
25325 S	623805	7033099	99B1		S C	25	gen	gy	N	50	con	cov	sh	<5	2/12/99	C.S.	Poor soil dev; duff over C-hor
25326 S	623860	7033165	99B1		S B	15	st	gy	N	50	con	cov	sh	30	2/13/99	C.S.	Thin B-hor. over shale frags
25327 S	623867	7033260	99B1		S B	25	mod	gy	Y	5	con	cov	sh	20	2/14/99	C.S.	Thin active layer
25328 S	623879	7033381	99B1		S B	30	mod	gy	Y	10	con	cov	ch, sh	10	2/15/99	C.S.	Common coarse sand frags
25329 S	623871	7033406	99B1		S B	20	mod	blk	Y	10	con	cov	sh	10	2/16/99	C.S.	Active grey layer over pforest
25330 S	623901	7033582	99B1		S B	25	mod	blk	Y	25	con	fill	sil	10	2/17/99	C.S.	Mixed fill, colluvium?
25331 S	623926	7033667	99B1		S B	30	mod	blk	Y	20	con	fill	sil	10	2/18/99	C.S.	Mixed fill, colluvium?
25332 S	623939	7033754	99B1		S B	20	gen	blk	Y	25	con	fill	sil	10	2/19/99	C.S.	Thin active layer
25333 S	623934	7033846	99B1		S A-B	25	gen	blk	Y	<10	con	fill		35	2/20/99	C.S.	Thin B-hor. development
25334 S	623920	7033903	99B1		S B	25	gen	dk gry	N	30	con	fill	sh, sil	10	2/21/99	C.S.	Large fill boulders overlie fines
25335 S	623866	7033882	99B1		S B	25	gen	blk	Y	10	con	fill		20	2/22/99	C.S.	No sizable fragments
25336 S	623799	7033820	99B1		S B	30	gen	blk	Y	5	con	fill	ch, sh	15	2/23/99	C.S.	One large chert fragment
25337 S	623637	7033718	99B1		S C	30	gen	blk	N	35	con	fill	sh	10	2/24/99	C.S.	Shale, sil frags
25338 S	623572	7033713	99B1		S D	25	gen	blk	Y	35	con	fill		15	2/25/99	C.S.	Duff overlying fill

## 2b) SOIL SAMPLE GEOCHEMICAL RESULTS

Sample No.	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Hg ppm	Mn ppm	Bi ppm	Co ppm	Ni ppm	Ba ppm	W ppm	Cr ppm	V ppm	Nm ppm	Li ppm	Sr ppm	Zr ppm	Se ppm	Th %	Al %	Ca %	Fe %	Mg %	K %	Na %	P %		
25321S	10	0.1	18	20	98	53	<5	<5	2	<10	<2	<0.1	5	17	253	<5	25	96	236	14	10	1	0.02	1.63	0.06	2.94	0.19	0.06	0.02	0.04	
25322S	23	1.2	69	30	157	70	<5	<5	4	<10	<2	<0.1	14	46	395	<5	36	84	535	13	23	3	0.01	2.4	0.06	4.44	0.37	0.13	0.02	0.06	
25323S	14	0.1	41	18	77	33	<5	<5	4	<10	<2	2.7	8	23	481	<5	18	24	863	18	57	1	2	0.01	1.1	0.34	1.99	0.25	0.11	0.02	0.07
25324S	<5	<0.1	72	29	195	48	<5	<5	5	<10	<2	<0.1	8	58	102	9	13	80	465	22	16	1	1	0.01	0.57	0.01	3.4	0.04	0.07	0.01	0.08
25325S	13	<0.1	34	37	54	37	<5	<5	7	<10	<2	<0.1	4	14	486	<5	17	62	149	28	130	1	2	0.01	0.64	0.06	1.87	0.15	0.23	0.02	0.07
25326S	10	<0.1	47	18	173	23	<5	<5	17	<10	<2	0.5	14	36	353	<5	15	50	986	20	23	1	2	0.01	0.86	0.17	3.77	0.16	0.16	0.02	0.06
25327S	15	0.8	37	14	96	45	<5	<5	6	<10	<2	0.6	21	927	<5	19	88	264	14	40	<1	2	0.01	0.99	0.31	1.7	0.25	0.18	0.02	0.14	
25328S	34	0.6	28	22	91	95	<5	<5	1	<10	<2	0.4	2	11	700	<5	26	111	62	7	36	1	2	0.01	1.49	0.23	1.57	0.3	0.23	0.02	0.16
25329S	23	0.3	63	22	188	58	<5	<5	8	<10	<2	0.8	7	35	951	<5	23	101	220	18	53	1	3	0.01	1.09	0.33	2.45	0.29	0.17	0.02	0.13
25330S	51	2	67	17	177	97	<5	<5	7	<10	<2	1.5	8	36	1037	<5	21	108	289	17	74	1	3	<0.01	1.15	0.34	2.26	0.26	0.18	0.02	0.14
25331S	13	0.3	31	15	72	36	<5	<5	3	<10	<2	0.9	3	15	1022	<5	15	76	138	12	33	1	2	0.01	0.81	0.21	1.38	0.13	0.1	0.02	0.1
25332S	10	0.8	20	8	33	18	<5	<5	2	<10	<2	<0.1	1	8	397	<5	10	36	24	9	24	1	1	<0.01	0.44	0.18	0.77	0.08	0.06	0.02	0.07
25333S	11	0.4	20	9	12	9	<5	<5	1	<10	<2	0.3	1	7	267	<5	7	22	14	7	16	1	<1	<0.01	0.27	0.07	0.51	0.02	0.04	0.02	0.06
25334S	15	0.4	47	12	176	32	<5	<5	8	<10	<2	<0.1	8	31	1203	<5	18	91	399	12	56	1	2	0.01	0.77	0.27	2.29	0.17	0.1	0.02	0.13
25335S	13	1.4	42	12	53	33	<5	<5	3	<10	<2	0.1	2	13	795	<5	16	75	34	12	37	1	2	0.01	0.78	0.15	1.26	0.12	0.09	0.02	0.11
25336B	15	0.9	57	16	145	43	<5	<5	8	<10	<2	1.3	5	35	1280	<5	20	111	205	13	54	1	3	0.01	1	0.29	2.31	0.18	0.12	0.02	0.12
25337S	16	1.3	77	18	219	57	6	<5	10	<10	<2	1.7	14	41	1539	<5	28	180	788	15	81	1	3	0.01	1.19	0.48	2.86	0.2	0.19	0.02	0.15
25338S	13	0.1	16	10	42	26	<5	<5	6	<10	<2	<0.1	2	10	296	<5	12	65	73	12	19	1	1	0.01	0.52	0.06	1.23	0.1	0.1	0.02	0.08

## APPENDIX 3: SILT SAMPLE GEOCHEMICAL RESULTS

### 3a) SILT SAMPLE DESCRIPTION SHEET

Sample No.	Easting	Northing	Zone	% Finer	Colour	Stream Grade	Stream Width	Date	Sampler	Comments
25199T	623888	7033560	8	75	blk	steep	almost dry	2/8/99	C.S.	Penistawney slope

### 3b) SILT SAMPLE DESCRIPTION SHEET

Sample No.	Au	Ag	Cu	Pb	Zn	As	Sb	Hg	Mo	Tl	Bi	Cd	Co	Ni	Ba	W	Cr	V	Mn	La	Sr	Zr	Sc	Ti	Al	Ca	Fe	Mg	K	Na	P
	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	%	%	%	%	%
25199T	38	0.7	45	17	11.5	55	5	<3	6	<10	<2	1.2	3	26	714	<5	14	77	245	15	88	1	2	<0.01	0.67	0.35	1.86	0.17	0.14	0.02	0.15