60001474

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. 94-295C
AUTHOR	C. Winchester; C. Muerhoff; S Faircloth
DATE OF DOC(S)	1994
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 363' handwritten notes; down hole camera images 17 p. 4 down hole camera images

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:
Initials Date

Revised: 1/22/08

94-295c

SOUTH ZONE

60001474 4010

lamer

6000 1474

Hecla
MINING COMPANY

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	94-295C	LOCATION	South Zone	REMARKS	RECOVERY NOT
PAGE 1 OF	11	NORTHING	2,203,260.240		RECORDED UNLESS < 90%;
DATE	6-12-94	EASTING	480,936.757		ORIENTATIONS STATED AS
LOGGED BY	C.B. WINETEER	ELEVATION	5,241.059		∡ TO CORE AXIS
SCALE	1" = 5'	AZIMUTH	5.5°		
TOTAL DEPTH	363'	INCLINATION	-89.5°		

%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
		NO RECOVERY 0-19'			5, 10, 15										
Box 1	68% >3" 8 TOTAL	MOD-MOD HD	CREAM-LT. GRN	19-25' FINE-GRAINED CLAYEY TUFF (HETERO LITHIC) BRECCIA W/ LIMONITE + CLAY OXID. FRAGMENTS IN A CLAYEY FIBEROUS MATRIX (PALE GREEN)	20		19-23' FeOx + CLAY ON FRAC'S @ 50-70°	OXIDIZED BRECCIA FRAG'S & LOC. CLAY ± FeOx FILLED DISCONT. FRAC'S	19	23	4.0'	0.001	0.03		
	23							23-26' PARTLY BRECCIATED, OXID., SILIC IN BANDS @ 40'							
	88% 16 TOTAL	MOD HD	ORG./RD RUST/ LT. BRN GRY	25-56.1' BRECCIATED, SILICIFIED FINE-GRAINED TUFF IN CLAST-SUPPORTED SILICEOUS BRECCIA, ANGULAR FRAG'S OF FINE-GRAINED TUFF IN SILICEOUS MATRIX, LOC. MATRIX INCR. TO MATRIX-SUPPORTED	25		25' APPARENT SHARP-PLANAR CONTACT @ 40° W/ FeOx + CLAY STRINGER		23	29	6.0'	0.005	0.09		

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%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
28 BOX 2		MOD HD TO HD LT GRY TAN W/ RD/ORN RUST/ PURPLE FeOx STN IN BANDS CLOTS				26-44' INTENSELY SILICIFIED BLEACHED, FeOx DEPLETED OXIDIZED, LOC. BX'IATED
					29-29.5 TECTONIC BX W/60° BOUND STX. WHT TO LIM STN'D CLAY ON 45° FRAC'S	NG MINOR KAOL. CLAY ON FRAC'S
	33 88% 16 TOTAL		30			
37 3			35		BRN INFILTRATION CLAY ON 90° OPEN FRAC	
	43 74% 15 TOTAL	MOD-MOD HD W/LOC. SOFT	40		BRN-TAN INFILTRATION CLAY + LIM/GEOT. IN OPEN VUG @70° 43-43.5 LIM/HEM/SiO_2 HEALED FRAC/BX	40-41' MINOR PY ENCAPSULATED W/ SPL → DRUSSY Q IN DISCONT, IRREG. VNLTS
46 4		MOD.HD.	45		44.5-46.2 TECTONIC BX W/ ANG. SILIC. FRAGS IN FeOx-CLAY MATRIX, PRINC. FRAC-ORIENT. 80° ±20°; MINOR WHT KAOL. CLAY 48' INFILTR. BRN-TAN AMORPH CLAYS IN VUGGY/OPEN-SPACE 48.4' SIG.A	44-90.5' LOC. BX'IATED, SILICIFIED IN SiO_2 MICRO-VNLTS/STKWK W/ 40, 80, 60 ±30° PREF'D ORIENTATION, FeOx DEPLETED TO 64'; FeOx ENRICHED 64-88'
	53 63% 12 TOTAL		50		CREAM COLORED CLAYS ON FRAC'S 48.5-49.5' 51.5' @50° TAN CLAY+LIM IN FRAC - OPEN-SPACE	
54 5			55			
DRILLER'S NOTE @ 63': SAND + H_2O 63-65'	53-63' 80% RECOV.	SOFT/ MOD/ MOD HD 56.1-65' TECTONIC BRECCIA W/IN SILIC. OXIDIZED FINE-GRAINED TUFF	60		56.1-65' TECTONIC BRECCIA W/ ANGULAR SILIC. TUFF FRAGS/ SiO_2 VNLET FRAG'S IN LIM-CLAYEY MATRIX - WKLY ARG. DRUSSY-SANDY Q (INFILTRATE) IN OPEN FRAC'S 60-63' PREDOM. 30°±70° FRAC ORIENT	

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
29	34	5.0'	0.002	0.06		
34	38	4.0'	0.002	0.06		
38	42	4.0'	0.001	0.04		
42	46.5	4.5'	0.002	0.10		
46.5	50	3.5'	0.002	0.08		
50	56.1	6.1'	0.003	0.05		
56.1	60'	3.9'	0.003	0.45		

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%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	FROM	TO	W	Au	Ag	Au2	Ag2
	63 71% 12 TOTAL	SOFT/MOD/MOD HD MOD-MOD HD S.A.A.					60	65	5.0'	0.004	0.19	0.005	
67 Box 5	63-73' 80% RECOV. W/ SAND + H_2O 63-65'	SOFT INCREASED FeOx STN AS HEM/LIM/GEOT/JARO 65-140' MATRIX-SUPPORT, POORLY-SORTED, HETEROLITHIC, FINE-GRAINED TUFF BRECCIA W/ INTERVALS OF SUPERIMPOSED TECTONIC BRECCIATION & SILICIFICATION AS NOTED TO RIGHT. Bx FRAGS ARE ANGULAR TO SUBROUNDED, GEN. F.G. CLAY ALT, LOC. PREF. FeOx STND. MATRIX IS F.G. & CLASTIC, TO SANDY CLASTS ARE POORLY SORTED ASH TO >1.5cm IN DIAM.	65		68.1' @ 65' TECTONIC Bx BOUNDED BY 65° FRAC'S W/ LIM-CLAY MATRIX Δ'ING ↓ TO HEM-CLAY	65.5' ↓ DECR. SILIC. 66-77 WHITE TO CREAM SOFT CLAY FILLED FRAC'S STRIKE AT 70, 20, 40' + LIM/HEM ± F.G. DRUSY Q	65	70	5.0'	0.003	0.05		
	73 87% 16 TOTAL		70		FRAC'S @ 20 & 40'	73-75 DRUSY Q XL'S + LIM/HEM & LOC. JAROSITE W/ LATE-STAGE BRNISH-TAN LAMINATED INFILTRATED CLAY ± FeOx PSEUDOMOR. REPL. OF PLATEY MARC. IN FRAC'S @ 5-20'	70	75	5.0'	0.007	0.07		
77 6			75		76.7' ↓ 78 TECTONIC Bx W/ 80' & 10' FRAC'S	[SANDY, CLAYEY; GRADED-LAMINATED-VARVED SILICA (INFILTRATED) FILLING FRAC'S - OPEN-SPACE @ 90.5'; 101'; 106.2 & 106.8'; 111.5', 112' GRADED-LAM'S-VARVING @ 0-15' SUGGESTING POST-DEPOSITION MOVEMENT/DISPLACEMENT]	75	80	5.0'	0.004	0.19		
	83 84% 16 TOTAL	MLTBx - massive or chaotic bedded lithic tuff breccia w/in LBT Lt. Gry-Tan-Loc. Pink Tint Loc. Strong Lim/Hem Stn.	80				80	85	5.0'	0.003	0.08		
86 7		86.2 CORE BARREL RUN 87.8 CORE RUN 87.7 CORE RUN	85			85-86' PSEUDOMORPHIC REPLACEMENT OF DISS. CUBIC Py BY FeOx 88-89' S.A.A.	85	90	5.0'	0.003	0.06		
CORE IN BOX BACK-ASS-WARD (TURNED TO CORRECT FOR PHOTO) 95	93 86% 16 TOTAL >3"		90 95			MIXED SULFIDE/OXIDE W/ DISS. CUBIC Py IN FRAG'S & MATRIX & FeOx (HEM/LIM/GEOT + SiO_2)-RICH FRAC'S & VNLTS; LIM STND FRAC'S	90	95	5.0'	0.002	0.07		

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%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
BOX 9		MOD-MOD HD	S.A.A.	LITH S.A.A.				99-103.5' SILIC. BX 100.5-101' FRAC'D BX W/ LIM + HEM + GEOTH ± CLAY + BRN INFILTRATED CLAY Δ ING ↓ TO CREAM GRADED-LAM. SANDY, CLAYEY SILICA W/ ANGULAR SILIC. FRAG'S FLOATING IN ABOVE DESCR MATRIX	95	100	5.0'	0.003	0.06		
105 10	103 88% 8 TOTAL >3"				100 105				100	105	5.0'	0.003	0.20		
					110				105	112	7.0'	0.002	0.09		
115 11	113 88% 14 TOTAL		Lt. Gray-Gry; Pink-Tan & Mottled	-112' ↓ INCR. IN FRAG SIZE -115.3'-116' LARGE FRAG OF PLANAR-LAM. F. G. TUFF W/ LAM'S @ 30' -118' LARGE >C.D. ANGULAR FRAG OF SILIC. V. F.G. AIRFALL TEPHRA MASS. W/ DISS. CUBIC PY -122-140' ALTERNATING BETWEEN MATRIX & CLAST SUPPORTED BECOMING CRACKLE BX ↓ W/IN F.G. PLANAR LAM. WATERLAIN ? TEPHRA	115		113-119' SULF + @ 70-80 @ 2.0/FT + @ 5-20' @ 1.0/FT HIGH & SULF VNLTS ± WHT SMECT. CLAY AS-PY, GA, MINOR MARC. 119-132' FRAC'S ± FeOx ± CLAY ± SULF @ 70', W/ ∠40-45'	MARKED DECREASE IN MASSY STRWK SILIC. & FeOx STN OF MATRIX; STILL FeOx STN'D FRAC/UNS PRIM. ASSOC. W/ Q ± BAR VNLTS; SULF VNLTS 113-134.5 DSS. PY ∠10% @ 30;70' 117.2' IRREG. LIM + DRUSSY Q + BAR 118' LIM/HEM + Q @ 60' 118.4 LIM. + DRUSSY FRAGMENT Q + CLAY @ 55' 119' 2.5" LIM + CLAY + DRUSSY Q + BAR @ 70' 120-124' (9) Q + BAR + LIM/HEM/GEOTH + CLAY @ 60-70' 122-126 VUGGY BANDS @ 70-80' W/ DRUSSY OPEN-SPACE F. XLN Q ± CLAY ± BAR VUG-FILLINGS FeOx + CLAY 126-133' SiO_2 + FeOx (LIM + HEM) + CLAY 0.02-0.2" @ OPPOSSIN 50 & 60'	112	117	5.0'	0.002	0.07		
					120				117	122	5.0	0.002	0.08		
124 12	123 69% 14 TOTAL >3"				125				122	127	5.0	0.002	0.05		
					130				127	132	5.0	0.002	0.06		

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%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	FROM	TO	W	Au	Ag	Au2	Ag2
133	133	MOD-MOD HD PINKISH-GREY LtGrn-Gry Mottled (GEN. PINK MATRIX W/ PALE GRN CLAY ALT CLASTS) MOD	135		W	WEAK ARG. ALT ↓ 135' Δ IN ↓ TO WK TO MOD ↓							
	74% 13 TOTAL >3"	-137' APPARENT CONTACT @ 40' BETWEEN CLAST-SUPPORT BX & STEEP-DIPPING PLANAR. LAM. BX TUFF			ADJACENT TO Q- BAR + LIM + CLAY VEINLTS Py W/ CORRODED DUGGY -50% CORES TO PSEUDO MORPHIC VOIDS AFTER Py	134-149 DISS. Py INCR TO 1-2% 134.5-135 Q+SULF VNLTS @ 80° W/ CORRODED CORES/STX +CLAY ± BAR 136-138 VUGGY DISSOLUTION W/ OPEN-SPACE Q + LIM.-CLAY	132	137	5.0'	0.003	0.08		
		BANDED GRN/ PINK GRY	140		138-149' FRAC'S @ 70-80° W/ WHT CLAY + MINOR BLADED MARC. /OR MASSIVE Py ± MARC ± MINOR CLAY	138-141 S.A.A. W/ ASSOC. Q + BAR + LIM-CLAY @ 60°	137	142	5.0'	0.002	0.06		
143	143	137-147' FINE-GRAINED WATERLAIN TEPHRA W/ MARKED GRADED PLANAR-LAMINATION @ 0-30° to C.A., CONTORTED & BRECCIATED @ TOP OF INTERVAL 137-144'; STEEP CONTACT @ BASE											
	67% 9 TOTAL >3"	MOD	145			144-152 SULF-RICH VNLTS @ 70° & 30° (2-3/FT & 4/FT)	142	147	5.0'	0.002	0.08		
		PINK-GRY MATRIX W/ GRY-GRN CLASTS				WHT CLAY + BLADED BIK MARC. @ 80° 146-147							
		147-201.5' MATRIX-SUPPORTED HOMOGENEOUS BRECCIA W/IN GRADED PLANAR-LAMINATED FINE-GRAINED WATERLAIN TEPHRA LOC. >> CORE DIAM. FRAGS W/STEEP PLANAR-LAM.				149-171.5 Diss Py ± HEX. MARC. <1% 150-161' 3.4/FT. 0.01-0.1" SULF STR. @ 70-85° 150-170' 0.5/FT 0.1-0.15 WHT CLAY + MARC PLATELTS @ 45°	147	152	5.0'	0.005	0.07		
		MOD-MOD HD	150										
	150.5	-150.5-152 CORE ROLLED IN CORE BARREL - ELIPTICAL SHAPE W/ 80% RECOVERY											
152	77% 12 TOTAL >3"	MATRIX IS PINK-TAN-CLEAR PREDOMINATELY SILICA W/ DISS. CUBIC Py LOC. BRASSY	155				152	157	5.0'	0.003	0.05		
		ORIG. F.G. GRADED-PLANAR LAM. WATERLAIN TEPHRA → DENTR. - SILIC. → TECTONICALLY BX'IATE → SILIC. MATRIX → ARG. FRAGS → FRAC → @ 70-90°; 40°; 5-15°; 30° → INTRODUCE Q-SULF ± PREC. METALS → CLAY → REMOVEMENT W/IN CLAY ↓ TECTONICALLY Bx Locally	160				157	162	5.0'	0.002	0.05		
161	161					161-171' 1.5/FT. SULF MICROVNTS @ 70-80°							
	91% 14 TOTAL >3"		165			DISS HEXAGONAL F.G. PLATELET MARC. + MINOR CUBIC Py 163' @ 75° MARC + Py + BAR + DRUSSY Q COATINGS	162	167	5.0'	0.018	0.10		

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%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
171	171.5 74% 14 TOTAL >3"	MOD-MOD HD PINK-GRY-CREAM MATRIX w/ GRN-GRY CLASTS + SOFT CLAY ALT FRAGS	170			171-201.5' 2.4/FT. SULF ± WHT CLAY @ 70-85' 170-180 0.1-0.2" WHITE + < YELLOW CLAY + MARC PLTLTS ± Q @ 45-55' @ 1.0/FT.
			175			171.5 + 188 2-3% Py IN CUBIC & DIMORPHIC FORM
180	182 83% 15 TOTAL >3"		180		Matrix-supported hydro-thermal bx similar to Chimney high-grade zone w/ pink SiO_2-rich matrix ± X-cutting pale grn. clay + SiO_2 ± sulf w/ grn clay alt. Clasts w/ diss. sulf of various xl-forms	180-190 @ 20-40' WHT + YELL CLAY ± Q + MARC. PLTLTS ± BAR ± @ 0.5/FT. tarnished sulf's grn, red, blue, purple orange 182-184' 183.5-184' white + Yellow Clay + Bar (C.XLN TO VN) + Abund Pseudohex Marc. 0.2-0.3" @ 15-20°
			185			186-187' FRAC-FILLING @ 5° w/ MASSIVE SILVER COLORED Py w/ TARNISHED YELLOW-BLUE ASSOC. YELLOW TARNISH Pyritohedrons Diss.
189		— 188-194' LARGE BRECCIA FRAG. OR BLOCK OF PLANAR-GRADED-LAMINATED WATERLAIN TEPHRA FINE-GRAINED MOD. WELL-SORTED w/ STEEP 5-20' LAM.'S LOC. CONTORTED	190		188' + Py BRASSY-YELLOW & IN CUBIC ± DIMORPHIC ± Pyritohedrons IN 2-3%	188' + INCREASING ARGILLIC ALT. 190-201.5 0.05-0.15" WHT + YELL + PALE GRN CLAY + MARC. ± Py-ohedrons + SULFOSALTS @ 40, 60, ± 5° 2.6/FT.
	192 71% 13 TOTAL >3"	— 194-201.5 BRECCIA MATRIX A.A. w/ CLAST-SUPPORTED FRAGS	195		194-201.5 YELLOW, TARNISHED Py; Py-ohedrons; Bladed Polysyn. Twined Marc. IN VNLTS & DISS.	192 IREG. 10-6' MICROVNLT w/ PALE GREEN-WHT SILIC. CLAY + Py + SULFOSALTS; ALSO BRASSY Q + AREIA Py 192-201.5 HYDRO THERMAL Bx w/ 0.01-0.1" PALE GRN CLAY/ WHITE CLAY & F.G. BRASSY Q ALTERATING + PSEUDO HEXA. MARC. @ 0-20° & 70-80° BRASSY-WHT MARC GREY-BLUE BRASSY-WHT 0.1-0.3" VNLT @ 25° w/ TWIN SURF'S
198			200		PREDOM MICRO FRAC IN/W/AS SiO_2 STKWK 1-2 30'	WHITE & YELLOW CLAY + BLADED MARC. + MED. GRAINED EUHED. BAR (FLOATING IN WHT CLAY) ± V.F. GRAINED Q XL'S (EUHEDRAL & FLOATING IN CLAY) GRNDMASS SILIC PINK Fe-K Stnd V.F.G. w/ diss pyritohedrons-yellow

FROM	TO	W	Au	Ag	Au2	Ag2
167	172	5.0'	0.003	0.06		
172	177	5.0'	0.005	0.09		
177	182	5.0'	0.004	0.08		
182	186	4.0'	0.005	0.10		
186	188	2.0'	0.003	0.07		
188	190	2.0'	0.007	0.11		
190	192	2.0'	0.004	0.06	0.005	
192	194	2.0'	0.006	0.10		
194	198	4.0'	0.013	0.07		
198	201.5	3.5'	0.005	0.09		

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%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
	202.5 .74% 17 TOTAL >3"	S.A.A. / S.A.A. — MOD HD / PALE GRN YELL-GRN — BLACK STREAK — 201.5 – 211.5' PALE GREEN FINE-GRAINED DENSE MASSIVE TO CRUDELY / FAINTLY PLANAR LAM. WATERLAIN / AIRFALL TEPHRA W/ APPARENT LAM'S @ 40° CO-INCIDENT W/ ONE PHASE OF SULF/CLAY MICROVNING. CLAYEY GROUNDMASS. FROM 201.5 ↓ 237.4 VERSES A SILICA RICH MATRIX W/ CLAYEY BX FRAG ↑	205		VNLT STKWK SULF ± WHT, YELL PALE GRN CLAY ± Q ± Py ± Marc. ± Ruby Ag ± Native Ag ± Electrum Coated Bright yellow high Z pyritohedrons.	203-207 0.01 - 0.05" 0-10° MICRO-VNLTS W/ PALE GRN TO CLEAR Q EXTERIOR W/ CLAY (PALE GRN SERICITE ?) OR MASSIVE AsPy CORES. V. HIGH Z SILVER, GOLD BRASS COLOR BLACK STREAK 4-5 Hd. CUBIC - MASS., PLATELTS
207 Box 21		↓ PREDOMINATELY CLAY MATRIX				201.5-207' 6/Ft SULF ± WHT ± YELL CLAY @ 50-70° MICROVNLTS WHT + YELLOW CLAY + BLADED MARC ± Q ± SILVER MASS SULF @ 0-5°
		MOD-MOD HD / PINK — 211.5 - 213 INTENSELY SILIC. FINE-GRAINED TUFF / TEPHRA BRECCIA W/ X-CUTTING SULF - CLAY & Q - BARITE VNLTS PARTIALLY VUGGY GRADING ↓ INTO FINE GRAINED FAINLY LAMINATED WATERLAIN TEPHRA	210		211.5 PLANAR - SHARP CONTACT @ 30°	206.5-207 Stubby Pyrargyrite euhedral - subhedral xls isolated in white clay w/surrounding yellow clay ± bladed marc. yellow high Z speckled py-ohedrons, IN VNLTS @ 60°
	213 80% 14 TOTAL >3"	GRN-GRY Lt. W/ LOC. LL PINK MOTTLING	215			207.2' FRAC STKWK W/ OPEN-SPACE Q XL LININGS → INWARD WHITE ± YELLOW CLAY ± Pyrarg. + tarnish Native Ag
216 22						207-211.5' 5/Ft. SULF + WHT + YELL CLAY @ 45-60° MICROVNLTS 2/Ft. 70-90° SULF. ± WHT CLAY
			220		MICROVNLT STK Marc. + Pale grn Sericite clay + blk sooty organic carb. on marc. + sulfosalts groundmass 50% SiO_2 - rich 50% clay.	208.5-211.5 0-5° SULF + Q + WHT + PALE (SAGE) GRN CLAY + BRASSY Py-ohedrons DISS. SULF 1-2% ↓ DECRE. @ INTERSECTION W/ 70-90° VNLTS MED. DK (GRASS) GRN CLAY
	223 77% 14 TOTAL >3"	MOD SOFT - MOD? MOD HD	225			211.5 - 216' PALE (SAGE) GRN CLAY STKWK @ 5°, 30°, 50° 0.02 - 0.1" W/ ± WHT ± YELL CLAY + BLADED SOOTY MARC, ± SULFOSALTS + F.G. OPEN-SPACE Q
226 23		MOD. SOFT — — POS. WATERLAIN CLAYSTONE 226-228 1ST APPEARANCE OF $CaCO_3$ in MICROVNLT STKWK (DISS.) — PARTIAL CRACKLE BX			226-228 FRAC'D SLICKED CLAY - MILLED BY 40° PRIM SLICK ORIENTATION <70-80° Pale green waxy clayey rock	216-220 SULF ± CLAY MICRO STKWK @ 5, 30, 50 ? 70-80
			230			219.5-220' VUGGY SILIC. + BAR ± SOOTY Py 220-226 60, 45, 5 SULF STKWK + IN FREQ W/ X-CUTTING WHT + PALE GRN CLAY VNLTS @ 0-10°
	233 70% 13 TOTAL >3"		235			226 - 237.4 DECR. SULF/CLAY STK. DECR. SILIC. INCR. VISIBLE PLANAR LAM. MICROVNLT CONSIST OF PALE GRN to WHT CLAY + TARNISH MASSIVE SULF. OR $CaCO_3$ + SOOTY MARC. BLADES IN PREDOM. CLAY MATRIX

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
201.5	205.0	3.5'	0.006	0.10		
205	207	2.0'	0.040	2.62	0.039	
207	211.5	4.5'	0.010	0.11		
211.5	215	3.5'	0.008	0.09		
215	220	5.0'	0.017	0.18		
220	226	6.0'	0.209	0.45	0.194	
226	230	4.0'	0.025	0.18		
230	235	5.0	0.012	0.14		

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%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
236 Box 24		S.A.A. MOD SOFT, DK GRN GRY; MOD HD, PINK; MOD SOFT, GRN-GRY. 237.4 - 243.1 FAULT BRECCIA CONSISTING OF MIXED LITHOLOGY CLASTS (TEPHRA; TUFF BRECCIA; SULFIDE & CALCITE VEINS) IN SULFIDE-CLAY RICH GOUGE CLAST FRAGMENTS GENERALLY 0.5cm; BUT ⇒ CORE DIAM. 244.1 - 245.3	240	Stx	237.4' DISTINCT PLANAR FAULT CONTACT @ 70' PRIM. FRAC'S @ 70'. $CaCO_3$ & SULF CLOTS as FRAG'S	238.2 - 239.3' Silic. HYDRO BX OF F.G. TEPHRA, PINK SILIC MATRIX - STKWK.
243 93% 11 TOTAL >3"		MOD, PALE GRN. 243.1 - 254' MATRIX-SUPPORT, POORLY-SORTED, LAPILLI TUFF; DEVITR. PUMICE LAP. LOC. DISPLAY IMBRICATION W/ FR'S 5:1 to 8:1; MATRIX IS FINE-GRAINED CLAYEY-ASH SIZE, CLASTS ARE GEN. < 0.5 CM. & HETEROLITHIC OCC. POLYLITHIC, SUBANG. TO RNDD.	245		243.1' $CaCO_3$ UN (0.75") @ 60' APPARENT LOWER CONTACT OF FAULT. 243.1 - 243.6' WAVY SULF + SiO_2/CLAY ON BDD. LAMINATIONS @ 60'. FIAMME FABRIC @ 70'	243.1 ↓ 254' DISS SULF V.V. F.G. CUBIC Py & F.G. BLADED MARC. W/ DEVITR. LAPILLI → CONCENTRATED ADJ. TO SULF + CARBONATE VNLTS
245 25			250			243.1 ↓ 254 $CaCO_3$ ± BLADED MARC. STK WK - both microvnlts & vnlts @ 15' & 60'
253 98% 10 TOTAL >3"		MOD SOFT MOD. 254 - 254.7 FAULT BRECCIA SIM. TO ABOVE. 254.7 - 263.5' MATRIX-SUPPORT, POORLY SORTED LAPILLI TUFF AS ABOVE FAULT W/ LAPILLI @ ~50'	255		254' DISTINCT PLANAR FAULT CONTACT @ 75' & SAME @ 354.7'	254.7 - 263.5 MICROVNLT STKWK $CaCO_3$ ± MINOR BLADED MARC. + MINOR DISS. CUBIC Py
254 26			260			
263 91% 10 TOTAL >3"		263.5 - 313' CLAST-SUPPORT, POORLY-SORTED, HETEROLITHIC & POLYLITHIC LAPILLI TUFF BRECCIA; ANGULAR TO ROUNDED C. GRAINED; ASH TO SEVERAL CM DIA. CLASTS IN $CaCO_3$ FLOODED FINE-GRAINED MATRIX (SILICEOUS CLAYEY) DARK GRY F.G. SILIC. VTn FRAGS - TRACE	265		263.5' SHARP PLANAR CONTACT @ 50'	
264 27		MED-DK GRN W/ MOTTLED LOC PINKISH BRN			267 - 269 C. XLN $CaCO_3$ IN FRAC-CRACKLE BX	C. XLN OPEN-SPACE $CaCO_3$ @ 80'
	95% REC. OPEN-SPACE H_2O COURSE @ 266'		270			SULF-RICH FRAGS LOC.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
235	237.4	2.4'	0.015	0.07		
237.4	238.2	0.8'	0.018	1.04		
238.2	239.3	1.2'	0.016	0.07		
239.3	243.1	3.8'	0.003	0.04		
243.1	247	3.9'	0.001	0.04		
247	251	4.0'	0.002	0.03		
251	254.7	3.7'	0.003	0.03		
254.7	260	5.3'	0.004	0.04		
260	263.5	3.5'	0.002	0.02		
263.5	268.5	5.0'	<0.001	0.02		

HOLE NUMBER 94-295C PAGE 9 OF 11

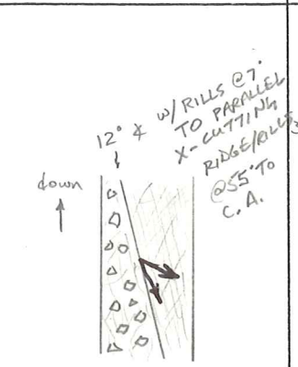
%REC	RQD	LITHOLOGY		FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
273	89% 19 TOTAL >3" 273	MOD → MOD HD	S.A.A.			272' SULF/CARB SLICKS @ 35', 40' 272.5 S.A.A. @ 80', 70'	271.5 @ 45° 0.05" $CaCO_3$ + WHT CLAY + CUBIC Py + BLADED MARC. + ACCES. SPL X-CUTTING THE BARREN $CaCO_3$ MICROUNL STRWK
BOX 28	90% 10 TOTAL >3" 98% REC.			275		278' HIGH ∡ PARTINGS	272 SULF + CARB SLICKS @ 35', 40' 269 – 284 CLASTS W/ BLEACHED REACTION RIM ALT. HALO'S
		MOD		280		280.5' DK GRN CHLORITIC CLAY + CUBIC MED. GRND Py @ 35' 282-284' TRANSITION FROM $CaCO_3$ MICROUNLT + LATER C. XL $CaCO_3$ VNS → TECTONICALLY BX'IATED S.A.A.	281-283' FRAGMENTED SULF + WHT CLAY + CARBONATE @ 30', 45', 35' (SULF HIGH Z Ag COLOR W/ YELL, ORANGE TARNISH 281-286' C. XLN $CaCO_3$ W/ HIGH ∡ 0-10' FRAC-CRACKLE Bx
282 29	283	284-313' FAULT BRECCIA ANGULAR TO ROUNDED ROLLED/MILLED FRAGS IN A PALE GRN CLAY MATRIX /GOUGE LOC. MOD TO STRONG $CaCO_3$ UNLT STRWORKS					
	80% 16 TOTAL >3"	MOD SOFT TO MOD	MOTTLED PALE-MED GRN	285		MILLED-ROUNDED SLIGHTLY SILIC. FRAGS IN PALE TO MED DK GREEN SLICKED CLAY MATRIX	286-286.5 C. XLN $CaCO_3$ @ 80'
	95% REC.		– INCREASING DARK GREY TO BLACK F.G. CLAYEY-SILIC. ANGULAR JTR FRAGS ↓			PREDOMINENT SLICKS @ 70-80' & 10-15' W/ LL 50-60'	288' C. XLN $CaCO_3$ @ 30' 289' C. XLN $CaCO_3$ @ 80' & 10' -289.8 GRN MASS PARTLY SILIC. W/ DISS. Py /Marc.
291 30	293			290			292-294' C. XLN $CaCO_3$ IN STKWK @ 80' & 10' + MINOR BLADED MARC.
	77% 13 TOTAL >3"	SOFT-MOD	MED-DK GRN	295			0.75" 296.5' DK GRN CHLORITE CLAY + MED. GRN CUBIC Py @ 40' X-CUT BY 80'/10' C. XLN BARREN $CaCO_3$ ↓ INCR. DK (GRASS) GRN CHLORITIC CLAY + BRASSY. YELLOW CUBIC & Py-chalcopyrite
300 31	100% REC.			300		300-301 ROUNDED MILLED $CaCO_3$ + MARC. FRAG'S	
	303 85% 15 TOTAL			305		303-304' $CaCO_3$ + SULF @ 20° $CaCO_3$ FLOODED HANGING WALL	

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
268.5	273	4.5'	0.007	0.04		
273	278	5.0'	<0.001	0.03		
278	283	5.0'	0.001	0.03		
283	288	5.0'	0.011	0.02		
288	294	6.0'	0.038	0.23		
294	300	6.0'	0.033	0.08		
300	305	5.0'	0.051	0.10		

HOLE NUMBER 94-295C PAGE 10 OF 11

%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG (LITH / STX / ALT/MINZ)	STRUCTURE	ALTERATION AND MINERALIZATION
	90% REC.	SOFT-MOD						
310 BOX 32					310			
	313			313-316' FAULT BRECCIA CONSISTING PREDOM. OF ANGULAR FRAGS OF F.G. INTRUSIVE RX BELOW IN A CARBONATE-SULFIDE + CLAY RICH MATRIX				
	93% 17 TOTAL >3"	MOD-MOD HD	PINKISH GRY					
	95% REC.	MOD HD	MED-DK GRY / VERY PALE GRN-GRY	316.5-323' (EOH) FINE-GRAINED, V. SLIGHTLY PORPHYRITIC W/ OCC. QUARTZ PHENOCRYSTS APHANITIC GROUNDMASS, VESICULAR, FLOW-BANDED INTERMEDIATE TO RHYOLITIC INTRUSIVE SILL/DIKE OR FLOW NO FLOW BREAKS OR COOLING JOINTS APPARENT; STRONGLY FLOW-BANDED BIRD'S EYE VESICULES W/ BANDED COLLOFORM (?) CRISTOBALITE ± → CARBONATE ± SULFIDE VESICLE-FILLINGS BASED ON UNIFORMITY OF APHAN. TEXTURE, LACK OF XL, LITHIC FRAGS, AND PROMINENT VESICULAR & FLOW-BANDED NATURE; THIS RX IS AN HYPABYSAL INTRUSIVE BODY THAT PRE-DATES THE FAULT, BASED ON BRECCIATED INTRUSIVE CONTACT.	315			
320 33					320			
	323							
	97% 9 TOTAL >3"							
	98% REC.	HD			325			
329 34								
	333				330			
	100% 10 TOTAL >3"							
338 35	100% REC				335			
					340			



316-316.5 DISTINCT-SHARP NEAR-PLANAR CONTACT @ 12' W/RIDGE-RILL Stx @ 55° TO C.A. DARK GREY SULF + CLAY GOUGE MICRO BX VNLTS @ 10' W/ SILIC. CLEAR TO LT GREY CLAYEY MATRIX & ANG. MICRO FRAGS WKLY CLAY ALT. FLOW-BANDED VESICLES @ 50'

SOUTH RIDGE FAULT @ 316' SRF @ 12'

FLOW-BANDED VES. @ 40'

308-310' $CaCO_3$ ± SULF MICRO VNLT STKWORK MOD INTENSE @ 70 & 15°

316.5-318 NARROW Lt to Dk GRY SULF ± CLAY ± CARBONATE VNLT BX @ 10-15°

323-334' 0.01-0.1" $CaCO_3$ + Q + white clay ± sulf @ 0-15° INTERMITTENT INTERGROWTHS INCLUDING BRIGHT Ag COLORED TARNISHED Ag SULFOSALTS ± ACCES. SPL.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
305	310	5.0'	0.052	0.10		
310	313	3.0'	0.044	0.15		
313	316.5	3.5'	0.002	<0.02		
316.5	320	3.5'	0.002			
320	325	5.0'	0.001			
325	330	5.0'	<0.001			
330	335	5.0'	<0.001			
335	340	5.0'	0.001			

HOLE NUMBER 94-295C PAGE 11 OF 11

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
	343 98% 10 TOTAL >3"	316.5-363 CONTINUED HD V. PALE GRN GRY — INCREASING Q PHENOCRYSTS UP TO 5-6% SUBHEDRAL 0.05' PHENO'S	345			MINOR Marc. coated Flow-bands	340	345	5.0'	0.001	<0.02		
348 Box 36	98% REC		350		FLOW BANDED VESICULES @ 35'		345	350	5.0'	<0.001			
	353 97% 9 TOTAL		355				350	355	5.0'	<0.001			
357 37	96% REC SHORT @ END OF RUN		360			258-259' CaCO3 + SULF + WHT CLAY @ 50° & 30° W/ INTER-CONNECTED 0-15' S.A.A. BLADER BRASS COLORED Marc.	355	360	5.0'	<0.001			
363	363	END OF HOLE @ 363'			FB VESICULES @ 50°	360-361' SULF + CaCO3 + WHT CLAY @ 30° 0.01-0.02"	360	363	3.0'	<0.001			

ANALYSIS REPORT

American Assay Laboratories Inc.

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-~~259C~~ 295C

LABORATORY JOB No. : SP029595

SAMPLE TYPE :

RECEIVED : 17/06/94

REPORTED : 29/06/94

No. SAMPLES : 42

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

SIGNATORY : Sue Faircloth M.S.

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-259C
JOB NUMBER : SP029595
REPORTED : 29/06/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
94-295C 19-23	0.001		0.03
94-295C 23-29	0.005		0.09
94-295C 29-34	0.002		0.06
94-295C 34-38	0.002		0.06
94-295C 38-42	0.001		0.04
94-295C 42-46.5	0.002		0.10
94-295C 46.5-50	0.002		0.08
94-295C 50-56.1	0.003		0.05
94-295C 56.1-60	0.003		0.45
94-295C 60-65	0.004	0.005	0.19
94-295C 65-70	0.003		0.05
94-295C 70-75	0.007		0.07
94-295C 75-80	0.004		0.19
94-295C 80-85	0.003		0.08
94-295C 85-90	0.003		0.06
94-295C 90-95	0.002		0.07
94-295C 95-100	0.003		0.06
94-295C 100-105	0.003		0.20
94-295C 105-112	0.002		0.09
94-295C 112-117	0.002		0.07
94-295C 117-122	0.002		0.08
94-295C 122-127	0.002		0.05
94-295C 127-132	0.002		0.06
94-295C 132-137	0.003		0.08
94-295C 137-142	0.002		0.06

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-259C
JOB NUMBER : SP029595
REPORTED : 29/06/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
94-295C 142-147	0.002		0.08
94-295C 147-152	0.005		0.07
94-295C 152-157	0.003		0.05
94-295C 157-162	0.002		0.05
94-295C 162-167	0.018		0.10
94-295C 167-172	0.003		0.06
94-295C 172-177	0.005		0.09
94-295C 177-182	0.004		0.08
94-295C 182-186	0.005		0.10
94-295C 186-188	0.003		0.07
94-295C 188-190	0.007		0.11
94-295C 190-192	0.004	0.005	0.06
94-295C 192-194	0.006		0.10
94-295C 194-198	0.013		0.07
94-295C 198-201.5	0.005		0.09
94-295C 201.5-205	0.006		0.10
94-295C 205-207	0.040	0.039	2.62

ANALYSIS REPORT

American Assay Laboratories Inc.

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: 94-295C
LABORATORY JOB No. : SP029712
SAMPLE TYPE :

RECEIVED : 24/06/94
REPORTED : 30/06/94
No. SAMPLES : 37

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

SIGNATORY : Sue Faircloth M.S.

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-295C
JOB NUMBER : SP029712
REPORTED : 30/06/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
94-295C 207-211.5	0.010		0.11
94-295C 211.5-215	0.008		0.09
94-295C 215-220	0.017		0.18
94-295C 220-226	0.209	0.194	0.45
94-295C 226-230	0.025		0.18
94-295C 230-235	0.012		0.14
94-295C 235-237.4	0.015		0.07
94-295C 237.4-238.2	0.018		1.04
94-295C 238.2-239.3	0.016		0.07
94-295C 239.3-243.1	0.003		0.04
94-295C 243.1-247	0.001		0.04
94-295C 247-251	0.002		0.03
94-295C 251-254.7	0.003		0.03
94-295C 254.7-260	0.004		0.04
94-295C 260-263.5	0.002		0.02
94-295C 263.5-268.5	<0.001		0.02
94-295C 268.5-273	0.007		0.04
94-295C 273-278	<0.001		0.03
94-295C 278-283	0.001		0.03
94-295C 283-288	0.011		0.02
94-295C 288-294	0.038		0.23
94-295C 294-300	0.033		0.08
94-295C 300-305	0.051		0.10
94-295C 305-310	0.052		0.10
94-295C 310-313	0.044		0.15

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-295C
JOB NUMBER : SP029712
REPORTED : 30/06/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
94-295C 313-316.5	0.002		<0.02
94-295C 316.5-320	0.002		<0.02
94-295C 320-325	0.001		<0.02
94-295C 325-330	<0.001		<0.02
94-295C 330-335	<0.001		<0.02
94-295C 335-340	0.001		<0.02
94-295C 340-345	0.001		<0.02
94-295C 345-350	<0.001		<0.02
94-295C 350-355	<0.001		<0.02
94-295C 355-360	<0.001		<0.02
94-295C 360-363	<0.001		<0.02

295° C,
120'

WELL
DEPTH
PICTURE NO.
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

295° C
20'

WELL
DEPTH
PICTURE NO.
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

295° C
360'

WELL
DEPTH
PICTURE NO.
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

295° C
240

WELL
DEPTH
PICTURE NO.
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

N-1-2-3-4-5-6-7-8-M-8-7-6-5-4-3-2-1-S-1-2-3-4-5-6-7-8-M-8-7-6-5-4-3-2-1-N
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N-1-2-3-4-5-6-7-8-W-8-7-6-5-4-3-2-1-S-1-2-3-4-5-6-7-8-E-8-7-6-5-4-3-2-1-N
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