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GEOLOGICAL SURVEY BRANCH ASSESSMENT REPORTS
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**REPORT**

**ON**

**THE NUGGET CLAIM  
YEOWARD MOUNTAIN AREA  
VERNON MINING DIVISION  
BRITISH COLUMBIA**

NTS 82L/1W  
Latitude 50°10'N  
Longitude 118°25'W

On Behalf of

Harold V. Arnold

By

**FILMED**

JAMES W. McLEOD, P. Geo.  
Delta, British Columbia

**GEOLOGICAL SURVEY BRANCH  
ASSESSMENT REPORT**

*January 9, 1996*

**24,236**

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## **INTRODUCTION**

During the period May 20-June 20, 1995 the writer conducted an exploration program on a portion of the Nugget mineral claim located on the westside of Yeoward Mountain in the Vernon Mining Division of British Columbia.

The program first required some 4x4 road rehabilitation to provide access from the Keefer Lake Road to the property. The subsequent exploration work consisted of expanding the 1993 grid and conducting rock exposure mapping and some self (spontaneous) potential (SP) survey.

The current field work and report are being done on behalf of H.V. Arnold, the claim owner, of Vernon, British Columbia.

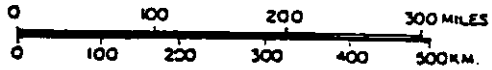
## **LOCATION AND ACCESS**

The Nugget mineral claim is located on the north-facing slope of Yeoward Mountain on the southside of Monashee Creek. The claim area may be located on map reference, NTS 82L/1W at latitude 50°10' north and longitude 118°25' west.

Access to the property was provided during this program by travelling on Highway #6 east of the Town of Lumby, B.C. for 60 kilometres to the Keefer Lake cut-off, then on a good allweather gravel road toward Keefer Lake for 10 kilometres to the Yeoward Mountain 4x4 cut-off to the north which is taken for approximately 9 kilometres to the claim.



**PROPERTY  
LOCATION**



CARBON REEF RESOURCES INC.	
YEOWARD MTN. PROPERTY LOCATION MAP	
N.T.S. 82L-1W	VERNON M.D., B.C.
SCALE : AS SHOWN	DATE : JAN. 1996
DRAWN BY : J.M.	FIGURE N <sup>o</sup> . 1

## **TOPOGRAPHICAL AND PHYSICAL ENVIRONMENT**

The property lies on the western flank of Yeoward Mountain (which rises to 2,131 metres or 6,990 feet) and ranges in elevation from 1,220 to 1,830 metres (4,000 - 6,000 feet) mean sea level.

The claim area occurs in rounded-steep mountainous conifer covered (spruce, cedar and pine) terrain which forms a gentle plateau to moderate to steep north slope down to Monashee Creek.

The biotic position of the property is generally sub-Alpine which is transitional; between the Interior wet belt and the Alpine zone.

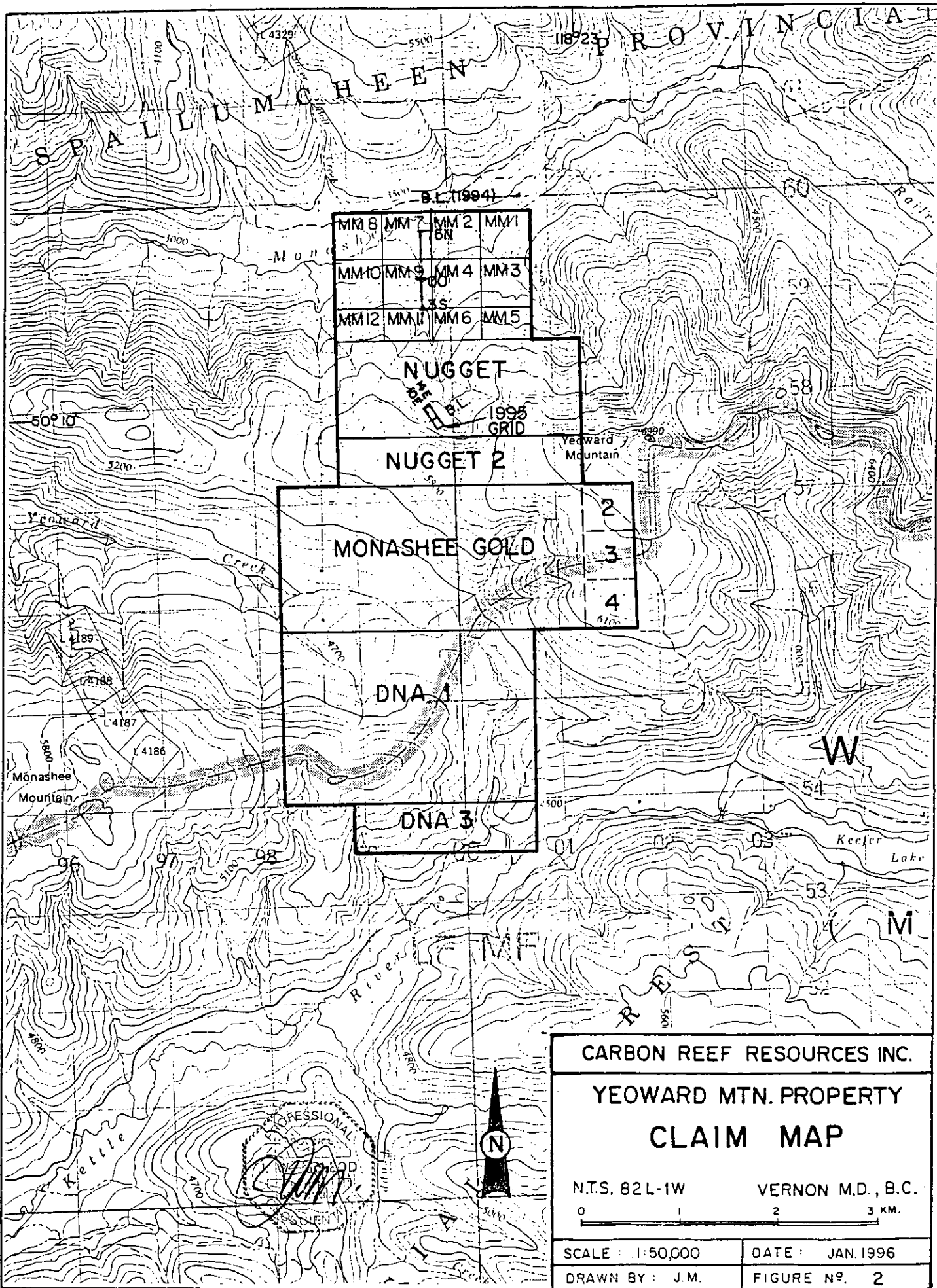
The area experiences approximately 120 centimetres (50 inches) of precipitation per year, of which 15 to 20 centimetres occur as a snow equivalent.

## **PROPERTY AND OWNERSHIP**

The Nugget claim consists of one lode mineral claim comprising a total of 10 units as follows:

<u>Name</u>	<u>Record No.</u>	<u>No. of Units</u>	<u>Anniversary Date</u>
Nugget	259063	10	October 21

The claim covers an area of 250 hectares (618 acres). The claim is owned 100% by Mr. Harold V. Arnold of Vernon, British Columbia.



## HISTORY

Table 1

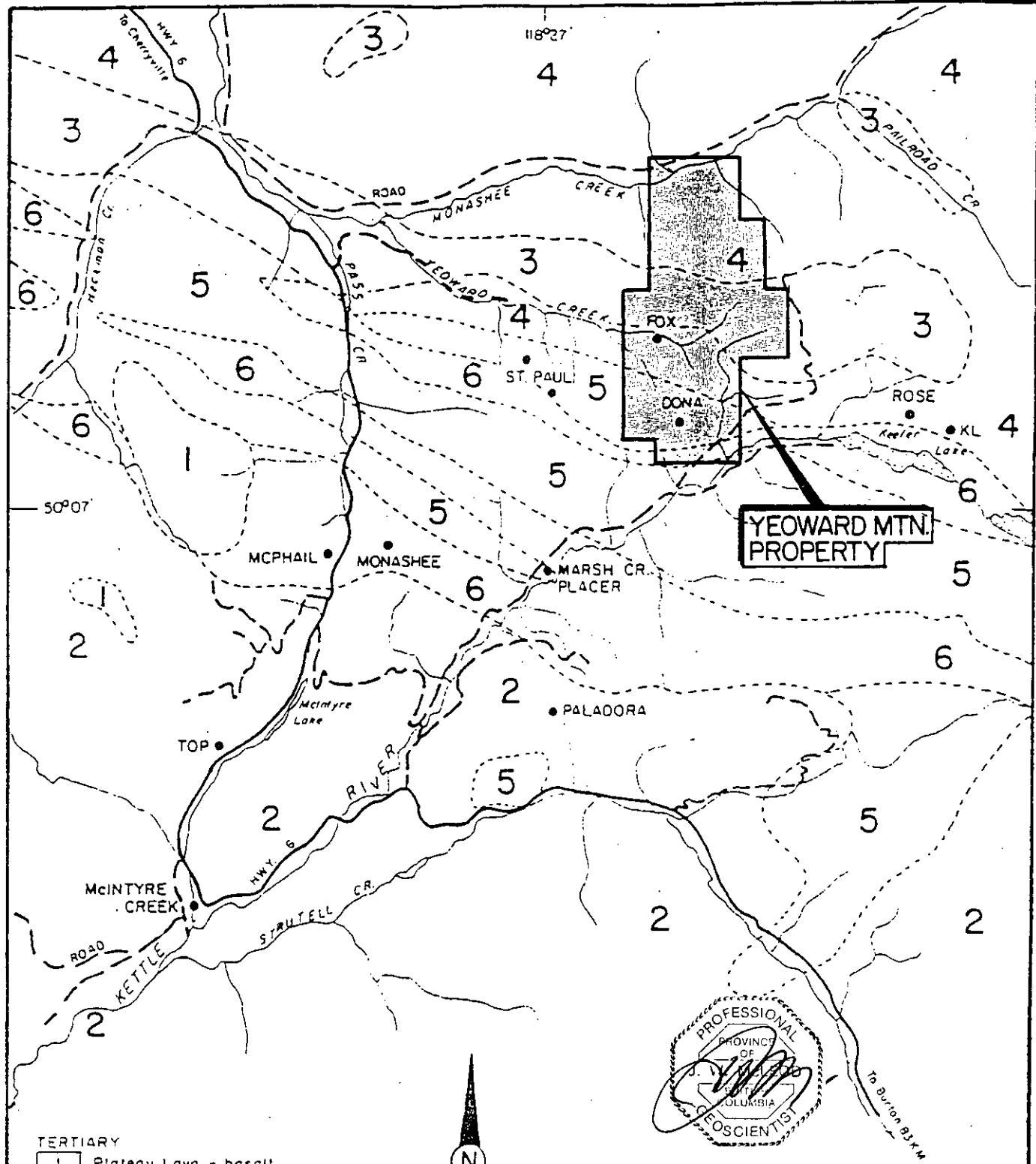
Year	Work Performed	By Whom
Pre-1962	3 pits (shaft) approx. turn-of-century.	N/A
1962-73	Hand trenching, prospecting.	Harry Arnold
1974	Reconnaissance geochemical survey on 400' x 400' grid.	Phil Nielsen
1975-77	Prospecting	Harry Arnold
1978	Reconnaissance geochemical survey on 100' x 400' grid.	Clem Paseika <sup>4</sup>
1979	Bulldozer trenching.	Dave King
1980-92	Prospecting, physical work on road and Yeoward Creek trail.	Harry Arnold
1993-Present	Road work, mapping, geophysics and rock geochem.	Carbon Reef Resources Inc.

## REGIONAL GEOLOGY

The general area is underlain by a west-northwest trending package of sediments and volcanics of the Thompson Assemblage which has been assigned a Carboniferous-Permian (possibly to Triassic) age, formerly referred to as the Cache Creek Group. The Thompson Assemblage is seen to be overlain unconformably on the north by mixed sediments and volcanics assigned to the Slocan Group which are thought to be of Triassic or older age. The Slocan Group is in turn overlain on the north by volcanic rocks of the Nicola Group which are assigned a Triassic age.

The sedimentary volcanic units are seen to generally reflect low grade (greenschist facies) regional metamorphism.

The general area has been affected by Valhalla Complex intrusive events of Jurassic age. The intrusive rocks observed in the general area are most often as granodiorite to diorite (rhyodacite to andesite) composition.



- TERTIARY
  - 1 Plateau Lava - basalt
- JURASSIC
  - 2 Intrusive Rocks
- TRIASSIC
  - 3 Nicola Group - andesite, basalt
  - 4 Slokan Group - mixed sedimentary & volcanic rocks
- CARBONIFEROUS & PERMIAN (MAY INCLUDE TRIASSIC)
  - 5 Thompson Assemblage - siliceous argillite, volcanoclastic sandstone, quartzite, breccia, greenstone & tuff
  - 6 Limestone, chert
- - - Geological contact
- Mineral occurrences

**CARBON REEF RESOURCES INC.**

**YEOWARD MTN. PROPERTY  
REGIONAL GEOLOGY**

**LUMBY AREA, B.C.**

NTS 82LIW      VERNON M.D.

0 1 2 3 6 KM.

SCALE 1:125,000	JAN. 1996	FIG. 3
J.M.		

AFTER G.S.C. 8  
H. JONES & ASSOCIATES INC. 1992



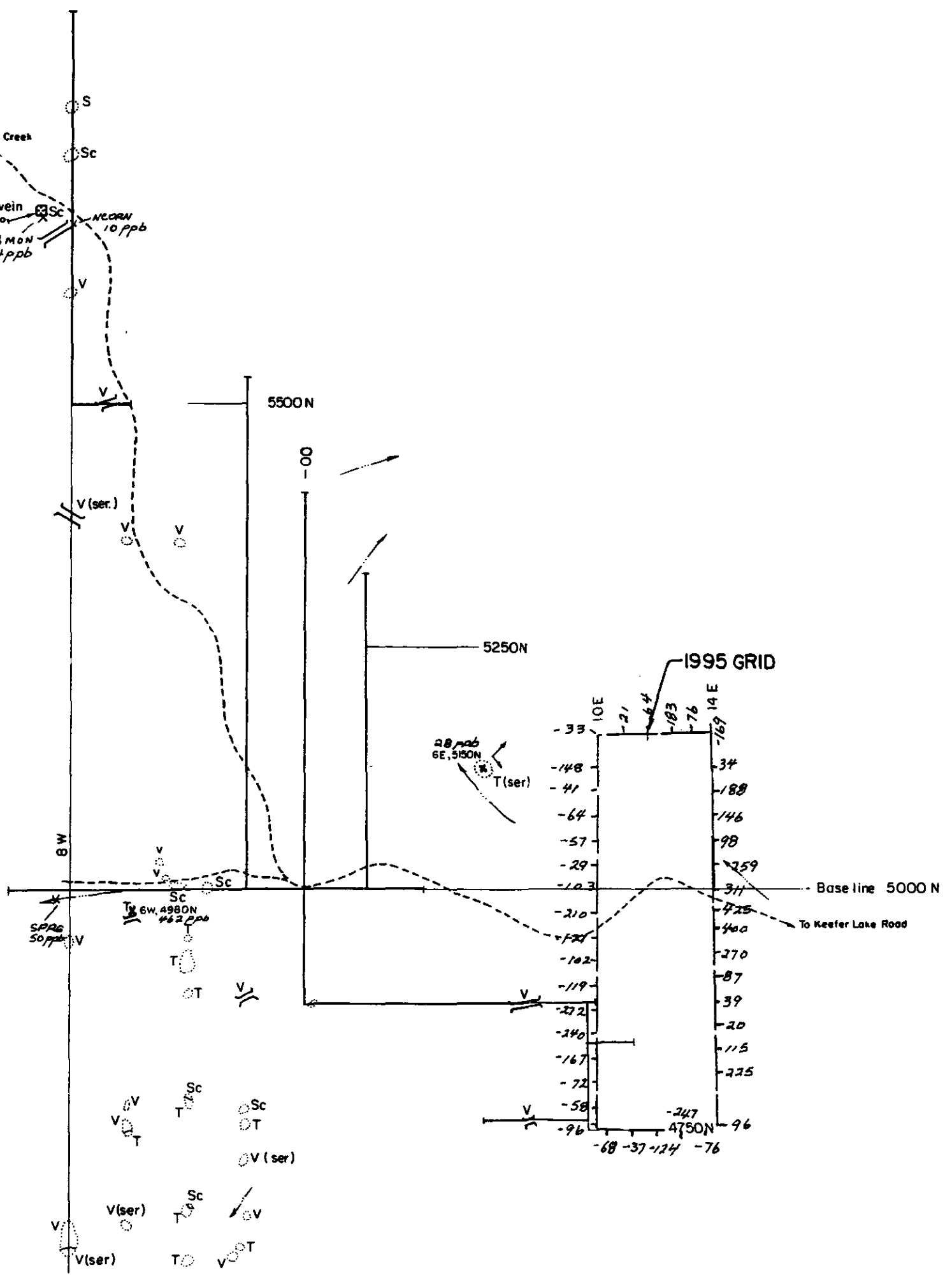
The general area has undergone folding, faulting and fracturing and rock alteration which is suggestive of regional stress; possibly compressional to the northeast, generating the broad undulatory or repeating folds and the attendant changes of dip such as is observed along Monashee Creek;

The offsets in some of the highly graphitic beds which may serve as markers are examples of faulting; the abundant quartz veins or sills offer examples of fracture closure and welding and various degrees of rock alteration together may indicate close-at-hand, underlying intrusive activity. Generally speaking, mineralization found in the area is as vein fillings of silver, gold and some lead, zinc, copper most always associated with arsenopyrite and accompanying silicification.

Localized occurrences throughout the general area of Tertiary plateau basalts are observed as cap and localized valley flows.

To Yeoward Creek Logging Road

quartz vein  
-50 to -65°  
13 MoN  
34 ppb



**LEGEND**

- Sc Schist ( may be graphitic )
- T Tuff ( crystal, some flow banded ? )
- S Sediment ( not tuffaceous )
- V Volcanic ( f-m grained ) may be intrusive ( rhyodacite composition )
- Ser Sericite
- Outcrop
- ↗ Direction of dip of quartz vein
- ⊠ Pit
- ⌋ Trench
- - - Road
- Spontaneous Potential (S.P.) line
- Drainage
- x Sample location number + gold in ppb's.



**CARBON REEF RESOURCES INC.**

**YEOWARD MTN. PROPERTY**

**PROPERTY GEOLOGY & S.P. GRID & GOLD**

LUMBY AREA, B.C.

N.T.S. 82L-1W VERNON M.D.

0 100 200 300 METRES

SCALE 1:5000	JAN. 1996	FIG. 4
J.M.		

## PROPERTY GEOLOGY

The Nugget claim is underlain by interlayered sediments and more abundant tuffaceous volcanics which exhibit low to moderately strong alteration as chlorite, sericite, talc and silicification which is related to all observed sulphide mineralization. The silicified (mineralized) zones are often normal to one another ie. as a set, with a general trend of northwest and/or southeast with a varying dip direction. The silicified areas are seen to occur as flat to steeply dipping. The sediments generally occur as aphanitic to fine grained schists and phyllites. The schists are often carbonaceous (graphitic). The volcanics range from vitric and lithic flow tuffs to crystalline tuffs and aphanitic to fine and medium grained volcanics of rhyodacite composition. These rocks are seen to express low to moderate alteration as chlorite, sericite and pervasive and widespread silicification as quartz stringers (<1mm) to large veins of several metres in thickness. Minor limonite with cubic "boxwork" structure (after pyrite) and localized, accompanying manganese stain are observed in several locations on the property.

Mineralization reported from the property and examined by the writer occurs as:

- a) Galena-sphalerite-chalcopryrite-chalcocite?-cerussite?-quartz "eyes"-tetrahedrite? with silver and gold values; and
- b) Pyrrhotite-sphalerite (black)-chalcopryrite-pyrite-minor quartz.

Both occurrences appear as vein fillings.

The writer feels that the mineralization observed is related to fault-contact vein structures which in turn have experienced post-mineralization offsets due in part to northwest-southeast faulting. A possible general sequence of events related to mineralization emplacement may be as follows:

- 1) Interlayered sediments-volcanic deposition, some may be sub-aerial.
- 2) General uplift and northeast compression causing major undulation and alternating dips of bedding from southwest to northeast.
- 3) Low angle separation of contacts and thrust faulting affording the system of conduits and depositional sites for widespread silicification as lenses and sills by hydrothermal means.
- 4) Subsequent sulphide mineralization (with some precious metal values) along east-westerly trending structures.

Note: 3) and 4) may be contemporaneous and related to igneous activity.

- 5) Post-mineralization faulting causing offset in a northwest-southeast direction.

#### PRESENT WORK PROGRAM

The current fieldwork program included rehabilitation of the 4x4 access road from the Keefer Lake road, near the south boundary of the property, installation of one kilometer of grid line with 25 metre flagged station intervals for the SP survey (see Appendix I) and rock exposure mapping at a scale of 1:5,000 (see Figure 4), rock sampling was performed where possible. The samples were analysed at the Acme Labs. in Vancouver, B.C. by induction coupled plasma (ICP) following an aqua regia digestion (see Appendix II).

The SP survey was conducted with a McPhar - SP30DIG instrument, serial no. M23-8035 generally at 25 metre intervals. The positive "pot" was fixed and approximately 1,000 metres of contiguous readings (one loop) were recorded. The survey proceeded by advancing the insulated wire reel ie. feeding out the wire connecting the two pots, Instrument readings using the McPhar digital high impedance voltmeter. The porous ceramic pots make the contact with the soil cover utilizing a saturated solution of copper sulphate. The readings in millivolts were recorded (see Appendix I).

## CONCLUSIONS

The SP results from the current program reveal several groups of values in the plus 100 millivolt range which may be indicative of underlying sulphide mineralization. If these results are viewed along with those from the 1994 SP orientation survey a northeasterly trend may be indicated. While the SP results to date do not delineate definite trends there are indications from bedrock exposures of a possible correlation between narrow fracture related mineralization and those results, ie. at L 8W-5380N - 130 ppb gold and at L6W - 4980N - anomalous precious and base metal values (see Appendix II) and L2W-4755N - 5.5 ppm silver and 30 ppb gold. These values are not highly anomalous in metal content, with the exception of L6W - 4980N, but the rocks in these areas appear relatively fresh regarding fracture preparation and alteration and the past geochemical soil survey data exhibited low values. Because of a general lack of rock exposures in the areas of SP-responses, with an indicated thin but widespread veneer of overburden, the method may still have validity. For these reasons a recommendation for further SP work is indicated.

## RECOMMENDATIONS

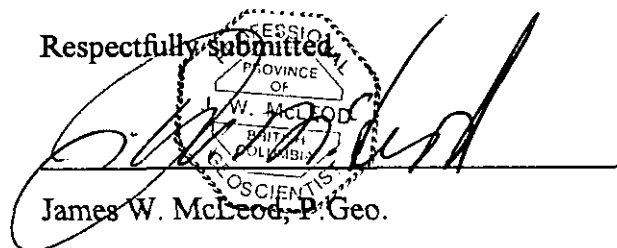
A program of grid controlled SP survey is recommended to cover the entire or as much of the Nugget and Nugget 2 mineral claims as is practically possible. There may be areas which lie in too steep terrain which precludes surveying, but these areas most always will contain abundant rock exposures.

The recommended Phase I program is expected to take one month to complete at an estimated cost of \$38,500.

**COST ESTIMATE****Phase 1**

Geological mapping, survey work and supervision	\$ 9,000
Grid installation	5,000
Self potential (SP) survey	5,000
Geochemical analyses and assays	1,000
Transportation	3,000
Insurance, licences and fees	6,000
Equipment and supplies	2,000
Reports and maps	4,000
Contingency (10%)	<u>3,500</u>
<b>Total Phase 1</b>	<b><u>\$ 38,500</u></b>

Respectfully submitted,



James W. McLeod, P. Geo.

**STATEMENT OF COSTS****A. SP Survey**

Geology and supervision	\$ 300
Grid installation	200
Geophysical surveys, spontaneous potential	300
Transportation	100
Camp and board, 5 mandays @ \$80 per manday	400
Geochemical analyses	100
Reports, maps	<u>100</u>
<b>Sub-total</b>	<b><u>\$ 1,500</u></b>

**B. Physical Work**

Wages - Rehabilitation of property access road to Keefer Lake road	250
Transportation	100
Camp and Board	<u>150</u>
<b>Sub-Total</b>	<b><u>\$ 500</u></b>

**TOTAL OF A AND B** **\$ 2,000**

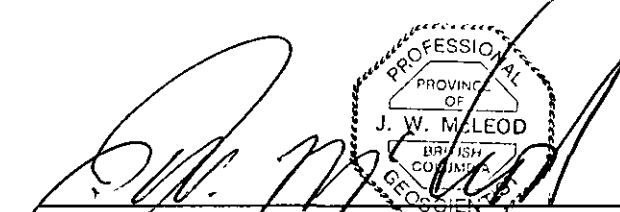
Note: The SP survey was conducted by the writer and his assistant,  
John F. Graffin on May 25, 1995.

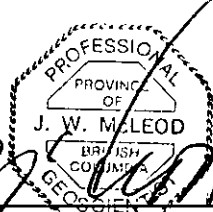
**CERTIFICATE**

I, **JAMES W. McLEOD**, of the Municipality of Delta, Province of British Columbia, hereby certify as follows:

1. I am a Consulting Geologist with an office at #203, 1318 - 56th Street, Delta, B.C. V4L 2A4.
2. I am a Professional Geoscientist registered in the Province of British Columbia and a Fellow of the Geological Association of Canada.
3. I graduated with a degree of Bachelor of Science, Major in Geology, from the University of British Columbia in 1969.
4. I have practised my profession since 1969.
5. I am President of Carbon Reef Resources Inc., the company that has an option on the Nugget claim.
6. The above report is based on personal field experience gained by working on the claim during 1995.

DATED at Delta, Province of British Columbia this 11th day of January, 1996.

  
James W. McLeod, P. Geo.  
Consulting Geologist



The seal is a circular emblem with a scalloped border. Inside the border, the text reads: 'PROFESSIONAL' at the top, 'PROVINCE OF' in the middle, 'J. W. McLEOD' in the center, and 'BRITISH COLUMBIA' and 'GEOSCIENTIST' at the bottom.



APPENDICES

APPENDIX I \_ SP Results

APPENDIX II - Geochemical Analyses

Appendix I

Self Potential(SP) Results

<u>L14E</u>	<u>Millivolts</u>	<u>L4750N</u>	<u>Millivolts</u>
4750N	-96	3+95E	-68
4800	-225	4+20	-37
4825	-115	4+45	-124
4850	-20	4+70	-247
4875	-39	4+95	-76
4900	-87		
4925	-270		
4950	-400		
4975	-425		
5000	-311		
5025	-259		
5050	-98		
5075	-146		
5100	-188		
5125	-34		
<u>L5160N</u>			
4+95E	-169		
4+70	-76		
4+45	-183		
4+20	-64		
3+95	-21		
3+70	-33		
<u>L10E</u>			
5125N	-148		
5100	-41		
5075	-64		
5050	-57		
5025	-29		
5000	-103		
4975	-210		
4950	-121		
4925	-102		
4900	-119		
4875	-272		
4850	-240		
4825	-167		
4800	-72		
4775	-58		
4750	-96		



GEOCHEMICAL ANALYSIS CERTIFICATE



Jim McLeod File # 96-0075 Page 1

203 - 1318 - 56th St., Delta BC V4L 2A6

SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Au*
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppb
13 MOW	12	60	15	89	<.3	21	2	296	.78	9	<5	<2	<2	122	3.0	<2	<2	10	1.26	.018	<1	13	.11	48	<.01	<3	.16	.01	.03	2	34
HCORN	2	32	6	29	.3	7	2	2116	1.50	<2	5	<2	10	934	.3	<2	<2	5	11.79	.051	10	7	.39	50	<.01	<3	.48	.02	.14	<2	10
6E 5150N	3	13	139	86	.9	9	2	539	2.25	53	<5	<2	3	64	.7	2	<2	13	.51	.098	8	11	.59	73	.11	<3	1.07	.03	.16	<2	28
6W 4980N	2	4679	20202	682	134.9	10	27	41	1.85	11444	<5	<2	4	6	275.7	4538	233	<1	.02	<.001	<1	7	.01	4	<.01	<3	.02	<.01	<.01	<2	462
RE 6W 4980N	2	4871	20631	701	149.6	10	29	18	1.96	12581	<5	<2	5	6	286.6	4741	249	<1	.02	<.001	<1	7	.01	4	<.01	<3	.02	<.01	<.01	<2	529

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 NL WITH WATER.  
 THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL.  
 ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB  
 - SAMPLE TYPE: P1 ROCK P2 SILT AU\* - IGNITED, AQUA-REGIA/MIBK EXTRACT, GF/AA FINISHED.  
 Samples beginning 'RE' are Recruns and 'RRE' are Reject Recruns.

DATE RECEIVED: JAN 8 1996

DATE REPORT MAILED: Jan 16/96

SIGNED BY: *C. Leong* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

APPENDIX II



GEOCHEMICAL EXTRACTION-ANALYSIS CERTIFICATE



Jim McLeod File # 96-0075 Page 2

203 - 1318 - 56th St., Delta BC V4L 2A4

SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Tl	Hg	Se	Te	Ga	Au*
	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppb	ppm	ppm	ppm	ppb
SPRG	.2	10.7	1.0	14.6	51	5	2	103	.33	2.9	<5	<1	149	.34	.2	.1	6	12.15	.013	<1	4	.15	23	.01	2	.18	<.01	.02	<2	<.1	18	1.3	<.1	.8	50

ICP - 15 GRAM SAMPLE IS DIGESTED WITH 90 ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 100 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K GA AND AL. SOLUTION ANALYSED DIRECTLY BY ICP. MO CU PB ZN AG AS AU CD SB BI TL HG SE TE AND GA ARE EXTRACTED WITH MIBK-ALIQWAT 336 AND ANALYSED BY ICP. ELEVATED DETECTION LIMITS FOR SAMPLES CONTAIN CU,PB,ZN,AS>1500 PPM, Fe>20%.

- SAMPLE TYPE: P1 ROCK P2 SILT AU\* - AQUA-REGIA/MIBK EXTRACT, GF/AA FINISHED.

DATE RECEIVED: JAN 8 1996 DATE REPORT MAILED: *Jan 16/96* SIGNED BY: *Ch...* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS