DUVAL INTERNATIONAL CORPORATION
844 WEST HASTINGS STREET
VANCOUVER BRITISH COLUMBIA V6C 1C8 CANADA TELEPHONE (604) 685-5523

PRELIMINARY REPORT
on the
GEOLOGY and GEOCHEMISTRY
of the
TOW 1 and 2 CLAIM GROUPS
NTS 92 I/12W, Lillooet Mining Division
121° 53'W, 50° 32'N

Owned by DUVAL MINING LTD
Work paid for by DUVAL INTERNATIONAL CORP.
Report by Victor F. Hollister, P.Eng.

Submitted March 23, 1979

DUVAL INTERNATIONAL CORPORATION
844 WEST HASTINGS STREET
VANCOUVER BRITISH COLUMBIA V6C 1C8 CANADA TELEPHONE (604) 685-5523

TABLE OF CONTENTS

*
* *

INTRODUCTION

During the period September 16 to September 24, 1978, a preliminary geologic and geochemical investigation was undertaken of the TOW claims by the Duval International staff. The work consisted of a nine day investigation by Mr. J. R. Huspeni and Mr. R. L. Moore from September 16, 1978, to September 24, 1978, three days by G. R. McKillop from September 21 to September 24, 1978, and two days by V. F. Hollister from September 22 to September 24, 1978. The topography around and in the claims is precipitous, and two fly camps were established during that period, so that the personnel involved could stay in the area. Geologic mapping was on the scale of 1:10,000, and the area covered included 2,500,000 sq. meters. Sixty-two rock chip and 33 soil samples were taken. This report summarizes the findings of that survey.

Mineral Claims

This report covers the TOW 1, record No. 635 (7), located June 29, 1978, and TOW 2, record No. 647 (7), located July 21, 1978, situated in the Lillooet Mining Division which are owned by Duval Mining Ltd., P.O. Box 49130, 595 Burrard Street, Vancouver, B.C., and holder of Free Miner's Certificate 168696. The work for this assessment report was done by Duval International staff under V. F. Hollister, P.Eng. Old claim posts were discovered within the claim boundary but no detailed record of assessment work has been found. Costs for the geologic and geochemical work should be broken down so that for every two dollars spent on TOW 1, one dollar was spent on TOW 2. The claims are shown on Map 1, the index map of this area.

.../...

Location

The TOW claims lie in NTS 92 I/12W in the drainages of Towinock and Spray Creeks in the Lillooet Range. The claims are centered around 121° 53'W and 50° 32'N. Please see Map 1.

Access

Access by land is west from the Lytton-Lillooet highway up Towinock Creek. The topography is very rugged, however, and access to all parts of the claim groups requires helicopter transport.

Topography

The claims cover steep slopes that range from 3,600 feet (about 1200 meters) to 8,000 feet (about 2200 meters). Some of the slopes have vertical angles exceeding 50° from the horizontal, and average slopes of 35° are common for much of the claim area. The topographic problems of inaccessible cliffs limited the rock-chip geochemical survey and forced sampling by traverse control rather than by grid control.

GEOLOGIC SURVEY

2,500,000 sq. meters of the TOW 1 and 2 claims were mapped on a scale of 1:10,000. The TOW claims lie in the area described by Geological Survey of Canada Map 1010A, but features were discovered during the Duval study that are omitted from the published map. For this reason no further reference will be made to the published data.

Stratigraphy

A major NW trending fault, the TOW fault on the attached

.../...

geologic map, serves as the eastern limit of mineralization. West of this fault, all of the layered rocks are believed to be Lower Cretaceous (?) metasediments. These are argillite and quartzite with conglomerate lenses. The distribution of the strata is shown on Map No. 2 in the pocket.

Intrusive Rocks

Three quartz diorite bosses intrude the metasediments. The largest is on the south fork of Towinock Creek. It includes both porphyritic and granitic textured phases. Staining tests show it to be largely devoid of magmatic orthoclase, but to contain variable amounts of quartz, biotite, hornblende and plagioclase. The two smaller bosses in Spray Creek are so altered by ground water that their precise magmatic mineralogy is not known.

Numerous fine-grained felsic dikes outcrop between the bosses. These are largely fresh mixtures of quartz and plagioclase with lesser orthoclase and mica. These dikes are believed to be late differentiates from the quartz diorite bosses. They trend northeasterly and were found only west of the Tow fault. The distribution of the intrusive rocks is shown on Map No. 2 in the pocket.

Alteration

The northernmost quartz diorite boss contains zoned potassic and phyllic alteration. Boundaries between alteration stages are gradational and were therefore approximately shown on the geologic map. The potassic zone consists of a replacement of the plagioclase by orthoclase and of the hornblende by biotite. This zone is about 600 feet (200 meters) in diameter. Adjacent and external

.../...

to this is a phyllic zone. This consists of up to 300 feet (100 m) of quartz-sericite alteration of the plagioclase, hornblende and biotite. Erratic pyritization also occurs throughout the boss. The intruded rocks are generally metamorphosed at and near the contact to sericite schists.

The southern quartz diorite bosses are strongly pyritized and weathering has oxidized the pyrite to iron oxides. Sulfuric acid generated has argillized the silicates and it is not now possible to categorize hypogene alteration stages at the surface in the southern bosses. Pyritization is strong around these southern intrusions and the intruded rocks are strongly argillized by weathering processes.

High pyrite areas occur within both areas of pervasive pyritization (associated with the north and south bosses). These sections include rocks with + 8% pyrite. Sections of abnormal hydrothermal silica also occur associated with each area of intrusion. The silica includes both replacement of silicates by quartz and introduction of vein quartz. Two distinctive color anomalies result from weathering of the pyritized rock. Alteration zones are shown on Map No. 3 in the pocket.

Mineralization

Sulfide mineralization consists of widely scattered but rare sphalerite in fractures in the intrusive and intruded rocks and very rare coarse grained molybdenite in quartz filled fractures. Scheelite occurs as an intrusive mineral in the stocks in trace amounts. Because fractures are important channels for metal sulfide mineralization, these were generally recorded and are shown on the

structure map. The mineralized fractures occasionally reach the density of a stockwork, and quartz and quartz-pyrite veinlets are most common. Chalcopyrite was rarely identified, and no secondary copper silicates were noted in outcrop. The distribution of mineralized fractures is shown on Map No. 4 in the pocket.

GEOCHEMICAL SURVEY

Sampling Procedure

Limited access caused by precipitous slopes prevented laying out a grid and the conducting of grid sampling for a geochemical survey. Therefore sample locations were determined by compass-hipchain traversing in accessible terrain. Geochemical samples were taken by Messrs. Huspeni and Moore, and the traverses served to complete the geologic mapping as well as for the sampling of outcrop and soils. Mr. McKillop served as the supervisor of this work. A total of 62 rock chip samples and 33 soil samples were obtained. These were analyzed for Mo, W, and Zn. The results are posted on maps in the pocket.

Rock chip samples were taken as rock chip grab samples of outcrop, with a minimum of 5 lbs. (2.4 kilos) sample taken at the sample station. Rock chip lithology was that of pyritized intrusive or metamorphic rock, as the case may be.

Soil samples were taken at a depth of 15 to 30 cm. Many soil samples were taken above tree line, and soils were poorly developed. Samples consisted of talus fines with little humus and minor clay.

.../...

Analyses

Slightly different sample preparation techniques were used for the rock chip samples than for the soil samples.

The rock chip samples were crushed to - 200 mesh. The sample was then analyzed by Min-En Laboratories for Mo, W and Zn. For molybdenum, Min-En used a nitric-perchloric digestion and atomic absorption for determining Mo content in PPM. Tungsten was determined by a carbonate flux fusion and a colorimetric extraction with dithiol. Results were reported in PPM. Zinc was determined by a nitric-perchloric digestion and the PPM were determined by atomic absorption.

Soil samples were seived, and the - 80 mesh fraction was used for analyses. Analyses for the Mo, W and Zn in the - 80 mesh fraction of the soil samples was the same as for the rock chip. Molybdenum analyses are shown on Map No. 5. Zinc analyses are shown on Map No. 6. Tungsten analyses are shown on Map No. 7.

DISCUSSION of the RESULTS

Geologic Results

Two areas of pervasive disseminated pyrite have been shown to be present as a result of the geologic mapping. The northern area of pyritization encloses a potassic-phyllic zonal complex. Alteration zones in the southern area of pyritization have not been defined. The larger area of pyritization is, however, the southern.

Geochemical Results

Zinc anomalies commonly occur in both the northern and southern areas of pyritization. The largest area of zinc anomalism

.../...

is, however, within the southern pyrite zone. The highest zinc values also occur in this zone.

The strongest tungsten values also occur in the southern zone of pyritization.

The strongest molybdenum values, however, are found in the northern zone of pyritization. The rock chip sampling disclosed an area in the north zone that has + 100 PPM (+ .01%) Mo, but no + 100 PPM molybdenum assays were found in the southern zone.

RECOMMENDATIONS

On the basis of the preliminary geologic and geochemical work, further studies are justified. These should be directed at enhancing the anomalies detected and trying to determine additional anomalism.

V. F. Hollister, P.Eng
8345
Province of British Columbia

Victor F. Hollister,
Professional Engineer
Province of British Columbia.

DUVAL INTERNATIONAL CORPORATION
844 WEST HASTINGS STREET
VANCOUVER BRITISH COLUMBIA V6C 1C8 CANADA TELEPHONE (604) 685-5523

FINANCIAL STATEMENT

Sample Analysis (Min-En Lab.):

62 Rock samples Mo, W, Zn @ 7.15/Sample.....	$ 443.30
33 Soil geochem samples for Mo, W, Zn @ 6.05/Sample.....	$ 199.65

Geologic Field Work Cost:

Salary J. R. Huspeni (9 Days)..... (Sept. 16 through Sept. 24 @ $59.75/day)	$ 537.75
Salary R. L. Moore (9 Days)..... (Sept. 16 through Sept. 24 @ $70.60/day)	$ 635.40
Salary G. R. McKillop (3 Days)..... (Sept. 21 through Sept. 24 @ $106.00/day)	$ 318.00
Salary V. F. Hollister (2 Days)..... (Sept. 22 through Sept. 24 @ $200/day)	$ 400.00
Helicopter Expenses (7.6 hrs x $335/hr. + Fuel)	$2,757.52
Truck Transportation (580 km @ 10¢/km).....	$ 58.00
Camping Expenses (8 Days, 2 men)..... (for Huspeni and Moore only)	$ 285.00
Report and Drafting (2 Days).....	$ 400.00
TOTAL.....	$6,034.62.

Division of Costs:

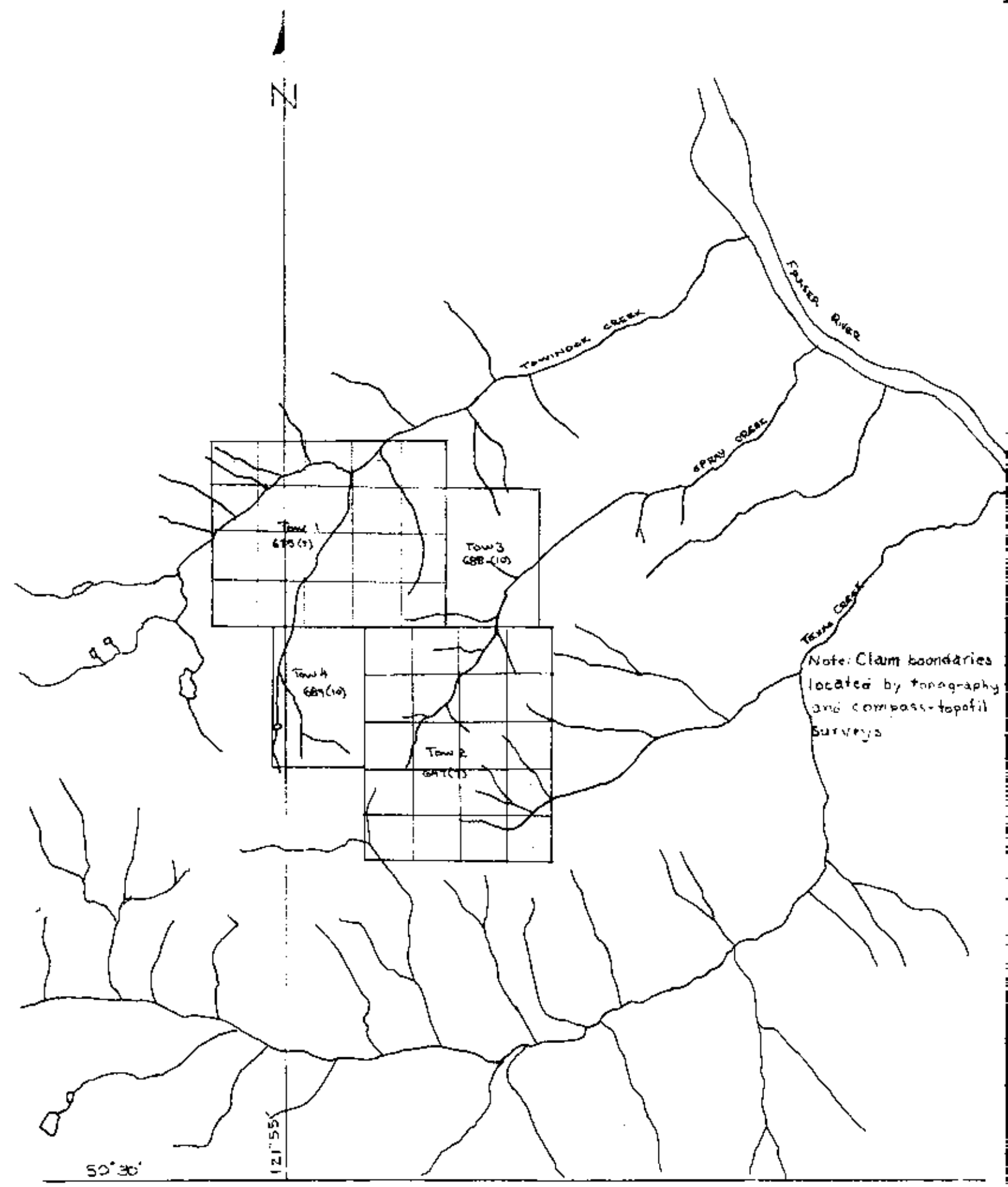
TOW # 1.....	$4,000.00
TOW # 2.....	$2,034.62.

Certified Correct,

V. F. Hollister, P.Eng
8345
Province of British Columbia

Victor F. Hollister,
Professional Engineer
Province of British Columbia

Date: March 22, 1979



INDEX MAP

TOW CLAIMS

NTS 92 I/12 W

0 1 2 3

KILOMETERS

MAP 1

DUVAL INTERNATIONAL CORPORATION
844 WEST HASTINGS STREET
VANCOUVER BRITISH COLUMBIA V6C 1C8 CANADA TELEPHONE (604) 685-5523

March 22, 1979

TO WHOM IT MAY CONCERN

Mr. J. R. Huspeni holds a B.Sc degree in geology from the University of Minnesota and had approximately three months post-graduate experience as a geologist at the time the TOW claim assessment work was undertaken. He was an employee of the Duval Corporation at that time.

V. F. Hollister P.Eng.
#8345
Province of British Columbia

Victor F. Hollister. P.Eng.
Manager of Special Projects
Duval International Corporation

DUVAL INTERNATIONAL CORPORATION
844 WEST HASTINGS STREET
VANCOUVER BRITISH COLUMBIA V6C 1C8 CANADA TELEPHONE (604) 685 5523

March 22, 1979

TO WHOM IT MAY CONCERN

Mr. R. L. Moore holds a B.Sc degree in geology from the University of Oregon. He had approximately one year post-graduate experience as a geologist at the time the TOW claim assessment work was undertaken. He was an employee of Duval at that time.

V. F. Hollister, P. Eng.
8345
Province of British Columbia

Victor F. Hollister, P.Eng.
Manager of Special Projects
Duval International Corporation

DUVAL INTERNATIONAL CORPORATION
844 WEST HASTINGS STREET
VANCOUVER BRITISH COLUMBIA V6C 1C8 CANADA TELEPHONE (604) 685-5523

March 22, 1979

TO WHOM IT MAY CONCERN

Mr. G. R. McKillop holds a B.Sc degree from the University of British Columbia in geology. He has five years experience in economic geology. He is an employee of the Duval Corporation.

V. F. Hollister, P.Eng
8345
Province of British Columbia

Victor F. Hollister, P. Eng.
Manager of Special Projects
Duval International Corporation

DUVAL INTERNATIONAL CORPORATION
844 WEST HASTINGS STREET
VANCOUVER BRITISH COLUMBIA V6C 1C8 CANADA TELEPHONE (604) 685-9523

March 22, 1979

TO WHOM IT MAY CONCERN

I hold a B.Sc and an M.Sc degree in geology from the University of California. I have been practicing as a geologist for 30 years in the field of economic geology. I am a registered professional engineer in the Province of British Columbia.

V. F. Hollister, P.Eng
8345
Province of British Columbia

Victor F. Hollister, P.Eng.
Manager of Special Projects
Duval International Corporation.

8500
5500
4000
1200
Falls
Creek
03
5000
3000
02
7500
5900
5500
Spring
01
TOW 3
TOW 1
TOW 2
TOW 4
4000
00
6000
8900
99
TRUE NORTH
R A N G E S
8400
98
7500
5500
97
5500

DUVAL CORPORATION–EXPLORATION DEPT.	Canada
TOW CLAIMS	B.C.
TYPE: GEOLOGY	NTS 92 I/12W
DATA BY: R.M., J.H., G.M., V.H.	DRAWN BY: G.M.
DATE: March 5, 1979	MAP NO. MAP 2
0 100 200 300 400 500 1000m. 1:10,000	PLATE NO.

- Felsic dykes
- Quartz diorite
- Metasediments
- Meta conglomerate
- Geological contact – defined / approximate
- Fault – defined / approximate
- Quartz vein stockwork
- Claim boundary
- Legal Corner Post

Located using topographic map, and topofil and compass.

Outcrop is practically continuous in areas mapped.

V. F. Holbek Esq
of 8395
Province of British Columbia
March 23, 1979

TOWINOCK CREEK

SPRAY CREEK

TO TEXAS CREEK

NORTH

MINERAL RESOURCES DIVISION
ASSESSMENT REPORT

7211

NO.

LEGEND

- Limit of potassic alteration
- Limit of phyllic alteration
- Limit of high silica
- Limit of high (+8%) sulfides
- Limit of color anomaly

V. F. Holleston PEng
8345
Province of British Columbia
March 23, 1979

Based on compass-hipchain surveys

DUVAL CORPORATION—EXPLORATION DEPT.	CANADA
TOW CLAIMS	B.C.
TYPE: ALTERATION	NTS 92 I/12W
DATA BY: R.M., J.H., G.M., V.H. / DRAWN BY: G.M. / DATE: MAR. 5, 1979	MAP NO. MAP 3
0 100 200 300 400 500 1000 m. 1:10,000	PLATE NO.

TOWINOCK CREEK

SPRAY CREEK

TOW FAULT

TO TEXAS CREEK

NORTH

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

7211

LEGEND

FAULT – defined / approximate

JOINT (unmineralized) – vertical dipping

JOINT (with limonite) – vertical dipping

V.F. Hollister, P.Eng
6592
Province of British Columbia
March 25, 1979

Based on compass- hipchain surveys

DUVAL CORPORATION–EXPLORATION DEPT.	CANADA
TOW CLAIMS	B.C.
TYPE: STRUCTURE	NTS 92 I/12W
DATA BY: R.M., J.H., G.M., V.H. / DRAWN BY: G.M. / DATE: MAR. 6, 1979	MAP NO. MAP 4
0 100 00 300 400 500 1000 m. 1:10,000	PLATE NO.

TOWINOCK CREEK

SPRAY CREEK

TO TEXAS CREEK

NORTH

MINERAL RESOURCES ...
ASSESSMENT REPORT
NO. 7211

Mo P.P.M.

- ROCK CHIP SAMPLE
- SOIL SAMPLE

Based on compass-pacing survey

V. F. Hollister, P.Eng
8345
Province of British Columbia
March 23, 1979

DUVAL CORPORATION–EXPLORATION DEPT.	CANADA
TOW CLAIMS	B.C.
TYPE: GEOCHEMISTRY	NTS 92 I/12W
DATA BY: R.M., J.H., G.M., V.H. / DRAWN BY: G.M. / DATE: MAR. 6, 1979	MAP NO. MAP 5
0 100 00 300 400 500 1000 m. 1:10,000	PLATE NO.

TOWINOCK CREEK

SPRAY CREEK

TO TEXAS CREEK

NORTH

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
7211

Zn P.P.M.

• ROCK CHIP SAMPLE

o SOIL SAMPLE

Based on compass-chain surveys

V.F. Hollister P.Eng
#8345
Province of British Columbia
March 23, 1979

DUVAL CORPORATION–EXPLORATION DEPT.	CANADA
TOW CLAIMS	B.C.
TYPE: GEOCHEMISTRY	NTS 92 I/12W
DATA BY: R.M., J.H., G.M., V.H. / DRAWN BY: G.M. / DATE: MAR. 6, 1979	MAP NO. MAP 6
0 100 00 300 400 500 1000 m. 1:10,000	PLATE NO.

TOWINOCK CREEK

SPRAY CREEK

TO TEXAS CREEK

NORTH

W P.P.M.

• ROCK CHIP SAMPLE

o SOIL SAMPLE

Based on compass-hipchain surveys

V.F. Hollister, P.Eng
#8345
Province of British Columbia
25 March, 1979

DUVAL CORPORATION–EXPLORATION DEPT.	CANADA
TOW CLAIMS	B.C.
TYPE: GEOCHEMISTRY	NTS 92 I/12W
DATA BY: R.M., J.H., G.M., V.H. / DRAWN BY: G.M. / DATE: MAR. 6, 1979	MAP NO. MAP 7
0 100 00 300 400 500 1000 m. 1:10,000	PLATE NO.