



42A11SE0217 2.7845 CODY

010

REPORT ON
HEAVY MINERAL STUDY
CODY TOWNSHIP
(Cody-Bush Claim Block)
BY
PLACER DEVELOPMENT LIMITED

Toronto, Ontario
March 1983

TABLE



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(In Map Pocket)

INTRODUCTION

During August 1982 soil samples were collected at various locations on the Cody claim group in an effort to study and discriminate the heavy mineral assemblages, Figure 1 and Dwg.No.184-33A.

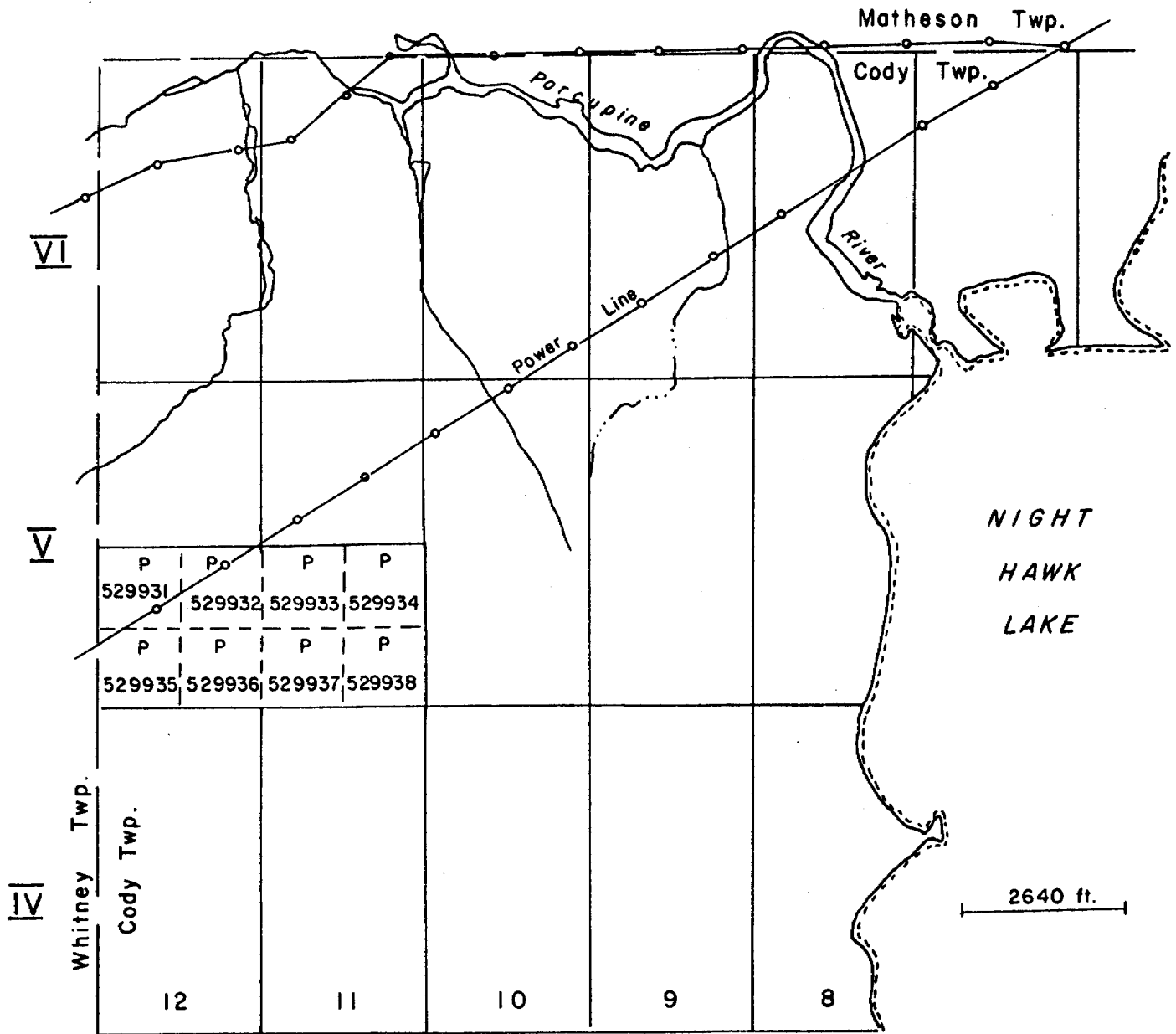
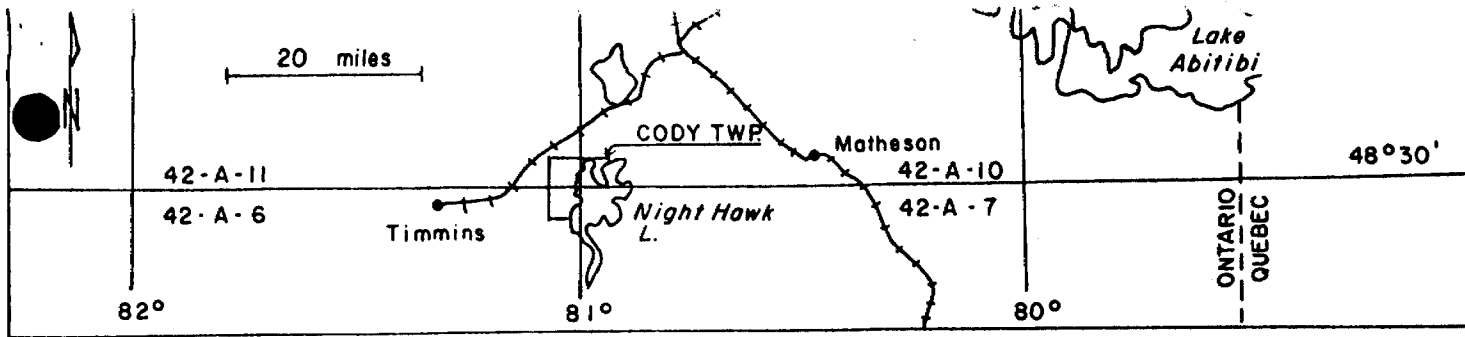
The resulting information was hoped to be supplemental to the geological mapping and in particular the humus sampling completed during 1981.

METHODOLOGY

A total of fourteen (14) samples were collected on the Cody grid system, a sample density felt to be representative of the bedrock geology. Each sample was taken near outcrop and if possible in the glacial lee of the outcrop. It was felt that this would enhance the chances of local bedrock contribution. A total of 5-7 kg of material was collected at soil-bedrock interface, regardless of the soil development. A normal soil sample was collected for routine geochemical analysis.

Separation of the heavy minerals was affected by wet sieving resulting in the following size fractions, >20 mesh, <20 >40 mesh, <40 mesh. The clay fraction was not collected and its weight was calculated. Of the various size fractions a heavy mineral concentrate was collected by panning of the <40 mesh and the <20 >40 mesh. All concentrates were examined with a binocular microscope for mineral identification by the writer. Results are tabulated in Table I and also Appendix I.

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after OMNR Plan M 270

PLACER DEVELOPMENT LIMITED
 LOCALITY & CLAIMS MAP
 CODY-BUSH CLAIM BLOCK
 Night Hawk Lake
 Cody Twp., Ontario

NTS 42-A-11
 Aug., 1982

V 184 (IV)

Figure 1.

For comparison three samples were collected outside of the Cody grid and were treated in a similar fashion. One of these THM-31 was collected approximately 1 km up ice from the Cody grid. The remaining two THM-A and THM-B were collected on the Deloro claims hence representing a completely different geological and glacial regime.

DISCUSSION

It must be stated at the onset that this study had a two-fold objective, first it was an orientation survey to explore the potential of basal till sampling in the immediate Cody area, and secondly it was meant to supplement the humus sampling completed in 1981. Before elaboration on the implication of the survey results, a few generalizations about the findings should be reviewed.

(1) Soil development on the Cody grid is poor, with only an Ao-A₁ horizon being universally developed. The B and/or C horizons may exist locally but typically beneath the A is either lacustrine clays or glacial sand and gravel. Even at the "soil"-bedrock interface intensely oxidized bedrock was seldom present.

(2) A till (glacial) cover for the most part is relatively shallow, 10 metres, consequently the initial appeal to basal till sampling as a means to evaluate the Cody grid for potential mineralization.

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(3) The heavy mineral assemblages of the samples collected are very similar, Table I and Appendix I, with significant variations occurring only in the magnetite and garnet abundances. The magnetite content shows a good correlation with proximity to NW trending diabase dykes. As for the remaining minerals little direct relationship to a bedrock source can be substantiated.

(4) Grain size, sorting and degree of rounding are remarkably consistent throughout the sample suite. The overall suggestion is that of considerable transport with little support for a local bedrock contribution. It should also be noted that aeolian concentration may have played a part, as evidenced by frosted and perfectly rounded quartz and garnet grains.

(5) In comparing the Cody suite with samples #31 and A one finds a remarkable similarity even though the underlying bedrock is quite unique to the three areas. When sample A is compared with sample B (a sample obtained from fractures filled with oxidized bedrock) and noting their proximity (< 25 m with similar bedrock), it becomes evident that the two reflect a completely difference provenance.

In reference to the two objectives outlined above it can be concluded that the first, that of an orientation survey, was met and any future considerations of a basal till or heavy mineral studies as a means to evaluate the grid area be dispelled.

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Heavy Mineral Distribution in -40 Mesh Size Fraction

<u>Mineral</u>	<u>Sample Number</u>															
	1	3	5	7	10	13	18	25	31	33	37	40	44	47	A	B
	<u>Mineral Abundance</u>															
Magnetite	B	A	B	B	A	B	A	B	B	C	B	B	A	B	A	A
Garnet	B	B	B	A	B	A	B	A	B	B	B	B	C	A	B	C
Ilmenite	C	C	C	C	C	C	C	C	D	C	C	C	C	B	C	D
Hornblende	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B
Epidote	B	C	C	C	C	C	C	C	D	C	C	C	D	C	C	C
Tourmaline	E	E	E	E	D	E	E	E	F	E	E	E	E	E	E	E
Zircon	E	E	D	D	D	D	E	D	E	D	D	D	E	D	E	
Spinel	D	D	D	C	D	D	D	D	E	C	C	D	D	C		
Chromite	F	F	F	F	E	F	F	F		F	F	F	F	E		
Hematite	F			E					E		E	F	F			
Apatite	E		E	E	E	E	E	E	E	D	E	E	E	D	E	D
Carbonate	E		E	E	E	E	E	E	D	E	E	F	E	E	E	E
Pyrite																C
Actinolite																F
Olivine	F		F	F	E	E			E	F	E	F	F	E	E	F
Rutile							F									
Sphene	F	F	F	F	F	F	F			F	F	F	F	F		
Limonite																D

A - very abundant 50%

D - common 5%

B - abundant 25% 50%

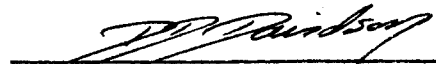
E - present

C - very common 5% 25%

F - suspected but not positively identified

Insufficient lodgement till exists in the area and even till that may qualify as lodgement till has a large glacial component. This argument can quite safely be extended to the claim groups located to the east on Nighthawk Lake, consequently giving rise to reflections on previous work. In an effort to supplement the humus survey little evidence exists that the anomalous values obtained in Au and As are a reflection of the heavy mineral component of the till. The normal soil samples collected also show little correlation with the humus sampling results, Appendix II.

Respectfully Submitted,



D.D. Davidson
Project Geologist

DDD/of

APPENDIX I

Heavy Mineral Analysis

RECEIVED

MAR - 1 1985

MINING LANDS SECTION

Project or Venture: V.184 Cody

Sample No.: THM-1

Sample Location: L300E-600N

Total weight of sample: 6.2 kg

Weight >20 mesh: 2.4 kg

Weight -20 + 40 mesh: 1.0 kg

Weight -40 mesh: 2.3 kg

Weight Clay fraction: 0.5 kg

Weight - Heavy Minerals:

-40 Mesh

HEAVY MINERALS

NOTES

Magnetite	-	steel blue
Ilmenite	-	
Garnet	-	four varieties based on colour (pink-amber)
Spinel	-	spinel crystal habit
Epidote	-	
Amphibole	-	probably hornblende
Zircon	-	2 varieties - clear and metamict
Tourmaline	-	similar to hornblende
Apatite	-	dark green-blue
Hematite	-	rounded aggregates
Chromite	-	suspected

-20 + 40 Mesh

HEAVY MINERALS

NOTES

Magnetite		
Garnet		
Epidote		
Carbonate	-	may also be present in -40 mesh
Quartz-Tourmaline??	-	composite grain

SUMMATION

Considerable variation in the degree of rounding and sorting in all minerals in sample.

Project or Venture: V.184 Cody

Sample No.: THM-3

Sample Location: L3+00E, 5+50N

Total weight of sample: 6.0 kg

Weight >20 mesh: 1.9 kg

Weight -20 + 40 mesh: 0.7 kg

Weight -40 mesh: 0.9 kg

Weight Clay fraction: 2.5 kg

Weight - Heavy Minerals:

-40 Mesh

HEAVY MINERALS

NOTES

Magnetite - 50% of sample
Epidote - canary yellow
Garnet - besides 4 shades of pink and amber, green and white
Amphibole - hornblende perhaps minor tremolite
Ilmenite -
Spinel - crystalline
Tourmaline - black and pale green
Apatite -
Zircon - mostly metamict
Chromite) - suspected but not positively identified
Olivine)

-20 + 40 Mesh

HEAVY MINERALS

NOTES

Garnet
Amphibole - both hornblende and tremolite
Magnetite
Ilmenite
Spinel
Zircon
Epidote
Carbonate - bluish grey
Olivine - pale green eroded grains

SUMMATION

Grains are angular to well rounded - the garnet grains are the most angular.

Project or Venture: V.184 Cody

Sample No.: THM-5

Sample Location: L7E/4+75N

Total weight of sample: 5.50 kg

Weight >20 mesh: 2.0 kg.

Weight -20 + 40 mesh: 0.95 kg

Weight <40 mesh: 0.65 kg

Weight Clay fraction: 1.90 kg

Weight - Heavy Minerals:

<40 Mesh

HEAVY MINERALS

NOTES

Magnetite	-	steel blue grey
Garnet	-	5 varieties based on colour
Amphibole	-	hornblende
Ilmenite	-	rounded grains
Apatite	-	blue green rare crystal face
Zircon	-	metamict
Spinel	-	
Epidote	-	yellow green
Tourmaline	-	
Chromite	-	suspected

-20 + 40 Mesh

HEAVY MINERALS

NOTES

Magnetite		
Garnet		
Amphibole	-	hornblende
Epidote		
Apatite		
Tourmaline		
Hematite	-	composite grains

SUMMATION

Few heavies especially in -20 +40 mesh fraction.

Project or Venture: V.184 Cody

Sample No.: THM-7

Sample Location: L7E - 4+25N

Total weight of sample: 5.6 kg

Weight >20 mesh: 2.2 kg

Weight -20 + 40 mesh: 1.4 kg

Weight <40 mesh: 1.4 kg

Weight Clay fraction: 0.6 kg

Weight - Heavy Minerals:

<40 Mesh

HEAVY MINERALS

NOTES

Magnetite -
Garnet - four varieties based on colour
Epidote -
Amphibole - hornblende
Spinel - typical crystal facets
Apatite -
Tourmaline -
Zircon -
Hematite - composite grains
Olivine - suspected
Chromite - suspected

-20 + 40 Mesh

HEAVY MINERALS

NOTES

Magnetite
Garnet
Amphibole - dominantly hornblende
Ilmenite
Spinel
Epidote
Apatite
Tormaline
Carbonate

SUMMATION

Garnet dominates the assemblage. Most grains well rounded.

Project or Venture: V.184 Cody

Sample No.: THM-10

Sample Location: L7+00E, 3+50N

Total weight of sample: 5.2 kg

Weight >20 mesh: 2.5 kg

Weight -20 + 40 mesh: 0.9 kg

Weight -40 mesh: 1.0 kg

Weight Clay fraction: 0.8 kg

Weight - Heavy Minerals:

-40 Mesh

HEAVY MINERALS

NOTES

Magnetite - comprises more than 50% of the sample
Garnet - four varieties
Epidote -
Zircon - metamict
Amphibole - hornblende
Apatite -
Chromite - dull grey - rounded
Spinel - excellent crystal faces
Ilmenite -
Tourmaline -

-20 + 40 Mesh

HEAVY MINERALS

NOTES

Magnetite - comprises about 35% of the sample
Garnet
Apatite
Hornblende
Epidote
Ilmenite
Spinel
Tremolite
Olivine - suspected
Chromite - suspected

SUMMATION

High magnetite content distinctive of sample.

Project or Venture: V.184 Cody

Sample No.: THM-13

Sample Location: L700E, 2+75N

Total weight of sample: 5.0 kg

Weight >20 mesh: 2.3 kg

Weight -20 + 40 mesh: 0.80 kg

Weight <40 mesh: 0.90 kg

Weight Clay fraction: 1.0 kg

Weight - Heavy Minerals:

<u><40 Mesh</u>		<u>NOTES</u>
<u>HEAVY MINERALS</u>		
Magnetite	-	
Garnet	-	dominantly pink and light amber
Apatite	-	
Ilmenite	-	
Amphibole	-	mostly hornblende
Epidote	-	canary yellow
Zircon	-	two varieties one metamict
Spinel	-	well defined crystal faces
Tourmaline	-	black - difficult to distinguish from hornblende
Olivine	-	serpentinized grains
Chromite	-	dull grey-rounded
Carbonate	-	blue white grains

<u>-20 + 40 Mesh</u>		<u>NOTES</u>
<u>HEAVY MINERALS</u>		
Magnetite		
Garnet		
Ilmenite		
Amphibole	-	chiefly hornblende but also tremolite
Apatite		
Olivine		
Carbonate		

SUMMATION

Grains of heavies smaller than most other samples and they are also more rounded.

Clay encrusts many of the grains in the -20 +40 mesh.

Project or Venture: V.184 Cody

Sample No.: THM-18

Sample Location: L700E 1+50N

Total weight of sample: 5.2 kg

Weight >20 mesh: 2.2 kg

Weight -20 + 40 mesh: 0.8 kg

Weight -40 mesh: 1.0 kg

Weight Clay fraction: 1.2 kg

Weight - Heavy Minerals:

-40 Mesh

HEAVY MINERALS

NOTES

Magnetite - approximately 50% of sample
Garnet - in addition to pink and amber white garnet present.
Epidote -
Ilmenite -
Amphibole - hornblende perhaps minor tremolite or actinolite.
Spinel -
Zircon - dominant variety metamict
Tourmaline - black
Chromite - dull grey-rounded grains
Rutile - one cubic crystal observed
Apatite -

-20 + 40 Mesh

HEAVY MINERALS

NOTES

Magnetite
Garnet
Amphibole - hornblende
Epidote
Apatite
Ilmenite
Carbonate

SUMMATION

Most grains clay encrusted making positive identification impossible. Grain size extremely fine.

Project or Venture: V.184 Cody

Sample No.: THM-25

Sample Location: L300E, 0+50N

Total weight of sample: 5.1 kg

Weight >20 mesh: 2.7 kg

Weight -20 + 40 mesh: 0.9 kg

Weight -40 mesh: 0.6 kg

Weight Clay fraction: 0.9 kg

Weight - Heavy Minerals:

-40 Mesh

HEAVY MINERALS

NOTES

Magnetite -
Garnet - at least four varieties, comprising 75% of the sample
Ilmenite -
Spinel -
Epidote -
Amphibole - chiefly hornblende
Zircon -
Tourmaline - black difficult to distinguish from hornblende
Apatite - blue green crystals
Carbonate - blue white grains often with mafic clots
Chromite - suspected

-20 + 40 Mesh

HEAVY MINERALS

NOTES

Garnet
Amphibole - hornblende and tremolite
Magnetite
Ilmenite
Spinel
Carbonate
Epidote

SUMMATION

Grains are well rounded and sorted.

Project or Venture: V.184 Cody

Sample No.: THM-31

Sample Location: Northeast of Cody Grid

Total weight of sample: 6.0 kg

Weight > 20 mesh: 1.0 kg - mostly clay balls

Weight -20 + 40 mesh: 0.5 kg

Weight -40 mesh: 0.5 kg

Weight Clay fraction: 4.0 kg

Weight - Heavy Minerals:

	<u>-40 Mesh</u>	<u>NOTES</u>
<u>HEAVY MINERALS</u>		
Garnet		
Magnetite		
Epidote		
Amphibole - hornblende		
Ilmenite		
Hematite		
Zircon		
Spinel		
Olivine		
Apatite		
Carbonate		

	<u>-20 + 40 Mesh</u>	<u>NOTES</u>
<u>HEAVY MINERALS</u>		
Amphibole - hornblende		
Garnet		
Ilmenite		
Magnetite - only a few grains		
Carbonate		

SUMMATION

Poor sample mostly clay fraction hence few heavies.

Project or Venture: V.184 Cody

Sample No.: THM-33

Sample Location: L9+00E, 5+75N

Total weight of sample: 4.9 kg

Weight >20 mesh: 0.95 kg

Weight -20 + 40 mesh: 0.7 kg

Weight -40 mesh: 0.9 kg

Weight Clay fraction: 2.35 kg

Weight - Heavy Minerals:

-40 Mesh

HEAVY MINERALS

NOTES

Garnet	- four colour variations
Amphibole	- hornblende
Magnetite	- comprises less than 10%
Ilmenite	-
Spinel	-
Zircon	- metamict
Epidote	-
Apatite	-
Tourmaline	- black difficult to distinguish from hornblende
Carbonate	-
Olivine	- suspected
Chromite	- suspected

-20 + 40 Mesh

HEAVY MINERALS

NOTES

Garnet	
Amphibole	
Magnetite	
Spinel	
Ilmenite	
Apatite	
Carbonate	
Tourmaline	- quartz tourmaline composite grains

SUMMATION

Project or Venture: V.184 Cody

Sample No.: THM-37

Sample Location: L900E, 4+75N

Total weight of sample: 5.1 kg

Weight >20 mesh: 1.2 kg

Weight -20 + 40 mesh: 2.0 kg

Weight -40 mesh: 1.2 kg

Weight Clay fraction: 0.9 kg

Weight - Heavy Minerals:

<u>-40 Mesh</u>		<u>NOTES</u>
<u>HEAVY MINERALS</u>		
Magnetite	-	
Garnet	-	
Amphibole	- hornblende	
Ilmenite	-	
Epidote	- canary yellow	
Zircon	-	
Tourmaline	- black to brown black	
Apatite	- blue green	
Carbonate	-	
Olivine	-	
Chromite	- suspected	
Hematite	- rounded composite grains	
Amphibole??	- pale green with amphibole cleavage	

<u>-20 + 40 Mesh</u>		<u>NOTES</u>
<u>HEAVY MINERALS</u>		
Magnetite		
Garnet		
Hornblende		
Ilmenite		
Spinel		
Carbonate	- blue white	

Most grain of this mesh clay encrusted hence difficult to identify.

SUMMATION

The -40 mesh fraction displays the most diverse selection of heavy mineral examined to date on the Cody grid.

Project or Venture: V.184 Cody

Sample No.: THM-40

Sample Location: L9+00E, 1+00N

Total weight of sample: 5.5 kg

Weight >20 mesh: 2.1 kg

Weight -20 + 40 mesh: 1.3 kg

Weight -40 mesh: 0.7 kg

Weight Clay fraction: 1.4 kg

Weight - Heavy Minerals:

<u>HEAVY MINERALS</u>	<u>-40 Mesh</u>	<u>NOTES</u>
Magnetite	-	less than 30% of sample volume
Garnet	-	at least four varieties based on colour
Epidote	-	
Apatite	-	
Tourmaline	-	
Ilmenite	-	
Amphibole	-	hornblende
Spinel	-	
Zircon	-	metamict
Hematite	-	as rounded grains
Chromite	-	suspected
Olivine	-	suspected

<u>HEAVY MINERALS</u>	<u>-20 + 40 Mesh</u>	<u>NOTES</u>
Magnetite		
Garnet		
Amphibole	-	hornblende minor tremolite
Ilmenite		
Spinel		
Epidote		
Apatite	-	blue green grains

SUMMATION

Grains are for the most part well rounded.

Project or Venture: V.184 Cody

Sample No.: THM-44

Sample Location: L500E, 2+75N

Total weight of sample: 5.7 kg

Weight >20 mesh: 1.9 kg

Weight -20 + 40 mesh: 1.4 kg

Weight -40 mesh: 1.3 kg

Weight Clay fraction: 1.1 kg

Weight - Heavy Minerals:

<u>HEAVY MINERALS</u>	<u>-40 Mesh</u>	<u>NOTES</u>
Magnetite	-	
Garnet	-	approximately 15% of sample volume
Ilmenite	-	
Amphibole	-	hornblende possibly some actinolite
Epidote	-	
Tourmaline	-	
Zircon	-	abundance lower than most samples
Spinel	-	
Apatite	-	
Olivine	-	suspected
Chromite	-	suspected
Hematite	-	clay encrusted rounded composite grains

<u>HEAVY MINERALS</u>	<u>-20 + 40 Mesh</u>	<u>NOTES</u>
Magnetite		
Garnet		
Amphibole	-	hornblende
Ilmenite		
Spinel		
Apatite		
Zircon		
Tourmaline		
Carbonate		

SUMMATION

Most grain clay encrusted making identification difficult.

Project or Venture: V.184 Cody

Sample No.: THM-47

Sample Location: L1+00E, 4+75N

Total weight of sample: 6.4 kg

Weight >20 mesh: 2.5 kg

Weight -20 + 40 mesh: 1.2 kg

Weight -40 mesh: 1.6 kg

Weight Clay fraction: 1.1 kg

Weight - Heavy Minerals:

-40 Mesh

HEAVY MINERALS

NOTES

Garnet - dominant heavy mineral, four colour varieties
Magnetite -
Ilmenite -
Spinel -
Zircon -
Amphibole - hornblende
Epidote -
Tourmaline -
Olivine - dull grey rounded grains
Apatite -
Carbonate - blue white grains

-20 + 40 Mesh

HEAVY MINERALS

NOTES

Garnet
Magnetite
Ilmenite
Spinel
Amphibole - hornblende possibly actinolite
Epidote
Olivine - serpentized grains
Tourmaline

SUMMATION

Grains show good sorting and degree of roundness.

Project or Venture: V.184 Cody

Sample No.: THM-A

Sample Location: Deloro Grid L17+00E, 1+25S

Total weight of sample: 6 kg

Weight 20 mesh: 0.5 kg

Weight -20 + 40 mesh: 2.5 kg

Weight -40 mesh: 2.5 kg

Weight Clay fraction: 0.5 kg

Weight - Heavy Minerals:

40 Mesh

HEAVY MINERALS

NOTES

Magnetite	-	comprises in excess of 50% of sample volume
Garnet	-	colour variation pink to dark amber
Amphibole	-	dominantly hornblende
Ilmenite	-	
Epidote	-	
Carbonate	-	soft off-white grains
Apatite	-	
Olivine	-	
Zircon	-	suspected
		few grains and all are clear
Tourmaline	-	black in colour

-20 + 40 Mesh

HEAVY MINERALS

NOTES

Magnetite		
Garnet		
Amphibole	-	hornblende
Ilmenite		
Epidote		
Tourmaline		
Apatite		
Carbonate		

SUMMATION

Sample collected near bedrock-"soil" interface, in fact sample dominantly glacial sand. Sample also in glacial lee of outcrop. All mineral grains including lights are well sorted and rounded.

Project or Venture: V.184 Cody

Sample No.: THM-B

Sample Location: L17+00E, 1+00S (Deloro Grid)

Total weight of sample: 5.2 kg

Weight >20 mesh: 3.5 kg

Weight -20 + 40 mesh: 0.6 kg

Weight -40 mesh: 0.6 kg

Weight Clay fraction: 0.5 kg

Weight - Heavy Minerals:

<u>HEAVY MINERALS</u>	<u>-40 Mesh</u>	<u>NOTES</u>
Magnetite	-	
Amphibole	-	both hornblende and actinolite
Garnet	-	mainly amber in colour
Pyrite	-	as oxidized cubes
Epidote	-	
Apatite	-	
Tourmaline	-	
Ilmenite	-	
Olivine	-	suspected
Carbonate	-	

<u>HEAVY MINERALS</u>	<u>-20 + 40 Mesh</u>	<u>NOTES</u>
Magnetite		
Amphibole		
Pyrite	-	as oxidized cubes
Limonite	-	after pyrite, mainly as encrustations
Garnet		
Epidote		
Olivine		
Carbonate		

SUMMATION

This sample was collected from depressions within bedrock (basaltic komatiite) so would reliably reflect bedrock. Two distinct populations exist based on sorting and degree of roundness suggesting a glacial component. Most of the pyrite was cubic and angular.

A P P E N D I X I I

Soil Sampling



SWASTIKA LABORATORIES LIMITED

P.O. BOX 10, SWASTIKA, ONTARIO P0K 1T0

TELEPHONE: (705) 642-3244

ANALYTICAL CHEMISTS • ASSAYERS • CONSULTANTS

Certificate of Analysis

Certificate No. 53873

Date: September 13, 1982

Received August 25, 1982 44 Samples of Soil

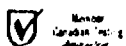
Submitted by Placer Development Ltd., Toronto, Ontario Project # V-184

Samples Per: Mr. D. Davidson

SAMPLE NO.	GOLD PPB	SAMPLE NO.	GOLD PPB
L17+00E, 1+00N	20	L7+00E, 3+25N	10
L17+00E, 1+25N	Nil	" 3+00N	Nil
L0+00, 4+50N	Nil	" 2+75N	Nil
L1+00E, 4+75	Nil	" 2+50N	Nil
L3+00E, 0+25N	Nil	" 2+25N	Nil
" 0+50N	10	" 2+00N	Nil
" 0+75N	Nil	" 1+75N	Nil
" 5+50N	10	" 1+50N	Nil
" 5+75N	Nil	" 1+25N	Nil
" 6+00N	Nil	" 1+00N	Nil
L4+00E, 0+50N	10	" 0+75N	Nil
" 0+25N	Nil	" 0+50N	Nil
L5+00E, 2+63.5N	10	" 0+25N	Nil
" 2+75N	Nil	L9+00E, 0+50N	Nil
" 3+00N	Nil	" 1+00N	10
L7+00E, 5+00N	10	" 3+75N	Nil
" 4+75N	10	" 4+50N	Nil
" 4+50N	10	" 4+75N	Nil
" 4+25N	Nil	" 5+00N	Nil
" 4+00N	110	" 5+25N	20
" 3+75N	Nil	" 5+50N	Nil
" 3+50N	Nil	L9+00E, 5+75N	Nil

Per G. Lebel
G. Lebel - Manager

ESTABLISHED 1928





SWASTIKA LABORATORIES LIMITED

P.O. BOX 10, SWASTIKA, ONTARIO P0K 1T0

TELEPHONE: (705) 642-3244

ANALYTICAL CHEMISTS • ASSAYERS • CONSULTANTS

Certificate of Analysis

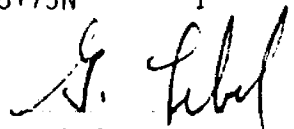
Certificate No. 53873 - A Date: September 16, 1982

Received August 25, 1982 44 Samples of Soil

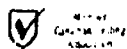
Submitted by Placer Development Limited, Toronto, Ontario Project V-184

Samples Per: Mr. D. Davidson

SAMPLE NO.	ARSENIC PPM	SAMPLE NO.	ARSENIC PPM
L17+00E, 1+00N	3	L7+00E, 3+25N	2
L17+00E, 1+25N	2	" 3+00N	4
L0+00, 4+50N	3	" 2+75N	2
L1+00E, 4+75N	<1	" 2+50N	3
L3+00E, 0+25N	3	" 2+25N	2
" 0+50N	3	" 2+00N	3
" 0+75N	2	" 1+75N	1
" 5+50N	9	" 1+50N	4
" 5+75N	6	" 1+25N	2
" 6+00N	8	" 1+00N	2
L4+00E, 0+50N	<1	" 0+75N	3
" 0+25N	<1	" 0+50N	4
L5+00E, 2+63.5N	5	" 0+25N	2
" 2+75N	<1	L9+00E, 0+50N	1
" 3+00N	2	" 1+00N	2
L7+003, 5+00N	3	" 3+75N	4
" 4+75N	3	" 4+50N	4
" 4+50N	2	" 4+75N	1
" 4+25N	3	" 5+00N	1
" 4+00N	2	" 5+25N	3
" 3+75N	1	" 5+50N	2
" 3+50N	1	" 5+75N	1

Per 
G. Lebel - Manager

ESTABLISHED 1928





42A11SE0217 2.7845 CODY

900

Mining Lands Section

File No 2. 107J

Control Sheet

TYPE OF SURVEY GEOPHYSICAL

GEOLOGICAL

GEOCHEMICAL

EXPENDITURE

MINING LANDS COMMENTS:

69d LD.

J. Hurst
Signature of Assessor

85-03-20
Date



Ministry of
Natural
Resources

Report of Work

(Geophysical, Geological,
Geochemical and Expenditures)

001/85
27845

Instructions: - Please type or print.

- If number of mining claims traversed exceeds space on this form, attach a list.

Note: - Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.

- Do not use shaded areas below.

Mar 17 1985

Type of Survey(s) **GEOCHEMICAL** Township or Area **CODY TWP**

Claim Holder(s) **COMSTATE RESOURCES LTD** Prospector's Licence No. **T-1127**

Address **# 403 - 8199 Yonge St., THORNHILL ONT L3T 2C6**

Survey Company **PLACER DEVELOPMENT LTD.** Date of Survey (from & to) **3 8 82 15 9 82** Total Miles of line Cut **9.6**

Name and Address of Author (of Geo-Technical report) **D. DAVIDSON SUITE 2600 401 BAY ST. TORONTO M5H 2Y4**

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	
Man Days Complete reverse side and enter total(s) here	Geophysical	Days per Claim
	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	17.5
Airborne Credits Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

Mining Claim		Expend. Days Cr.	Mining Claim		Expend. Days Cr.
Prefix	Number		Prefix	Number	
P	529931				
	529932				
	529933				
	529935				
	529936				
	529937				

RECEIVED
FEB 07 1985
MINING LANDS SECTION

RECORDED
1 JAN 3 1985
Receipt No. *[Signature]*

Expenditures (excludes power stripping)

Type of Work Performed **PORCUPINE MINING DIVISION**

Performed on Claim **RECEIVED JAN 03 1985 P.M.**

Calculation of Expenditures

Total Expenditures \$ ÷ 15 = Total Days Credits

Total number of mining claims covered by this report of work. **6**

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Cr. Recorded **105** Date Recorded **Jan 03/85** Mining Record *[Signature]*

Date Approved as Recorded **85.3.22** *[Signature]*

Date **Dec 31/84** Recorder's Name or Agent (Signature) **D.R. Pyke**

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying **D. R. PYKE, 31 DELAIR CRES, THORNHILL ONT L3T 2M3**

Date Certified **Dec 31/84** Certified by (Signature) **D.R. Pyke**

Assessment Work Breakdown

Man Days are based on eight (8) hour Technical or Line-cutting days. Technical days include work performed by consultants, draftsmen, etc..

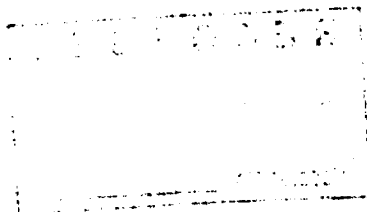
Type of Survey GEOCHEMICAL						
Technical Days		Technical Days Credits	Line-cutting Days	Total Credits	No. of Claims	Days per Claim
15	x	7	=	105	+	6
			=	105	+	17.5

Type of Survey						
Technical Days		Technical Days Credits	Line-cutting Days	Total Credits	No. of Claims	Days per Claim
[]	x	7	=	[]	+	[]
			=	[]	+	[]

Type of Survey						
Technical Days		Technical Days Credits	Line-cutting Days	Total Credits	No. of Claims	Days per Claim
[]	x	7	=	[]	+	[]
			=	[]	+	[]

Type of Survey						
Technical Days		Technical Days Credits	Line-cutting Days	Total Credits	No. of Claims	Days per Claim
[]	x	7	=	[]	+	[]
			=	[]	+	[]

MINING LANDS SECTION



002/85
2.7845

Instructions: - Please type or print.
- If number of mining claims traversed exceeds space on this form, attach a list.
Note: - Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
- Do not use shaded areas below.

man 5/1

Mining Act

Type of Survey(s) **Geochemical (Expenditure)** Township or Area **Cody**
 Claim Holder(s) **COMSTATE RESOURCES LTD** Prospector's Licence No. **T-1127**
 Address **#403-8199 Yonge St. Thornhill Ont L3T 2C6**
 Survey Company **PLACER DEVELOPMENT LTD** Date of Survey (from & to) **3 8 82 4 8 82** Total Miles of line Cut **9.6**
 Name and Address of Author (of Geo-Technical report) **D. DAVIDSON SUITE 2600, 401 BAY ST. TORONTO M5H 2Y4**

Credits Requested per Each Claim in Columns at right

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
For each additional survey: using the same grid: Enter 20 days (for each)	Geological	
	Geochemical	
Man Days Complete reverse side and enter total(s) here	Geophysical	Days per Claim
	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
Airborne Credits Note: Special provisions credits do not apply to Airborne Surveys.	Geological	
	Geochemical	
Electromagnetic	Days per Claim	
	Magnetometer	
	Radiometric	

Mining Claims Traversed (List in numerical sequence)

Mining Claim			Mining Claim		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
P	529931	3.35			
	529932	3.35			
	529933	3.35			
	529935	3.35			
	529936	3.35			
	529937	3.35			

RECORDED
 JAN 5 1985
 Receipt No. *[Signature]*

RECEIVED
 FEB 07 1985
 MINING LANDS SECTION

Expenditures (excludes power stripping)
 Type of Work Performed **Soil Sampling**
 Performed on Claim(s) **P529933, 529935, 529936, 529937.**
 Calculation of Expenditure Days Credits
 Total Expenditures **\$ 302.50** + Total Days Credits **15** = **20.14**
 Instructions
 Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

Total number of mining claims covered by this report of work. **6**

Date **Dec 31/84** Recorder (Holder or Agent) Signature **D.R. Pyke**

For Office Use Only
 Total Days Cr. Recorded **20.14** Date Recorded **Jan 03/85** Mining Report Recorded
 Date Approved as Recorded **8.3.22** By Branch Inspector *[Signature]*

Certification Verifying Report of Work
 I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and after its completion and the annexed report is true.
 Name and Postal Address of Person Verifying Report **D.R. PYKE 131 DELAIR CRES, THORNHILL ONT L3T 2M3**
 Date Certified **Dec 31/84** Certified by Signature **D.R. Pyke**
 P.M.
 7 8 9 10 11 12 1 2 3 4 5 6

RECEIVED

MAR 12 1985

MINING LANDS SECTION

March 7/85.

*Enclosing duplicate receipts for
expenditure re file — 2-7845.*

(Mining claims body Twp - P52993) etc

D. Pyke.



SWASTIKA LABORATORIES LIMITED
 P.O. BOX 10, SWASTIKA, ONTARIO P0K 1T0 TELEPHONE: (705) 642-3244

6371

RECEIVED

MAR 12 1985

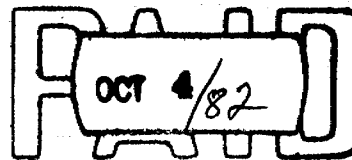
MINING LANDS SECTION

SOLD TO Placer Development Limited
 Suite 2600
 401 Bay St.
 Toronto, Ontario
 M5H 2Y4

SHIP TO

DATE	SHIPPED VIA	FED LICENCE NO	PROV LICENCE NO	YOUR ORDER NO	OUR ORDER NO	TERMS	SALESMAN
Sept. 17/82				V-184		Net 30 days	
QUANTITY	DESCRIPTION				UNIT PRICE	AMOUNT	
44	Au Assays PPB on soil				\$ 8.00	\$ 352.00	
44	Sample Handling Cert. No. 53873 Sept. 13/82				1.25	55.00	
44	As Assays PPM Cert. No. 53873-A Sept. 16/82				5.75	253.00	
TOTAL.....						\$ 660.00	

SWASTIKA LABORATORIES LTD.



WITH THANKS

PER *[Signature]*

MOORE BUSINESS FORMS 3 7060E

ANALYTICAL CHEMISTS • ASSAYERS • CONSULTANTS
 ESTABLISHED 1928



FACTURE / INVOICE

FEBRUARY 28, 1985

LAND MANAGEMENT BRANCH
MINING LANDS SECTION
ROOM 6610
Whitney Block,
QUEEN'S PARK.
TORONTO. M7A 1W3

RE: MINING CLAIMS P529931-933, P529935-937,
CODY TOWNSHIP, PORCUPINE MINING DIVISION.

ENCLOSED IS A GEOCHEMICAL REPORT (IN DUPLICATE)
FOR SIX MINING CLAIMS IN CODY TOWNSHIP.

RECEIVED
MAR - 1 1985
MINING LANDS SECTION

SINCERELY
D Pyke.



**GEOPHYSICAL - GEOLOGICAL - GEOCHEMICAL
TECHNICAL DATA STATEMENT**

**TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.**

Type of Survey(s) Geochemical (TECHNICAL & EXPENDITURE)
Township or Area CODY
Claim Holder(s) COMSTATE RESOURCES LTD
Survey Company PLACER DEVELOPMENT LTD
Author of Report D. DAVIDSON
Address of Author SUITE 2600, 401 BAY ST, TORONTO
Covering Dates of Survey JULY 82 - JAN 85
(linecutting to office)
Total Miles of Line Cut 9.6

MINING CLAIMS TRAVERSED
List numerically

P 529931
.....
(prefix) (number)
P 529932
.....
P 529933
.....
P 529935
.....
P 529936
.....
P 529937
.....

If space insufficient, attach list

<u>SPECIAL PROVISIONS CREDITS REQUESTED</u>	<u>DAYS per claim</u>
ENTER 40 days (includes line cutting) for first survey.	Geophysical -Electromagnetic _____ -Magnetometer _____ -Radiometric _____
ENTER 20 days for each additional survey using same grid.	-Other _____ Geological _____ Geochemical _____

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE Feb 28/85 SIGNATURE: [Signature]
Author of Report or Agent

Res. Geol. _____ Qualifications 2.3899

Previous Surveys

File No.	Type	Date	Claim Holder

TOTAL CLAIMS 6

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS – If more than one survey, specify data for each type of survey

Number of Stations _____ Number of Readings _____

Station interval _____ Line spacing _____

Profile scale _____

Contour interval _____

MAGNETIC

Instrument _____

Accuracy – Scale constant _____

Diurnal correction method _____

Base Station check-in interval (hours) _____

Base Station location and value _____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

Method: Fixed transmitter Shoot back In line Parallel line

Frequency _____
(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

Base station value and location _____

Elevation accuracy _____

**INDUCED POLARIZATION
RESISTIVITY**

Instrument _____

Method Time Domain Frequency Domain

Parameters – On time _____ Frequency _____

– Off time _____ Range _____

– Delay time _____

– Integration time _____

Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

Corrections made _____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

Additional information (for understanding results) _____

AIRBORNE SURVEYS

Type of survey(s) _____

Instrument(s) _____

(specify for each type of survey)

Accuracy _____

(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

GEOCHEMICAL SURVEY - PROCEDURE RECORD

Numbers of claims from which samples taken P529933, P529935, P529936.
P529937

Total Number of Samples 16 (for heavy mineral identification)
Type of Sample soil-bedrock intertace
(Nature of Material)
Average Sample Weight 5-7 Kg
Method of Collection Grubhoe - shovel

Soil Horizon Sampled soil bedrock intertace
Horizon Development A1-fair; B+C-poor
Sample Depth 1-3 feet
Terrain Relatively flat. MAX. APPROX 20' relief
Drainage Development POOR
Estimated Range of Overburden Thickness 0-10 metres.

SAMPLE PREPARATION

(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis 2 size fractions examined - 40 mesh ; -20 + 40 mesh

General Wet sieving of the soil to obtain required mesh fractions. Fanning of mesh fractions to obtain heavy mineral concentrates. Examination of concentrates with binocular microscope

44 samples for geochem. analysis
ANALYTICAL METHODS

Values expressed in: per cent
p. p. m.
p. p. b.

Cu, Pb, Zn, Ni, Co, Ag, Mo, As, -(circle)

Others Au

Field Analysis (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (_____ tests)

Name of Laboratory SUMASTIKA LAB JKD

Extraction Method _____

Analytical Method _____

Reagents Used _____

General -80 mesh fraction of soils analysed.

Au - fire assay - Atomic Absorption

As - Silver Diethyl Dithio Carbamate (Colour - Method)

ASSESSMENT CREDIT BREAKDOWN

Sample Collecting

Richard Cote'	2 days
Dave Adresen	2 days
Dave Davidson	1 day

Sample preparation (pan, sieve, weigh)
and binocular microscopic examination

D. Davidson	<u>10 days</u>
-------------	----------------

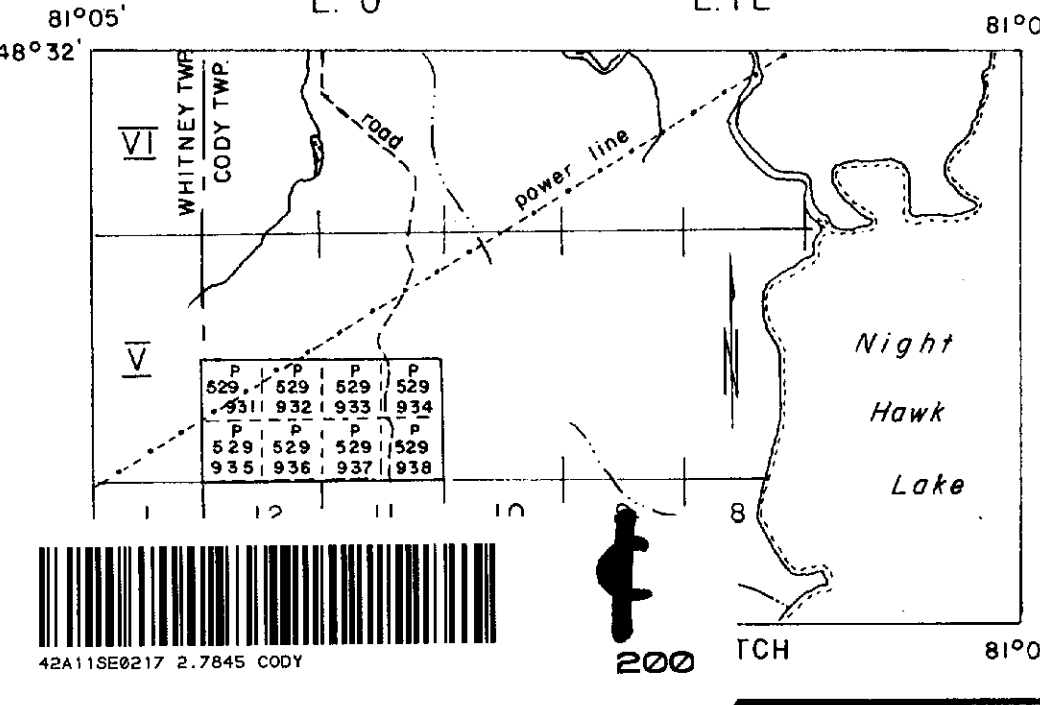
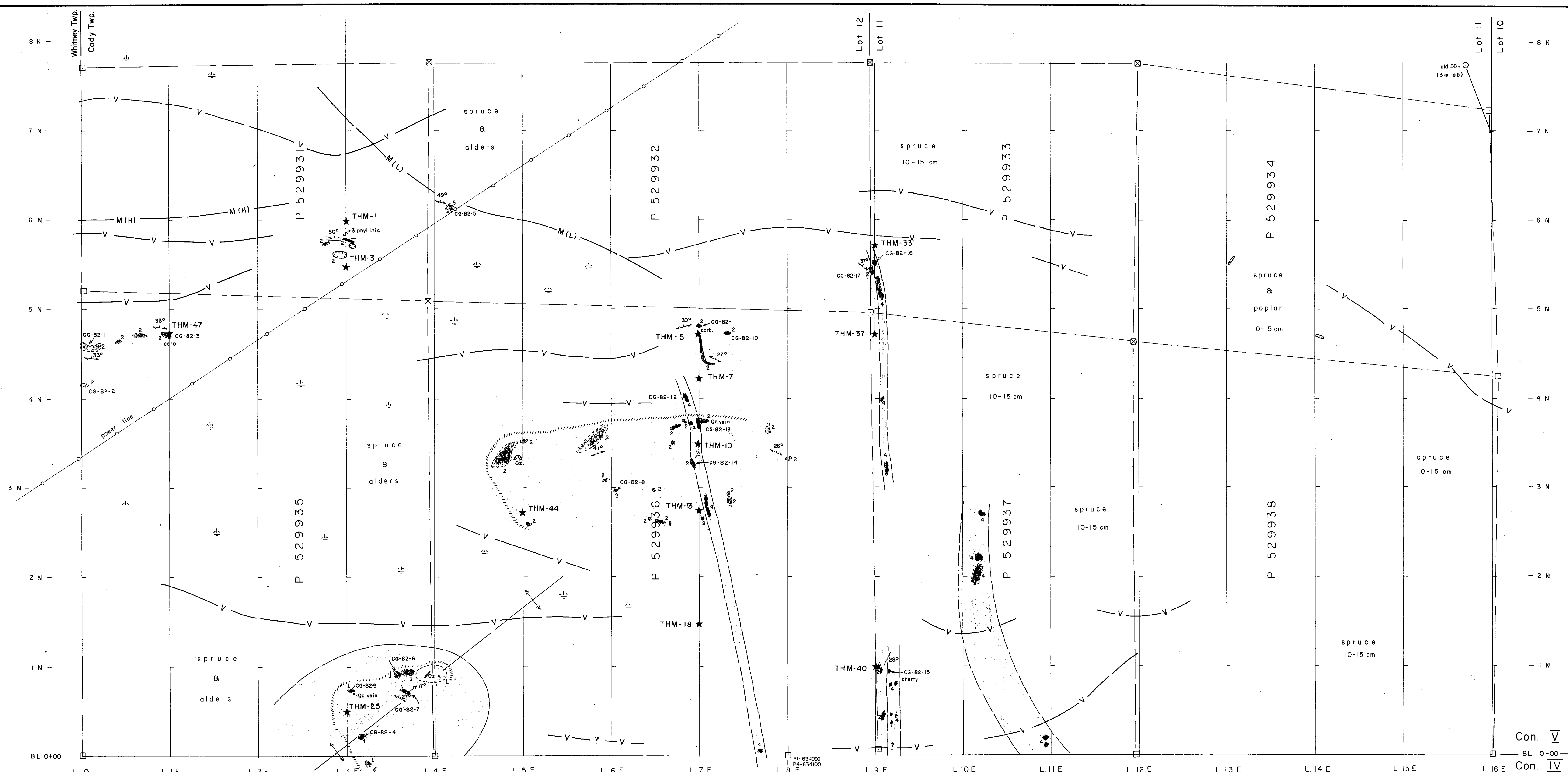
Total Technical days	15 days
----------------------	---------

Total Technical days claimed - 7 x 15 = 105 days

Expenditure Credits

44 soil samples analysed for gold
and arsenic 44 x \$15.00 = \$660.

Total expenditure day credits $\frac{660}{15}$ = 44 days



42A1108217 2.7645 CODY
200 TCH

Mapped: July, 1982

LEGEND

- Rock Units**
- 5 [Symbol] Diorite
 - 4 [Symbol] Gabbro
 - 3 [Symbol] Slate and phyllite
 - 2 [Symbol] Intermediate volcanoclastics
 - 1 [Symbol] Chlorite carbonate schist

- Symbols**
- [Symbol] Claim post (observed, inferred) and claim line
 - [Symbol] Swamp
 - [Symbol] Higher ground
 - [Symbol] Assumed geological contact
 - [Symbol] Outcrop with quartz vein
 - CG-82-2 [Symbol] Rock sample number & site
 - [Symbol] Trench

- Anticline**
- [Symbol] Foliation - inclined
 - [Symbol] L. 17° L. 30° L. 45° L. 60° L. 75° L. 90° L. 105° L. 120° L. 135° L. 150° L. 165° L. 180°
 - [Symbol] L. 17° L. 30° L. 45° L. 60° L. 75° L. 90° L. 105° L. 120° L. 135° L. 150° L. 165° L. 180°
 - [Symbol] M(H) Axis of magnetic high
 - [Symbol] M(L) Axis of magnetic low
 - [Symbol] V VLF EM anomaly axis
 - ★ THM-5 Heavy mineral sample - site and number

PLACER DEVELOPMENT LIMITED

HEAVY MINERAL SAMPLE LOCATION MAP

2.7845
CODY-BUSH GRID
Cody Twp.
COMSTATE OPTION
Timmins Area
Porcupine Mining Division, Ontario

DRAWN	R.C.	SCALE	1:2000
TRACED	J.G.W.	DATE	Oct. 1982
APPROVED			

NTS 42-A-11
VENTURE 184 (IV)
Dwg. No. 184-33A