60001559

Mining District File Summary Sheet

DISTRICT	Rosebud
DIST_NO	4010
COUNTY If different from written on document	Pershing
TITLE If not obvious	Rosebud Drill Hole File - Hole No D-111-95
AUTHOR	C. Muerhoff; S. King; K Allen
DATE OF DOC(S)	1995
MULTI_DIST Y / (N?) Additional Dist_Nos:	
QUAD_NAME	Sulphur 7.5'
P_M_C_NAME (mine, claim & company names)	Rosebud Mine; Rosebud Project; Hecla Mining Co. South Zone
COMMODITY If not obvious	gold silver
NOTES	Drill log; geology; assay; total depth 155' handwritten notes 6 p.

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)

SS: DD 5/29/08
Initials Date
DB: mah
Initials Date
SCANNED: NV Blue
Initials Date

Revised: 1/22/08

D-111-95

SOUTH ZONE /850 N

60001559 4010

6000 1559

Hecla MINING COMPANY

- quartz, chalcedony, silicification
- faults, fractures, joints
- FeO_X
- sulfide
- calcite, carbonate
- argillization, white clays
- propylitization
- potassic alteration
- chlorite, chloritic clays

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	D-111-95	LOCATION	Station 16 - 850 N	REMARKS	
PAGE 1 OF 3		NORTHING	2,203,871.865	Drilled from decline station #16	
DATE	11/3/95	EASTING	481,735.712	NW Drilling - Hagby On-ram 1000	
LOGGED BY	KDA	ELEVATION	4655.202	NDBGM core (2.2" diameter)	
SCALE	1" = 10'	AZIMUTH	collar: 122° (S58°E)	175': 121.5° (S 58.5° E)	
TOTAL DEPTH	155'	INCLINATION	collar: +17°	75': +16°	

LITHOLOGY

0-155' - LBT.

0-8.3' - MODERATELY SOFT, LT BUFF TO VERY LT. PINK, SLIGHTLY POTASSICALLY ALTERED, FINE-GRAINED, MASSIVE ASH TUFF. INTERVAL CONTAINS << 1% OF 0.01 to 0.20" SIZED DK BROWN MASSIVE FINE-GRAINED ASH OR MUD? CLASTS OR FRAGMENTS. THIS UNIT MAY BE SIMPLY A LARGE BLOCK SIZED CLAST W/IN THE BRECCIA DESCRIBED BELOW?

8.3-37.3' - MODERATELY SOFT, LT GREY to LT BUFF IN COLOR, HETEROLITHIC?, MATRIX TO CLAST SUPPORTED, 98% LAPILLI - 2% BLOCK SIZED VOLCANIC BRECCIA. CLASTS ARE COMPOSED OF DOMINATELY A FINE-GRAINED MASSIVE ASH AND ≈ 1% DARK BROWN FINE-GRAINED MASSIVE MUD OR ASH TUFFS. THIS DK BROWN ASH CLASTS OR FRAGMENTS ARE LAPILLI IN SIZE AND RARELY EXCEED .2". CLASTS ARE SUB-ROUNDED to SUB-ANGULAR. PORTIONS OF THIS INTERVAL IS SOFT.

37.3-68' - MODERATELY SOFT to MODERATELY HARD, LT. PINK, POTASSICALLY ALTERED, HETEROLITHIC, MATRIX SUPPORTED, SUB-ROUNDED TO SUB-ANGULAR, VOLCANIC BRECCIA. (PINK MATRIX BRECCIA). CLASTS ARE COMPOSED OF DOMINATELY 2 FINE-GRAINED MASSIVE ASH TUFFS w/ MINOR SLIGHTLY WAVY LAMINATED TUFFS, AND << 1% DK BROWN MASSIVE FINE-GRAINED ASH OR MUD? CLASTS OR FRAGMENTS. CLASTS ARE 98% LAPILLI 2% BLOCK SIZED. 50% MATRIX 50% CLASTS.

FT: 10, 20, 30, 40, 50

GRAPHIC LOG: CA UNK

STRUCTURE

0-8.3' - MODERATELY COMMON HEALED & OPEN SPACE FRACTURES w/ MARCASITE ± BARITE + QUARTZ ±. 2 FRACTURE SETS ⇒
1) @ 60-70° to CA ≈ 2-3/FOOT
2) @ 30-40° to CA ≈ 4-5/FOOT
EACH FRACTURE SET CUTS the OTHER SET.

8.3-26.1' - MINOR to MODERATELY COMMON HEALED & OPEN SPACE FRACTURES w/ QUARTZ + MARCASITE ± BARITE ± WHITE CLAY. 3 Sets of FRACTURES @
1) 0-15° to CA ≈ 0.2/FOOT
2) 30-40° to CA ≈ 1-2/FOOT
3) 50-60° to CA ≈ 2-3/FOOT

26.1-37.3' - MINOR HEALED & OPEN SPACE FRACTURES w/ QUARTZ + MARCASITE + PYRITE ± BARITE ± WHITE CLAY.
1) @ 0-20° to CA ≈ .05/FOOT (cuts other SETS of FRACTURES.
2) 30-40° to CA ≈ 1/FOOT
3) 70-60° to CA ≈ 1/FOOT

37.3-45.8' - MINOR QUARTZ + MARCASITE ± BARITE FRACTURES ⇒
1) 50-60° to CA ≈ 1/FOOT to 2/FOOT
2) 20-30° to CA ≈ 1/FOOT

45.8-53.5' - VERY COMMON QUARTZ + MARCASITE + PYRITE ± WHITE CLAY FRACTURES.
1) 50-60° to CA ≈ 6-7/FOOT
2) 30-40° to CA ≈ .2/FOOT
3) 0-20° to CA ≈ 1/FOOT.

ALTERATION AND MINERALIZATION

0-8.3' - SLIGHTLY POTASSICALLY ALTERED w/ A VERY MINOR PINK COLORATION. MINOR ARGILLIZATION (BLEACHING), DISSEMINATED PYRITE + MARCASITE up to 5%. MARCASITE BLADES COMON W/IN FRACTURES. SOME MARCASITE IS COATED w/ A BLACK MINERAL AND MINOR AMOUNTS APPEAR to HAVE BEEN REPLACED BY CPY? MINOR WHITE CLAY.

8.3-26.1' - ARGILLIZED, LT GREY IN COLOR. DISSEMINATED PYRITE + MARCASITE up to 15-20%. MARCASITE BLADES COMMON W/IN FRACTURES. MINOR MARCASITE IS COATED W/ BLACK MATERIAL AND SHOWS CPY REPLACEMENT? TRACE AG-SULFOSALTS? MINOR WHITE CLAY

26.1-37.3' - ARGILIZED, LT BUFF IN COLOR. DISSEMINATED PYRITE + MARCASITE to 5%. THIS DISSEMINATED SULFIDE IS CONCENTRATED W/IN THE CLASTS WHERE AS @ 8.3-26.1' the MATRIX CONTAINED ABUNDANT DISSEMINATED SULFIDE. MARCASITE BLADES COMMON IN FRACTURES, However LESS FRACTURES. PYRITE W/IN FRACTURE ARE NOW COMMON. MINOR WHITE CLAY. QUARTZ IN FRACTURES

37.3-45.8' - POTASSICALLY ALTERED w/ DISSEMINATED PYRITE + MARCASITE up to 5% CONCENTRATE IN THE CLASTS. MINOR QUARTZ + MARCASITE BLADES FRACTURE FILL & VEINLETS.

45.8-53.5' - POTASSICALLY ALTERED w/ DISSEMINATED PYRITE up to 7%. COMMON FRACTURES w/ MARCASITE + PYRITE + QUARTZ. HIGH FRACTURE DENSITY. TRACE AMOUNTS of A BLACK MINERAL?

ANALYTICAL DATA (opt)

%REC	RQD	FROM	TO	W	Au	Ag	Au2	~~Ag2~~ AuGrav
		0	5	5'	0.051	0.15		
		5	8.3	3.3'	0.129	0.37		0.116
		8.3	13.3	5'	0.013	0.16	0.015	
		13.3	18.3	5'	0.006	0.12		
		18.3	23.3	5'	0.015	0.18		
		23.3	26.1	2.8'	0.021	0.14		
		26.1	30	3.9'	0.010	0.09		
		30	35	5'	0.010	0.13		
		35	37.3	2.3'	0.050	0.13		
		37.3	42	4.7'	0.022	0.13		
		42	45.8	3.8'	0.015	0.13		
		45.8	50	4.2'	0.023	0.19		

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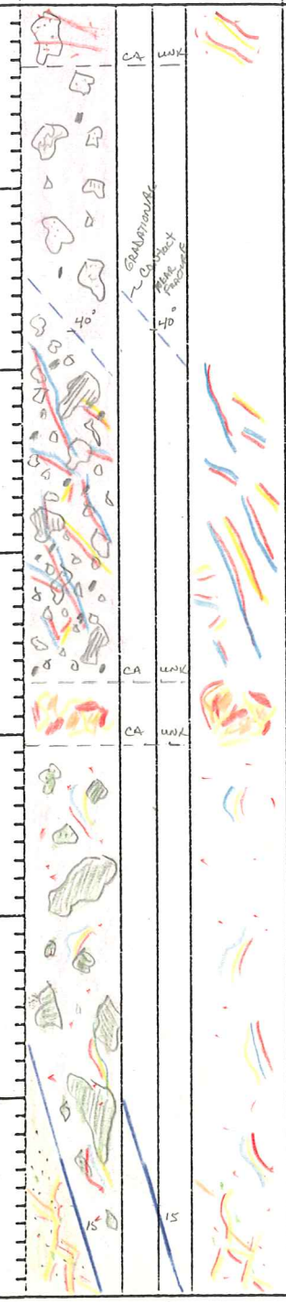
REC	RQD	LITHOLOGY	FT
		68-87.2' - MODERATELY SOFT TO MODERATELY HARD, LT PINK TO BUFF IN COLOR, POTASSICALLY ALTERED, MATRIX TO CLAST SUPPORTED HETEROLITHIC VOLCANIC BRECCIA. INTERVAL CONTAINS A MUCH LARGER PERCENTAGE OF CLASTS THAN PREVIOUS BRECCIAS (85% CLASTS 15% MATRIX). CLASTS ARE SUB-ROUNDED TO SUB ANGULAR AND ARE COMPOSED OF PLANAR LAMINATED ASH TUFFS, FINE-GRAINED MASSIVE ASH TUFFS (2:3) AND THOSE DK-BROWN FINE-GRAINED MASSIVE ASH OR MUD FRAGMENTS (UP TO 4-5%). INTERVAL CONTAINS ≈ 85% LAPILLI & 15% BLOCK SIZED FRAGMENTS.	
		87.2-90.7' - MODERATELY SOFT TO MODERATELY HARD LT PINK TO LT GREEN, POTASSICALLY & PROPYLITICALLY ALTERED, MATRIX SUPPORTED HETEROLITHIC VOLCANIC BRECCIA. "GRADATIONAL" ZONE WITH CHARACTERISTICS OF BOTH THE BRECCIA DESCRIBED @ 68-87.2' ABOVE AND 90.7-116.1' BELOW.	
		90.7-116.1' - MODERATELY SOFT, LT PINK TO BUFF MATRIX & LT. GREEN CLASTS, POTASSICALLY & PROPYLITICALLY ALTERED, MATRIX SUPPORTED, HETEROLITHIC VOLCANIC BRECCIA. INTERVAL CONTAINS ≈ 80% CLASTS 20% MATRIX. CLASTS ARE SUB-ROUNDED TO SUB-ANGULAR AND ARE DOMINANTLY COMPOSED OF SLIGHTLY PLANAR LAMINATED TUFFS (≈ 60-70% OF THE CLASTS) FINE-GRAINED MASSIVE TUFFS. THE DK-BROWN MASSIVE ASH TUFF OR MUD? CLASTS ARE ABSENT. FEW OF THE CLASTS (FINE-GRAINED, MASSIVE TUFF) SHOW THE "DEVITROPHYCATION" TEXTURES AND ARE CLAY RICH. CLASTS ARE 70% LAPILLI 30% BLOCK.	
		116.9-136.9' - MODERATELY HARD, LT GREEN, PROPYLITIZED, FINE-GRAINED TO COARSE GRAINED, VERY SLIGHTLY LAMINATED ASH TUFF. THIS UNIT LOOKS LIKE A FINE-GRAINED TO VERY FINE GRAINED NORMALLY GRADED LEOPARD SKIN TUFF EQUIVALENT. THE VESICLES OR FIAMME? (PUMICE?) ARE FILLED OR ALTERED WITH DARK GREEN CHLORITIC CLAY.	

GRAPHIC LOG



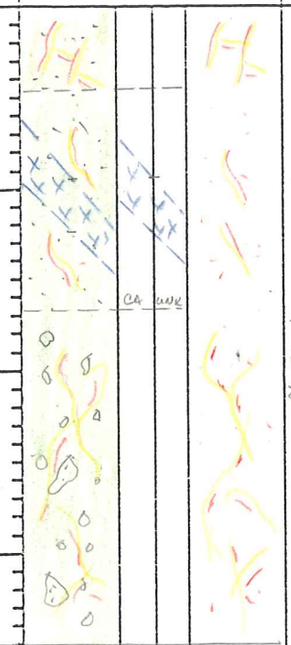
STRUCTURE
53.5-68' - MINOR HEALED AND OPEN SPACE QUARTZ + MARCASITE + PYRITE FRACTURES. MINOR BARITE XTALS IN OPEN SPACE. 1) 50-60° to CA @ 1-2/FOOT 2) @ 30-40° to CA @ 1/FOOT.
68-87.2' - CALCITE ± QUARTZ + MARCASITE FRACTURES COMMON 1) 30-40° to CA ≈ 2-3/FOOT 2) 70-80° to CA ≈ 2/FOOT.
87.2-90.7' - RANDOMLY ORIENTED OPEN SPACE FRACTURES FILLED W/ QUARTZ & MARCASITE, & WHITE CLAY
90.7-115.1' - CACO3 ± QUARTZ ± MARCASITE ± PYRITE FRACTURES 1) RANDOM STOCKWORK 2) 30-40° to CA ≈ 1-2/FOOT 3) 60-70° to CA ≈ 1/2/FOOT
115.1-116.9 - FAULT ZONE @ 15° to CA. RUBBLE FROM 116.1'-116.9'. FAULT IS ≈ 1" WIDE.
116.9-124.8' - QUARTZ + PYRITE ± WHITE CLAY FRACTURES 2 SETS 1) @ 40-50° to CA ≈ 1-2/FOOT 2) @ 0-20° to CA ≈ 1/FOOT. The 0-20° SET CROSS-CUTS & offsets the 40-50° set.

ALTERATION AND MINERALIZATION
53.5-68' - POTASSICALLY ALTERED W/ DISSEMINATED PYRITE up to 5%. MINOR QUARTZ + MARCASITE + PYRITE FRACTS. TRACE AMOUNTS OF WHITE CLAY
68-87.2' - POTASSICALLY ALTERED W/ DISSEMINATED PYRITE up to 7%. CONTAINS MODERATE CALCITE + MARCASITE AND QUARTZ + MARCASITE HEALED FRACTURES. MINOR OPEN SPACE FRACTURES W/ QUARTZ, CACO3, MARCASITE, ~~& WHITE CLAY~~. INTERVAL ALSO CONTAINS MINOR LT GREEN CHLORITIC CLAY. CALCITE ALSO OCCURES AS A STOCKWORK OR "CRACKLE" TYPE BRECCIA. WHITE CLAY IS MODERATELY COMMON.
87.2-90.7' - POTASSICALLY ALTERED W/ PROPYLITIZED CLASTS. NUMEROUSE LARGE OPEN SPACE FRACTURES FILLED W/ MARCASITE BLADES & ± WHITE CLAY. TRACE AMOUNTS (BUT SIGNIFICANT) OF BLACK Ag-SULFO W/ CPY? W/IN THESE OPEN SPACE FRACTURES. POSSIBLY ONE SMALL PIECE OF U.G. WAS OBSERVED.
90.7-115.1' - POTASSIC AND PROPYLITIC ALTERATION. TRACE AMOUNTS OF CALCITE STOCKWORK & VEINLETS. DISSEMINATED PYRITE up to 2%. GREEN CHLORITIC CLAY MODERATE ALONG FRACTURES. FRACTURES CONTAIN CACO3 ± QUARTZ ± MARCASITE ± PYRITE ± DK GREY to BLACK Ag-SULFO?
115.1-116.9' - CLAYEY RUBBLE FAULT ZONE - GREEN CHLORITIC CLAY.
116.9-124.8' - BLEACHED W/ SILICA + PYRITE VEINLETS & MODERATE PROPYLITIC ALTERATION. MINOR DK GREEN CHLORITIC CLAY FILLS VUGS? QUARTZ VEINING & STOCKWORK CONTAINS PYRITE AND IS DK GREY W/ MINOR REDDISH BROWN IN COLOR. WHITE CLAY FRACTURES COMMON. MARCASITE VERY MINOR OR ABSENT. CALCITE ABSENT.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	~~Au2~~ AuGrav
50	53.5	3.5'	0.014	0.14		
53.5	58.5	5'	0.003	0.05		
58.5	63	4.5'	0.008	0.09		
63	68	5'	0.031	0.20		
68	73	5'	0.026	0.24		
73	78	5'	0.164	1.97		0.154
78	83	5'	0.086	0.17		
83	87.2	4.2'	0.079	0.16	0.087	
87.2	90.7	3.5'	7.390	10.30		8.010
90.7	95	4.3'	0.348	0.62		0.346
95	100	5'	0.447	0.69		0.448
100	105	5'	1.200	11.00		1.130
105	110	5'	0.373	0.82		0.342
110	115.1	5.1'	2.550	3.05		2.370
115.1	116.9	1.8'	2.610	4.85		2.700
116.9	120	3.1'	0.175	0.45		0.157

HOLE NUMBER D-111-95 PAGE 3 OF 3

REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		136.9-155' TD - MODERATELY SOFT to MODERATELY HARD, LT GREEN, PROPYLITIZED, MATRIX to CLAST SUPPORTED VOLCANIC (SOME POSSIBLE HYDROTHERMAL) BRECCIA. CLASTS ARE SUB-ROUNDED AND ARE COMPOSED of the UNIT DESCRIBED @ 116.9-155'. CLASTS ARE LAPILLI 85% BLOCK 15%.	130 140 150 155' TD.		124.8-129.6' - QUARTZ + PYRITE FRACTURES 1) 0-20° to CA ≈ 1/FOOT 2) 30-40° to CA ≈ 2/FOOT 3) 70-90° to CA ≈ .2/FOOT. 129.6-132.4' - RUBBLE ZONE 132.4-136.9' - QUARTZ + MARCASITE + PYRITE FRACTURES ⇒ 1) @ 40-50° to CA @ ≈ 2-3/FOOT. 136.9-155' - QUARTZ + MARCASITE FRACTURES 1) @ 0-20° to CA ≈ 1/FOOT 2) @ RANDOM ⇒ MOST COMMON.	124.8-136.9' - STRONG PROPYLITIC ALTERATION w/ DK-GREEN CHLORITIC CLAY. MINOR QUARTZ + PYRITE VEINLETS, MINOR WHITE CLAY. CALCITE ABSENT. MARCASITE BLADES MODERATE IN OPEN SPACE FRACTURES. 136.9-155' - INTERVAL IS PROPYLITICALLY ALTERED AND MINOR to MODERATELY SILICIFIED (QUARTZ stockwork). COMMON OPEN SPACE VUGS w/ CLEAR to MILKY (sometimes bluish) CHALCEDONIC QUARTZ + MARCASITE. DISSEMINATED MARCASITE + PYRITE up to 2%. MINOR WHITE CLAY.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Au Gray
120	124.8	4.8'	0.134	0.29		0.124
124.8	129.6	4.8'	0.053	0.12		
129.6	132.4	2.8'	0.128	1.05		0.110
132.4	136.9	4.5'	0.058	0.15		
136.9	140	3.1'	0.012	0.06		
140	145	5'	0.019	0.15		
145	150	5'	0.009	0.06		
150	155	5'	0.005	0.03	0.003	
	TD.					

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036445

American Assay Laboratories

P.O. BOX 11530
RENO, NV,,USA
Ph.1-702-356-0606, Fax.1-702-356-1413

HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF

:

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CLIENT REFERENCE No: D-111-95 RECEIVED : 14 NOV 1995

No. SAMPLES : 36 REPORTED : 1 DEC 1995

MAIN SAMPLE TYPE : DRILL CORE

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

SIGNATORY : Sue King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036445

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-111-95

REPORTED : 1 DEC 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-111-95 0-5	0.051			0.15
D-111-95 5-8.3	0.129		0.116	0.37
D-111-95 8.3-13.3	0.013	0.015		0.16
D-111-95 13.3-18.3	0.006			0.12
D-111-95 18.3-23.3	0.015			0.18
D-111-95 23.3-26.1	0.021			0.14
D-111-95 26.1-30	0.010			0.09
D-111-95 30-35	0.010			0.13
D-111-95 35-37.3	0.050			0.13
D-111-95 37.3-42	0.022			0.13
D-111-95 42-45.8	0.015			0.13
D-111-95 45.8-50	0.023			0.19
D-111-95 50-53.5	0.014			0.14
D-111-95 53.5-58.5	0.003			0.05
D-111-95 58.5-63	0.008			0.09
D-111-95 63-68	0.031			0.20
D-111-95 68-73	0.026			0.24
D-111-95 73-78	0.164		0.154	1.97
D-111-95 78-83	0.086			0.17
D-111-95 83-87.2	0.079	0.087		0.16
D-111-95 87.2-90.7	7.390		8.010	10.30
D-111-95 90.7-95	0.348		0.346	0.62
D-111-95 95-100	0.447		0.448	0.69
D-111-95 100-105	1.200		1.130	11.00
D-111-95 105-110	0.373		0.342	0.82

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036445

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-111-95

REPORTED : 1 DEC 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-111-95 110-115.1	2.550		2.370	3.05
D-111-95 115.1-116.9	2.610		2.700	4.85
D-111-95 116.9-120	0.175		0.157	0.45
D-111-95 120-124.8	0.134		0.124	0.29
D-111-95 124.8-129.6	0.053			0.12
D-111-95 129.6-132.4	0.128		0.110	1.05
D-111-95 132.4-136.9	0.058			0.15
D-111-95 136.9-140	0.012			0.06
D-111-95 140-145	0.019			0.15
D-111-95 145-150	0.009			0.06
D-111-95 150-155	0.005	0.003		0.03