60001504

Mining District File Summary Sheet

| | |
|---|---|
| DISTRICT | Rosebud |
| DIST_NO | 4010 |
| COUNTY<br>If different from written on document | Pershing |
| TITLE<br>If not obvious | Rosebud Drill Hole File - Hole No. 94-327C |
| AUTHOR | L. Bernard; C. Muerhoff; S. Faircloth |
| DATE OF DOC(S) | 1994 |
| MULTI_DIST Y / (N?)<br>Additional Dist_Nos: | |
| QUAD_NAME | Sulphur 7.5' |
| P_M_C_NAME<br>(mine, claim & company names) | Rosebud Mine; Rosebud Project; Hecla Mining Co.; North Zone |
| COMMODITY<br>If not obvious | gold silver |
| NOTES | Drill log; geology; assay; total depth 1000'<br>handwritten notes<br><br>24p. |

Keep docs at about 250 pages if no oversized maps attached
(for every 1 oversized page (>11x17) with text reduce
the amount of pages by ~25)

| | Initials | Date |
|---|---|---|
| SS: | DD | 5/29/08 |
| DB: | mah | |
| SCANNED: | NVBlue | |

Revised: 1/22/08

94-327c

60001504 4010

6000 1504

**Hecla**
MINING COMPANY

# ROSEBUD PROJECT
# DIAMOND DRILL LOG

| | | | | | |
|---|---|---|---|---|---|
| HOLE NUMBER | 94-327 | LOCATION | Northzone | REMARKS | |
| PAGE | 1 OF | NORTHING | 2204283.0 | RC to 495 rapid logging | |
| DATE | 12/1 | EASTING | 482458.0 | CORE from ___ to ___ Quick logging | |
| LOGGED BY | LJB/CM | ELEVATION | 5345.0 | | |
| SCALE | RC 1"=20' CORE 1"=10' | AZIMUTH | 91.0° | | |
| TOTAL DEPTH | 1000' | INCLINATION | -90.0° | | |

| REC | RQD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION |
|---|---|---|---|---|---|---|
| | poss mislabel Trays Check Top of hole in field | 15-105 dk gy - purple Volcanic bx med grain w/ fine wk clay alt clasts <1/20" | 20, 40, 60, 80, 100 | | | 15-105 hem rk |

ANALYTICAL DATA

| FROM | TO | W | Au | Ag | Au2 | Ag2 |
|---|---|---|---|---|---|---|
| 0 | 15 | 15 | 6 | | | |
| 15 | 25 | 10 | <5 | | | |
| 25 | 35 | 10 | <5 | | | |
| 35 | 45 | 10 | <5 | | | |
| 45 | 55 | 10 | | | | |
| 55 | 65 | 10 | | | | |
| 65 | 75 | 10 | | | | |
| 75 | 85 | 10 | | | <5 (R) | |
| 85 | 95 | 10 | | | | |
| 95 | 105 | 10 | | | <5 (R) | |

HOLE NUMBER 94-327 PAGE 2 OF

| FEC | RQD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION |
|---|---|---|---|---|---|---|
| | | 115 - 155 white Ashy w/ fine grains w/ wk py dissem<br>Ashy-fine grain Tuff | 120 | | | 115-155 wk sil + wk FeOx on frac. |
| | | | 140 | | | |
| | | 165 - 195 Ashy - fine grain Tuff<br>As noted above | 160 | | Marker unit ??<br>Fault ??? | 155-165 str hem Zone<br>v. wk chl at base |
| | | | 180 | | | |
| | | 195 - 295 purple fine grain Volcanic by fine Angular clasts | 200 | | | 195- 295 str hem<br>V. wk chl<br>wk Argillic (fine clays) |
| | | | 220 | | | |
| | | | 240 | | | |

| ANALYTICAL DATA | | | | | | |
|---|---|---|---|---|---|---|
| FROM | TO | W | Au | Ag | Au2 | Ag2 |
| 105 | 115 | 10 | <5 | | | |
| 115 | 125 | 10 | ↓ | | | |
| 125 | 135 | 10 | ↓ | | | |
| 135 | 145 | 10 | 30 | | | |
| 145 | 155 | 10 | <5 | | | |
| 155 | 165 | 10 | <5 | | | |
| 165 | 175 | 10 | <5 | | | |
| 175 | 185 | 10 | 32 | | 37 (R) | |
| 185 | 195 | 10 | <5 | | | |
| 195 | 205 | 10 | <5 | | | |
| 205 | 215 | 10 | <5 | | | |
| 215 | 225 | 10 | <5 | | | |
| 225 | 235 | 10 | 5 | | | |
| 235 | 245 | 10 | <5 | | | |

HOLE NUMBER 94-327 PAGE 3 OF

| REC | RSD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION |
|---|---|---|---|---|---|---|
| | | 295-345 green clastics in dk brown hem matrix, decreasing hem Transition to Bud? | 260 280 300 320 340 360 380 | | | 295-345 wk chl |
| | | 345-455 lt+dk green chips combination of ash Tuff and volcanic brec | | | | 345-455 wk chl w/ sil overprint wk gtz-py veinlets, wk py vn mod chl, wk py veinlets |

ANALYTICAL DATA

| FROM | TO | W | Au | Ag | Au2 | Ag2 |
|---|---|---|---|---|---|---|
| 245 | 255 | 10 | <5 | | | |
| 255 | 265 | 10 | | | | |
| 265 | 275 | 10 | | | | |
| 275 | 285 | 10 | | | <5 (R) | |
| 285 | 295 | 10 | | | | |
| 295 | 305 | 10 | | | | |
| 305 | 315 | 10 | | | | |
| 315 | 325 | 10 | 62 | | | |
| 325 | 335 | 10 | 21 | | | |
| 335 | 345 | 10 | <5 | | | |
| 345 | 355 | 10 | 87 | | | |
| 355 | 365 | 10 | 218 | | | |
| 365 | 375 | 10 | 34 | | | |
| 375 | 385 | 10 | 37 | | | |

HOLE NUMBER 94-327 PAGE 4 OF

| REC | RQD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION |
|---|---|---|---|---|---|---|
| | | 455-495 white Ashy Tuff w/ wk-mod py disem<br><br>↓<br><br>SEE 1"=10' CORE LOGS | 400<br>420<br>440<br>460<br>480<br>500<br>520 | | | wk py vn<br>wk py vn<br>mod py vn |

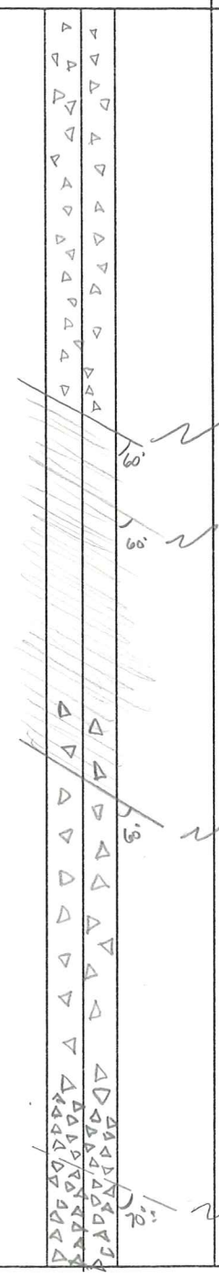
ANALYTICAL DATA

| FROM | TO | W | Au | Ag | Au2 | Ag2 |
|---|---|---|---|---|---|---|
| 385 | 395 | 10 | 8 | | 6 (R) | |
| 395 | 405 | 10 | 48 | | | |
| 405 | 415 | 10 | 20 | | | |
| 415 | 425 | 10 | 52 | | | |
| 425 | 435 | 10 | 150 | | | |
| 435 | 445 | 10 | 260 | | | |
| 445 | 455 | 10 | 112 | | | |
| 455 | 465 | 10 | 96 | | 102 (R) | |
| 465 | 475 | 10 | 228 | | | |
| 475 | 485 | 10 | 464 | | | |
| 485 | 495 | 10 | 106 | | | |

HOLE NUMBER 94-327 PAGE 5 OF 12

| %REC | RQD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION | ANALYTICAL DATA FROM | TO | W | (opt) Au | (opt) Ag | (opt) Au2 | (opt) Ag2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RC to 495'; HQ core to 1000' | | | | | 495'-850.5' Geochem samples taken | | | | | | |
| | | 495'-527.5' Rhyolitic(?) flow/flow bxa. Matrix-supported w/ sub-rounded, chloritized to argillized fragments (same composition as groundmass) which contain 2-3% chloritized mm-size tabular phenos. Clasts comprise approx 20% of rock mass. | 500 | | | 495'-505' Strongly argillized, but waning rapidly w/ depth. 495'-527.5' Flow/flow bxa is cut by chalcedony ± drusy qtz + pyrite ± illite stringers; preferentially @ 60° ± to c.a. | 495 | 505 | 10 | <0.001 | 0.03 | | |
| | | | 510 | | | | 505 | 515 | 10 | <0.001 | 0.02 | <0.001 | |
| | | | 520 | | | | 515 | 527.5 | 12.5 | 0.004 | 0.05 | | |
| | Middle Bud | 527.5'-582.7' Clast-supported, lithic-rich tuff breccia (really more conglomeratic) w/ strongly chloritized & pyritized groundmass. Heterolithic w/ 4 distinct fragment types: 1) chloritized/pyritized finely-bedded ash tuff, 2) chloritized → argillized vfg "massive" tuff, 3) tan, v. angular, aphanitic frags, 4) dark green, aphanitic flow(?) fragments w/ calcite-replaced tabular phenos. | 530 | | | | 527.5 | 538 | 10.5 | 0.002 | 0.04 | | |
| | | | 540 | | | | 538 | 548 | 10 | 0.009 | 0.09 | | |
| | | | 550 | | | | 548 | 558 | 10 | 0.002 | 0.04 | | |
| | | | 560 | | | | | | | | | | |

HOLE NUMBER 94-327 PAGE 6 OF 12

| %REC | RQD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION |
|---|---|---|---|---|---|---|
| | | 582.7'-589.5' flow-laminated, strongly chloritized → argillized lithic-tapilli ash flow tuff. V. dark green in color | 570, 580, 590, 600, 610, 620, 630 |  | Sharp, planar, conformable contact. (60°); flow laminations (60°); conformable contact. (60°); bedding (20°) | |
| | | 589.5'-604' flow-laminated tuff continues, but now contains propylitized & argillized tuffaceous fragments. | | | | |
| | | 604'-622.6' Clast-supported lithic tuff / tuff bxa w/ strongly chloritized groundmass & chloritized → argillized sub-angular fragments. | | | | |
| | | 622.6'-692' bxa above rapidly grades into bedded volcanic conglomerate (mosaic → pebble cong. textured) | | | | |

ANALYTICAL DATA

| FROM | TO | W | Au | Ag | Au2 | Ag2 |
|---|---|---|---|---|---|---|
| 558 | 568 | 10 | 0.001 | 0.03 | | |
| 568 | 582.7 | 14.7 | <0.001 | 0.03 | | |
| 582.7 | 590 | 7.3 | <0.001 | <0.02 | <0.001 | |
| 590 | 600 | 10 | <0.001 | <0.02 | | |
| 600 | 610 | 10 | 0.001 | <0.02 | | |
| 610 | 620 | 10 | <0.001 | <0.02 | | |
| 620 | 630 | 10 | <0.001 | <0.02 | | |

HOLE NUMBER 94-327 PAGE 7 OF 12

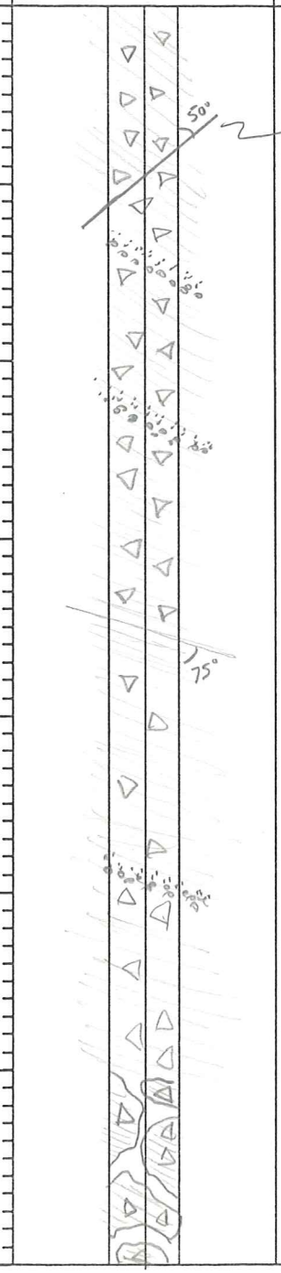
| %REC | RQD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION | ANALYTICAL DATA FROM | TO | W | Au | Ag | Au2 | Ag2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ~634' bxa/conglomerate grades into flow-laminated ash tuff which contains bleached, argillized or chloritized angular porphyritic fragments. "Bedding" is slightly contorted. | | | bedding @ 70° | | 630 | 640 | 10 | <0.001 | 0.02 | | |
| | | ~640'-692' s.a.a., only varies from matrix-supported to clast-supported | 640 | | bedding @ 60° | -past 644', propylitic/chloritic alteration becomes increasingly overprinted by argillization. Increasing w/ depth. ↓ | 640 | 650 | 10 | 0.001 | <0.02 | | |
| | | | 650 | | | | 650 | 660 | 10 | <0.001 | <0.02 | | |
| | | | 660 | | | | 660 | 670 | 10 | 0.023 | 0.03 | | |
| | | | 670 | | | | 670 | 680 | 10 | 0.004 | <0.02 | | |
| | | | 680 | | | bleaching 3' into bxa above ↑ 692'-741.4' flow/sill is cut by numerous pyrite ± grey chalcedony stringers @ 30°-40° to c.a. & by v. thin, wispy, irregular pyrite + chlorite stringers @ no preferential orientation. | 680 | 692 | 12 | <0.001 | 0.03 | | |
| | Tmb | 692'-741.4' alkali-rhyolitic(?) flow/sill(?). light tan w/ clay-altered, tabular feldspar phenos & chloritized-to-pyritized mafics. Crude pheno alignment @ 60° ± to c.a. | 690 | | sharp, irregular contact. @ 50° | | 692 | 702 | 10 | 0.004 | 0.08 | | |
| | | | 700 | | pheno foliation @ 60° | | | | | | | | |

HOLE NUMBER 94-327 PAGE 8 OF 12

| %REC | RQD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION |
|---|---|---|---|---|---|---|
| | Lower Bud | 741.4'-850.5' Strongly chloritized lithic-rich bxa (same as 527.5'-582.7'). Changing intervals of clast-supported & matrix-supported. Foliation of bxa @ 60° ± to c.a. ↓ occassional, short (1'-3') intervals of coarsening-downward epiclastic (tuffaceous sandstone grading into pebble conglomerate) throughout Lower Bud interval. All contacts within interval appear to be conformable. | 710 720 730 740 750 760 770 | 3" of bleaching of underlying bxa; 30°; 60° ± | Sharp, irregular contact; "bedding" | -past 715', chlorite ± pyrite stringers @ 10°-15° to c.a. dominant. |

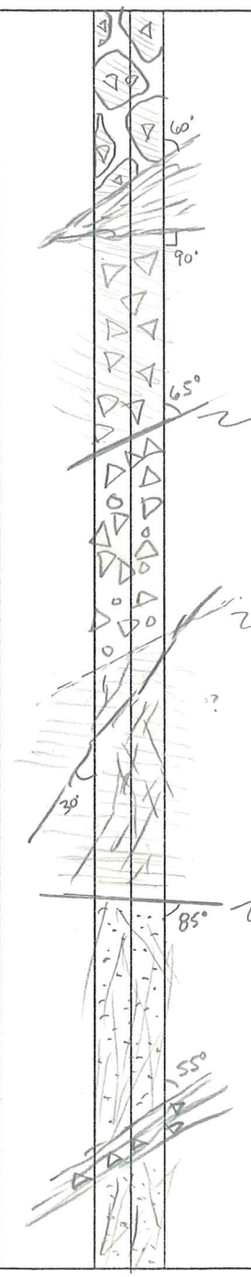
| ANALYTICAL DATA | | | | | | |
|---|---|---|---|---|---|---|
| FROM | TO | W | Au | Ag | Au2 | Ag2 |
| 702 | 712 | 10 | 0.002 | 0.05 | | |
| 712 | 722 | 10 | <0.001 | 0.02 | | |
| 722 | 732 | 10 | 0.004 | 0.07 | | |
| 732 | 741.4 | 9.4 | 0.004 | 0.06 | | |
| 741.4 | 750 | 8.6 | 0.025 | 0.08 | 0.017 | |
| 750 | 760 | 10 | 0.022 | 0.02 | | |
| 760 | 770 | 10 | 0.001 | 0.02 | | |

HOLE NUMBER 94-327 PAGE 9 OF 12

| %REC | RQD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION |
|---|---|---|---|---|---|---|
| | | - past 830', tuff has been strongly re-brecciated & fractured - healed & filled by illite/white clays + pyrite. | 780<br>790<br>800<br>810<br>820<br>830<br>840 |  | fault (nearly ⊥ to "bedding") w/ 4" grey-green clay gouge + rock flour. | - past 800' start picking up illite on fracture surfaces.<br>- past 808', start picking up "wispy", elongated chlorite 'blobs' in groundmass.<br>812'-850.5' Milky-white chalcedony veining (upto 2" thick) @ ⊥ to c.a. Also, very distinctly oriented zones of grey chalcedony brecciation @ 40° to c.a. - cutting white chalcedony veins.<br>@826' argillization increases dramatically - nearly total replacement of rock mass to pale green, waxy clay. Overprinted by silicification to ~840'. |

| ANALYTICAL DATA | | | | | | |
|---|---|---|---|---|---|---|
| FROM | TO | W | Au | Ag | Au2 | Ag2 |
| 770 | 780 | 10 | <0.001 | 0.02 | <0.001 | |
| 780 | 790 | 10 | 0.057 | 0.03 | | |
| 790 | 800 | 10 | 0.041 | 0.05 | | |
| 800 | 810 | 10 | 0.042 | 0.06 | | |
| 810 | 820 | 10 | 0.003 | 0.21 | | |
| 820 | 830 | 10 | 0.007 | 0.06 | | |
| 830 | 840 | 10 | 0.023 | 0.10 | | |

HOLE NUMBER 94-327 PAGE 10 OF 12

| %REC | RQD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION |
|---|---|---|---|---|---|---|
| | BUD/LBT ? | 852.5'-863.6' Gradational Bud/LBT contact? Pervasively silicified bxa/conglomerate. Clast-supported w/ dark green, chloritic, porphyritic sub-rounded fragments (phenos totally chloritized) & strongly argillized small (≤ 1/4") v. angular tuffaceous fragments, & sub-rounded, grey & milky-white chalcedony fragments in silicified (overprinting propylitic-chloritic alteration) lithic-rich ground mass. | 850 |  | 850.5-852.5' fault - both contacts very irregular. 2ft between contacts - grey clay + rock flour gouge; partially cemented by spheroidal, grey, pyritic chalcedony + open-space barite xtals ± Ag-sulfosalts (pyrargyrite?) | Start whole core assay sample → |
| | SRF ? | 863.6'-876.0' South Ridge Fault(?) Looks like a hydrothermal bxa w/ pale, tan, silicified, angular fragments floating in black chalcedony that contains rounded fragments of white chalcedony | 860 | | HW of SRF marked by 1/4" open-space calcite veinlet coated w/ small spheres of tan mineral (cellestite?) | 863.6'-876.0' Entire interval cut by later illite stringers @ random ∠s to c.a. Interval is vugy w/ open-space barite + stibnite xtals. |
| | LBT ? | 876.0'-889' Tan, fg, finely laminated tuff - pervasively silicified & bxiated & healed by black chalcedony + pyrite + illite ± stibnite stringers @ 20° to c.a. | 870 | | footwall not very distinct | |
| | | | 880 | | 880'-881' fault - healed by grey chalcedony ± illite ± pyrite | |
| | | 889'-903.2' Massive, vfg, tan, argillized tuff/flow w/ ±2% pyritized, tabular phenos | 890 | | v. sharp contact. 889'-903.2' brecciated by grey chalcedony. Random chalcedony stringers; generally @ 50°(±15°) to c.a. Yellow (ducks butter) illitic clays on fracture surfaces. | @889' silicification beginning to wane rapidly w/ depth ↓ |
| | | 905'-921.6' Hydrothermally-brecciated light tan to pale yellow vfg tuff(?) flow(?). Subtle mosaic-bxiation w/ FeOx on fracture surfaces. Has been re-bxiated by grey chalcedony + pyrite + dark grey mineral (doesn't (con't) look like Ag) | 900 | | 903.2'-905' Fault/hydrothermal bxa vein w/ small, angular tuff frags entirely supported by massive, sulfide-poor, white illitic clay & black chalcedony. | |
| | | | 910 | | | |

ANALYTICAL DATA

| FROM | TO | W | Au | Ag | Au2 | Ag2 |
|---|---|---|---|---|---|---|
| 840 | 850.5 | 10.5 | 0.007 | 0.41 | 0.007 | |
| 850.5 | 852.5 | 2 | 0.059 | 1.65 | 0.073 | |
| 852.5 | 858 | 5.5 | 0.049 | 24.90 | 0.028<br>0.072 | |
| 858 | 863.6 | 5.6 | 0.169 | 0.43 | 0.158 | |
| 863.6 | 867 | 3.4 | 0.037 | 0.52 | . | |
| 867 | 872 | 5 | 0.077 | 0.16 | 0.095 | |
| 872 | 876 | 4 | 0.060 | 0.07 | 0.047 | |
| 876 | 880 | 4 | 0.006 | 0.05 | | |
| 880 | 881.1 | 1.1 | 0.021 | 0.17 | | |
| 881.1 | 885 | 3.9 | 0.005 | 0.06 | | |
| 885 | 889 | 4 | 0.045 | 0.22 | | |
| 889 | 894 | 5 | 0.004 | 0.05 | | |
| 894 | 899 | 5 | 0.012 | 0.06 | | |
| 899 | 903.2 | 4.2 | 0.001 | 0.04 | | |
| 903.2 | 905 | 1.8 | 0.002 | 0.05 | | |
| 905 | 910 | 5 | 0.003 | 0.06 | | |

HOLE NUMBER 94-327 PAGE 11 OF 12

| %REC | RQD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION |
|---|---|---|---|---|---|---|
| | (con't) | stringers & by white chalcedony stringers; all @ random orientations | | | 905'-921.6' Strong, prominent fracture pattern @ 40° to c.a. Illitic clays (ducks butter) + pyrite on fracture surfaces. | |
| | | 921.6'-924' Pervasively-silicified, matrix-supported breccia w/ sub-rounded silica-replaced lithic tuff fragments (only subtle remnant textures remain) floating in a silica-overprinted → replaced, hematitic groundmass w/ no remnant textures (can't determine grain size). Don't think it is a healed fault or vein. | 920 | brecciated contact between LBT & Dozer? | | |
| Dozer ? | | 924'-968.2' Vfg → aphanitic banded/bedded flow(?). Pervasively-silicified to ~935'. banding starts out @ 30°-40° to c.a., but changes to ~60° to c.a past 935'. | 930 | ~35°-40° | | 924'-968.2' Preferential argillization of flow bands/bedding (30°-40° to c.a.) to light yellow clay. |
| | | -past 949', some bands/beds are preferentially pyritized. Orientation of flow bands/beds changing to ~80° to c.a. | 940 | ~60° | 946'-949' cut by open-space chalcedony-qtz + illite + pyrite + grey vfg mineral (doesn't look like Ag-salts) ~55° to c.a. | |
| | | 968.2'-992.7' Strongly brecciated vfg flow. Mosaic-textured bxa - clast-supported w/ strongly bleached → argillized v. angular fragments in hematized to chloritized med-grain. groundmass. | 950 | | past 949', flow is cut by black chalcedony + pyrite @ 60° to c.a. | -past 935', still strongly argillized, but w/o yellow clay along certain flow bands. |
| | | 968.2'-992.7' bxa is cut by grey-white chalcedony + pyrite + illite stringers @ random to c.a. Illite + marcasite + pyrite ± stibnite on fracture surfaces. | 960 | ~80° | | Entire Interval cut by pyrite ± chalcedony stringers w/ no preferred orientation; in turn cut by later clay (illite?) stringers @ 60° to c.a. Illite ± marcasite blades on fracture/joints throughout interval. |
| | | | 970 | Sharp contact marked by 3/4" black, planar chalcedony vein. | | Argillization increasing w/ depth ↓ |
| | | | | ~20°-25° | 975.3' fault @ 55° to c.a. w/ 3" grey, pyritic clay. | |
| | | | 980 | ~55° | | |

| ANALYTICAL DATA | | | | | | |
|---|---|---|---|---|---|---|
| FROM | TO | W | Au | Ag | Au2 | Ag2 |
| 910 | 915 | 5 | 0.002 | 0.08 | | |
| 915 | 921.6 | 6.6 | 0.001 | 0.07 | | |
| 921.6 | 924 | 2.4 | 0.004 | 0.05 | | |
| 924 | 929 | 5 | 0.002 | 0.04 | | |
| 929 | 934 | 5 | 0.001 | 0.04 | | |
| 934 | 939 | 5 | 0.007 | 0.06 | | |
| 939 | 944 | 5 | 0.002 | 0.04 | | |
| 944 | 949 | 5 | 0.002 | 0.08 | | |
| 949 | 954 | 5 | 0.002 | 0.06 | | |
| 954 | 959 | 5 | 0.002 | 0.06 | | |
| 959 | 964 | 5 | 0.002 | 0.05 | | |
| 964 | 968.2 | 4.2 | 0.002 | 0.09 | | |
| 968.2 | 975.3 | 7.1 | 0.002 | 0.04 | | |
| 975.3 | 980 | 4.7 | 0.003 | 0.06 | | |

HOLE NUMBER 94-327 PAGE 12 OF 12

| %REC | RQD | LITHOLOGY | FT | GRAPHIC LOG | STRUCTURE | ALTERATION AND MINERALIZATION |
|---|---|---|---|---|---|---|
| | | ~984' grades into massive light green aphanic flow w/ 2-3% clay-replaced tabular feldspars.<br>~987'-992.7' grades into pervasively-silicified flow bxa – crude lineation @55° to c.a. Vugy w/ yellow clay & pyritized (stibnite?) needles. | 990 | | 992.7'<br>sharp fault. | past 984', stockworked by erratic, discontinuous pyrite + black chalcedony ± illite stringers.<br>987.7' 3" massive white calcite vein; bxized & healed by illitic clay. |
| | Ts | 992.7'-1000' Interbedded carbonaceous med-grain sandstone >> mudstone. 55° to c.a. Minor brecciation. Discontinuous wispy 'blebs' of pyrite ± marcasite along bedding planes. | 1000 | | T.D. 1000' | |

| ANALYTICAL DATA | | | | | | |
|---|---|---|---|---|---|---|
| FROM | TO | W | Au | Ag | Au2 | Ag2 |
| 980 | 984 | 4 | 0.007 | 0.14 | 0.008 | |
| 984 | 987.7 | 3.7 | 0.002 | 0.06 | | |
| 987.7 | 992.7 | 5 | 0.032 | 1.90 | 0.022 | |
| 992.7 | 996 | 3.3 | 0.007 | 0.23 | | |
| 996 | 1000 | 4 | 0.005 | 0.06 | | |

## HECLA MINING COMPANY – ROSEBUD PROJECT
## GEOTECHNICAL DRILL LOG

HOLE # 94-327 DATE: 11/1/94 LOGGED BY: C. Muirhoff PAGE 1 OF 2

| DRILL RUN FROM | DRILL RUN TO | SOLID CORE RECOVERY (%) | TOTAL CORE RECOVERY (%) | RQD | ROCK STRENGTH DOWNHOLE DEPTH | ROCK STRENGTH POINT LOAD INDEX (psi) | FRACTURE DATA FRACTURE DENSITY/FT. | FRACTURE DATA AVG. ANGLE TO C.A. | FRACTURE DATA ROUGHNESS | FRACTURE DATA INFILL | DENSITY DATA DOWNHOLE DEPTH | DENSITY DATA SAMPLE WEIGHT (g) | DENSITY DATA DISPLACEMENT (cc) | DENSITY (g/cc) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 854 | 864 | 100 | 100 | 100 | 860 | R3 | 0.5 | 51 | V | illite + barite x-tals | 860 | 570.3 | 220 | |
| 864 | 874 | 98 | 100 | 89 | 870 | R3 | 0.5 | 43 | R | illite + barite x-tals | 870 | 336.2 | 135 | |
| 874 | 884 | 98 | 100 | 92 | 880 | R3 | 0.5 | 56 | V | illite + minor py | 880 | 756.0 | 280 | |
| 884 | 894 | 100 | 100 | 93 | 890 | R2 | 0.5 | 47 | R | illite + minor green waxy clay | 890 | 570.8 | 235 | |
| 894 | 904 | 94 | 97 | 86 | 900 | R2 | 0.4 | 30 | R | illite ± chalcedony | 900 | 479.2 | 185 | |
| 904 | 914 | 97 | 98 | 93 | 910 | R3 | 0.4 | 53 | R | illite ± grey clay | 910 | 453.9 | 180 | |
| 914 | 924 | 98 | 100 | 80 | 920 | R3 | 1.0 | 36 | R | illite ± grey clay + py | 920 | 516.7 | 195 | |
| 924 | 934 | 98 | 100 | 90 | 930 | R3 | 0.8 | 43 | R | " ± minor | 930 | 677.6 | 265 | |
| 934 | 944 | 98 | 98 | 94 | 940 | R2 | 0.9 | 38 | R | " | 940 | 319.6 | 140 | |
| 944 | 954 | 100 | 100 | 89 | 950 | R2 | 0.8 | 50 | R | illite + coarse py | 950 | 422.5 | 180 | |
| 954 | 964 | 97 | 100 | 91 | 960 | R2 | 0.6 | 42 | S | illite + py + more blebs | 960 | 680.5 | 290 | |

# HECLA MINING COMPANY – ROSEBUD PROJECT
## GEOTECHNICAL DRILL LOG

HOLE # 94-327 DATE: _____ LOGGED BY: _____ PAGE 2 OF 2

| DRILL RUN FROM | DRILL RUN TO | SOLID CORE RECOVERY (%) | TOTAL CORE RECOVERY (%) | RQD | ROCK STRENGTH DOWNHOLE DEPTH | ROCK STRENGTH POINT LOAD INDEX (psi) | FRACTURE DATA FRACTURE DENSITY/FT. | FRACTURE DATA AVG. ANGLE TO C.A. | FRACTURE DATA ROUGHNESS | FRACTURE DATA INFILL | DENSITY DATA DOWNHOLE DEPTH | DENSITY DATA SAMPLE WEIGHT (g) | DENSITY DATA DISPLACEMENT (cc) | DENSITY (g/cc) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 964 | 974 | 98 | 100 | 87 | 970 | R2 | 1.0 | 39 | S | illite + py ± more ± chalc. + chorite | 970 | 618.9 | 255 | |
| 974 | 984 | 97 | 100 | 88 | 980 | R3 | 0.6 | 48 | S | illite ± minor sulfides | 980 | 591.9 | 225 | |
| 984 | 994 | 98 | 97 | 91 | 990 | R3 | 0.5 | 46 | S | illite ± sulfide + calcite | 990 | 774.0 | 305 | |
| 994 | 1000 | 98 | 98 | 63 | 998 | R1 | 0.8 | 60 | S | bedding plane illite ± carbon | 998 | 643.5 | 285 | |
| | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | |

180
290

# ANALYSIS REPORT

American Assay Laboratories

P.O. BOX 71060
RENO, NV,,U.S.A.,
Ph.1-702-356-0606, Fax.1-702-356-1413
Telex:

## HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF

CLIENT REFERENCE No: 94-327

LABORATORY JOB No. : SP031547

SAMPLE TYPE :

RECEIVED : 7 NOV 1994

REPORTED : 21 NOV 1994

No. SAMPLES : 13

| ANALYSIS | ANALYTICAL METHOD | QUALITY PARAMETER | UNIT | DETECTION |
|---|---|---|---|---|
| Au(OZ) | FA60 | 15% | OPT | 0.001 |
| Au(RZ) | FA60 | 15% | OPT | 0.001 |
| AuGRAV | GRAV | 15% | OPT | 0.001 |
| Ag(OZ) | D210 | 10% | OPT | 0.02 |

ok to pay
140175-477
CM

# ANALYSIS REPORT

American Assay Laboratories

P.O. BOX 71060
RENO, NV,,U.S.A.,
Ph.1-702-356-0606, Fax.1-702-356-1413
Telex:

## HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF

CLIENT REFERENCE No: 94-327

LABORATORY JOB No. : SP031043

SAMPLE TYPE :

RECEIVED : 27 SEP 1994

REPORTED : 20 OCT 1994

No. SAMPLES : 49

| ANALYSIS | ANALYTICAL METHOD | QUALITY PARAMETER | UNIT | DETECTION |
|---|---|---|---|---|
| Au | FA30 | 15% | ppb | 5 |
| Au(R) | FA30 | 15% | ppb | 5 |

SIGNATORY : Sue Faircloth M.S.

AMERICAN ASSAY LABORATORIES

# ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-327
JOB NUMBER : SP031043
REPORTED : 20 OCT 1994

| SAMPLES | Au FA30 ppb | Au(R) FA30 ppb |
|---|---|---|
| 94-327 1-15 | 6 | |
| 94-327 15-25 | <5 | |
| 94-327 25-35 | <5 | |
| 94-327 35-45 | <5 | |
| 94-327 45-55 | <5 | |
| 94-327 55-65 | <5 | |
| 94-327 65-75 | <5 | |
| 94-327 75-85 | <5 | <5 |
| 94-327 85-95 | <5 | |
| 94-327 95-105 | <5 | <5 |
| 94-327 105-115 | <5 | |
| 94-327 115-125 | <5 | |
| 94-327 125-135 | <5 | |
| 94-327 135-145 | 30 | |
| 94-327 145-155 | <5 | |
| 94-327 155-165 | <5 | |
| 94-327 165-175 | <5 | |
| 94-327 175-185 | 32 | 37 |
| 94-327 185-195 | <5 | |
| 94-327 195-205 | <5 | |
| 94-327 205-215 | <5 | |
| 94-327 215-225 | <5 | |
| 94-327 225-235 | 5 | |
| 94-327 235-245 | <5 | |
| 94-327 245-255 | <5 | |

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-327
JOB NUMBER : SP031043
REPORTED : 20 OCT 1994

| SAMPLES | Au FA30 ppb | Au(R) FA30 ppb |
|---|---|---|
| 94-327 255-265 | <5 | |
| 94-327 265-275 | <5 | |
| 94-327 275-285 | <5 | <5 |
| 94-327 285-295 | <5 | |
| 94-327 295-305 | <5 | |
| 94-327 305-315 | <5 | |
| 94-327 315-325 | 62 | |
| 94-327 325-335 | 21 | |
| 94-327 335-345 | <5 | |
| 94-327 345-355 | 87 | |
| 94-327 355-365 | 218 | |
| 94-327 365-375 | 34 | |
| 94-327 375-385 | 37 | |
| 94-327 385-395 | 8 | 6 |
| 94-327 395-405 | 48 | |
| 94-327 405-415 | 20 | |
| 94-327 415-425 | 52 | |
| 94-327 425-435 | 150 | |
| 94-327 435-445 | 260 | |
| 94-327 445-455 | 112 | |
| 94-327 455-465 | 96 | 102 |
| 94-327 465-475 | 228 | |
| 94-327 475-485 | 464 | |
| 94-327 485-495 | 106 | |

# ANALYSIS REPORT

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RENO, NV,,U.S.A.,
Ph.1-702-356-0606, Fax.1-702-356-1413
Telex:

## HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF

:

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CLIENT REFERENCE No: 94-327

LABORATORY JOB No. : SP031546

SAMPLE TYPE :

RECEIVED : 7 NOV 1994

REPORTED : 17 NOV 1994

No. SAMPLES : 35

| ANALYSIS | ANALYTICAL METHOD | QUALITY PARAMETER | UNIT | DETECTION |
|---|---|---|---|---|
| Au(OZ) | FA30 | 15% | OPT | 0.001 |
| Au(RZ) | FA30 | 15% | OPT | 0.001 |
| Ag(OZ) | D210 | 10% | OPT | 0.02 |

SIGNATORY : Sue Faircloth M.S.

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# ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-327
JOB NUMBER : SP031546
REPORTED : 17 NOV 1994

| SAMPLES | Au(OZ) FA30 OPT | Au(RZ) FA30 OPT | Ag(OZ) D210 OPT |
|---|---|---|---|
| 94-327 495-505 | <0.001 | | 0.03 |
| 94-327 505-515 | <0.001 | <0.001 | 0.02 |
| 94-327 515-527.5 | 0.004 | | 0.05 |
| 94-327 527.5-538 | 0.002 | | 0.04 |
| 94-327 538-548 | 0.009 | | 0.09 |
| 94-327 548-558 | 0.002 | | 0.04 |
| 94-327 558-568 | 0.001 | | 0.03 |
| 94-327 568-582.7 | <0.001 | | 0.03 |
| 94-327 582.7-590 | <0.001 | <0.001 | <0.02 |
| 94-327 590-600 | <0.001 | | <0.02 |
| 94-327 600-610 | 0.001 | | <0.02 |
| 94-327 610-620 | <0.001 | | <0.02 |
| 94-327 620-630 | <0.001 | | <0.02 |
| 94-327 630-640 | <0.001 | | 0.02 |
| 94-327 640-650 | 0.001 | | <0.02 |
| 94-327 650-660 | <0.001 | | <0.02 |
| 94-327 660-670 | 0.023 | | 0.03 |
| 94-327 670-680 | 0.004 | | <0.02 |
| 94-327 680-692 | <0.001 | | 0.03 |
| 94-327 692-702 | 0.004 | | 0.08 |
| 94-327 702-712 | 0.002 | | 0.05 |
| 94-327 712-722 | <0.001 | | 0.02 |
| 94-327 722-732 | 0.004 | | 0.07 |
| 94-327 732-741.4 | 0.004 | | 0.06 |
| 94-327 741.4-750 | 0.025 | 0.017 | 0.08 |

# ANALYSIS REPORT

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Ph.1-702-356-0606, Fax.1-702-356-1413
Telex:

## HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF

:

:

:

CLIENT REFERENCE No: 94-327

LABORATORY JOB No. : SP031598

SAMPLE TYPE :

RECEIVED : 9 NOV 1994

REPORTED : 17 NOV 1994

No. SAMPLES : 21

| ANALYSIS | ANALYTICAL METHOD | QUALITY PARAMETER | UNIT | DETECTION |
|---|---|---|---|---|
| Au(OZ) | FA60 | 15% | OPT | 0.001 |
| Au(RZ) | FA60 | 15% | OPT | 0.001 |
| Ag(OZ) | D210 | 10% | OPT | 0.02 |

AMERICAN ASSAY LABORATORIES

# ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-327
JOB NUMBER : SP031598
REPORTED : 17 NOV 1994

| SAMPLES | Au(OZ) FA60 OPT | Au(RZ) FA60 OPT | Ag(OZ) D210 OPT |
|---|---|---|---|
| 94-327 903.2-905 | 0.002 | | 0.05 |
| 94-327 905-910 | 0.003 | | 0.06 |
| 94-327 910-915 | 0.002 | | 0.08 |
| 94-327 915-921.6 | 0.001 | | 0.07 |
| 94-327 921.6-924 | 0.004 | | 0.05 |
| 94-327 924-929 | 0.002 | | 0.04 |
| 94-327 929-934 | 0.001 | | 0.04 |
| 94-327 934-939 | 0.007 | | 0.06 |
| 94-327 939-944 | 0.002 | | 0.04 |
| 94-327 944-949 | 0.002 | | 0.08 |
| 94-327 949-954 | 0.002 | | 0.06 |
| 94-327 954-959 | 0.002 | | 0.06 |
| 94-327 959-964 | 0.002 | | 0.05 |
| 94-327 964-968.2 | 0.002 | | 0.09 |
| 94-327 968.2-975.3 | 0.002 | | 0.04 |
| 94-327 975.3-980 | 0.003 | | 0.06 |
| 94-327 980-984 | 0.007 | 0.008 | 0.14 |
| 94-327 984-987.7 | 0.002 | | 0.06 |
| 94-327 987.7-992.7 | 0.032 | 0.022 | 1.90 |
| 94-327 992.7-996 | 0.007 | | 0.23 |
| 94-327 996-1000 | 0.005 | | 0.06 |

AMERICAN ASSAY LABORATORIES

# ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-327
JOB NUMBER : SP031546
REPORTED : 17 NOV 1994

| SAMPLES | Au(OZ) FA30 OPT | Au(RZ) FA30 OPT | Ag(OZ) D210 OPT |
|---|---|---|---|
| 94-327 750-760 | 0.022 | | 0.02 |
| 94-327 760-770 | 0.001 | | 0.02 |
| 94-327 770-780 | <0.001 | <0.001 | 0.02 |
| 94-327 780-790 | 0.057 | | 0.03 |
| 94-327 790-800 | 0.041 | | 0.05 |
| 94-327 800-810 | 0.042 | | 0.06 |
| 94-327 810-820 | 0.003 | | 0.21 |
| 94-327 820-830 | 0.007 | | 0.06 |
| 94-327 830-840 | 0.023 | | 0.10 |
| 94-327 840-850.5 | 0.007 | 0.007 | 0.41 |

AMERICAN ASSAY LABORATORIES

# ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-327
JOB NUMBER : SP031547
REPORTED : 21 NOV 1994

| SAMPLES | Au(OZ) FA60 OPT | Au(RZ) FA60 OPT | AuGRAV GRAV OPT | Ag(OZ) D210 OPT |
|---|---|---|---|---|
| 94-327 850.5-852.5 | 0.059 | | 0.073 | 1.65 |
| 94-327 852.5-858 | 0.049 | 0.028 | 0.072 | 24.90 |
| 94-327 858-863.6 | 0.169 | | 0.158 | 0.43 |
| 94-327 863.6-867 | 0.037 | | | 0.52 |
| 94-327 867-872 | 0.077 | | 0.095 | 0.16 |
| 94-327 872-876 | 0.060 | | 0.047 | 0.07 |
| 94-327 876-880 | 0.006 | | | 0.05 |
| 94-327 880-881.1 | 0.021 | | | 0.17 |
| 94-327 881.1-885 | 0.005 | | | 0.06 |
| 94-327 885-889 | 0.045 | | | 0.22 |
| 94-327 889-894 | 0.004 | | | 0.05 |
| 94-327 894-899 | 0.012 | | | 0.06 |
| 94-327 899-903.2 | 0.001 | | | 0.04 |