ARIS SUMMARY SHEET

Di..rict Geologist, Smithers   Off Confidential: 90.12.28

ASSESSMENT REPORT 19830   MINING DIVISION: Liard

PROPERTY: White Bull
LOCATION: LAT 58 54 00   LONG 127 54 00
UTM 09 6529229 563381
NTS 094L13W
CLAIM(S): Whitebull
OPERATOR(S): Homestake Mining (Canada)
AUTHOR(S): Holbeck, P.;McPherson, M.D.
REPORT YEAR: 1990, 53 Pages
COMMODITIES
SEARCHED FOR: Copper,Lead,Zinc
KEYWORDS: Cambrian,Silurian,Kechika Group,Schists,Tuffs,Pyrite,Phyllites
WORK
DONE: Geological,Geochemical
GEOL 500.0 ha
Map(s) - 1; Scale(s) - 1:5000
ROCK 39 sample(s) ;ME
SOIL 56 sample(s) ;ME
Map(s) - 2; Scale(s) - 1:5000
RELATED
REPORTS: 11190

1989 EXPLORATION REPORT

on the

WHITE BULL CLAIM

Liard Mining Division
NTS:94 L/13W
Lat:58° 54′N
Long:127° 54′W

Owner and Operator:

Homestake Mining (Canada) Limited
#1000-700 W. Pender St.
Vancouver,B.C.
V6C 1G8

By:P.Holbek
M.McPherson

February 15, 1990

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SUMMARY

The White Bull property is located near the junction of the Turnagain and Major Hart rivers within the Cassiar Mountains of north-central B.C. The property consists of one, twenty unit claim (White Bull) which is owned by Homestake Mining (Canada) Ltd.

The ground was originally staked in 1977 as a shale-hosted lead-zinc target and has since been explored by Amoco Canada Petroleum Co. Ltd., Esso Resources Canada Ltd. and now Homestake. Previous work includes geological prospecting and mapping, soil and rock geochemistry, HLEM and proton magnetometer geophysics, and reconnaissance stream and heavy mineral sampling. Exploration work in 1989 consisted of geological mapping, soil and rock sampling.

The White Bull claim is underlain by variably deformed Upper Cambrian to Middle Silurian Kechika Group sediments, tuffaceous volcanics, carbonates and schists (Fig. 2.1). Stratigraphy strikes northwest and dips moderately southwest, forming the southwest limb of a shallow northwesterly plunging anticline. This feature is reflected at both outcrop and regional scales. A siliceous, high potassium intrusive plug or sill of possibly Tertiary age occurs in the northern part of the claim. Stratigraphy is locally offset by north-northwest trending, sub-vertical normal faults.

The most distinctive features on the property are the broad, pale yellow to grey sulphate crusts or vegetation "kill zones", extending discontinuously along a strike length of 1800m, varying in width of 100 to 300m, across the central part of the property. These zones contain strongly leached and weathered material including Fe-oxides (limonite, jarrossite), Fe-sulphates (coquimbite), native sulphur and gypsum. The thickness of the zones and the highly altered nature of the rocks can make identification of the protolith difficult.

Elsewhere on the property, rocks are often pervasively quartz-sericite altered, and may contain up to 2-3% disseminated pyrite.

Mineralization on the White Bull property consists of disseminated to massive pyrite and minor sphalerite, with pyrite locally to 50%. Semi-massive pyrite occurs in a 1m band sub-parallel to foliation planes, as pods up to 3cm in width, and as a 3 to 5m thick band of extensive quartz-calcite-pyrite fracture fill.

Soil geochemistry identified a weak 50-350m wide zinc anomaly trending northeast along a 1200m strike length across the northern part of the claim. A moderately strong 75m wide lead anomaly trends 100 over a strike length of 1800m across the central portion of the claim. Both anomalies are gently warped, reflecting the regional folding of the underlying stratigraphy.

No new or significant occurrences of mineralization were discovered on the property, and geochemical analyses returned generally low values of both precious and base metals. Although the property occupies a favourable stratigraphic horizon for a sediment-hosted Pb-Zn deposit, it does not show grade or size potential for an economic deposit of this type.

1.0 INTRODUCTION

1.1 Location and Access

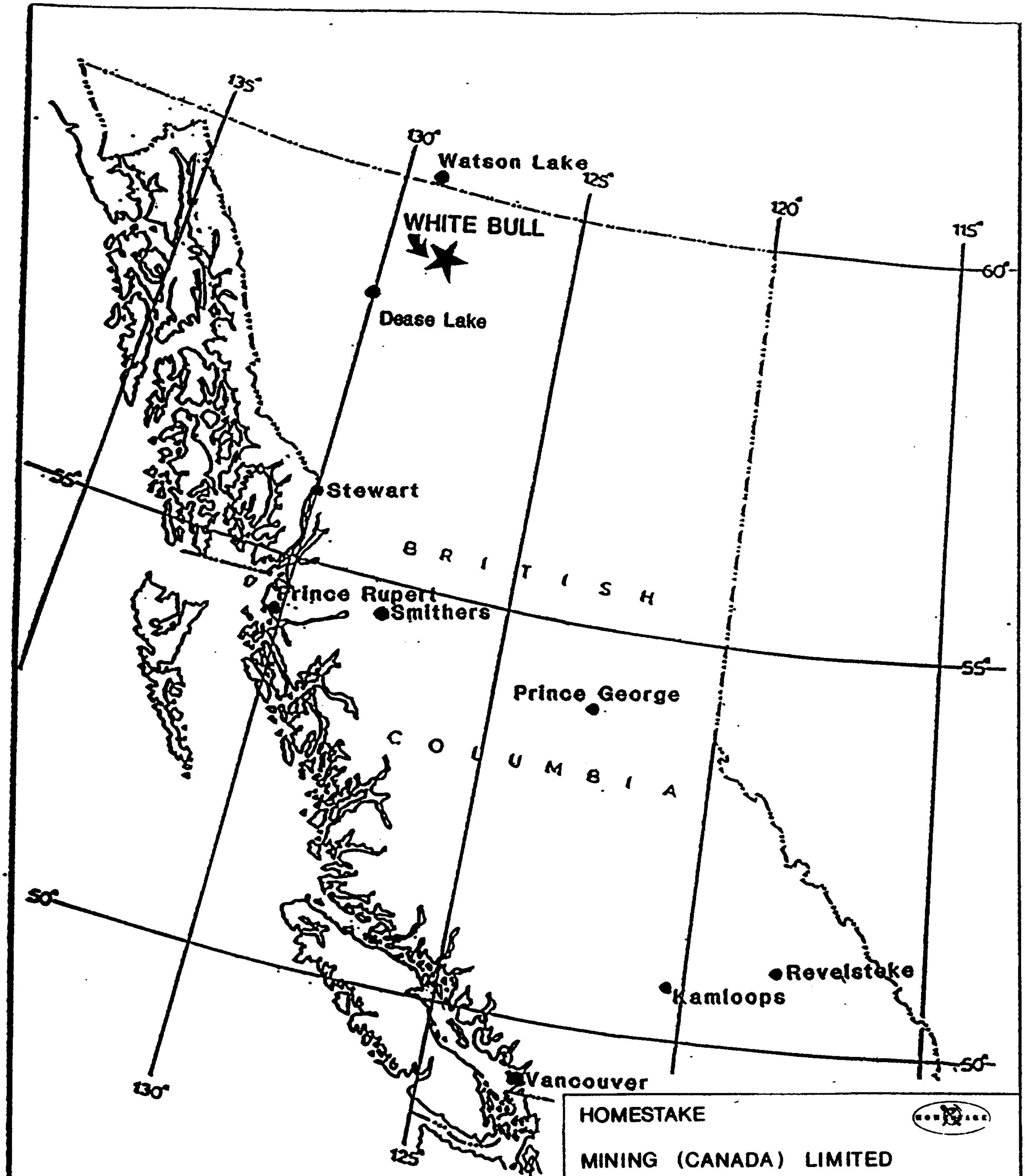
The White Bull property is located within the Cassiar Mountains of north-central British Columbia, near the junction of the Turnagain and Major Hart rivers (Fig. 1.1). The claim is situated at latitude 58° 54'N and longitude 127° 54'W, on NTS map sheet 94L/13W.

Access to the property is via float plane to the Turnagain River, or by helicopter directly to the property. Charter aircraft are available in Dease Lake, 133 km to the southwest, and Watson Lake, 140 km to the northwest.

1.2 Claim Status

The White Bull property consists of a single twenty unit claim owned by Homestake Mining (Canada) Limited (Fig. 1.2). Assuming acceptance of the 1989 field work, claim data will be as follows:

CLAIM	UNITS	RECORD #	RECORD DATE	EXPIRY DATE
White Bull	20	2306	May 6,1982	May 6,1995



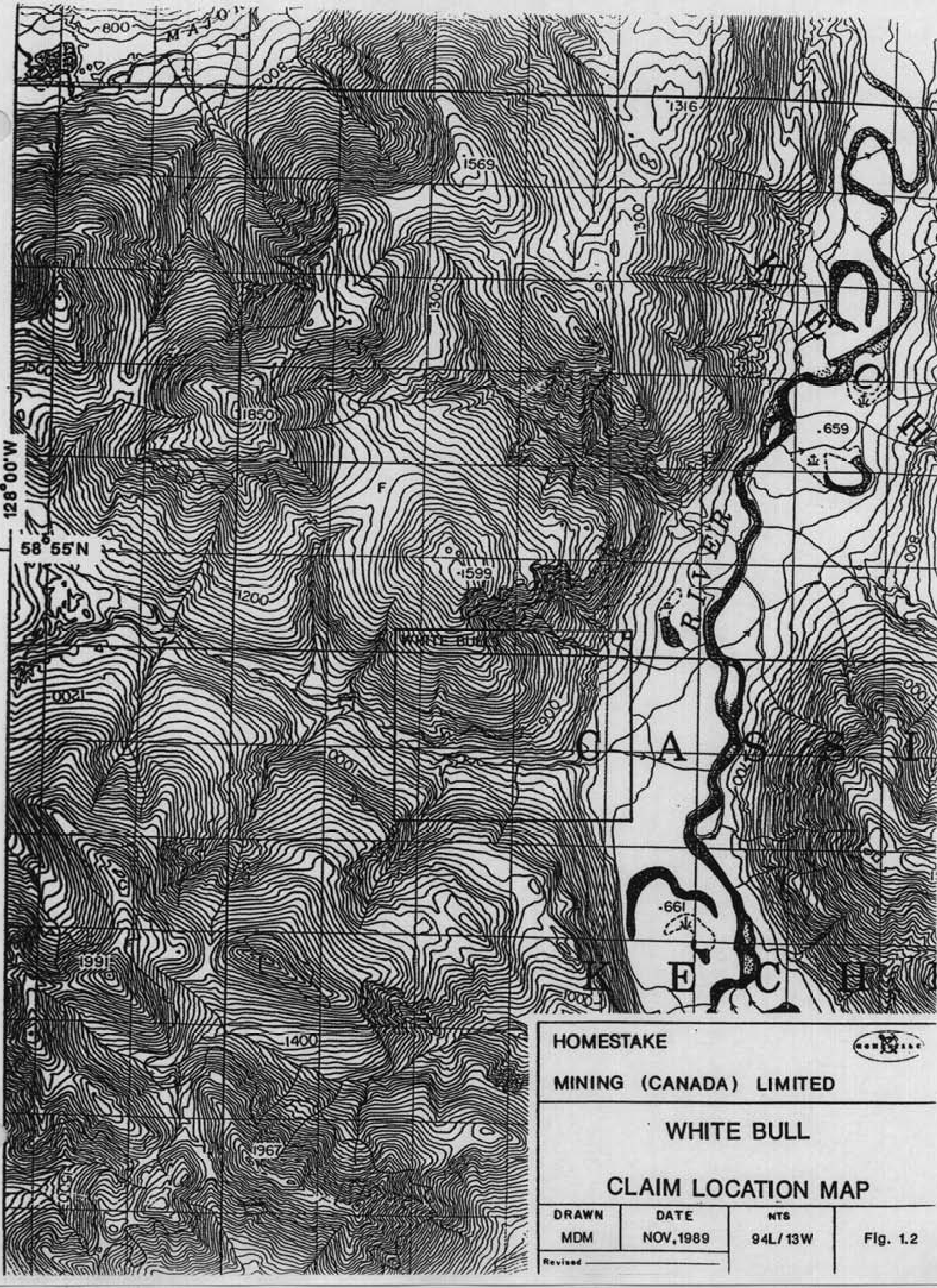
HOMESTAKE MINING (CANADA) LIMITED

WHITE BULL

LOCATION MAP

DRAWN	DATE	NTS	
MDM	NOV,1989	94L/13W	Fig. 1.1

Revised



HOMESTAKE

MINING (CANADA) LIMITED

WHITE BULL

CLAIM LOCATION MAP

DRAWN	DATE	NTS	
MDM	NOV, 1989	94L/13W	Fig. 1.2

Revised

1.3 Physiography

The White Bull property occupies a moderately steep, east-west trending valley, draining easterly into the Turnagain River. Elevations range from 700 to 1400m. The property lies within a large burned area and present vegetation is limited to aspen, slide alder and a few small pine groves. Several broad vegetation anomalies or "kill zones" characterize the central part of the claim.

1.4 Exploration History

The White Bull property was originally staked by Amoco Canada Petroleum Company Ltd. in 1977 as a shale-hosted lead-zinc target. Field work consisted of B-horizon soil sampling, soil profile sampling, prospecting and a limited two grid line RAD-EM survey. Results from this work discovered generally low and erratic Cu, Pb and Zn values and a strong EM response over the vegetation "kill zones". Amoco failed to discover the source of the geochemical anomalies and the property was allowed to lapse in the fall of 1981.

Esso Resources Canada Ltd. staked the White, Blue and Black Bull claims in May 1982 in order to evaluate the property in detail. Field work carried out in 1982 included linecutting, soil, rock and water sampling, geological mapping, HLEM and proton magnetometer surveying, and reconnaissance silt and heavy mineral sampling. Five additional claims were staked adjacent to the original claims in September 1982, to protect Esso's interest in the area.

Results from this work identified an extensive bleached and leached zone of sericite-quartz altered tuffs and argillites (unit 2 of Fig. 2.2) approximately 1900m long and 100-300m wide, as a possible sulphide-bearing horizon. Strong leaching has produced extensive Fe-sulphate and ferricrete crusts above this horizon, effectively masking the underlying stratigraphy and creating prominent vegetation "kill" zones. These zones were marked by spotty lead anomalies, anomalous water geochemistry (high Fl, Fe, Ag), anomalous whole rock geochemistry, and high EM responses. A 3500 ft drill program was proposed for the 1986 field season, but was never initiated.

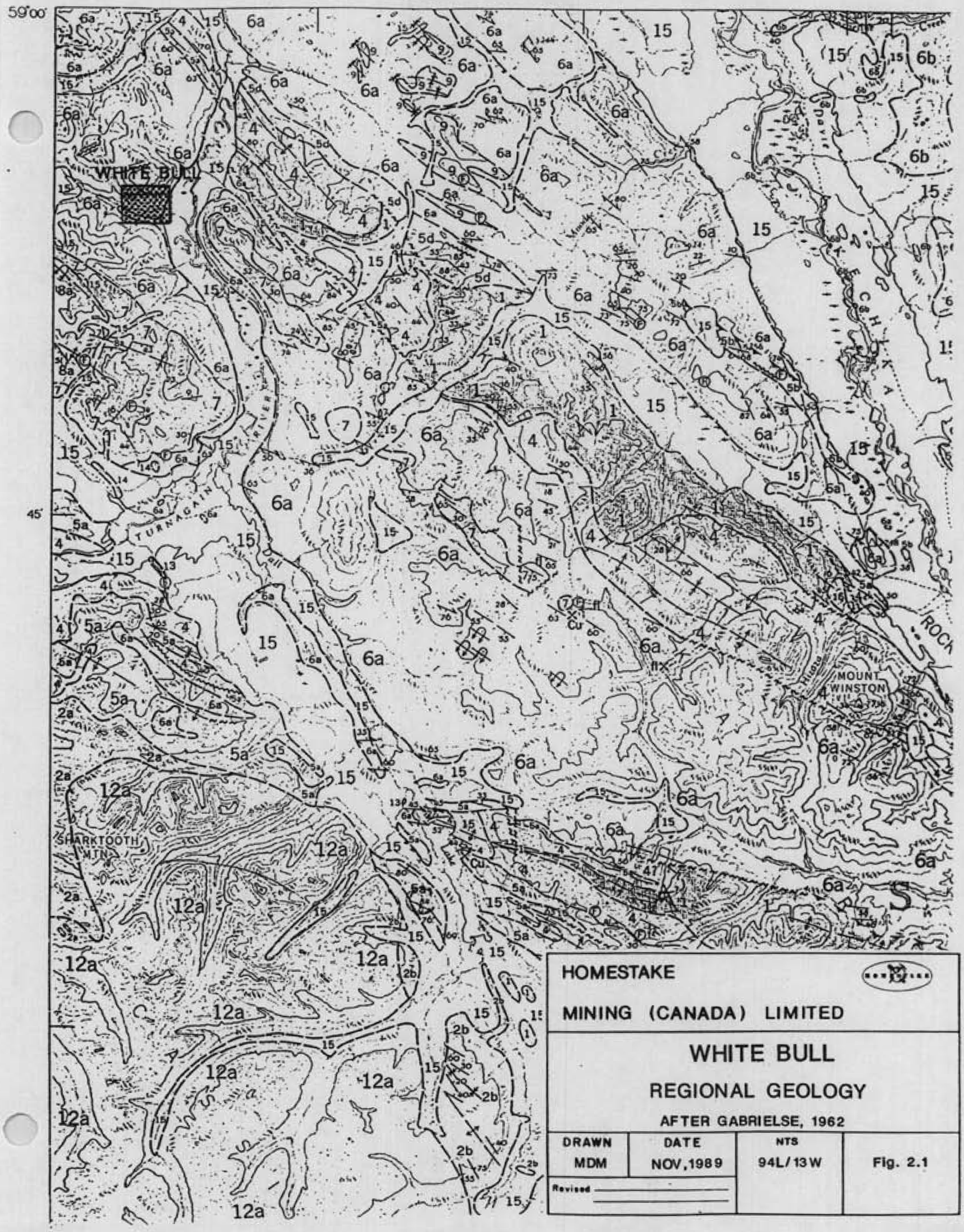
1.5 Current Work

The 1989 field work program was designed to re-evaluate the property for both its precious metal and base metal potential. The exploration program was conducted from Octcber 15-20, 1989, and consisted of geological mapping, and soil and rock sampling. Particular attention was given to the following targets:

a) the detection of additional showings of sulphide mineralization beneath the sulphate crust,

b) the identification of the source of the strong EM anomaly found by Esso Resources in 1983 that is coincident with the sulphate crusts, but may be attributed to argillites,

c) the detection of the source of anomalous silver values in waters draining the property (Everett and Cooper, 1983),



HOMESTAKE MINING (CANADA) LIMITED

WHITE BULL

REGIONAL GEOLOGY

AFTER GABRIELSE, 1962

DRAWN	DATE	NTS	
MDM	NOV, 1989	94L/13W	Fig. 2.1

Revised

TABLE 2.1A LEGEND

(to accompany fig.2.1, Regional Geology Map)

EOCENE?	14	Rhyolite, chalcedonic rhyolite brxx, brxx, tuff
U.CRET-EOCENE	13	Conglomerate, sandstone, shale
U.DEV-PERM	9	SYLVESTER GROUP: Limestone, chert-nodule lmst, cglt (NIZI FM.); sandstone, argillite, chert.
M.-U.DEV.	8	MCDAME GROUP: Black dolomite,dolomite breccia, limestone.
SILURIAN	7	SANDPILE GROUP: Dolomite, chert-nodule dolomite, sandstone, quartzite.
U.CAM-M.SIL	6a	KECHIKA & ROAD RIVER GROUPS: lower part: U.CAM to L.ORD Kechika Gp. argillaceous limestone, phyllitic limestone, calcareous shale; upper part: Road River Gp. thin ordovician black graptolitic shale, minor quartzite, Sil. graptolitic slst.
L.CAMBRIAN	5	ATAN GROUP: ROSELLA FM; Limestone, dolomite, minor shale.
	4	BOYA FM; Quartzite, shale, argillite, slate, conglomerate.
PRE-CAMBRIAN	1	Undifferentiated sediments.

2.0 GEOLOGY

2.1 Regional Setting

The White Bull property lies within the Omineca Tectonic belt, just west of the Rocky Mountain Trench and east of the Kechika Fault (Fig. 2.1).

The oldest rocks in the area consist of Pre-Cambrian interbedded clastic and carbonate rocks of the Stelkuz and Espee Formations (Gabrielse,1979). These rocks are exposed east of the White Bull property and west of the Kechika Fault, forming cores to two regional northwest-trending anticlines. Conformably overlying the Pre-Cambrian sediments are Lower Cambrian Atan Group rocks, which can be subdivided into the lower Boya Fm and the upper Rosella Fm (Fritz, 1980), (Table 2.1B).

Conformably overlying the Atan Group rocks are Middle Cambrian to Ordovician Kechika and Road River Group sediments and meta-sediments (Gabrielse 1960,1962). While the position of the basal contact of the Road River Group is still a matter of discussion, the two groups can be differentiated into distinct units based on type lithologies. The Kechika Group is comprised of a highly folded and cleaved assemblage of Middle Cambrian to pre-Lower Ordovician limestone, phyllitic limestone, phyllite, argillite, sandstone and limestone conglomerate (Gabrielse, 1960), locally intruded by greenstone sills and dykes. The Road River Group comprises Early Ordovician to Middle Silurian graptolitic and pyritic shale, slate, siltstone, argillaceous limestone and calcareous shale (Gabrielse, 1960). The two groups are laterally interfingered and exhibit lateral facies variations (Norford, 1962).

Road River rocks are generally overlain by Middle Silurian and minor Devonian dolomite, chert-nodule dolomite, sandstone, and quartzite of the Sandpile group (Gabrielse,1962). These rocks typically form blocky, resistant cliffs and ridges and are of variable thickness and lithology as a result of lateral facies changes (Gabrielse,1960). Contact relationships between the two units are typically unconformable or fault contacts.

Unconformably overlying the Sandpile Group rocks are platey limestone and black, fetid dolomite of the Middle to Upper Devonian McDame Group, and Upper Devonian to Permian (?) sediments and metavolcanics of the Sylvester Group (Gabrielse, 1979).

Two exposures of Upper Cretaceous to Eocene clastic sediments belonging to the Rapid Fm. (Gabrielse, 1960) occur to the northwest and southwest of White Bull. These rocks unconformably overlie some of the oldest rocks in the area, Lower Cambrian and Pre-Cambrian sediments, indicating a substantial period of local non-deposition of Paleozoic and Lower Mesozoic material.

The youngest rocks in the area are represented by Eocene rhyolite, chalcedonic rhyolite breccia, and tuffs lying unconformably on top of Sandpile rocks to the southwest of White Bull.

Intrusive rocks in the area are limited to the Cretaceous Cassiar batholith to the south, consisting mainly of biotite quartz monzonite and granodiorite (Gabrielse,1962).

Rocks southwest of the Rocky Mountain Trench are more complexly deformed than those to the northeast. Plunging, overturned and assymetrical folds, locally complicated by thrust faulting are particularly evident in Lower Cambrian and Pre-Cambrian rocks (Gabrielse, 1962), southeast of White Bull.

Faults in the area display a strong northwest trend and are dominated by the Rocky Mountain Trench Fault to the east and the Kechika Fault to the west, both of which show right-lateral displacement. Several smaller scale faults near the White Bull area trend northeast with right-lateral displacement, and may represent cross-structures to the main structural trend.

TABLE 2.1B STRATIGRAPHIC COLUMN

Geology after Gabrielse, 1960, 1962, 1979

(Relationships in the vicinity of White Bull)

PERIOD/EPOCH	FORMATION	LITHOLOGICAL DESCRIPTION
EOCENE?	----	rhyolite, rhyolite brxx, tuff
U.CRET to EOC.	RAPID	cglt, sandstone, shale
M.MISS	NIZI	lmst, chert-nodule lmst, cglt
U.DEV to L.MISS	SYLVESTER GP	greenstone, chert, argillite, slate, qzite, lmst, cglt, wcke
M. to U.DEV	McDAME GP	U: platey grey limestone L: black fetid dolomite
U.ORD to DEV?	SANDPILE GP	U: laminated dolomite, siltst, sandst, qzite, dolomite brxx L: dolomite, cherty dolomite, sandy dolomite, qzite, chert
ORDOVICIAN	ROAD RIVER GP	black laminated pyritic, grapto-litic shale, minor arg, lmst
U.CAM to L.ORD	KECHIKA GP	lmst, arg-lmst, phylitic lmst, phylite, cglt, calcareous arg.
L.CAMBRIAN	ATAN GP	ROSELLA FM: lmst, shale,dolomite BOYA FM: qzite, argillite, shale, siltstone, cglt, slate
PRE-CAMBRIAN	-----	undifferentiated sediments

2.2 Property Geology

2.2.1 Stratigraphy

Six mappable units were identified on the White Bull property (Fig. 2.2). The units are not necessarily in stratigraphic order due to structural complications. Units 2 to 6 are thought to represent Kechika Group stratigraphy, while Unit 1 represents a later felsic intrusion.

Unit 6 is a pale buff - grey phyllitic limestone exposed in the northern part of the claims. It is moderately cleaved and locally grades into the more strongly deformed but less competent phyllite of unit 5.

Unit 5 is a pale to medium grey, highly crenulated phyllite exposed throughout the property. This unit is likely derived from mixed volcanic ash and sediments. Locally this unit grades into a phyllitic limestone (unit 6, Fig. 2.2), which is exposed extensively to the north and northwest of the claim. This unit shows the highest degree of deformation as evidenced by extreme micro-folding on the property.

Unit 4, exposed along Sheep Creek and at the base of the Eastern "kill zone", consists of dark grey to black dolomite and graphitic to calcareous argillite. This unit is tentatively assigned to the Kechika Group, but lithologically the rocks are more typical of the Road River Group. This unit hosts several small occurrences of massive pyrite mineralization. Unit 4 locally underlies unit 5.

Unit 3 is exposed as buff weathering bluffs in the central part of the claim. Lithology consists of bedded cream coloured dolomite, limestone, minor sandy dolomite, chert or quartzite, and argillite. These rocks have previously been reported as Sandpile Group (Everett,1982), but may actually be a dolomitic member of the Kechika Group. This unit appears to be exposed as a structural window in the overlying rocks. The contact between this unit and unit 2 is marked by 0.5 to 3m of ferricrete but otherwise appears conformable.

Unit 2 consists of interbedded and/or interfolded dark grey graphitic to calcareous argillites, and tan sericite schist. Siliceous zones, possibly silica exhalites, are common along the lower contact. The schists may be derived from altered tuffaceous volcanic rocks of units 4 or 5. This unit hosts the distinct yellow to pale grey alteration "kill zones" immediately north of Sheep Creek (Fig. 2.2). Although the "kill zones" appear to be quite thick, particularly on the west side of the property, they are actually on a thin dip slope. The alteration cannot be traced beyond the current property boundary.

Unit 1 is a fine-grained, pale buff to grey felsic intrusion exposed as weakly gossanous bluffs in the northern section of the property (Fig. 2.2). The rocks are probably rhyo-dacitic in composition based partly on the presence of quartz eyes, and are pervasively silicified and K-feldspar altered.

2.2.2 Structure

Regionally, stratigraphy in the White Bull area strikes northwest and dips moderatly southwest, forming the southwest limb of a shallow northwesterly plunging anticline located approximately 7 km to the northeast of the property. This trend is also indicated by numerous smaller scale fold structures where fold axes typically trend 290° to 295°, plunge 10° to 20° and dip steeply northeast.

At least two phases of deformation are indicated by well-developed crenulation cleavage where an earlier foliation (S1) has been refolded by a later folding event (F2). The axial planes of the two fold events intersect one another at an obtuse angle. Competency contrasts are quite extreme with unit 3 displaying well-preserved bedding and no foliations whereas the other units commonly display two foliations and little preservation of primary textures. The contact between units 2 and 3 clearly displays minor and major phase two folds. It is unclear as to whether the contacts between sericite schists and argillites are tightly folded or whether this is a primary feature due to interbedding and/or an irregular alteration contact. Neither unit 2 nor 3 can be traced far beyomd the claim boundaries but the reasons for this are not clear. Additional mapping in the area surrounding the claim may result in a better understanding of the structural geology.

Moderate westerly dipping to sub-vertical normal faults trend north-northwest in the southeast corner of the claim, resulting in minor offsets in the stratigraphy. Within the "kill zones" rocks tend to look strongly sheared, however this may be due to their position within the core of a small fold, or as a result of weathering rather than faulting.

3.0 ECONOMIC GEOLOGY

The White Bull property occupies a favourable setting for a sediment-hosted Pb-Zn target. The following features pertaining to the White Bull property are recognized as potential ore controls for sediment-hosted sulphide deposits, such as Sullivan or Cirque type deposits (Lydon and Sangster,1984):

-spatial association with intracontinental or continental margin basins; usually thick successions of clastic rocks.

Kechika and Road River rocks were likely the result of deposition in a moderate to deep-water environment, while Sandpile rocks were deposited mainly in shallow ,well-aerated waters on a slowly subsiding shelf or platform (Gabrielse,1960).

-second order basin environment, recognized in part by rapid lateral facies changes.

Kechika,Road River and Sandpile Group rocks all exhibit strong lateral variations in thickness and lithology.

-Evidence of syn-depositional tectonic activity.

Abrupt lateral changes in lithology may be attributable to growth faults or grabens.

-Evidence of syndepositional geothermal activity; i.e. presence of volcanic rocks in the succession, presence of other chemical sediments of hydrothermal origin (chert, barite, sediments enriched in Fe or Mn),or of biogenic origin resulting from hydrothermal activity (sediments enriched in C, P, Si).

There are thin interbeds of sericitic tuffaceous volcanics within the calcareous and carbonaceous argillites as well as sulphate (+/- sulphide) rich horizons, on the White

Bull property.

3.1 Alteration

Alteration on the White Bull property is dominated by several broad zones of pale yellow to bright orange to black earthy weathered material forming distinct vegetation "kill zones" north of Sheep Creek (Fig. 2.2). These zones extend discontinuously along a strike length of 1800m and vary in width from 100 to 300m. This material has previously been described as a sulphate crust, forming a leached cap over a massive sulphide horizon located approximately 2-20m below surface (Everett,1982).

The "kill zones" are cemented by a variety of Fe-oxides (limonite, jarrosite), Fe-sulphates and gypsum, and locally native sulphur. X-Ray diffraction analyses on bright orange, yellow and blue sulphate material occurring throughout the "kill zones" has identified it as coquimbite; Fe2(SO4)3.9H2O (Everett, 1982). Ferricrete horizons are common, especially in creek gullies.

It was possible to dig through this weathered material in several places, and the underlying rocks were found to be unmineralized interbedded argillites and sericite schists (Unit 2, Fig. 2.2).

Other alteration assemblages include moderate patchy to pervasive quartz-sericite-pyrite alteration of dolomites, tuffaceous volcanics and rarely, argillites. Pyrite content is typically less than 3%.

The argillites are locally graphitic, often calcareous, and occasionally coated with a powdery white to pale yellow precipitate.

Apple green coloured blebs resembling mariposite were found in several locations (WBC-04, -08; Fig. 2.2), in association with sericite altered schistose volcanics.

All the units are cut by unmineralized massive, white quartz and calcite veins, occasionally associated with rusty-brown iron-carbonate alteration. Vein widths are typically less than 30cm, but can occur in "vein swarms" up to 10m in width. Coarse white barite veins and honey-brown siderite veins are less common (WBP-10, M97-5; Fig. 2.2). Whole rock ICP analysis of sample WBP-10 returned a value of 330,367 ppm Ba, however this occurrence may actually be a bed as opposed to a barite vein.

The rhyo-dacite intrusion (Unit 1, Fig. 2.2) is strongly pervasively altered by fine-grained quartz-K-Feldspar which gives a buff to pale grey colour and masks most original textures. Previous thin-section work has identified the K-Feldspar as an alteration product, based on its trachytoid texture that locally overprints primary phenocryst phases. Potassium-argon dating of this material gave a Middle Cretaceous age of 113+/-4 Ma to the hydrothermal event responsible for the alteration (Everett, 1983). Whole rock ICP analysis of this material returned a very high Potassium value of 13.03 wt.% K.

3.2 Mineralization

Mineralization on the White Bull property consists of fine to medium grained disseminated to massive pyrite, with minor sphalerite. Disseminated pyrite, in amounts ranging from 1 to 3%, is most commonly found in association with sericitic alteration and/or pervasive silicification. Pyrite occurs as irregular veinlets and blobs in argillite without apparent alteration, and as narrow shear fillings within areas of intense sericite alteration. Narrow bands or lenses of semi-massive pyrite were found in several locations. At sample location WBC-01 in Sheep Creek, massive pyrite occurs in pods up to 3cm in diameter within light grey chert and buff dolomite (Fig. 2.2). Further to the north-west (WBC-03), massive pyrite occurs parallel and sub-parallel to foliation planes within argillite, across a width of 50cm. At this same location is a 3-5m section of brecciated argillite cemented by quartz-calcite-pyrite material. A 30cm shear within sericite schist contains 30-35% pyrite and abundant gypsum along foliation planes (WBP-11, Fig. 2.2).

Several additional discontinuous pyritic zones were also identified and sampled, however they lack continuity and size, and thus have little economic significance with the exception that these types of occurrences are common in rocks peripheral to sedimentary exhalitve deposits. A more important consideration is whether or not the presence of massive sulphides is obscured by leaching. The presence of ferricrete, or transported gossans, particularly in some of the gullies on the southeast part of the claim, indicate at least some iron leaching has taken place. Additionally, a 2m wide layer of a very porous siliceous box work is present at sample location #R9-WBP13B. However, it is not known whether the leached filling of this horizon consisted of sulphides or sulphate minerals. The presence of relateively fresh pyrite at numerous locations suggests that leaching of sulphides is not that extensive.

3.3 Geochemistry

3.3.1 Soil Geochemistry

Two soil lines were run parallel to the original Esso grid to further define a weak northeast-trending Zn anomaly centred at 2+00W/1+00N on the Esso grid. Line 1+00W was sampled from 0+00N to 4+00N on 25m stations and line 6+00W was sampled from 1+00N to 7+75S also on 25m stations. Several isolated soil samples were collected downslope from the "kill zones" to test for leaching effects. A total of 56 soil samples were collected.

The samples were collected with a mattock from the B-horizon, placed in Kraft paper sample bags and air dried. The samples were then shipped to Acme Analytical Labs for 30-element ICP analysis.

Soil sample results are tabled in Appendix I. Lead and zinc values were plotted and contoured together with those from the 1982 survey (Fig. 3.1, 3.2).

Lead values range from 11 to 105 ppm in 1989, and from 4 to 2300 ppm in 1982. A moderately strong, well developed Pb anomaly 75m wide and 1800m long trends approximately 100° across the southern part of the grid. This anomaly is locally coincident with the sulphate crust zones and mimics fold morphology. Other Pb anomalies also trend roughly east-west but are weakly defined.

Zinc values range from 17 to 1654 ppm in 1989, and from 4 to 900 ppm in 1982. A moderately well-defined Zn anomaly 50 to 350m wide and 1200m long, trends at 080° across the northwest part of the grid. This zone exhibits moderate warping, similar to that seen within the Pb anomaly to the south. A second strong Zn anomaly trends east-west and ranges from 50m wide at 14+00E to 400m wide at 6+00E. However it is cut off abruptly at 5+00E, possibly by a small fault. Several weaker Zn anomalies in the southern part of the grid are locally coincident with Pb anomalies. An isolated stream sediment sample from a damp gulley at 3+00E/1+00N gave the highest Zn value of 1654 ppm.

Copper, silver and gold values are typically low across the entire grid, with rare anomalous Ag values to 1.6 ppm. A spot arsenic high of 117 ppm at 6+00W/6+00S corresponds to Pb, Zn and Sr highs, and may warrant further investigation.

3.3.2 Rock Geochemistry

A total of 39 rock chip samples were collected from the White Bull property and shipped to Acme Analytical Labs in Vancouver, B.C. for 30-element ICP analysis (Fig. 2.2). Samples consist of representative grabs or 1-2 m chips across altered or mineralized exposures. Sample sites were marked with orange flagging tape and located using topography. Individual sample descriptions are listed in Appendix II and results are tabled in Appendix I.

Gold values all registered below the ICP detection limit of 3ppm Au. Silver values were also low, ranging from 0.1 to 2.2 ppm Ag with typical values in the 0.1 to 0.7 ppm Ag range.

Base metal values were weakly anomalous, but show poor correlation of copper, lead and zinc. Only one sample registered >100ppm Cu (sample # R9WBC-03), which was a grab sample of massive pyrite banding proximal to a 3-5m band of quartz-carbonate-pyrite fracture fill. This sample also carried the highest lead value (326ppm) and was weakly anomalous in arsenic (63ppm). Several other samples contained elevated values of lead ranging from 110 to 278ppm Pb relative to a background value of 35ppm. Anomalous lead seems to be associated with rocks containg disseminated to massive pyrite, or with transported gossan material. Zinc values ranged from 1 to 113 ppm Zn, with only two values >100ppm Zn (M96-1, R9WBP-10). These two values were associated with sericite-chlorite-pyrite altered felsic tuffs, and siliceous argillite-chert with massive barite, respectively. Sample M96-1 is coincident with a strong northeast trending zinc soil anomaly.

A sample of intensely oxidized gossanous material (#31142) has an unusual geochemical signature. It contained very high values of Fe (35.17%), As (661ppm), Mo (66ppm), V (1210ppm), P (2.306%) and Cr (469ppm); one to two orders of magnitude greater than the average value. It was very poor in Ca (0.15%).

A total of six rock chip samples were sent to Acme Analytical Labs for ICP-whole rock analysis (sample #'s: R9WBP--04, -07, -08, -10, -14, 30364). Results from these analyses are tabled in

APPENDIX I.

Previous workers were concerned that geochemical analyses of rocks would be misleading since the sulphate zones indicate extensive leaching. Certainly, this would be the case for gossanous or limonitic material but many of the rocks analysed contained fresh sulphides with no signs of oxidation.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the 1989 exploration program, the following conclusions and recommendations have been made:

1) The White Bull property is underlain by Upper Cambrian to Middle Silurian Kechika Group sediments, carbonates, tuffaceous volcanics and schists, and possibly by Middle Silurian dolomites of the Sandpile Group.

2) A broad zone of transported oxide and sulphate material forms a distinct vegetation "kill zone" across the central portion of the claim, and may indicate a massive sulphide horizon at depth.

3) Several small occurrences of semi-massive pyrite were located, including massive pyrite pods, pyrite bands sub-parallel to foliation planes, and quartz-calcite-pyrite fracture fillings.

4) Soil geochemistry identified a weak zinc anomaly and a moderate lead anomaly that appear associated with a stratigraphic horizon.

5) The White Bull property illustrates several features recognized as potential ore controls for sediment-hosted sulphide

deposits (Lydon and Sangstre, 1984), including:

a) spatial association with intracontinental or continental marginal basins; usually recognized by thick successions of clastic rocks,

b) second order basin environments, recognized in part by rapid lateral facies changes,

c) syn-depositional tectonic activity

d) syn-depositional geothermal activity (i.e. volcanic episodes, chemical sediments of a hydrothermal origin.)

6) Reversal of presumed fault displacements along the Rocky Mountain Trench Fault could theoretically bring the White Bull property into close spatial and stratigraphic association with the Cirque Pb-Zn deposit to the southeast.

7) No new significant occurrences of massive sulphide or precious metal mineralization were discovered with this exploration program, and geochemical analyses generally returned low values for both precious and base metals. Favourable structural and stratigraphic evidence, as outlined in 5) above, indicates that the property occupies a positive environment for a sediment-hosted Pb-Zn deposit. However, geological mapping suggests that the extent of favourable stratigraphy on the White Bull property is limited and therefore both grade and size potential indicators are lacking.

8) The sum of field work evidence suggests that the alteration on the property is syngenetic and related to predominantly sulphate deposition in a sedimentary exhalitive environment. However, the nature and significance of the highly potassium altered rocks remains equivocable.

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6.0 STATEMENT OF COSTS

LABOUR: October 16-20,1989

Sr. Project Geologist	P.Holbek	5 days @ $250/day	$1250
Consultant	C.Hrkac	5 days @ $250/day	1250
Geologist	M.McPherson	5 days @ $165/day	825
Geologist	P.Southam	5 days @ $165/day	825
		Total	$4150

ANALYSIS:

Acme Analytical Lab:

30 element ICP:	56 soil samples @ $12/sample	$ 672
	39 rock samples @ $15/sample	$ 585
Whole rock ICP:	6 rock samples @ $ 9/sample	$ 54
	Total	$1311

LOGISTICS:

Food and Accomodation 16 man-days @ $50/day	$ 800
Canadian Airlines - Vanc. to Smithers rtn. 3 @ $452	$1356
Central Mtn. Air - Smithers to Dease Lk. rtn 3 @ $320	$ 960
Freight	$ 300
Yukon Airways Limited - Bell 206 helicopter 7.5 hrs. @ $670/hr including fuel	$5025
Total	$8441

Draughting and Reproduction	$ 260
Report Preparation	$1800
Sub-Total	$15962
10% DSS	$ 1596
TOTAL	$17558

STATEMENT OF QUALIFICATIONS

I, Peter Holbek, DO HEREBY CERTIFY THAT:

1) I am a project geologist presently employed by Homestake Mineral Development Company located at 1000 - 700 West Pender Street, Vancouver, B.C. V6C 1G8.

2) I graduated from the University of British Columbia with a B.Sc. (Hons.) in geology in 1980 and an M.Sc. in geology in 1988.

3) I have actively practiced my profession in North America since 1975.

4) The work described herein was done by me or under my direct supervision.

DATED THIS 15th DAY OF February ,1990 AT VANCOUVER, B.C.

Peter Holbek

STATEMENT OF QUALIFICATIONS

I, Margaret D. McPherson, DO HEREBY CERTIFY THAT:

1. I am presently employed as a geologist with Homestake Mineral Development Company located at #1000-700 West Pender Street, Vancouver, B. C. V6C 1G8.

2. I graduated from the University of British Columbia in 1987, with a Bachelor of Science degree in Geology.

3. I have been employed in the mineral exploration industry since 1985.

4. The work described in this report was done with my participation.

Margaret McPherson

February 1, 1990

APPENDIX I

ANALYTICAL RESULTS

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

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 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 AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: P1-P2 SOIL P3-P4 ROCK

DATE RECEIVED: OCT 25 1989 DATE REPORT MAILED: Nov 3/89. SIGNED BY. C. Leong ..D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

Homestake Mineral Dev. Co. PROJECT 5710-35 File # 89-4469 Page 1

SAMPLE#	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Ni PPM	Co PPM	Mn PPM	Fe %	As PPM	U PPM	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPM	Ca %	P %	La PPM	Cr PPM	Mg %	Ba PPM	Ti %	B PPM	Al %	Na %	K %	W PPM
35-WB-2 L6W 1+00N	2	19	32	88	.2	44	12	969	4.04	6	5	ND	6	36	1	2	2	37	.57	.028	46	36	.49	391	.05	3	1.73	.01	.11	1
35-WB-2 L6W 0+75N	1	17	19	56	.1	28	13	457	3.84	7	5	ND	6	74	1	2	2	16	2.12	.037	32	19	.36	129	.01	7	1.04	.01	.07	1
35-WB-2 L6W 0+50N	1	10	23	59	.1	34	11	449	3.63	11	5	ND	7	27	1	2	2	32	.42	.021	32	32	.43	290	.04	6	1.63	.01	.09	1
35-WB-2 L6W 0+25N	1	13	4	40	.1	13	4	275	1.25	15	5	ND	1	346	1	2	2	4	16.63	.059	9	8	.73	99	.01	6	.27	.01	.03	1
35-WB-2 L6W 0+00	2	22	22	87	.1	41	12	549	3.85	19	5	ND	6	56	1	2	2	33	1.41	.026	33	39	.54	348	.06	8	1.48	.01	.14	1
35-WB-2 L6W 0+25S	1	11	27	99	.2	35	10	603	3.76	3	5	ND	3	34	1	2	2	33	.58	.111	30	32	.41	549	.05	12	1.40	.01	.18	1
35-WB-2 L6W 0+50S	2	21	27	105	.1	45	13	1117	3.83	9	5	ND	5	31	1	2	2	32	.44	.077	34	34	.42	435	.04	8	1.49	.01	.18	1
35-WB-2 L6W 0+75S	2	16	24	110	.1	37	11	1064	3.87	2	5	ND	3	28	1	2	2	30	.38	.107	34	33	.39	482	.04	6	1.39	.01	.15	2
35-WB-2 L6W 1+00S	2	18	26	152	.2	38	13	1174	4.00	9	5	ND	4	25	1	2	2	37	.40	.051	30	32	.43	490	.07	4	1.57	.01	.14	1
35-WB-2 L6W 1+25S	2	20	32	176	.3	36	18	2164	3.80	3	5	ND	3	28	1	2	2	30	.44	.152	27	31	.37	725	.05	6	1.38	.01	.15	1
35-WB-2 L6W 1+50S	4	15	50	77	.3	25	8	234	3.84	19	5	ND	5	39	1	2	2	22	.23	.068	35	21	.24	504	.04	4	.89	.01	.20	1
35-WB-2 L6W 1+75S	2	11	30	73	.2	30	14	563	3.89	7	5	ND	4	30	1	2	2	35	.34	.071	28	32	.42	402	.05	8	1.33	.01	.13	1
35-WB-2 L6W 2+00S	2	15	23	81	.1	30	10	470	3.55	8	5	ND	6	32	1	2	4	32	.25	.049	34	33	.43	455	.05	8	1.20	.01	.16	1
35-WB-2 L6W 2+25S	3	18	44	138	.5	31	12	932	3.74	9	5	ND	4	37	1	2	2	23	.29	.064	44	20	.23	477	.02	4	.89	.01	.12	1
35-WB-2 L6W 2+50S	2	14	42	216	.3	45	12	434	4.15	16	5	ND	6	32	1	2	2	35	.28	.086	25	40	.49	346	.06	3	1.49	.01	.16	1
35-WB-2 L6W 2+75S	3	22	31	140	.3	39	12	375	3.91	16	5	ND	6	33	1	2	2	29	.24	.064	38	28	.38	338	.04	5	1.11	.01	.15	1
35-WB-2 L6W 3+00S	5	33	40	235	.3	44	15	742	4.29	15	5	ND	6	44	1	2	2	29	.38	.118	53	33	.38	401	.04	6	1.10	.01	.14	1
35-WB-2 L6W 3+25S	2	17	45	216	.3	39	13	731	4.31	14	5	ND	6	45	1	2	2	30	.40	.140	56	27	.32	587	.03	10	1.11	.01	.15	1
35-WB-2 L6W 3+50S	3	18	36	198	.6	39	14	652	4.42	14	5	ND	6	42	2	2	2	32	.32	.148	35	24	.35	561	.05	7	1.24	.01	.13	1
35-WB-2 L6W 3+75S	4	19	33	108	.2	34	13	363	4.31	23	5	ND	7	45	1	2	2	28	.30	.058	51	25	.31	420	.03	6	1.02	.01	.14	1
35-WB-2 L6W 4+00S	4	12	41	75	.2	21	11	328	4.36	13	5	ND	6	35	1	2	2	23	.22	.041	37	15	.21	543	.01	6	.88	.01	.10	1
35-WB-2 L6W 4+25S	4	36	31	95	.9	37	13	278	3.39	17	5	ND	5	40	1	2	2	11	.28	.050	40	7	.11	416	.01	4	.53	.01	.08	1
35-WB-2 L6W 4+50S	7	24	33	53	.3	23	23	137	5.98	19	5	ND	6	75	1	2	2	14	.28	.109	38	6	.08	469	.01	8	.43	.01	.08	1
35-WB-2 L6W 4+75S	13	5	42	20	.1	7	5	26	3.21	19	5	ND	17	77	1	2	2	6	.05	.048	76	3	.03	191	.01	6	.25	.01	.12	1
35-WB-2 L6W 5+00S	7	14	16	23	.1	5	6	58	4.99	14	5	ND	12	137	1	2	2	3	.16	.095	47	2	.03	68	.01	5	.34	.01	.26	1
35-WB-2 L6W 5+25S	8	19	18	17	.2	11	7	58	5.29	13	5	ND	13	111	1	2	3	2	.10	.081	50	1	.03	57	.01	5	.39	.01	.29	1
35-WB-2 L6W 5+50S	6	20	17	42	.2	19	12	383	3.67	29	5	ND	10	105	1	2	2	9	.23	.057	46	4	.07	159	.01	7	.36	.01	.10	1
35-WB-2 L6W 5+75S	16	42	46	71	1.6	18	12	105	7.48	44	5	ND	8	975	1	8	3	95	.11	.236	15	18	.04	68	.01	12	.33	.02	.32	1
35-WB-2 L6W 6+00S	18	60	67	419	.6	86	13	348	7.91	117	5	ND	3	216	3	10	2	72	3.32	.164	7	21	1.18	376	.01	19	.73	.01	.07	1
35-WB-2 L6W 6+25S	9	34	105	176	1.8	51	16	490	5.98	46	5	ND	4	122	1	3	2	36	3.06	.091	29	12	1.48	328	.01	9	.45	.01	.08	2
35-WB-2 L6W 6+50S	6	15	61	103	.6	26	11	343	5.21	28	5	ND	7	38	1	2	2	27	.34	.042	32	11	.20	413	.01	5	.66	.01	.07	1
35-WB-2 L6W 6+75S	7	18	68	162	.3	44	17	679	6.73	30	5	ND	7	30	1	3	2	30	.28	.042	34	13	.23	540	.01	12	.84	.01	.08	1
35-WB-2 L6W 7+00S	22	65	35	327	1.3	110	13	335	2.98	23	5	ND	1	181	1	3	2	27	3.76	.142	14	10	1.30	230	.01	15	.45	.01	.05	1
35-WB-2 L6W 7+25S	8	19	60	229	.2	58	15	598	4.19	26	5	ND	5	50	1	2	2	24	.72	.080	27	10	.24	433	.01	5	.93	.01	.06	1
35-WB-2 L6W 7+50S	2	11	11	47	.2	16	4	233	1.31	5	5	ND	1	304	1	2	2	4	13.50	.076	5	4	1.20	170	.01	8	.16	.01	.02	1
35-WB-2 L6W 7+75S	3	21	38	105	.1	36	12	549	3.72	14	5	ND	6	46	1	2	2	23	1.16	.045	23	16	.40	422	.01	5	1.18	.01	.09	1
STD C	19	63	44	132	6.8	67	31	961	4.07	44	21	7	38	48	18	15	21	59	.48	.089	38	57	.87	174	.06	39	1.98	.06	.14	13

SAMPLE#	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Ni PPM	Co PPM	Mn PPM	Fe %	As PPM	U PPM	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPM	Ca %	P %	La PPM	Cr PPM	Mg %	Ba PPM	Ti %	B PPM	Al %	Na %	K %	W PPM
1+00W 4+00N	2	30	30	86	.2	44	15	344	3.13	47	5	ND	2	109	1	2	2	14	2.49	.070	16	22	.41	234	.01	3	.62	.01	.09	1
1+00W 3+75N	1	27	18	55	.1	43	15	208	3.12	47	5	ND	4	81	1	3	2	10	2.35	.049	25	18	.52	102	.01	2	.48	.01	.05	1
1+00W 3+50N	1	12	31	109	.3	45	12	499	4.54	26	5	ND	5	28	1	2	2	41	.49	.030	21	34	.54	226	.04	8	2.24	.01	.07	1
1+00W 3+25N	1	15	25	110	.3	41	10	349	4.25	17	5	ND	5	24	1	2	2	39	.40	.033	20	32	.52	371	.05	7	2.24	.01	.06	1
1+00W 2+75N	4	15	29	159	.5	32	10	453	3.37	13	5	ND	2	38	1	3	2	25	.30	.052	24	26	.36	257	.03	8	1.15	.01	.14	1
1+00W 2+50N	4	16	27	104	.5	36	9	313	3.43	19	5	ND	1	50	2	3	2	27	.34	.108	28	28	.38	247	.03	4	1.10	.01	.16	1
1+00W 2+25N	1	14	31	139	1.0	38	10	382	3.53	13	5	ND	3	35	1	2	2	35	.41	.263	24	35	.51	445	.06	7	1.55	.01	.11	1
1+00W 2+00N	4	14	37	158	.6	32	8	374	3.48	26	5	ND	1	45	2	2	2	27	.20	.100	32	24	.26	381	.03	7	1.03	.01	.13	1
1+00W 1+75N	3	19	36	372	.7	43	13	623	3.73	11	5	ND	1	43	7	3	2	35	.34	.155	31	32	.33	332	.04	5	1.21	.01	.10	1
1+00W 1+50N	3	19	36	183	1.3	40	12	755	3.40	7	5	ND	1	54	2	2	2	31	.28	.168	37	32	.28	441	.03	2	1.02	.01	.10	1
1+00W 1+25N	4	28	58	177	.3	48	13	1930	5.73	20	5	ND	6	43	1	2	2	42	.34	.067	185	32	.39	382	.03	8	1.31	.01	.11	1
1+00W 1+00N	4	35	76	301	.3	48	17	2077	5.55	23	5	ND	8	56	2	2	2	40	.71	.124	206	28	.40	570	.08	8	1.50	.01	.15	1
1+00W 0+75N	1	19	34	299	1.2	52	13	1216	4.30	12	5	ND	4	29	1	3	2	32	.43	.152	31	30	.41	462	.08	5	1.60	.01	.15	1
1+00W 0+50N	3	17	44	84	.4	30	7	576	3.59	24	5	ND	3	37	1	2	2	23	.30	.046	33	16	.18	490	.04	9	.79	.01	.15	1
1+00W 0+25N	6	24	53	104	.5	44	10	321	4.51	59	5	ND	5	58	1	2	2	24	.29	.057	49	21	.25	500	.03	8	.88	.01	.21	1
1+00W 0+00N	5	24	57	97	.7	38	10	274	3.93	37	5	ND	8	51	1	2	2	20	.22	.041	49	20	.28	478	.02	5	.94	.01	.18	2
30356	4	69	38	42	.4	102	21	158	9.10	10	5	ND	2	103	1	2	2	25	1.62	.191	8	24	.17	26	.01	10	.35	.01	.11	1
30358	2	48	27	60	.2	90	15	90	10.48	16	5	ND	2	176	1	2	2	33	4.32	.151	6	21	.07	21	.01	34	.19	.05	.16	1
30361	3	14	36	1654	.5	84	5	78	2.19	13	5	ND	4	218	8	2	2	11	11.33	.088	21	9	.30	164	.01	15	.44	.01	.08	1
D9-WBP-01	1	79	19	117	.3	21	10	58	19.79	8	5	ND	4	33	2	2	2	21	2.37	.067	3	136	.06	18	.01	16	.41	.02	.22	1
STD C	18	61	35	132	6.5	68	29	998	3.93	41	18	7	37	49	17	14	22	56	.44	.087	38	53	.80	176	.06	33	1.94	.06	.14	12

SAMPLE#	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Ni PPM	Co PPM	Mn PPM	Fe %	As PPM	U PPM	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPM	Ca %	P %	La PPM	Cr PPM	Mg %	Ba PPM	Ti %	B PPM	Al %	Na %	K %	W PPM
M96-1	1	98	25	111	.5	101	28	633	6.09	2	5	ND	1	211	1	2	2	92	9.27	.176	8	215	3.65	16	.01	6	3.44	.01	.04	1
M96-2	1	3	5	8	.1	3	1	122	.75	2	5	ND	1	692	1	2	2	2	40.78	.012	5	10	1.69	7	.01	6	.06	.01	.02	1
M97-5	2	4	7	5	.1	8	1	444	.64	2	5	ND	1	269	1	2	2	2	15.36	.009	9	12	.20	9	.01	2	.08	.01	.01	1
R9-WBC-01	1	36	170	24	1.3	21	7	610	13.85	47	5	ND	1	122	1	8	2	9	15.65	.004	2	20	4.22	19	.01	6	.05	.02	.04	2
R9-WBC-02	1	43	118	10	1.3	9	3	464	12.70	26	5	ND	1	74	1	9	2	4	15.10	.004	2	11	7.06	8	.01	6	.08	.01	.03	2
R9-WBC-03	1	100	326	12	1.0	54	22	571	18.60	63	5	ND	1	75	1	2	2	5	6.72	.152	3	10	1.86	4	.01	2	.22	.01	.03	1
R9-WBC-05	2	6	18	1	.1	6	1	53	.59	6	5	ND	1	7	1	2	2	1	.25	.014	2	5	.13	62	.01	4	.06	.01	.04	1
R9-WBC-06	2	15	25	20	.3	19	4	104	3.26	30	5	ND	1	17	1	2	2	1	1.36	.007	2	7	.20	25	.01	16	2.95	.01	.01	4
R9-WBC-06A	1	44	267	67	2.2	11	3	105	17.96	39	5	ND	1	9	1	2	2	1	1.06	.001	2	16	.11	5	.01	2	.22	.01	.01	1
R9-WBC-08	3	5	12	1	.1	10	1	32	1.04	8	5	ND	1	59	1	2	2	5	.06	.265	2	11	.01	181	.01	3	.08	.01	.03	1
R9-WBP-02	1	14	150	27	.7	24	7	1285	10.09	24	5	ND	1	70	1	2	2	9	21.20	.008	2	8	5.32	22	.01	7	.19	.01	.01	3
R9-WBP-03	1	6	278	4	.3	12	4	451	9.83	23	5	ND	1	55	1	2	2	5	22.24	.011	2	1	2.39	12	.01	3	.01	.01	.14	1
R9-WBP-04	2	50	186	8	.8	61	51	849	8.78	12	5	ND	1	139	1	2	2	18	29.12	.127	7	1	4.67	18	.01	11	.13	.01	.04	1
R9-WBP-05	2	11	13	58	.3	19	10	1292	5.28	9	5	ND	1	318	1	2	2	6	25.10	.271	4	3	7.99	48	.01	29	.17	.01	.03	1
R9-WBP-06	1	47	140	63	.5	80	19	1075	14.10	15	5	ND	1	60	1	2	2	6	17.46	.027	3	26	6.52	14	.01	8	.58	.01	.01	1
R9-WBP-07	2	2	8	4	.1	6	1	41	.32	3	5	ND	2	14	1	2	2	1	.40	.006	9	8	.15	241	.01	11	.15	.01	.04	1
R9-WBP-08	6	5	11	5	.1	25	4	47	1.38	5	5	ND	1	43	1	2	2	5	.54	.011	3	6	.16	35	.01	4	.12	.01	.04	1
R9-WBP-09	3	3	61	1	.3	8	1	36	.50	3	5	ND	1	23	1	2	2	3	.04	.001	5	9	.01	355	.01	4	.06	.01	.04	1
R9-WBP-10	5	11	85	113	.4	15	3	12	.67	16	6	ND	2	842	1	2	2	44	.06	.015	7	6	.01	3633	.01	2	1.09	.01	.01	1
R9-WBP-11	2	69	29	17	.5	110	22	327	16.66	20	7	ND	1	98	1	2	2	18	3.28	.032	4	31	.53	4	.01	5	.28	.01	.07	1
R9-WBP-12	3	3	9	3	.1	8	1	26	.58	3	5	ND	1	15	1	2	2	1	.07	.001	2	6	.01	108	.01	6	.08	.01	.03	1
R9-WBP-13	8	3	16	1	.2	5	1	19	1.04	4	5	ND	1	113	1	2	2	12	.01	.003	4	4	.01	75	.01	7	.09	.02	.07	1
R9-WBP-13B	1	3	127	9	.6	8	1	15	.39	3	5	ND	2	991	1	2	2	6	.39	.003	20	11	.02	31	.01	9	.30	.02	.04	1
R9-WBP-14	4	2	10	3	.1	4	1	19	.40	4	5	ND	15	23	1	2	2	1	.02	.013	48	2	.01	420	.01	6	.16	.01	.10	1
R9-WBP-15	1	27	110	6	.9	17	5	404	14.88	39	5	ND	1	49	1	2	2	2	5.89	.004	2	7	1.80	5	.01	6	.01	.01	.01	1
R9-WBP-16A	2	29	83	14	.3	87	27	215	8.66	60	5	ND	1	25	1	2	2	5	1.26	.110	2	1	.76	2	.01	11	.42	.01	.06	1
R9-WBP-16B	2	3	25	7	.2	8	1	50	1.39	7	5	ND	1	13	1	2	2	1	1.41	.004	2	5	.16	25	.01	8	.11	.01	.04	1
30357	2	9	5	25	.1	25	6	437	1.68	9	5	ND	1	598	1	2	2	7	14.26	.024	3	10	4.58	37	.01	4	.12	.01	.01	1
30359	2	3	8	7	.1	6	1	19	.30	4	5	ND	1	9	1	2	2	1	.06	.002	6	7	.02	184	.01	3	.17	.01	.04	1
30360	5	5	12	4	2.0	14	1	56	.84	5	5	ND	1	28	1	2	2	1	.19	.003	3	12	.07	93	.01	2	.03	.01	.01	1
30362	6	2	6	1	.1	5	1	23	.40	6	8	ND	16	24	1	2	2	1	.02	.025	59	3	.01	654	.01	3	.20	.01	.10	1
30363	5	4	6	4	.1	11	1	33	.31	4	5	ND	5	7	1	2	2	1	.02	.009	17	9	.01	627	.01	2	.10	.01	.05	1
30364	6	2	7	1	.1	4	1	20	.28	4	6	ND	14	9	1	2	2	1	.02	.012	46	4	.01	632	.01	5	.14	.01	.09	1
30365	7	1	33	1	.7	1	1	59	2.55	91	6	ND	7	28	1	2	2	1	.17	.008	37	1	.01	26	.01	8	.21	.01	.23	1
STD C	20	56	40	130	6.5	70	30	1093	4.00	41	16	7	36	48	21	17	17	58	.48	.094	36	60	.90	180	.06	35	1.96	.05	.14	13

SAMPLE#	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Ni PPM	Co PPM	Mn PPM	Fe %	As PPM	U PPM	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPM	Ca %	P %	La PPM	Cr PPM	Mg %	Ba PPM	Ti %	B PPM	Al %	Na %	K %	W PPM
35-WB-1 31140	1	50	24	23	.5	61	23	90	5.87	16	5	ND	3	124	1	2	2	42	6.11	.123	6	33	.05	28	.01	5	.25	.01	.09	1
35-WB-1 31141	1	76	15	64	.3	156	30	663	8.56	15	5	ND	3	82	1	2	2	27	5.75	.180	5	66	1.15	18	.01	7	.92	.01	.09	1
35-WB-1 31142	66	23	2	32	.5	5	12	10	35.17	661	5	ND	3	124	1	2	2	1210	.15	2.306	6	469	.02	2	.01	26	.24	.01	.52	1
35-WB-1 31143	1	91	23	32	.3	107	21	365	12.33	6	5	ND	1	90	2	2	2	16	3.82	.032	3	17	.56	10	.01	5	.35	.01	.07	1
35-WB-1 31144	3	3	6	1	.1	6	1	11	.82	14	5	ND	16	23	1	2	2	17	.21	.061	87	9	.02	416	.01	13	.28	.01	.14	1

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

WHOLE ROCK ICP ANALYSIS

A .2000 GRAM SAMPLE IS FUSED WITH .60 GRAM OF LIBO2 AND IS DISSOLVED IN 100 MLS 5% HNO3.
- SAMPLE TYPE: SOIL PULP

DATE RECEIVED: NOV 14 1989 DATE REPORT MAILED: Nov 28/89. SIGNED BY. C. Leong .D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

HOMESTAKE MINERAL DEV. CO. PROJECT 5710-35 File # 89-4469R

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba PPM	La PPM	Zr PPM	Y PPM	Nb PPM	LOI %	SUM %
R9-WBP-04	21.23	7.92	11.26	6.80	18.78	.31	1.96	2.47	.24	.09	.001	235	25	79	17	20	11.9	83.02
R9-WBP-07	85.78	6.47	.53	.47	.63	.05	1.74	.37	.02	.01	.005	12618	25	296	8	20	1.8	100.06
R9-WBP-08	84.92	5.83	2.18	.49	.85	.05	1.96	.53	.03	.01	.011	952	25	38	5	20	3.0	100.03
R9-WBP-10	37.92	2.61	.96	.01	.11	.05	.05	.07	.04	.01	.001	330367	25	12	5	20	1.6	99.58
R9-WBP-14	65.18	18.72	.69	.19	.03	.18	11.16	.49	.06	.01	.001	5891	75	752	94	272	2.2	100.06
30364	64.46	18.10	.39	.01	.01	.24	13.03	.44	.06	.01	.001	12516	62	702	90	231	1.0	100.01

APPENDIX II

ROCK SAMPLE DESCRIPTIONS

SAMPLE #	DESCRIPTION
30356	Soil: red-brown soil below Eastern "kill" zone.
30357	1m chip: 20cm pale yellow QZVN in argillite.
30358	Soil: red-brown soil within Eastern "kill" zone.
30359	0.50m chip: siliceous pod with 2-3% disseminated pyrite in buff-coloured dolomite.
30361	1m chip: QZ-flooded dolomite with 2-3% fine PY.
30361	Stream sediment: partial permafrost.
30362	3m chip: silicified felsic volcanic, weakly limonitic.
30363	2m chip: bull QZVN swarm with HE on fractures.
3036 4	1m chip: silicified felsic volcanics with trace PY.
30365	Grab: brick-red weathered silicified felsic volcanic with 2-3% fine PY. Strongly gossanous soil.
31140	Grab: orange weathered, fine grained felsic tuff.
31141	Grab: orange-brown SE-CB altered argillite, tr. PY.
31142	Grab: intensely oxidized dark red-brown unit.
31143	Grab: 0.75m wide zone of QZ-SE-PY altered argillite with 5-15% fine pyrite stringers.
31144	Grab: limonitic limestone.
M96-1	Grab: orange-brown weathered SE-CL altered phyllitic argillite or felsic tuff? 1% fine PY and 5% CBVNs.
M96-2	Grab: cleaved grey dolomite or phyllitic limestone with 1-2% fine PY and coarse white CB veinlets.
M97-5	Grab: coarse white QZ and BA? veins and pale brown

carbonate (siderite?) veinlets. FeCO3 altered argillaceous limestone.

R9-WBC01 Grab: QZ-CB veins to 5cm locally with pods of massive pyrite and trace sphalerite in grey chert & dolomite.

R9-WBC02 Grab: small shear with QZVN? and weathered pyrite in argillaceous dolomite.

R9-WBC03 Grab: Massive pyrite bands to 5cm, parallel foliation in limonitic argillite. QZ-CB-PY breccia with massive pyrite fragments at same location.

R9-WBC05 Grab: 1% fine pyrite in limonitic pale grey chert.

R9-WBC06 Float: pale grey chert with QZ stringers, trace PY,SP.

R9-WBC06A Float: massive pyrite.

R9-WBC08 Grab: 1m QZVN in phyllitic SE-altered volcanics with trace mariposite blebs.

D9-WBP01 Soil: rusty overburden.

R9-WBP02 Grab: argillaceous limestone with transported gossan and scorodite.

R9-WBP03 Grab: argillaceous limestone with transported gossan and scorodite.

R9-WBP04 Grab: sericitic-pyrite schist with carbonate layers and nodules.

R9-WBP05 Grab: 30cm CBVN with coarse muscovite and fine pyrite stringers.

R9-WBP06 Selective grab: pyritic argillite.

R9-WBP07 Float: rusty yellow chert with SE partings and 0.1% disseminated pyrite.

R9-WBP08 Grab: silicieous fine grained rock with 10% disseminated silvery pyrite and bright green flakes.

R9WBP09 Grab: silicified argillite with minor relict pyrite. Could be exhalitive in origin.

R9-WBP10 Grab: massive barite and siliceous argillite-chert. Sed-Ex? Trace pyrite.

R9-WBP11 Grab: shear in muscovite schist with 30-35% pyrite and abundant gypsum along foliation planes.

R9-WBP12 Grab: chert/sed-ex? from base of charcoal leach zone.

R9-WBP13A Grab: siliceous argillite.

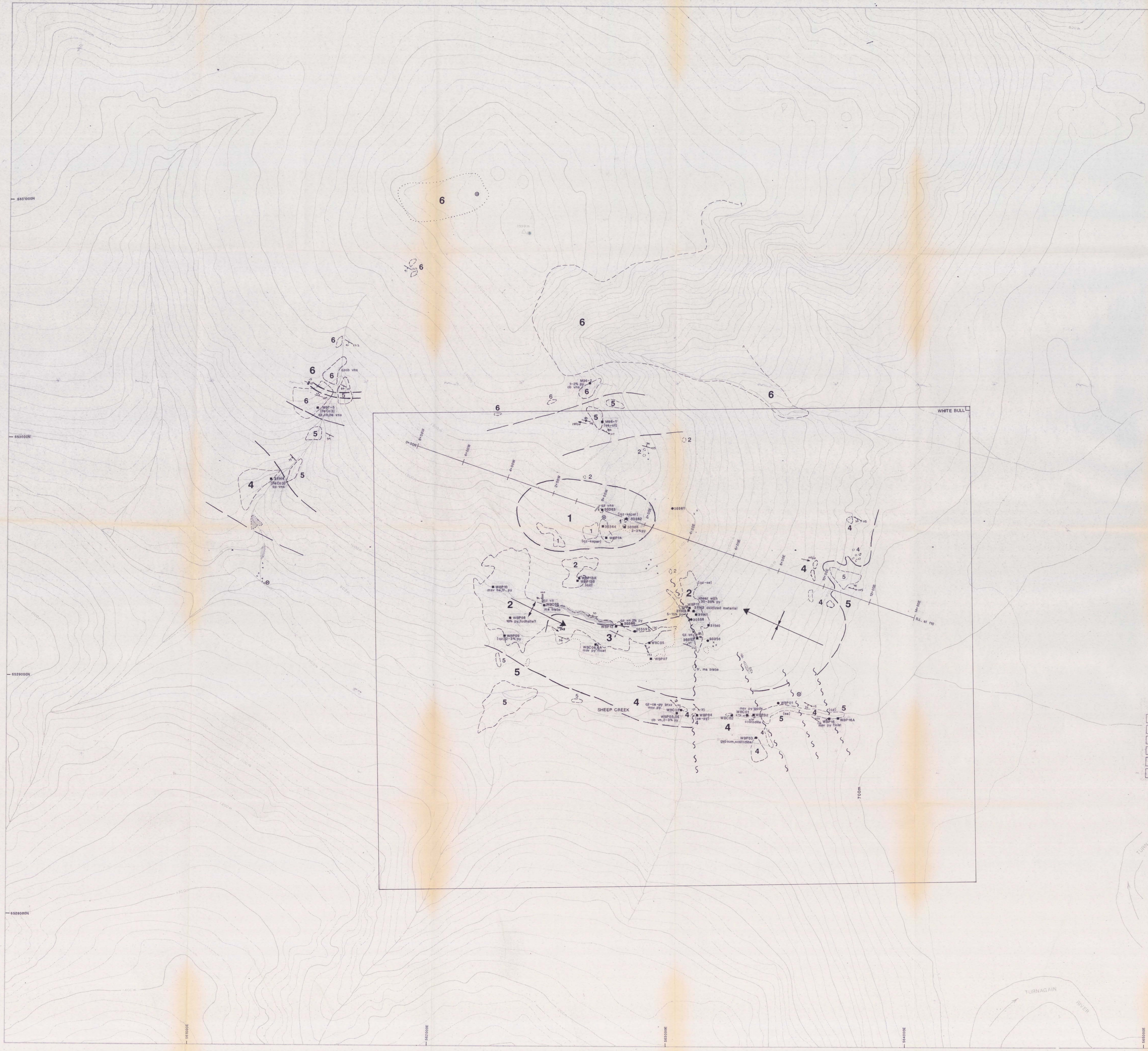
R9-WBP13B Grab: porous green-grey "punk" rock.

R9-WBP14 Grab: rhyolite chert? or altered volcanic?

R9-WBP15 Float: massive pyrite ~10cm wide.

R9-WBP16A Grab: yellow-green precipitate in fault zone.

R9-WBP16B Grab: silicified fault zone at phyllite-lmst contact.



LEGEND

SYMBOLS

- Outcrop Boundary
- Talus, Float
- Geological Contact
- Fault; normal, thrust
- Bedding; vertical, inclined
- Foliation
- Cleavage
- Lineation (ie. fold hinge)
- vn Vein
- Anticline, Syncline
- Soil sample
- Rock sample
- Helicopter pad
- ferricrete
- [ ] Alteration Assemblage
- qz quartz
- se sericite
- ca,cb calcite, carbonate
- ba barite
- py pyrite
- sp sphalerite
- ma mariposite
- msv massive

LITHOLOGY

1	K-FELDSPAR ALTERED FELSIC INTRUSION
2	ARGILLITE AND QUARTZ-SERICITE SCHIST
3	DOLOMITE, limestone, chert, quartzite, argillite
4	ARGILLITE AND BLACK DOLOMITE
5	PHYLLITE, minor volcanic ash and argillaceous sediments
6	PHYLLITIC LIMESTONE

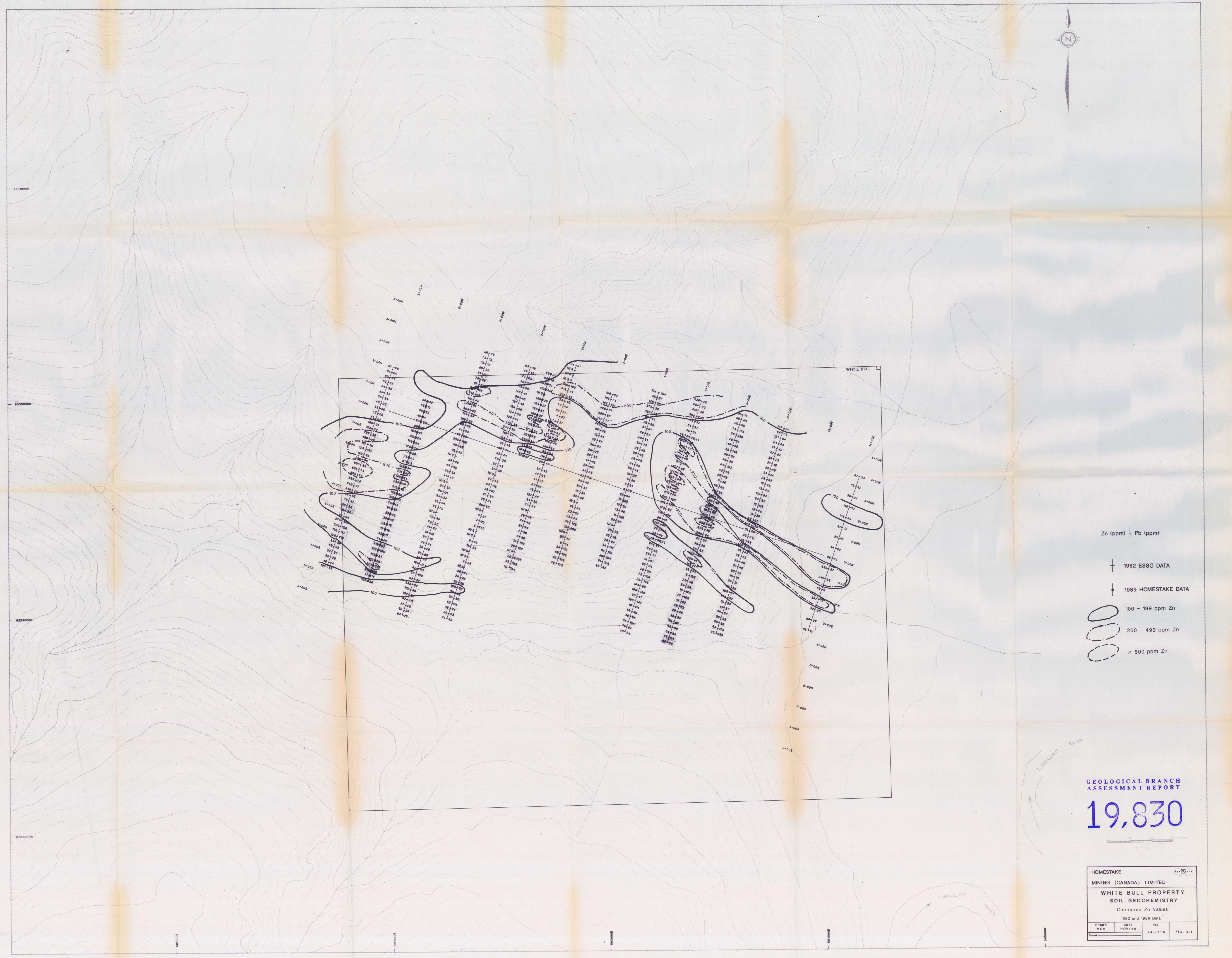
GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,830

HOMESTAKE
MINING (CANADA) LIMITED

WHITE BULL PROPERTY
GEOLOGY
AND SAMPLE LOCATIONS

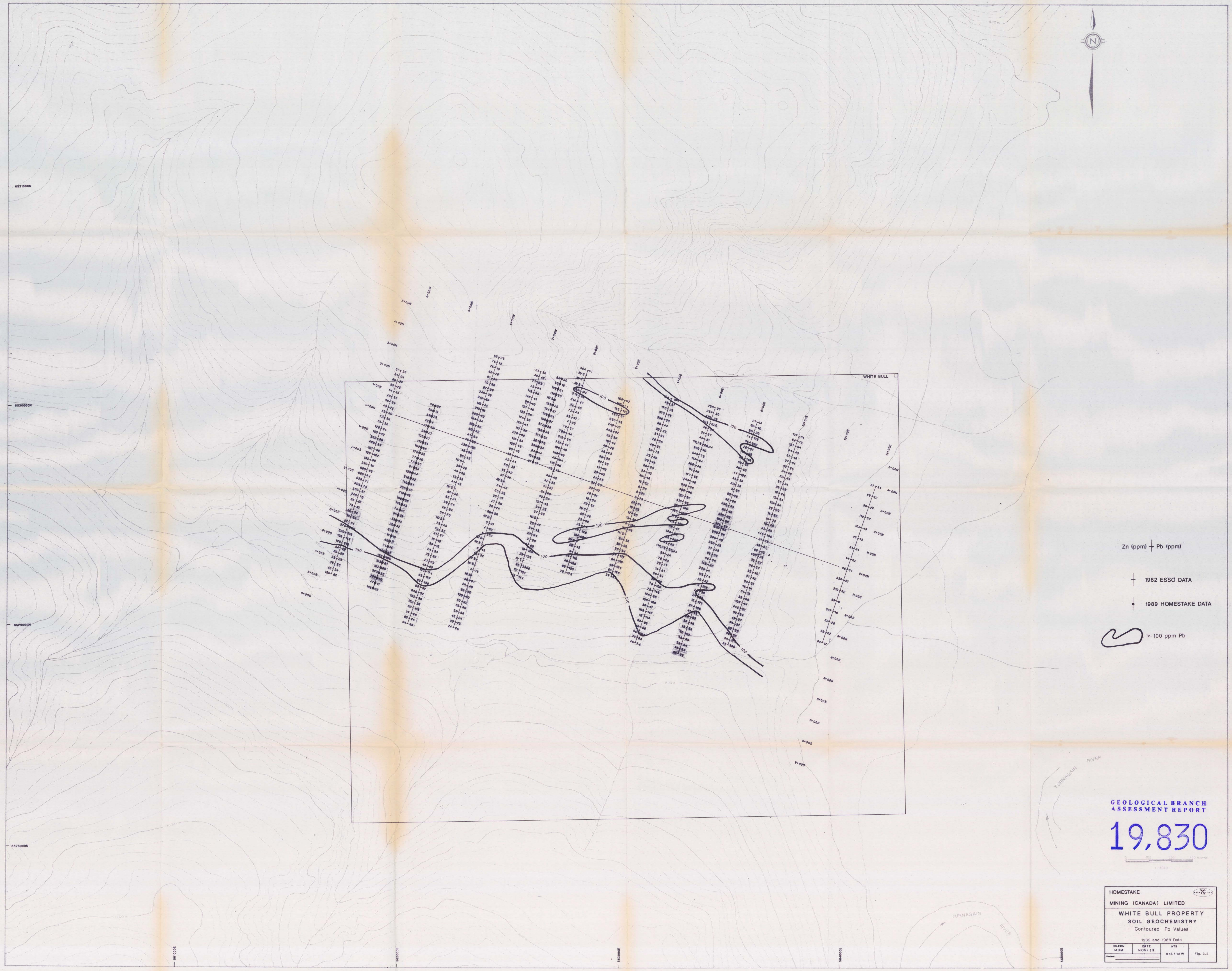
DRAWN	DATE	NTS	
MDM	10/89	94L/ 13W	FIG. 2.2
Revised			



GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,830

HOMESTAKE MINING (CANADA) LIMITED			
WHITE BULL PROPERTY SOIL GEOCHEMISTRY Contoured Zn Values 1982 and 1989 Data			
DRAWN MDM	DATE NOV/89	NTS 94L/13W	FIG. 3.1
Revised			


WHITE BULL
100
Zn (ppm) Pb (ppm)
1982 ESSO DATA
1989 HOMESTAKE DATA
> 100 ppm Pb
TURNAGAIN RIVER
TURNAGAIN RIVER
6531000N
6530000N
6529000N
6528000N
561000E
562000E
563000E
564000E
565000E
N
GEOLOGICAL BRANCH
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WHITE BULL PROPERTY
SOIL GEOCHEMISTRY
Contoured Pb Values
1982 and 1989 Data
DRAWN MDM
DATE NOV/89
NTS 94L/13W
Fig. 3.2
Revised