827191

# 1989 Exploration Program

## Lara Property

Victoria Mining Division
NTS 92B/13W
Latitude: 48° 54'N Longitude 123° 52'W

Minnova Inc.
Vancouver, B.C.

G. S. Wells
J. D. Kapusta
January 23, 1990

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## Summary

Minnova's 1989 exploration program on the Lara property endeavoured to a) find additional reserves in and around the Coronation Zone and b) assess the massive sulphide potential of the rest of the property. The bulk of the program was devoted to diamond drilling (43 holes: 10,328 m) although geophysical, geological and lithogeochemical surveys were completed along strike from the Coronation Zone. The drilling, metallurgical work and open pit assessment of the Coronation Zone mineralization indicates that the near-surface high grade pods can be mined with anticipated good metal recoveries but the outlined tonnage is too small to be economic.

The reconnaissance ground surveys and diamond drilling carried out in 1989 greatly enhanced the massive sulphide potential of the rest of the Lara property. On the basis of structural studies, the Coronation Zone is interpreted as a stretched stringer zone that would underlie a volcanogenic massive sulphide lens. Thrust faulting has repeated both the mineralization and the stratigraphy. This implies that any one of the mineralized horizons on the property may correlate with the VMS horizon associated with the Coronation Zone. The lithogeochemical surveys defined two areas of hydrothermal alteration that is typically associated with VMS deposits. One occurs in the Randy Zone at the transition between quartz-eyed, felsic tuffs and reworked volcanic sediments. The second altered zone occurs in the structural hanging wall and to the east of the Coronation Zone. It has a strike extent of at least six km and pyritic cherts intersected in this zone are interpreted as distal exhalites. Future work will focus on evaluating the shallow level potential of mineralized horizons in areas of anomalous geochemistry.

# 1989 Exploration Program
# Lara Property

## 1. Introduction

Minnova's 1989 exploration program on the Lara property evaluated the extent of the Coronation Zone mineralization and the massive sulphide potential of the Sicker volcanics exposed elsewhere on the property. This report summarizes the results of the program.

### A. Location and Access

NTS: 92B/13W
Latitude: 48° 52' N
Longitude: 123° 52' W

The Lara property is located on southern Vancouver Island, 75 km north of Victoria and 15 kilometres northwest of Duncan (Figure 1). Access to the property is along the Chemainus River Logging Truck Road (MacMillan Bloedel) and a network of secondary logging and forestry roads. In addition, a major B.C. Hydro power right-of-way cuts across the west side of the property.

### B. Property Status

The Lara Property is owned 100% by Laramide Resources Ltd. of 904 - 675 W. Hastings St., Vancouver, B.C. Abermin Corporation retains a 10% Net Profits Interest which is convertible at any time prior to October 31, 1990, into 5% of the issued common shares of Laramide. Minnova Inc. has obtained exclusive exploration rights to the Lara Property, for the period between November 1, 1988 and June 30, 1991 subject to certain expenditure guarantees.

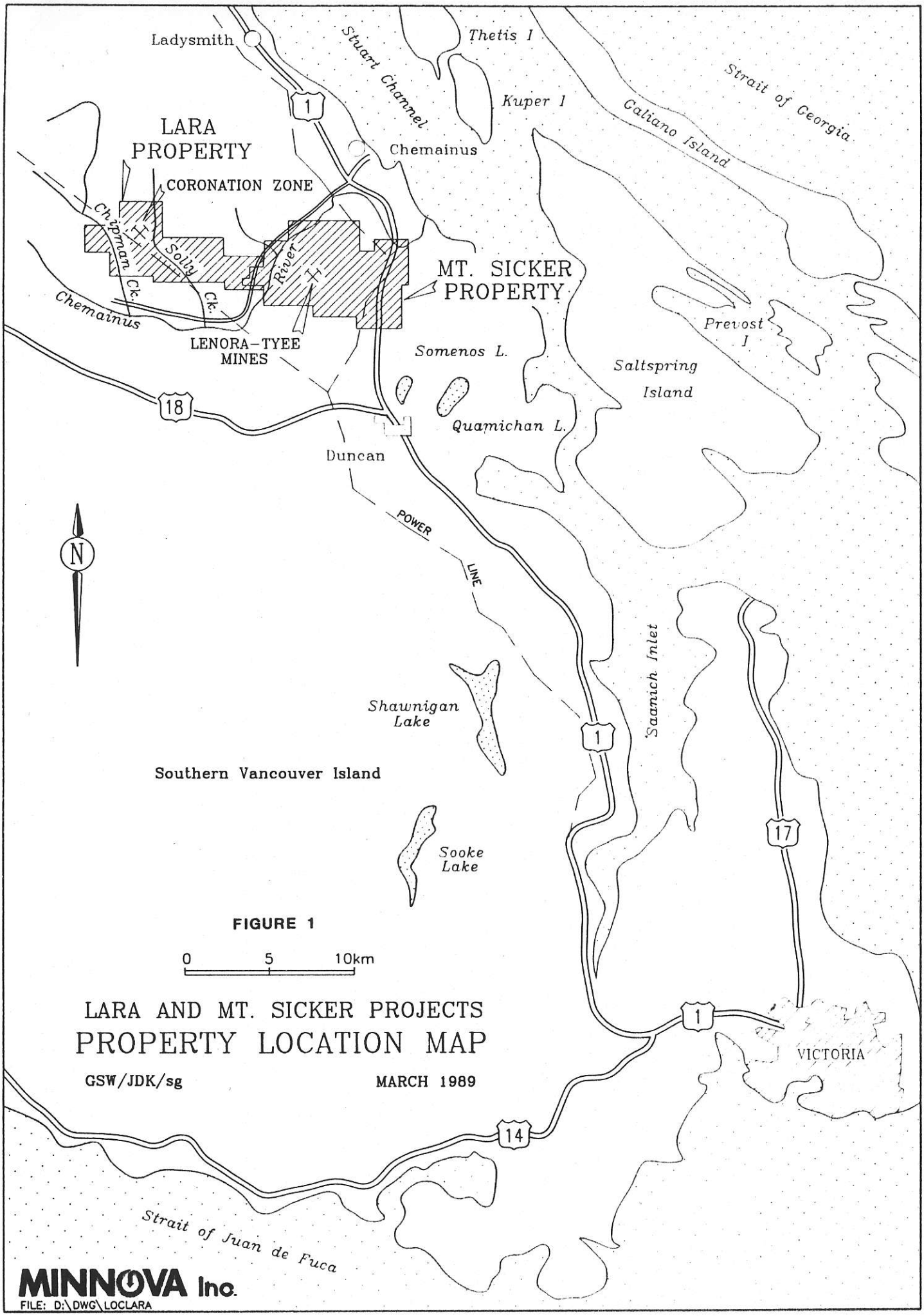


**FIGURE 1**

# LARA AND MT. SICKER PROJECTS
# PROPERTY LOCATION MAP

GSW/JDK/sg MARCH 1989

MINNOVA Inc.

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C. Mineral Claims

| Claim Name | Record No. | Units | Expiry Date |
|---|---|---|---|
| | Group I | | |
| Silver I | 535 | 12 | May 8, 2000 |
| Silver II | 536 | 9 | May 8, 2000 |
| Fang | 534 | 20 | May 8, 2000 |
| Tooth | 1377 | 5 | Nov 7, 2000 |
| Touche | 1396 | 12 | Jan 21, 2000 |
| Cavity | 1397 | 12 | Jan 21, 2000 |
| Susan (Lot 23G) | 698 | 1 | Oct 26, 2000 |
| Klondyke (Lot 68G) | 699 | 1 | Oct 26, 2000 |
| Tinto View (Lot 78G) | 700 | 1 | Oct 26, 2000 |
| | Group II | | |
| Solly | 537 | 9 | May 8, 2000 |
| T.L. | 538 | 20 | May 8, 2000 |
| Jennie | 1112 | 4 | Nov 18, 2000 |
| Ugly | 753 | 6 | Feb 8, 2000 |
| Wimp | 754 | 2 | Feb 8, 2000 |
| Nero | 755 | 1 | Feb 8, 2000 |
| Face | 1402 | 12 | Jan 23, 2000 |
| Plant | 1401 | 20 | Jan 23, 2000 |
| COR 1-7 Fr. | 1378-84 | 7 | Nov 7, 2000 |

Statements of Work filed in 1989 and early 1990 to keep the claims in good standing are included in Appendix I.

D. History (to the end of 1988)

The Lara Property was staked by Laramide Resources in 1981 and optioned to Abermin Corporation in 1982. During 1981-83, exploration work included linecutting, geological mapping, geophysical and soil geochemical surveys, and backhoe trenching to test anomalous areas. In 1984, 12 diamond drill holes totalling 1346 metres tested targets defined by the backhoe trenching. The last drill hole of this program, DDH 84-12, intersected economically significant mineralization that graded 0.68% Cu, 0.45% Pb, 3.01% Zn, 67.54 g/T Ag and 3.46 g/T Au, over a true thickness of 7.95 metres. This mineralized horizon was named the Coronation Zone, after its occurrence on the south slope of Coronation Mountain.

In 1985, sixty-one (61) diamond drill holes totalling 7437 metres tested the Coronation Zone over a strike length of 990 metres and up to 160 metres downdip.

The 1986 exploration program tested both the Coronation Zone and reconnaissance targets throughout the property. Seventy-five (75) diamond drill holes totalling 11,339 metres were completed. The Coronation Zone mineralization was tested over a strike length of 2100 metres and the reconnaissance drilling tested geophysical, humus geochemical and geological targets in the East, Far East, and North Grid areas. In addition, one backhoe trench (86-43) exposed a high grade massive sulphide pod of the Coronation Zone which assayed 3.04% Cu, 43.01% Zn, 8.30% Pb, 513.60 g/T Ag and 24.58 g/T Au over a true thickness of 3.51 metres.

The 1987 exploration program tested the Coronation Zone, Randy Zone and reconnaissance targets throughout the property. Eighty-three, (83) diamond drill holes totalling 15,038 metres were completed and one backhoe trench (87-44) over the Coronation Zone was excavated. Ten diamond drill holes in the Randy Zone area traced a zone of weak zinc stringer mineralization over a strike length of 2000 meters. The reconnaissance drilling tested

geophysical, humus geochemical and geological targets on the West and North grid areas. Hole 87-214 intersected a weakly mineralized horizon that graded 1.02% Zn over 1.55 m. Hole 87-216 tested this zone 120 meters down dip and intersected a thin tuffaceous unit, that assayed 0.67% Zn, 0.25% Pb, 0.13% Cu and minor Au and Ag over 0.7 m.

In 1988 an underground exploration program tested the continuity of the Coronation Zone, evaluated rock conditions for mining cost estimates and provided a bulk sample for metallurgical tests.

## 2. 1989 Exploration Program

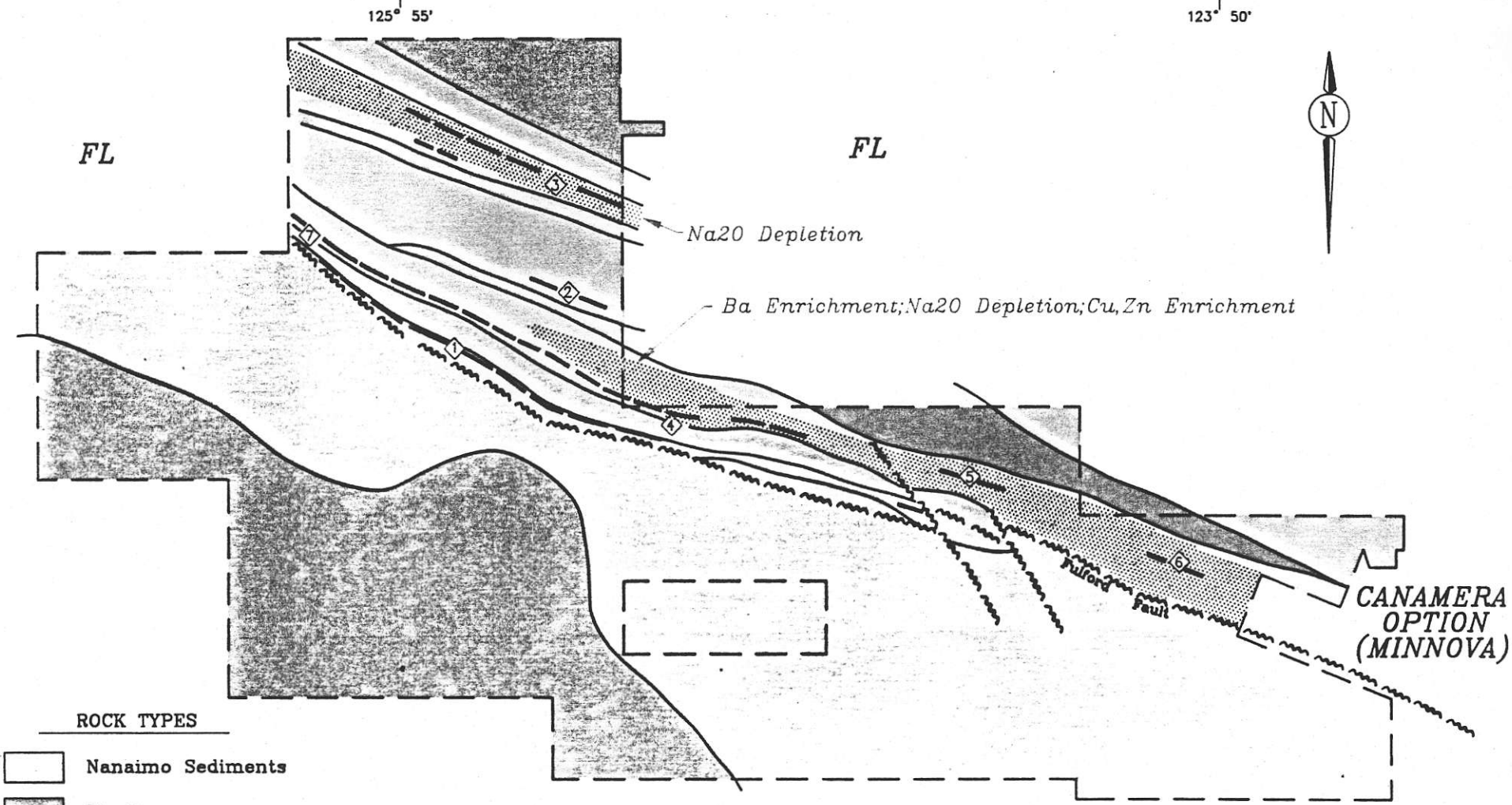
In 1989, 43 diamond drill holes totalling 10,327.8 meters were completed on the Lara property. Twenty-seven (27) holes (6457.1 m) tested the extent of the Coronation Zone mineralization and 16 holes (3870.7 m) tested other mineralized horizons and geophysical targets. Preliminary metallurgical and mineralogical studies on the Coronation Zone mineralization were completed and its open-pit potential was evaluated by Mintec.

Field work included geological and structural mapping, lithogeochemical sampling, linecutting (68.3 km of which 27.5 km is surveyed) and MAG-VLF-IP surveys. Other work includes reclamation associated with Abermin's 1988 underground program.

## 3. Results

### A. Diamond Drilling

The diamond drilling was carried out in two phases - a spring and fall program. Location of the holes is given in Figure 2. Drilling details and significant results are presented in Table 1 and a complete set of drill logs has been included in Appendix II. Drilling was carried out in seven specific areas and the findings for each are summarized below:




MINNOVA Inc.

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**FIGURE 2**

LARA PROJECT

GEOLOGY, LITHOGEOCHEMISTRY & DIAMOND DRILL HOLE LOCATIONS

GSW/sg NTS 92B/13W JANUARY 1990

Table 1: SUMMARY OF THE 1989 DIAMOND DRILLING PROGRAM – LARA PROJECT PN 242

| Hole # Location | Elevation | Azimuth | Collar Dip | Final Depth | Significant Results | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Zone | Interval | Cu (ppm) | Zn (ppm) | Pb (ppm) | Ag (ppm) | Au (ppb) | Ba (ppm) | Length (m) | |
| 1. Coronation Zone | | | | | | | | | | | | | | |
| 89–228 99+80W; 103+23N | 666 m | 208 | –63 | 333.5 m | C.Z. | 237.35–237.6 | 1950 | 4650 | 3100 | 30 | 825 | | 0.25 | |
| 89–229 103+75W; 101+54N | 622 m | 208 | –50 | 152.1 m | C.Z. | 30.50–30.60 | No significant Results | | | | | | | |
| 89–230 103+25W; 101+79N | 624 m | 208 | –57 | 116.1 m | C.Z. | 42.19–43.12 | 490 | 798 | 151 | 7.6 | 1563 | | 0.93 | |
| 89–231 102+00W; 102+03N | 630.5 m | 208 | –65 | 166.7 m | C.Z. | 90.40–93.61 | 255 | 1962 | 1481 | 17.7 | 1185 | | 3.21 | |
| | | | | | | 100.65–106.8 | 232 | 2810 | 1553 | 17 | 732 | | 6.16 | |
| | | | | | | 100.65–101.0 | .20% | 4.12% | 2.52% | 261 g/T | 2.31 g/T | | 0.36 | |
| 89–232 99+00W; 102+36N | 655 m | 208 | –52 | 197.2 m | C.Z. | 122.2–123.60 | 80 | 102 | 40 | 0.8 | 35 | 1620 | 1.4 | |
| 89–233 103+75W; 102+53N | 633 m | 208 | –72 | 253.9 m | HWZ | 113.8–114.66 | 785 | 2756 | 1117 | 21 g/T | 2.03 g/T | | 0.86 | |
| | | | | | C.Z. | 152.25–161.3 | 0.35% | 2.00% | 0.67% | 63.98 g/T | 1.07 g/T | | 9.06 | |
| | | | | | | Incl. | 0.47% | 2.72% | 0.60% | 03.90 g/T | 1.89 g/T | | 3.82 | |
| 89–234 100+50W; 103+46N | 680 m | 208 | –74 | 442.3 m | | 13.65–16.45 | 527 | 135 | | | 40 | 2850 | 2.8 | cherts |
| | | | | | | 116.3–122.05 | 7986 | | | | | | 5.75 | py–cp–qtz stringers |
| | | | | | C.Z. | 351.0–352.1 | 94 | 165 | 62 | 1 | 15 | | 1.1 | |
| 89–235 105+50W; 103+38N | 635 m | 208 | –53 | 276.4 m | C.Z. | 194.1–198.77 | 0.51% | 0.99% | 0.12% | 16.84 g/T | 0.65 g/T | | 4.67 | |
| 89–236 105+50W; 103+38N | 635 m | 208 | –77 | 322.2 m | C.Z. | 265.37–266.9 | 29 | 10 | 36 | 0.5 | 88 | | 1.57 | |
| 89–237 101+25W; 102+56N | 652.5 m | 208 | –57 | 231.9 m | C.Z. | 155.65–157.1 | 931 | .36% | 2.04% | 27.2 | 1149 | | 1.45 | |

| Hole # Location | Elevation | Azimuth | Collar Dip | Final Depth | Significant Results | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Zone | Interval | Cu (ppm) | Zn (ppm) | Pb (ppm) | Ag (ppm) | Au (ppb) | Ba (ppm) | Length (m) | |
| 89–238 101+25W; 101+80N | 632.5 m | 208 | –52 | 92.4 m | C.Z. | No significant results | | | | | | | | |
| 89–239 105+02W; 102+49N | 627 m | 208 | –70 | 221.6 m | C.Z. | 127.0–137.4 | 0.27% | 0.92% | 0.12% | 16.10 g/T | 0.37 g/T | | 10.4 | |
| | | | | | | 127–130.54 | 0.55% | 1.16% | 0.20% | 15.70 g/T | 0.43 g/T | | 3.54 | |
| 89–240 101+75W; 101+68N | 625 m | 208 | –45 | 123.4 m | C.Z. | 44.4–45.3 | 1750 | 2250 | 19 | 630 | 880 | | 0.9 | |
| 89–241 102+75W; 102+77N | 644 m | 208 | –68 | 313.9 m | C.Z. | 168.85–169.3 | 2.59% | 22.6% | 11.5% | 455 g/T | 50.2 g/T | | 0.5 | |
| 89–242 106+00W; 102+36N | 635 m | 208 | –62 | 209.4 m | HWZ | 51.9–54.6 | 65 | 1227 | 602 | 4.7 | 155 | | 2.7 | |
| | | | | | C.Z. | 103.56–108.8 | 576 | 4520 | 330 | 8.5 | 297 | | 5.24 | |
| | | | | | | 103.56–104.2 | 0.30% | 1.50% | 0.05% | 33.2 | 570 | | 0.64 | |
| 89–243 106+20W; 102+78N | 636.5 m | 208 | –62 | 209.4 | HWZ | 116.54–122.1 | 0.05% | 0.18% | 0.09% | 20.31 g/T | 0.47 g/T | | 5.56 | |
| | | | | | C.Z. | 171.6–186.4 | 0.23% | 0.48% | 0.03% | 4.74 g/T | 0.34 g/T | | 14.8 | |
| 89–244 101+72W; 103+46N | 673 m | 208 | –61 | 114.9 m | | Hole abandoned due to severe flattening | | | | | | | | |
| 89–244 101+72W; 103+46N | 673 m | 208 | –62 | 395.2 m | C.Z. | 256.0–256.5 | 44 | 82 | 27 | 1.8 | 1.21 g/T | | 0.5 | |
| 89–245 108+75W; 101+98N | 668 m | 208 | –52 | 182.9 m | .W.Z | 22.7–24.26 | 0.58% | 6.96% | 6.11% | 357 g/T | 6.57 g/T | | 1.56 | |
| | | | | | | 23.10–23.55 | 1.76% | 22.5% | 8.96% | 1080 g/T | 15.4 g/T | | 0.45 | massive sulphides |
| | | | | | C.Z. | 77.3–83.03 | 0.33% | 2.24% | 0.26% | 27.8 g/T | 0.68 g/T | | 5.73 | |
| 89–246 108+75W; 102+19N | 669.5 m | 208 | –68 | 208.6 m | HWZ | 63.10–69.2 | 206 | 1012 | 409 | | | | 6.1 | |
| | | | | | C.Z. | 115.31–123.6 | 0.20% | 2.25% | 0.18% | 10.99 g/T | 0.41 g/T | | 8.36 | |
| | | | | | | 115.31–120.1 | 0.29% | 3.10% | 0.13% | 13.19 g/T | 0.33 g/T | | 4.81 | |

| Hole # Location | Elevation | Azimuth | Collar Dip | Final Depth | Significant Results | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Zone | Interval | Cu (ppm) | Zn (ppm) | Pb (ppm) | Ag (ppm) | Au (ppb) | Ba (ppm) | Length (m) | |
| 89–247 101+75W; 104+02N | 680.8 m | 208 | –71 | 426.4 m | C.Z. | 389.5–392.55 | 0.55% | 1.19% | 0.30% | 29.48 g/T | 1.24 g/T | | 3.05 | |
| 89–248 108+75W; 103+01N | 673.5 m | 208 | –68 | 281.0 m | C.Z. | 219.4–230.8 | No Significant Results | | | | | | | |
| 89–249 109+50W; 102+50N | 677.5 m | 208 | –68 | 243.9 m | C.Z. | 149.13–157.4 | 51 | 135 | 87 | 2.6 | 61 | | 8.3 | |
| 89–250 105+50W; 103+37N | 635 m | 208 | –68 | 296.6 m | C.Z. | 200.85–232.7 | 107 | 960 | 323 | 1.6 | 60 | | 31.85 | |
| | | | | | | 200.85–207.7 | 200 | 2021 | 606 | 3.2 | 52 | | 6.85 | |
| 89–251 110+50W; 101+93N | 670 m | 208 | –48 | 169.7 m | | | No Significant Results | | | | | | | |
| 89–252 103+00W; 101+53N | 621.5 m | 208 | –55 | 76.2 m | | | No Significant Results | | | | | | | |
| 89–253 109+50W; 102+28N | 677.5 m | 208 | –55 | 157.6 m | | | No Significant Results | | | | | | | |
| 89–263 89+82W; 105+14N | 664 m | 208 | –67 | 241.7 m | | | No Significant Results | | | | | | | |
| | | | 27 holes | 6457.1 m | | | | | | | | | | |
| 2. West Zinc Horizon | | | | | | | | | | | | | | |
| 89–254 115+00W; 104+64N | 735 m | 208 | –49 | 227.7 m | | 192.40–193.6 | 6100 | 815 | | 3.7 | 900 | | 1.25 | diss py–cp in andesitic tuff = IP |
| 89–255 119+00W; 104+37N | 705.5 m | 208 | –52 | 230.7 m | | 57.90–60.5 | 352 | 1836 | | | | | 2.6 | 1–2% diss po, py, sph in ituff |
| | | | | | | 139.3–141.8 | 250 | 1740 | | | | | 2.5 | 1–2% diss po, py, sph in ituff |
| 89–264 123+00W; 104+78N | 693 m | 208 | –59 | 269.7 m | | | No Significant Results | | | | | | | |
| | | | 3 holes | 728.1 m | | | | | | | | | | |

| Hole # Location | Elevation | Azimuth | Collar Dip | Final Depth | Significant Results | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Zone | Interval | Cu (ppm) | Zn (ppm) | Pb (ppm) | Ag (ppm) | Au (ppb) | Ba (ppm) | Length (m) | |
| 3. Barite–Pyrite Vein | | | | | | | | | | | | | | |
| 89–265 53+00W; 115+20N | 818 m | 208 | –55 | 21.3 m | | | Hole abandoned due to fault zone | | | | | | | |
| 89–265 53+00W; 115+20N | 818 m | 208 | –55 | 316.1 m | | | No Significant Results | | | | | | | |
| 89–266 55+37W; 111+75N | 737 m | 208 | –50 | 226.2 m | | | No Significant Results | | | | | | | |
| 89–267 57+00W; 111+88N | 730 m | 208 | –50 | 252.1 m | | 225.21–226.5 | 250 | 223 | 1320 | | | | 1.32 | 2–3% py–sph stringers |
| | | | | | | 237.53–248.3 | 227 | | | | | | 10.79 | l ash, pyritic cherts |
| 89–268 54+30W; 111+36N | 736 m | 208 | –45 | 86.3 m | | 41.85–42.40 | .45% | | | | | | 0.55 | |
| | | | | | | 69.0–71.63 | | | | | | .82% | 2.63 | |
| | | | | | | 77.25–78.0 | 877 | | | | | | 0.75 | qtz–py–cp stringer |
| | | | 4 holes | 902.0 m | | | | | | | | | | |
| 4. Randy Zone | | | | | | | | | | | | | | |
| 89–260 106+95W; 116+59N | 817 m | 211 | –50 | 131.1 m | | 16.5–16.8 | 913 | 726 | | | | | 0.3 | diss py, sph |
| | | | | | | 41.8–42.8 | | 771 | | | | | 1.0 | diss py, sph |
| 89–261 106+97W; 117+47N | 824 m | 211 | –58 | 289.6 m | | 64.2–64.7 | 265 | 4430 | | | | | 0.5 | diss py, cp, sph |
| | | | | | | 155.75–156.25 | | 1320 | | | | | 0.5 | diss py, cp, sph |
| | | | | | | 183.8–184.8 | 123 | 455 | | | | | 1.0 | diss py, cp, sph |
| | | | 2 holes | 420.7 m | | | | | | | | | | |

| Hole # Location | Elevation | Azimuth | Collar Dip | Final Depth | Significant Results | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Zone | Interval | Cu (ppm) | Zn (ppm) | Pb (ppm) | Ag (ppm) | Au (ppb) | Ba (ppm) | Length (m) | |
| 5. 262 Zone | | | | | | | | | | | | | | |
| 89–262 89+68W; 106+84N | 681 m | 212 | –55 | 203.9 m | | 34.8–35.35 | 0.27% | 0.15% | | | | | 0.55 | |
| | | | | | | 55.65–56.55 | | 0.58% | | | | | 0.9 | py, sph stringer |
| | | | | | | 111.6–112.75 | 1.42% | 0.12% | | 5.9 g/T | | | 1.15 | semi–massive py, FTuff, cht |
| | | | | | | 118.1–121.0 | 0.33% | | | | | | 2.9 | cpy–py stringers in ser QP Tuff |
| | | | 1 hole | 203.9 m | | | | | | | | | | |
| 6. 214–216 Horizon | | | | | | | | | | | | | | |
| 89–256 104+74W; 109+27N | 750 m | 208 | –60 | 168.9 m | | 99.6–101.5 | | 744 | | | | | 1.9 | lash |
| | | | | | | 108.5–116.4 | | 600 | | | | | 7.9 | M,F,tuffs = 214 Zone |
| | | | | | | 111.8–113.25 | | 0.16% | | | | | 1.45 | |
| 89–257 102+74W; 110+35N | 800 m | 216 | –65 | 281.9 m | | 250.05–250.3 | 5000 | 735 | | | | | 0.25 | M. tuff = possible 214 Zone |
| 89–258 104+75W; 110+75N | 775 m | 214 | –70 | 292.3 m | | | No Significant Results | | | | | | | |
| 89–259 102+73W; 109+47N | 780 m | 208 | –55 | 228.3 m | | 18.8–20.75 | | 0.21% | | | | | 1.95 | 214 Zone |
| | | | | | | 22.5–23.5 | | 0.54% | | | | | 1.0 | 214 Zone |
| | | | | | | 181.4–182.6 | 0.9% | | | | | | 1.2 | cp in qtz vein |
| | | | 4 holes | 971.4 m | | | | | | | | | | |
| 7. East Grid | | | | | | | | | | | | | | |
| 89–269 67+94W; 113+75N | 729 m | 208 | –65 | 250.5 m | | 167.21–173.2 | 702 | 123 | | | | | 6.07 | pyritic bedded ashes/chts |
| 89–270 69+16W; 113+38N | 744 m | 208 | –70 | 304.8 m | | | No Significant Results | | | | | | | |
| | | | 2 holes | 554.95 m | | | | | | | | | | |

1. Coronation Zone

Twenty seven diamond drill holes (89-228 to 89-253 and 89-263) totalling 6,457.10 m were drilled in the Coronation and Coronation Extension Zones, to evaluate the continuity and extent of the existing high-grade mineralized zones and to test for additional high-grade shoots at depth (Figure 3). The revised mineral inventory (using a $50 NSR over 2.0 m cutoff) is 324,869 tonnes grading 0.91% Cu, 6.01% Zn, 1.26% Pb, 111.07 g/T Ag and 4.70 g/T Au (NSR = $101.67 per tonne). Results from the 1989 drill program will not appreciably change this grade and tonnage estimate.

The 1989 program has shown that there is no significant mineralization at shallow depths in the eastern part of the Coronation Zone except for that previously defined. Drilling around the hole 203 and 199 intersections indicates that these zones have limited lateral and down-dip extents. Additional tonnage is present along the hole 62-67-182 trend. Hole 233 intersected a 9.07 m zone of mineralization which included 3.82 meters that assayed 0.47% Cu, 2.72% Zn, 0.60% Pb, 103.9 g/t Ag and 1.89 g/t Au. Hole 241 was also included in this zone and it intersected a 0.5 meter slug of black massive sulphides which assayed 2.59% Cu, 11.5% Pb, 22.6% Zn, 455 g/t Ag and 50.2 g/t Au.

Hole 235, 242, and 243 intersected wide zones of mineralization down-dip of the high grade central part of the Coronation Zone. Although base metal grades of these intersections are elevated, gold and silver contents are low. At depth, the zone appears to be very weakly mineralized or absent (hole 236, 249).

Drill testing in the western part of the Coronation Zone intersected two mineralized zones. The upper one has been called the Hanging Wall zone, although it is interpreted to be the fault repetition of the Coronation Zone. Hole 245 intersected a 0.45 m zone of black massive sulphides in the HWZ which assayed 1.76% Cu, 8.98% Pb, 22.50% Zn, 1080 g/t Ag, 15.4 g/t Au. Drilling along strike and down-dip suggests that this high-grade mineralization

has limited extent. In addition, the Coronation Zone is poorly developed and/or weakly mineralized in the western part of the property.

2. West Zinc Horizon

Three diamond drill holes (89-254, 89-255, 89-264) totalling 700.1 m tested a very continuous IP anomaly that extends over a strike length of at least 1.2 km. The IP response is due to disseminated pyrrhotite (locally up to 3%), pyrite (1-3%) and chalcopyrite that occur in dominantly andesitic rocks.

Drill hole 254 was drilled on L115+00W, near the contact between andesitic and felsic units. The best results in the hole were obtained from an andesite tuff containing 3-4% pyrite that assayed 6100 ppm Cu, 815 ppm Zn, 18 ppm Pb, 3.70 ppm Ag and 900 ppb Au over 1.25 meters.

Drill hole 255 tested the IP anomaly on L119+00W. An intermediate tuff unit that occurs just south of the felsic tuff-andesite contact has anomalous zinc values (1836 ppm Zn) over 2.6 meters. This unit is dilated by a diorite dike and contains another zone of disseminated and stringer sphalerite which assayed 1740 ppm Zn over 2.5 meters.

Hole 264 which was drilled on L123+00W did not intersect any zones with anomalous metal contents.

In conclusion, the mineralization intersected in hole 254, 255 and 264 is only weakly and locally developed at or close to the contact between andesitic and felsic tuffs. This mineralization does not occur in any discrete stratigraphic interval and does not appear to be syngenetic in nature. The better mineralized intervals contain stringers and disseminations of sphalerite and chalcopyrite and are locally concentrated adjacent to quartz veins.

3. Barite - Pyrite Vein

Four diamond drill holes (89-265 - 268 incl.) totalling 902 meters were drilled in the Far East grid area. They tested VLF/IP anomalies and the extent of a barite-pyrite vein intersected in hole 89-110. The geophysical anomalies are caused by zones of disseminated pyrite (2-5%) which are usually hosted in andesitic tuffs. In hole 89-267 an interbedded sequence of fine pyritic felsic ash, intermediate ash and chert assayed 227 ppm Zn over 10.8 m. This zone is interpreted as a distal exhalite and warrants additional work. The barite-quartz vein intersected in 89-110 appears to have limited lateral extent. It was only intersected in hole 268 where a quartz-pyrite stringer assayed 0.38% Ba over 0.78 m.

4. Randy Zone

Two diamond drill holes (89-260 and 89-261) totalling 420.70 tested a weak VLF/IP anomaly south of the Randy Zone. Drill hole 260 intersected weak sporadic sulphide disseminations and stringers. The best zones assayed 913 ppm Cu, 726 ppm Zn over 0.3 m and 771 ppm Zn over 1.0 m.

Drill hole 261 was drilled downdip of hole 260 and intersected similar sulphide mineralization. The best results were 265 ppm Cu, 4430 ppm Zn over 0.5 m, 1320 ppm Zn over 0.5 m and 123 ppm Cu, 455 ppm Zn over 1.0 m. The felsic rocks intersected in both holes are strongly depleted in sodium.

5. 262 Zone

Hole 262 tested an IP anomaly that occurs in an area of hydrothermal alteration. It intersected a zone of semi-massive sulphides (15-20% pyrite, 2-3% chalcopyrite), felsic tuff, ash and minor chert that assayed 1.42% Cu, 0.12% Zn, 5.9 g/T Ag and 0.14

g/T Au over 1.15 m. Immediately overlying this interval is a sequence of intermediate ash and quartz porphyry felsic tuffs which contains 3 to 10% pyritic stringers. Copper-rich sections in this zone graded 0.18% Cu over 2.5 meters and 0.33% Cu over 2.9 m. The semi-massive sulphides are underlain by a sequence of relatively unaltered felsic tuffs that contain 3-5% disseminated and stringer sulphides (pyrite, chalcopyrite and sphalerite). Best asays from this zone yielded 0.58% Zn over 0.90 m. Further drilling will be required to properly evaluate the extent and significance of these anomalous sulphide zones.

6. 214-216 Horizon

Four diamond drill holes (89-256 - 259 incl.) totalling 971.40 m tested the extent of mineralization intersected in holes 87-214 and 87-216 (214: 1.07% Zn over 1.55 m; 216: .67% Zn, .25% Pb over 0.7 m). The 214/216 horizon lies close to the contact between quartz feldspar porphyry tuffs and aphyric felsic tuffs.

Drill holes 257 and 259 were drilled 100 metres to the east of 214/216. Hole 259 intersected a sequence of interbedded felsic and mafic tuffs and ashes that graded 0.21% Zn over 4.7 meters. This zone correlates with the 214 horizon. Another felsic interval that occurs in a diorite yielded 0.90% Cu over 1.20 m. Hole 257 intersected a thin, pyritic mafic tuff that graded 0.50% Cu and 0.07% Zn over 0.25 m. This may correlate with the interval noted in hole 259.

Drill holes 256 and 258 were drilled 100 m to the west of 214/216. Drill hole 256 intersected a sequence of interbedded felsic and mafic tuffs and ashes, that assayed 600 ppm Zn over 7.90 m. An intermediate ash unit that assayed 744 ppm Zn over 1.92 m may also correlate with the 214-216 zone. Drill hole 258 which tested downdip of 256 did not intersect any significant mineralization.

7. East Grid

Two diamond drill holes (89-269 and 89-270) totalling 555.30 m tested IP and VLF anomalies that occur within geochemically anomalous zones (Ba, Cu, Zn enrichment, Na depletion).

Drill hole 89-269 intersected a 15.47 m (159.80-175.27) thick sequence of well bedded pyritic ashes and tuffs that occur at the contact between sericite felsic tuffs and andesitic tuffs. This exhalative horizon contains a 7.87 m section that grades 565 ppm Cu and 213 ppm Zn. The sericitic felsic tuffs that overly this horizon contain minor pyritic stringers and disseminations (1-2%) and traces of chalcopyrite.

Drill hole 89-270 tested the downdip and lateral extent of the exhalative horizon intersected in drill hole 269. The exhalative horizon is absent in this hole, but the felsic tuffs that overly the andesites are altered and contain 2-3% pyrite stringers.

B. Geophysics

Magnetic, VLF and IP surveys were carried out by Al Scott Geophysics Ltd. on the Mine and exploration grids which were oriented perpendicular to the strike of the rock units and the Coronation Zone.

A total of 49.2 km of magnetic surveying was completed to try and define some of the crosscutting fault structures. The western part of the grid was not surveyed due to interference caused by the B.C. Hydro high voltage lines. The magnetic survey successfully outlined some of the conformable diorite sills and dikes but the data is too noisy to confidently discern any cross sections. Additional filtering of the data may help detect some of these more subtle features.

VLF surveying was done in conjunction with the magnetic survey. An additional 17.0 km of baselines were surveyed in an attempt to define northeasterly trending structures. Most of the NW-SE trending VLF anomalies are attributed to lithological units rather than cross-cutting faults. However, the best response ie associated with the semi-conformable Fulford Fault and Nanaimo-Sicker contact.

A total of 26.7 km of IP surveying was completed to the east and west of the Coronation Zone. A 10 kWatt system was used and this enabled surveying beneath the powerline. There are no anomalies along strike from the Coronation Zone but several laterally extensive, regional chargeability highs are present. These are associated with disseminated sulphide zones hosted primarily in andesitic tuffs. Isolated 1 and 2 line IP anomalies occur in the vicinity of the Road showing and warrant further follow-up work.

Downhole IP surveying was done for five holes in the Coronation Zone area. Although anomalies were detected, it is uncertain how far away from the hole the system is seeing as all holes intersected sufficient sulphides to explain the anomalies. Further modelling and test surveying is required before downhole IP becomes a routine exploration technique.

## C. Lithogeochemistry

Lithogeochemical surveys are used as a standard tool in the exploration for volcanogenic massive sulphides targets because the alteration haloes associated with these deposits are characterized by $Na_2O$ depletion and Ba, Cu and Zn enrichment. A total of 184 surface samples were collected on the Lara property in 1989. In addition, litho samples were taken systematically from all 1989 and pre-Minnova drill holes. All samples were analyzed for major and trace elements ($SiO_2$, $TiO_2$, $Al_2O_3$, CaO, $Na_2O$, $K_2O$, MgO, $Fe_2O_3$, $MnO_2$, Ba, S, Ag, Cu, Zn, Pb, Au, Sb, As) using ICP and atomic

absorption methods. Analyses were done at Min-En Laboratories in North Vancouver.

Frequency histograms were generated for the various elements using QGAS, a geostatistical package. On the basis of $SiO_2$, there are two dominant population groups within the Sicker volcanic package - andesites with an $SiO_2$ range of 46 to 60% and rhyolites with $SiO_2$ ranging between 60 and 78%. Statistical parameters for these two rock types were determined for Cu, Zn, $Na_2O$, $K_2O$ and Ba and are presented in Table 2. Anomalous values which are generally greater than two standard deviations from the mean, are as follows:

| Element | Anomalous Values |
|---|---|
| Cu | > 200 ppm |
| Zn | > 200 ppm |
| $Na_2O$ | < 1.0 % |
| Ba | > 0.2 % |

Two zones of anomalous lithogeochemistry are present on the Lara property (Figure 2). The Randy Zone is characterized by intense $Na_2O$ depletion and spotty Cu, Zn and Ba enrichment. The second zone of anomalous lithogeochemistry which is present to the north and east of the Coronation Zone has an elongate, east-west trend. Both zones are considered as expressions of a hydrothermal alteration system associated with the formation of a VMS deposit.

The lithogeochemical data from the structural footwall and hanging wall of the Coronation Zone indicate that there are no anomalies associated with this mineralization. However, rocks within the mineralized zone are altered which supports the idea that it is a stringer zone rather than a proximal VMS deposit.

# Table 2: Lithogeochemical Statistics

| Rock Type | Element | N | Min. | Max | Mean | Std. Dev. | Type of Distribution |
|---|---|---|---|---|---|---|---|
| 1. Andesites SiO2:46–60% | Cu (<200 ppm) | 393 | 1.0 | 200 | 66.4 | 53.9 | biomodal: lognormal + normal |
| | Zn (<200 ppm) | 472 | 9.0 | 199 | 77.0 | 38.0 | skewed normal |
| | Na2O (%) | 541 | 0.01 | 8.26 | 2.87 | 1.28 | normal with anomalous population <1% |
| | K2O (%) | 541 | 0.01 | 6.88 | 1.04 | 1.05 | log normal |
| | Ba (%) | A= 513<br>B= 110 | 0.001 | <br>0.605 | .023<br>0.112 | .0002<br>0.017 | bimodal A= 0–0.085<br>B= 0.085–0.150 |
| 2. Rhyolites SiO2:60–78% | Cu (<100 ppm) | 920 | 1.0 | 99.0 | 18.7 | 17.2 | log normal |
| | Zn (<100 ppm) | 949 | 1.0 | 97.0 | 36.4 | 19.8 | skewed normal |
| | Na2O (%) | 1076 | 0.01 | 8.58 | 2.46 | 1.54 | normal with anomalous population < 1% |
| | K2O (%) | 1076 | 0.01 | 6.61 | 2.55 | 1.08 | normal |
| | Ba (<0.25%) | 888 | .005 | .750 | .097 | .046 | normal |

D. Geology

Geological mapping was done on the new geophysical grid and although several new outcrops were discovered, the overall geological picture of an alternating sequence of andesitic and felsic tuffs is unchanged (Figure 4). Relogging of drill holes through the Coronation Zone suggests that it is a stringer zone associated with a volcanogenic massive sulphide deposit. This interpretation is supported by the stringery look to the mineralization, the irregular and spotty distribution of the high grade zones, the absence of strong footwall alteration and the lack of a distinct horizon when the zone is not present.

Relogging of reconnaissance drill holes and evaluation of Abermin's trench data indicated that there are several pyritic chert and argillite beds within the Sicker stratigraphy. These horizons are interpreted as exhalites or distal equivalents of volcanogenic massive sulphide zones. Prior to Minnova aoquiring the property, the significance of these zones was not recognized. Future drilling and trenching will be done to properly evaluate the economic potential of these horizons.

Keith Glover, a consulting geologist with structural expertise was employed for a four week period to sort out a structural history of the Sicker volcanics exposed on the Lara property. Three major phases of deformation were recognized. A dominant phase I folding event produced a vertical to steeply dipping, west-northwesterly trending penetrative foliation and a shallow easterly plunging lineation. The scale of this folding is unknown as there are no marker units in the Sicker volcanics and very few indications of original bedding.

The second phase of deformation is characterized by southwesterly directed thrust faults that dip moderately to steeply toward the northeast. The major thrust, the Fulford Fault, dips at about 45° to the northeast. It juxtaposes volcanic rocks of the Sicker Group against sedimentary rocks of the Upper Cretaceous

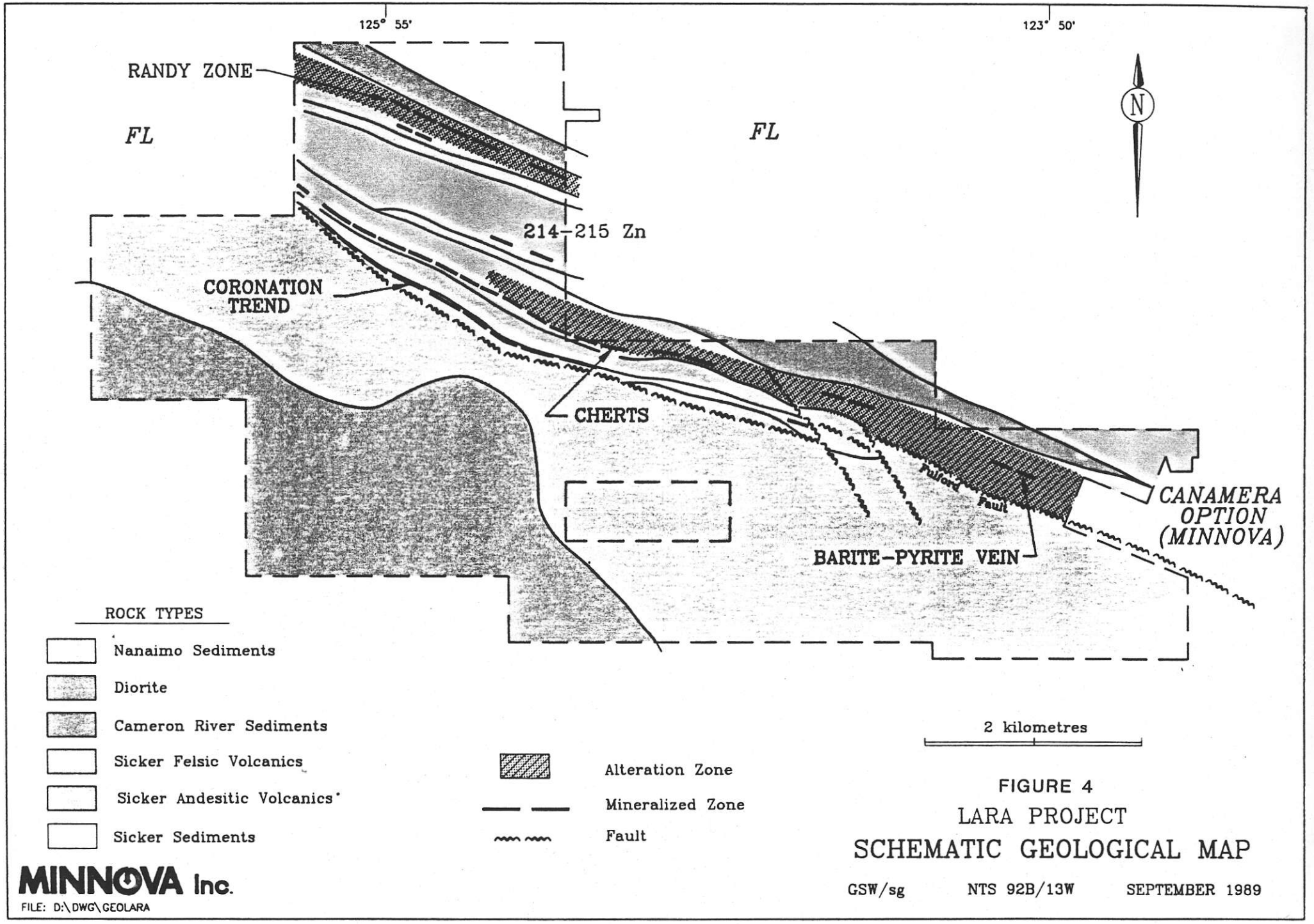


FIGURE 4

LARA PROJECT

SCHEMATIC GEOLOGICAL MAP

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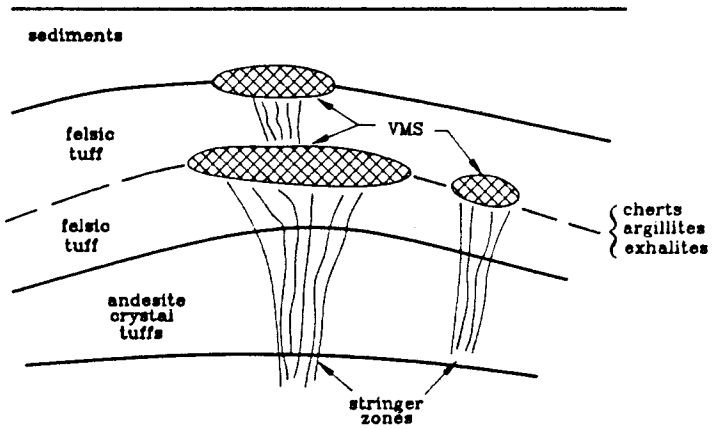
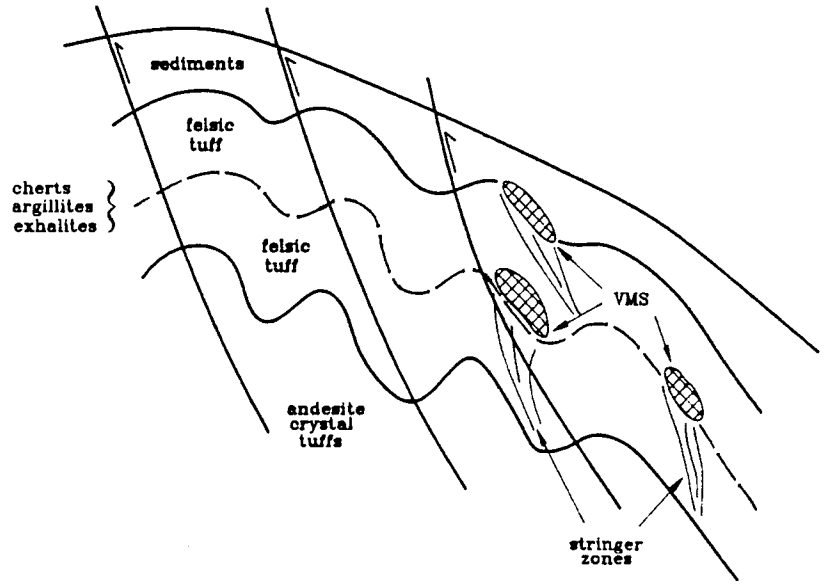
Nanaimo Group. Similar but steeper northeasterly dipping structures have been recognized in the Sicker stratigraphy. One of these faults follows the locus of the Coronation Zone and another, the Southern Rhyolite Fault, defines the northeast margin of the felsic sequence which hosts the zone. These faults are characterized by a number of small-scale structures such as C-S fabrics, cataclastic textures and asymmetric folds.

The final phase of deformation consists of northeasterly trending high angle cross faults with an apparent left lateral movement.

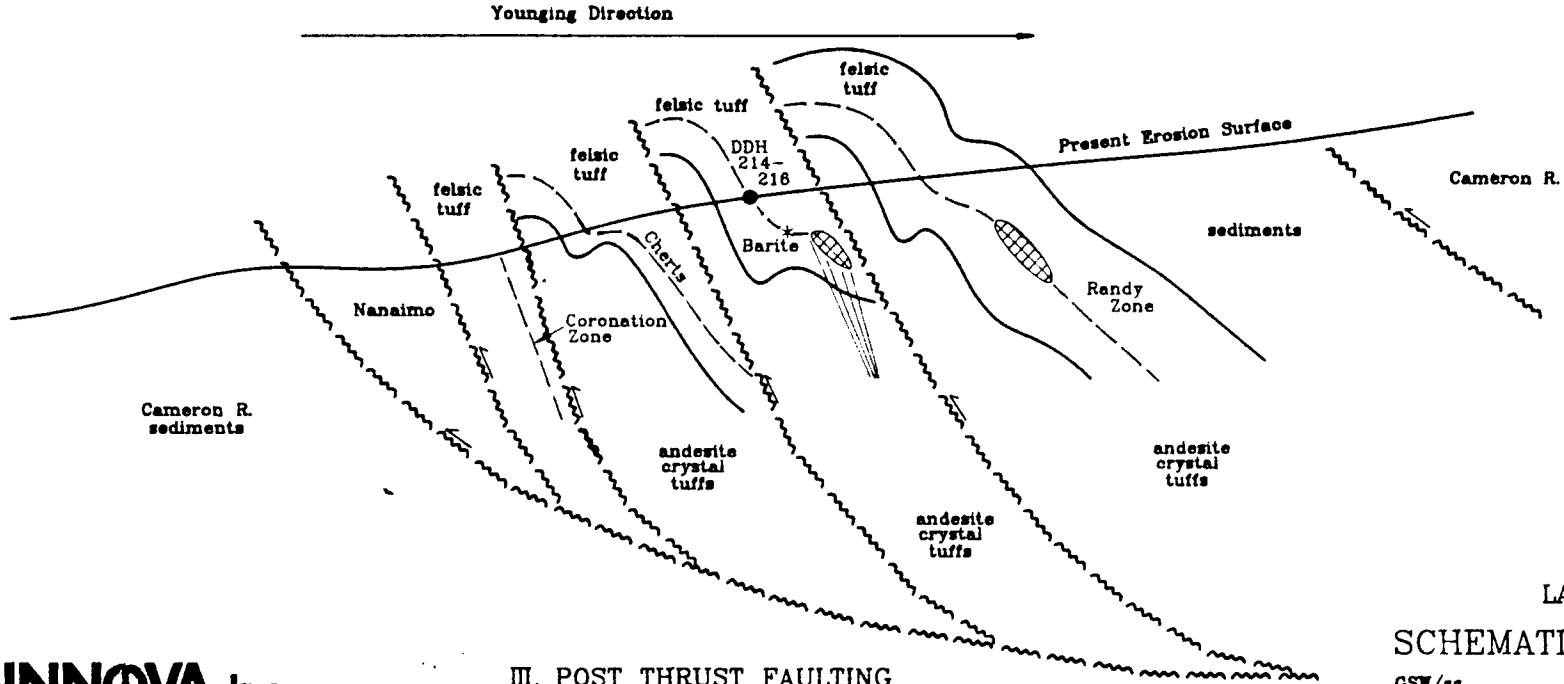
The structural model that has evolved for the Sicker volcanics is portrayed schematically in Figure 5. Volcanogenic massive sulphide deposits and underlying sulphide stringer zones form in a felsic volcanic sequence that overlies a dominantly andesitic basement. Pyritic cherts and argillites are the lateral equivalent of the massive sulphides and represent the time break during which the sulphides accumulated. An early phase of folding results in the elongation of sulphide zones which is parallel to the shallow easterly plunging mineral lineations. A later thrust faulting event has locally repeated the mineralization (i.e. Hanging Wall Zones) and the stratigraphy to the north of the Coronation Zone. At the present erosional level, it appears that the VMS associated with the Coronation stringer zone has been eroded away. However the easterly plunge of the mineral lineations implies that such a deposit could be preserved to the east. In addition, any one of the mineralized or cherty horizons exposed on the property may correlate with the Coronation Zone exhalite.




I. POST DEPOSITION




II. POST PHASE 1 FOLDING




III. POST THRUST FAULTING

FIGURE 5

LARA PROJECT

SCHEMATIC CROSS-SECTION

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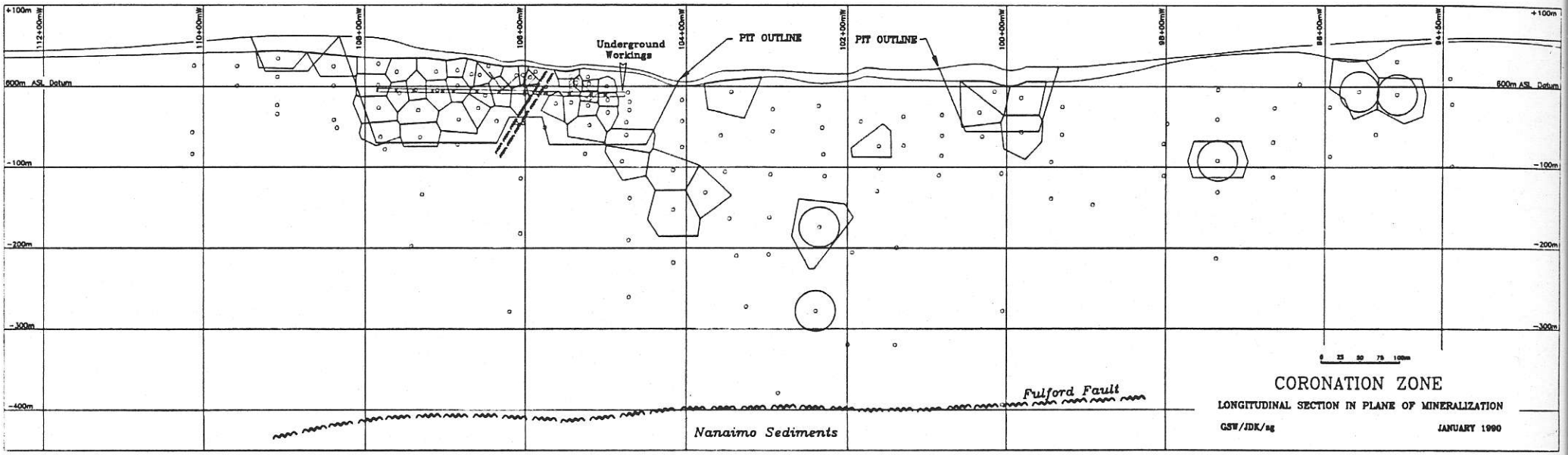
## E. Mintec Open Pit Study

Mintec Inc. evaluated the open pit potential of the Coronation Zone mineralization. A 3-D block model was created and floating cone pits were generated based on the following parameters:

1. maximum pit wall angle of 60 degrees
2. minimum NSR value of $20 (NSR formula = Cu% x 15.761 + Pb% x 1.518 + Zn% x 4.541 + Ag g/T x .181 + Au g/T x 9.111)
3. mining cost of $2.50/tonne mined
4. milling cost of $10.00/tonne mined.
5. value per block based on the above NSR formula and the specific gravity interpolated from the drill hole data.

Two shallow pits with a bottom elevation of 530 meters are required to mine the near surface high grade pods of the Coronation and Coronation Extension zones. The pit outlines have been projected onto the inclined longitudinal section in Figure 6 and the estimated tonnage and grade figures are presented in Table 3.

Using a $20 cutoff, the mineral inventory for the Mintec model is 399,173 tonnes at 0.40% Cu, 0.50% Pb, 2.24% Zn, 53.9 g/T Ag and 2.39 g/T Au and the stripping ratio is 14.6:1. At a $30 cutoff, the Mintec tonnage estimates are substantially lower than the ones determined by Minnova using a polygon method. This difference is attributed to the smaller area of influence that each hole was given in the Mintec model. In either case, the indicated mineral inventories are marginal or sub-economic. Additional reserves are required to justify the capital expenditures associated with a profitable mining operation.




Polygon Area of Influence-Minnova Mineral Inventory

Drill hole intercept

| | | Tonnes | Cu% | Pb% | Zn% | Ag g/T | Au g/T | NSR $/T |
|---|---|---|---|---|---|---|---|---|
| MINTEC | $20.00 NSR (within pit) | 399,173 | 0.40 | 0.50 | 2.24 | 53.86 | 2.39 | 46.76 |
| MINNOVA | $50.00 NSR (over 2.0m) | 324,861 | 0.91 | 1.26 | 6.01 | 111.07 | 4.70 | 101.67 |

MINNOVA Inc.

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FIGURE 6

## Table 3: Mineral Inventory Comparisons: Minnova/Mintec

| Zone | Company | Cutoff | tonnes | Cu % | Pb % | Zn % | Ag g/T | Au g/T | NSR $/T |
|---|---|---|---|---|---|---|---|---|---|
| Coronation | | | | | | | | | |
| | Mintec | $30 NSR | 243,698 | 0.47 | 0.48 | 2.43 | 53.36 | 2.46 | 51.23 |
| | Minnova | $30 NSR | 403,550 | 0.54 | 0.53 | 2.92 | 61.37 | 2.64 | 57.74 |
| Coronation Extension | | | | | | | | | |
| | Mintec | $30 NSR | 49,070 | 0.47 | 1.03 | 3.85 | 102.74 | 4.34 | 84.59 |
| | Minnova | $30 NSR | 105,058 | 0.42 | 0.94 | 3.73 | 94.63 | 4.18 | 80.22 |
| Total Open-Pittable Reserves | | | | | | | | | |
| | Mintec | $20 NSR | 399,173 | 0.40 | 0.50 | 2.24 | 53.88 | 2.39 | 48.80 |
| | Mintec | $30 NSR | 284,039 | 0.47 | 0.57 | 2.68 | 61.89 | 2.78 | 56.97 |
| | Minnova | $30 NSR | 508,607 | 0.52 | 0.61 | 3.09 | 68.24 | 2.96 | 62.38 |

## F. Metallurgical and Mineralogical Work

Metallurgical test work on Abermin's Coronation Zone bulk sample was done at the Noranda Technology Centre in Pointe Claire, Quebec under the direction of K. G. Stowe, J. Y. Kim and S. Lajoie. Two samples were evaluated - a low grade one and a high grade one with the following grades:

low grade: 0.35% Cu, 0.42% Pb, 2.53% Zn, 5.0% Fe, 41.7 g/T Ag, 1.60 g/T Au

high grade: 1.28% Cu, 1.76% Pb, 11.20% Zn, 8.11% Fe, 176 g/T Ag, 3.10 g/T Au

The significant findings are as follows:

1. The valuable minerals are relatively coarse-grained and do not require a fine primary grind or regrind.

2. Losses of all metals into tailings are very low.

3. The high grade sample yielded a high grade Cu-Pb concentrate with good metal recoveries (Cu 90%, Pb 80%, Ag 70% and Au 70%). An excellent zinc concentrate was also obtained (56%+ Zn) with high grade zinc recoveries (95%).

4. Sphalerite and pyrite are highly activated and there was a problem depressing them in the Cu-Pb circuit.

5. Results for the low grade sample indicated lower grade concentrates but good overall metal recoveries.

The ore mineralogy of the Coronation Zone was examined by Min-Scan Consultants Ltd. under the direction of Dave Carson from Noranda Research. In a largely descriptive report, they determined the grain size distribution and occurrence of ore-bearing minerals - both of which have a direct impact on the metallurgy of the ore.

## G. Reclamation Work

Reclamation work associated with Abermin's 1988 underground program on the Coronation Zone was completed in early fall. The waste and ore piles stored on an impermeable pad were levelled and limestone and clay capped to prevent any acid generation due to degradation of the sulphide material. In addition, a highly visible snow fence was erected around the portal entrance. Water quality monitoring is continuing on a quarterly basis.

# 4.0 Conclusions

The main objectives of Minnova's 1989 exploration program on the Lara property were to find additional ore reserves in and around the Coronation Zone and to assess the property's potential for hosting other massive sulphide zones. Although drilling in the Coronation Zone area augmented the down-plunge extent of the central high grade pod, the overall mineral inventory is relatively unchanged. Metallurgical work on the high grade mineralization indicated that good to excellent metal recoveries can be easily obtained (Cu: 90%, Pb: 90%, Zn: 95%, Ag: 70%, Au: 70%). These shallow high grade zones are also amenable to open pit mining but the deposit is too small to be economic on its own. Mintec calculated an open pit reserve of 399,173 tonnes at 0.40% Cu, 0.50% Pb, 2.24% Zn, 53.9 g/T Ag, 2.39 g/T Au using a $20 NSR cutoff.

The geological, geophysical and geochemical work has greatly enhanced the massive sulphide potential for the rest of the property. The Coronation Zone is interpreted as a stretched stringer zone that is associated with a volcanogenic massive sulphide deposit. A late regional thrust faulting event has repeated both the mineralization and the stratigraphy. This implies that any one of the mineralized or cherty horizons that occur on the property may correlate with the VMS horizon that is associated with the Coronation Zone.

Two areas of hydrothermal alteration which are characterized by $Na_2O$ depletion and Ba, Cu and Zn enrichment have been defined by the lithogeochemical surveys. One occurs in the Randy zone at the transition between quartz-eyed felsic volcanics and reworked volcanic sediments. The second altered zone which has a strike length of over 6 km occurs in the structural hanging wall and to the east of the Coronation Zone. Drill testing of some of the VLF and IP anomalies in this second zone has intersected sequences of pyritic cherts which are interpreted as distal exhalites associated with VMS zones. In hole 262, a copper-rich zone associated with these cherts assayed 1.42% Cu, 0.12% Zn over 1.15 m.

## 5. Future Work

The 1990 exploration program will attempt to define additional shallow-level ore reserves in areas removed from the Coronation Zone. A limited amount of linecutting, IP, VLF, Mag and geology remains to be done in the eastern part of the property but the bulk of the program will consist of diamond drilling. An 8500 meter drill program will test geophysical anomalies and mineralized horizons within areas of anomalous geochemistry. Specific target areas that have been defined to date include the following:

1. RANDY ZONE - zinc stringers and argillite horizons hosted in the most altered felsic rocks on the property

2. 262 ZONE - no hole within 1 km of this mineralization

3. ROAD SHOWING - isolated, untested IP anomalies in the vicinity of this showing; 550 m to west have 15 m thick pyritic argillite that has never been drill tested.

4. PYRITIC CHERTS - in Barite vein and East grid areas - these distal exhalites are untested along strike.