60001480

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. 94-301C
AUTHOR	C. Winchester; C. Muerhoff; S. Fairchild
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 383' handwritten notes; down hole camera images 18p. 5 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:	MAB	
	Initials	Date
SCANNED:		
	Initials	Date

Revised: 1/22/08

94-301 C

SOUTH ZONE

6000 1480 4010

6000 1480

Hecla
MINING COMPANY

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	94-301C	LOCATION	South Zone	REMARKS	RECOVERY NOT
PAGE 1 OF	12	NORTHING	2,203,340.1		RECORDED UNLESS <90%;
DATE	5-18-94	EASTING	481,108.9		ALL ORIENTATIONS ARE
LOGGED BY	CBW	ELEVATION	5267.5		STATED IN RELATION TO
SCALE	1"=5'	AZIMUTH	83.5°		CORE AXIS (∡ TO CORE AXIS)
TOTAL DEPTH	383 FEET	INCLINATION	-89.5°		

%REC	RQD	Hardness S M H	COLOR	LITHOLOGY DESCRIPTION	FT	GRAPHIC LOG LITH	Stx	Alt.	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
7					5												
Box 1	60% >3" 16 total	MH → H	tan, grey, grnish-grey, red-orange FeOx stnd	Heterolithic tuff breccia w/ superimposed tectonic-hydrothermal (low temp - poss. surface weather-leaching) brecciation and silicification, Pref. oxidization of frac / vnlt-skwk and clasts. Clasts are angular to rnd, poss. polylithic and -matrix supported. Matrix is intensely repl. by SiO_2, as are clasts giving "ghost" bx frag's.	10				Brecciation ranging from crackle bx to hydrothermal bx. Predominant frac orientations at 50, 70 and 5-25°	Intense silicification - repl. Oxidation intense - limited to frac's & clasts locally. High frac. density - creating stkwk.	7	14	7.0'	0.002	0.03		
16	16				15												
2	87% >3" 10 total		med grey	18.2' Apparent contact @ 70° lim+clay. 18.2-47 Brecciated f.g., slightly porphyritic ash flow tuff. Hydrothermally & tectonically brecciated.	20					Lt grey to clear Q microvnlts stkwk up 0.1" @ 40°, 60°, 70° 5-20°, some open-space Q frac-filling w/ lim/hem/spec. hem. coatings. Diss. FeOx + spec. hem.	14	20	6.0'	<.001	0.04		
	23																
25	78% >3" w/ 14 total		Lt. gry	ground mass, phenocrysts and clasts completely replaced by f.g. sugary SiO_2. Pheno's repl appear to be hrn & feldspar	25						20	25	5.0'	<.001	0.07		

HOLE NUMBER 94-301 C PAGE 2 OF 12

%REC	RQD	Hardness S M H	COLOR	DESCRIPTION	FT	STRUCTURE	ALTERATION AND MINERALIZATION
Box 3		H	lt gry; loc. tan	18-47' s.a.a.		Intensely frac'd w/>10/ft.	Intensely silic.; SiO_2 repl. of g.m., phenocrysts & clasts.
34 / 4	33 / 82% >3" w/10 total				30		
43 / 5	43 / 80% >3" w/15 total				35		open-space frac's w/ v.f. tan clay (infiltrated)
			mottled grn, gry pink, tan	47' Contact @ 70'	40		
		MH		47-113.5' Heterolithic, polylithic tuff breccia w/ local tectonic breccia as noted below.	45		Hem ± lim ± clay ± SiO_2 vnlts up to 0.5" @ 40', 30', 70' @ >1/ft. mod. silic.; mod. clay alt. oxid., propylitically alt. strong loc. SiO_2 in patchy microvnlt stockwork
52.5 / 6	53 / 80% >3" w/12 total				50		
					55	frac's ↓ to 2-3/ft. @ 70' pred.	
					60		

GRAPHIC LOG

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
25	30	5.0'	<.001	.05		
30	35	5.0'	<.001	.04		
35	40	5.0'	0.001	.07		
40	45	5.0'	<.001	.07		
45	47	2.0	0.003	.13	0.003	
47	50	3.0	<.001	.06		
50	55	5.0	<.001	.07		
55	60	5.0	<.001	.10		

HOLE NUMBER 94-301C PAGE 3 OF 12

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
62 Box 7	63 82% >3" 11 total	47-113.5' continued mod Hd — mottled grn, gry tan, cream M w/ soft clay alt frags				oxid. frac's & repl of clasts, & phenos + clay.
			65		frac's w/ wht ill. clay ± lim + slicks @ 30°; 50°; 70° decr. ↓	
		M-MHd				Clear to lt. gry SiO_2 micro-xnlt stkwk w/ 50°-70° frac prim. control
		dk'er grn	70			
72 8	73 70% >3" w/ 12 total	M w/ soft clay alt frags				
		tan	75			
		pale to dk grn				
81 9	83 77% >3" w/ 13 total	MH	80			
			85			86' irreg subang. vug-filling or vn frag w/sltly amthystine open-space Q
90 10	93 76% >3" w/ 10 total	Soft — M to MH	90			
		brn, orange-yellow grn ↓	95			

92.5'-94' Fault bx w/ slicks @ 50; 40; 70'
Gravelly angular frags in clay gouge
Clasts are sand to pebble size, - matrix-supported to clast-support.

FROM	TO	W	Au	Ag	Au2	Ag2
60	65	5.0'	0.004	.08		
65	70	5.0'	0.002	.08		
70	75	5.0'	0.003	.09		
75	80	5.0'	0.002	.09		
80	85	5.0'	0.006	.14	.005	
85	89	4.0'	0.002	.09		
89	92.5	3.5'	0.006	.10		
92.5	94	1.5'	0.003	.13		
94	100	6.0'	0.003	.10		

HOLE NUMBER 94-301 C PAGE 4 OF 12

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
99 Box 11		M to MH; grayish-grn.				
		MS-M → MH; orange brn, yellow grn	100			
	103 75% >3" w/ 15 total		105		102-113.5 High frac density w/ tect. bx filled frac's > core diam. Frag's non-rotated to slightly rotated. bx-frac zone controlled by 15' ≈ 20' high ∡ stx.	up to 0.5" bx'iated Q vnlt frag's
108 12		MHb H				Bx'iated barren wht to tan Q vnlts & vns
		S; 112-113' contact zone appx ∡ 80° low ∡ contact	110			
	113 72% >3" w/ 12 total	MH-H; very pale grn w/ v. pale yellow grn clay alt f.g. Clasts — 113.3' Contact; 113.5 – Lapilli tuff; latitic f.g. to c.g. angular to slightly flattened pumice lapilli and ash w/ low flattening ratio's in latitic f.g. groundmass massive at top grading down ward into lapilli-laminated banding @ 153' groundmass is vitroclastic w/ clear to pale grn (devitric) SiO_2 micro vnlts. generally non-porphyritic, but locally where Lapilli are small & clay alt. appears porph.				
117 13		Soft; H-MH	115		116.5' fault / frac clay gouge	oxidized – limited to frac-surf's + clay @ 25'; 50 & 70'
	123 90% > 3" w/ 9 total		120		minor frac zone @ 124.5	
127 14			125			
			130			

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
95	100	5.0'	0.003	.10		
100	105	5.0'	0.010	.22		
105	109	4.0'	0.012	.33		
109	113.3	4.3'	0.005	.11		
113.3	119	5.7'	0.004	.08		
119	125	6.0'	DTF .004	.12		
125	130	5.0'	0.015	.10		

HOLE NUMBER 94-301 C PAGE 5 OF 12

%REC	RQD	Hardness	Color	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
	133	N-MH	pale lt grn w/ v. lt grn devitr. pumice lapilli	113.5 – 159 Continued.				
136 Box 15	72% >3" w/14 total	MH co-incident w/grn chl +SiO2	-d'ker grn in bands/ halo's to SiO2 vnlts		135		minor frac. zone w/ clay + lim matrix	minor weak silic. bands from 136' ↓ SiO2 gry to wht @ 70'
	143				140		minor frac zone w/slight clast rotation	clay + lim matrix
146 16	95% >3" w/13 total				145			
	153				150			
156 17	96% >3" w/11 total				155			156'-157 F.g. Q + lim micro vnlts @ 30' & 70'
		soft Mod to MH	med to lt grn w/ irreg chl-rich clotts locally	159' soft pale grn clay alt. f.g. tephra @ 70'				159' – thin band w/ f.g. diss. PY
	163			159 – Latitic tuff breccia; heterolithic – w/ flow-banded frags; clay alt frags; sulf-rich frags; and devitr. glassy frags., frags up to core diam. in size; angular to subrd, generally matrix-supported.	160			162-165' lim ± clay ± Q xl repl. of sulf-silic. clasts
165					165			161-165' chalc. SiO2 ± lim in microvnlts @ 40°; 162-7-163 vuggy, SiO2 + tan clay infilltrated; 164 → wht to lt grey, discont. patchy SiO2 repl/stkwk

FROM	TO	W	Au	Ag	Au2	Ag2
130	135	5.0'	0.002	.04		
135	140	5.0'	0.001	.15		
140	145	5.0	DTF .002	.10		
145	150	5.0	0.001	.06		
150	156	6.0'	0.002	.06		
156	158.8'	2.8'	0.003	0.09		
158.8	162	3.2'	0.002	0.08		
162	165	3.0'	0.003	0.06		

HOLE NUMBER 94-301 C PAGE 6 OF 12

%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
Box 18	89% >3" w/ 13 total	Mod to Mod H w/ Mod soft clay-alt. clasts/ frags.	med. to lt grn		170			165-172 pref. repl. clasts w/ sulf - f.g. & bladed w/ assoc. blk v.f.g. carb. mat. also in clean to grey / pale grn SiO_2 micro vnlts. Also, lim + open-space Q + clay microvnlts @ 40, 70' SiO_2 microvnlts / stkwk
174 19	173 86% >3" w/ 12 total	Mod to Mod Hd	med to lt grn	173 Apparent contact; mod. intense oxid. above contact. 173-206' Latitic - vitroclastic tuff breccia, only loc. heterolithic silic. w/ SiO_2 microvnlt stkwk vitroclastic brecciated grndmass	175		ground mass appears shattered & healed w/ SiO_2	172-182 lim. + clay + open-space Q xl @ 70' & 30-40' w/ inter vein let area w/ SiO_2 microvnlt stkwk. Q + sulf vnlts repl. w/ lim + grnish oxid + tan infiltrated clay?
183.5 20	183 91% >3" w/ 12 total				180			182 sulf-rich microvnlt @ 70' changing to 40' 182-206' Mixed sulf'd - & oxid. - bearing microvnlts incepient oxid. zone
					185			188.6-189.3' Wht amorph SiO_2 w/ v.f.g. hex/pseudo-hexagonal sulf. xls. as vn/repl. @ 30'
193 21	193 66% >3" w/ 9 total	mod		BUD VOLC. BX Lat. Lithic lap. tuff bx	190			192 ↓ sulf./oxid stringers decreasing.
					195			
					200			

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	Ag2
165	170	5.0	0.002	0.06		
170	175	5.0	0.005	0.10		
175	180	5.0	0.005	0.05		
180	185	5.0	<0.001	0.04		
185	190	5.0	0.002	0.07		
190	195	5.0	0.003	0.08		
195	200	5.0	0.001	0.05		

HOLE NUMBER 94-301 C PAGE 7 OF 12

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
Box 21 202 22	203 <61% >3" w/8 total	mod ↓ med to pale grn 206 Apparent Contact @ 70' 206-211' Pale grn lapilli latitic tuff. 206-211 Crude flow-lamination @ 70' w/ lapilli-fiamme imbricated porphyritic appear 206-207.3 from smaller more equant and abund. - lapilli matrix-supported to nearly clast-supported, f.g. vitroclastic groundmass, w/ sugary devitrified pumice lapilli.	205		Healed tectonic bx SiO_2-rich matrix oxid. rubble zone	Incipient Oxidation ↓
212 23	213 77% >3" w/15 total	211' mod Hd pale grn w/ pink tint 211-220.5' Heterolithic latitic tuff breccia. 214' mod to modi. soft 217 mod to mod Hd	210 215		211-212 healed (SiO_2) tectonic bx zone w/ pref. silic. bx frags 213.65 frac/slick @ 70' w/ clay-gouge tectonic breccia ↓ to 216.5' slicks @ 50' @ 216	Sulf. Zone w/ sulf + blk carb. mat. rich stringers @ 65-70' @ 3.5/ft 206-212 pseudo-hexagonal sulfide platelets w/ black sooty coatings w/in wht clay py/marc. platelets composed of v.v. f. aggregated and/or twinned py/marc. 206-217' lt gry silic. frags 211-213 bladed sulf-clotts 214.5 Sulf stv. @ 65' 216.3' 0.1-1.0' mass. py vnlt @ 60' 217.4 ↓ wht clay + bladed marc. @ 55' ±25'
222 24	223 70% >3" w/10 total	220.5' apparent flow-break @ 70' 220.5-224' Heterolithic lapilli tuff 221 mod-m.s. tan grnd mass w/ pale grn fiamme 224 mod pale to dk grn w/ tan-pink matrix 224' apparent contact @ 65' planar 224-235' Heterolithic tuff breccia and flow-laminated latitic lapilli tuff.	220 225		219.4-224 tectonic bx pale grn slicks abund. clayey matrix w/ angular heterolithic clasts predom. frac/slicks @ 50-70' 227' minor tectonic bx @ 50'	217.4 ↓ wht clay + bladed marc. @ 55' ±25' diss. py weak discontinuous sulf-rich stringers 219.4-224 228-230.5 irreg. sulf-rich vnlts @ 40-50' 4.1/ft.
230 25	233		230 235		228.5' tectonic bx 0.3' @ 50' 230' s.a.a' 230' flow-aligned pale grn devitr. pumice lap w/ FR's up to 15:1 @ 40' 231.7' tectonic bx w/ angular frags in clayey matrix 232.2-234 s.d.b	231' Sulf-rich frags

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
206	206	6.0'	0.001	0.05		
206	210	4.0'	0.002	0.08		
210	215	5.0'	0.002	0.08		
215	219.4	4.4'	0.001	0.05		
219.4	224	4.6'	0.001	0.06		
224	228	4.0'	0.002	0.07		
228	233	5.0'	0.004	0.08		
233	238	5.0'	0.002	0.09		

HOLE NUMBER 94-301 C PAGE 8 OF 12

%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
239 Box 26	58% >3" w/11 total	mod	pink g.m. w/ pale grn fiamme	235' Contact @ 40° planar 235-243 Flow-laminated heterolithic latitic lapilli tuff. Flow-aligned imbricated lapilli @ 40° w/ FR's of up to 10:1 (fiamme). BUD ↓ 243	240		238-238.5 tectonic bx rubble	235-237' sulf-SiO2 rich frags 238' sulfide-rich microvnlt @ 60° x-cutting
243	69% >3" w/9 total	mod to mod Hd	pale grn	243' Contact @ 60° planar 243-247.5' Pale grn f.g. ash-flow tuff w/ minor lithic & lapilli clasts.	245			245.5 sulf + clay vnlt @ 70° x-cut (offset) by wht clay-rich vnlt @ 15°
248 27			pink sandy g.m. w/ pale grn f.g. clasts	247.5 Contact @ 70° planar 247.5-263.3 Fine-grained ash-flow tuff breccia. Matrix-supported, homogeneous massive to strong planar-laminated clasts. Clasts generally pale green v. f. grained softer than pinkish-brown siliceous ground mass. Clasts angular to subrounded & x-cut by SiO2 micro vnlt stkwk. LBT	250			243-250 sulf. rich vnlts + weak disseminated sulfide platelets proximal to veinlets. 250-263.3 Patchy disseminated sulfide concentrated in matrix locally & w/in clasts locally. 254-258 Moderately strong sulfidation - black discont streak on hardness test. sulf. in bands @ 50° 251-255 sulf.-rich vnlts @ 70-90°
253	79% >3" w/12 total				255			
257 28					260			
263	50% >3" w/10 total	263.3' mod Hd	pinkish brn g.m. w/pink to grn clasts	263.3' Contact @ 75° planar 263.3-301 Fine-grained ash-flow tuff breccia. Matrix-supported 263.3-274. Clast-supported crackle-breccia (w/angular slightly rotated frags) 274-276.5 Matrix-supported 276.5-301. Homogeneous clast-composition, angular to subrounded in a reddish brown siliceous, sulfide-rich sandy texture ground mass.	265		269-269.8 tectonic bx rubble zone	263.3-266 Clasts partially to totally altered to reddish brown SiO2 + sulfide. * 263.3-285 White clay + yellow "ducks butter" clay ± sulfides at 20' & 40' sulfides loc. w/ open-space Q → wht/yellow clay; sulf soft & yellow
266 29					270			

ANALYTICAL DATA

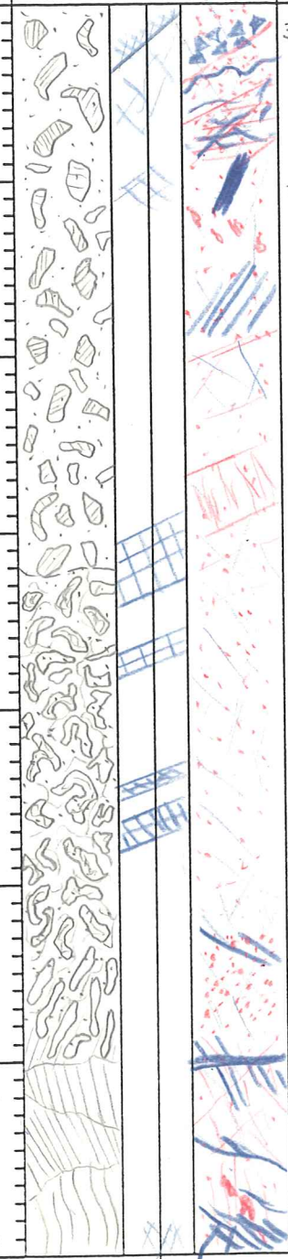
FROM	TO	W	Au	Ag	Au2	Ag2
238	243	5.0'	0.003	0.07		
243	247.5	4.5	0.002	0.06		
247.5	250	2.5	0.005	0.09		
250	254	4.0'	0.005	0.11		
254	258	4.0'	0.007	0.12		
258	263.3	5.3'	0.022	0.12		
263.3	269	5.7'	0.004	0.13		

HOLE NUMBER 94-301C PAGE 9 OF 12

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		mod Hd; 263.3 - 301 Continued			271-271.5 tectonic bx w/ bounding frac's @ 50°	271-271.4 grn chalcedonic SiO_2 vnlts @ 65°
	273				274-275 frac'd - crackle bx	
275 Box 30	73% >3" w/ 15 total		275			
			280			279-283 Sulf-rich + wht clay vnlts @ 65-75° @ 6.5/ft. also dk grn chl-rich sulf vnlts
	283					
	82% >3" w/ 15 total	285- mod to Mod Hd; yellow buff; pink to reddish brn/ pale grn mottled gsm. w/ grn f.g. clasts			284.5-285 tectonic bx	283-285 yellow tan, wht & grn clay abundant (duck-butter-rich)
285 31		LB7	285		286.5' BARITE + Q ALT/ MINZ ↓ To 301'	286.5 clear to lt tan cixln celcsite/barite vn *
			290			290.5-293 ducks butter yellow clay on 50° vnlts *
	293				292.8 @ 70° slicks & tectonic bx ↓ 295.5 discont.	293.3 bx Qtz + sulf. vnlts sulf-rich vnlts @ 30-45°
294 32	48% >3" w/ 7 total		295		297.5' bx'iated vn w/ frac @ 80°	* 297.5 fragmented clear to blue-gry ~~bart~~ brassy-yellow py + pseudo hex marc. w/ blk carb. mat. coatings *
		301 mod Soft to mod; med yellowish grn; 301' Contact @ 60° planar; 301 - 382.5' Fine-grained laminated waterlain tephra; 301-333.5 tephra breccia, matrix-supported homogeneous clast composition; angular	300		300.5-301 frac'd; 302.7-304 frac'd w/ pale grn slicks at 50-70°	301-306 mod to strong disseminated f.g. sulf - patchy black streak; $CaCO_3$ flooding + veining 302.8' ↓
304 33	303		305			

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	Ag2
269	272	3.0'	0.009	0.08		
272	276	4.0'	0.009	0.09	0.011	
276	279	3.0'	0.017	0.08		
279	283	4.0'	0.009	0.09		
283	285	2.0'	0.008	0.10		
285	290	5.0'	0.006	0.09		
290	293.3	3.3'	0.010	0.13		
293.3	297	3.7	0.032	0.36		
297	301	4.0	0.042	0.15		
301	306	5.0'	0.037	0.33		

HOLE NUMBER 94-301C PAGE 10 OF 12

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
	52% >3" w/8 total 312 65% >3" w/11 total 322.5 35% >3" w/6 total 331 78% >3" w/12 total	mod soft to mod; mod; mod to mod Hd; 321 mod Hd to Hd; 339.5 mod to mod Hd; Pale grn; 327 Lt grey; 329 mottled pale grn & pinkish tan to elongate/rounded clasts w/ sulfide-rich silicified re-action rims. Planar-laminated, cross-laminated, graded bedding w/in clasts. LBT 321-335' Fine-grained tephra breccia w/ highly-contorted (soft-sediment deformation) lamination of clasts & laminations w/in clasts. 335-382.5' gradational transition from tephra breccia into steeply-dipping, planar-laminated, graded bedding waterlain tephra. Laminations at 15-40' w/ local contort-bending, kinking	310 315 320 325 330 335 340		306' slick @ 50° w/ tectonic bx'iated CaCO3 vn (0.3') above, pale yellowish green silic-clay slicks + 310-311 frac'd rubble zone 320-322 frac'd zone w/ frac's @ 20° & 70° 323.2 - 323.8' s.a.a. 327-327.4 s.a.a. 328-329 frac'd rubble	brecciated wht c. xln CaCO3 w/ minor yellow to black sulf. 306 & 307' 308-310' sulf/carbonate vnlts @ 50-90° 310-310.25' barren wht c. xln CaCO3 @ 25° 311-312 sulf.-repl. frags 318-320 pale grn carbonate + clay + minor platey sulf. microvnlts @ 70 & 20° 331.4-334 c.g. disseminated cubic py - brassy to steel color 1-2% assoc. w/ clear to reddish-brown SiO2 microvnlt stkwork. 335 CaCO3 @ 90° & 30° 335-337' CaCO3 + py + clay + yellow → tarnished red, purple py ± minor brn sph. @ 35° 337 - 340.5 incr. in CaCO3 density & size x-cutting steep-dipping lamination.	306	311	5.0'	0.025	1.02		
							311	315	4.0'	0.012	0.14		
							315	320	5.0'	0.006	0.16		
							320	325	5.0'	0.002	0.05		
							325	330	5.0'	0.002	0.05		
							330	334.5	4.5'	<0.001	0.02		
							334.5	341	6.5'	0.004	0.05		

HOLE NUMBER 94-301 C PAGE 11 OF 12

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
Box 37	341.5 69% >3" w/13 total	mod pale grn gry 335-382.5' Planar-laminated fine-grained waterlain tephra.			0.1" wht clay filled frac's @ 20° 0.5" $CaCO_3$ + grn clay @ 45° 0.01 sulf + grn chl. clay @ 50° & 5°	344' lt blue Q stringers @ 70° partially fragmented + wht clay + wht $CaCO_3$ + minor sulfide platelets
		347 mod Hd to Hd weak black streak 349-351' Interbedded, highly fragmented palegreen claystone	345		planar-laminations @ 45°	
351	351		350		(2) 1.5" c.g. open-space $CaCO_3$ vnlts @ 50° w/ blk sooty carbonaceous mat. on bounding stx ± minor py 0.3" $CaCO_3$ vnlt @ 40° along grn claystone bed-plan	0.01" sulf + grn chl. clay @ 45°
38	49% >3" w/10 total (12' run) ?	LB7	355		tectonic bx 0.05-0.1" wht clay-filled frac's @ 60 & 20°	bx'iated massive py + SiO_2 + * wht clay + $CaCO_3$ pink Q vn or SiO_2 repl. frags py yellow - loc. tarnished minor wht bar platelets cpy @ border of $CaCO_3$/sericite/illite - SiO_2
361			360		planar-graded bdd @ 50°	
39	363					minor sulfide stringer 0.01" @ 50°
	72% >3" w/11 total		365		planar-graded laminations @ 45° & 70° - pos. planar-x-bdd. planar-lam. @ 50°	367' 1.0" $CaCO_3$ vnlt @ 55°
371			370			
40	373		375		frac's + ± grn clay + sulf/or ± wht clay @ 10° & 55°	

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
341	347	6.0'	0.003	0.05		
347	352.0	5.0'	0.001	0.03		
352	353	1.0'	0.006	0.12		
353	354.7	1.7'	0.005	0.05		
354.7	360	5.3'	0.001	0.03		
360	365	5.0'	<0.001	0.03		
365	370	5.0'	<0.001	0.02		
370	375	5.0'	<0.001	0.03		

HOLE NUMBER 94-301 C PAGE 12 OF 12

REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
Box 40	54% >3" w/13 total	mod Hd; pale grn gry; black streak; LBT ↓ TD			planar lam. @ 65-70'		375	380	5.0'	0.001	0.03		
381			380		0.02" wht clay-filled frac's @ ~50'	diss. py strong ↓							
41		382.5-383 Fine-grained tephra breccia w/ angular matrix-supported tephra clasts in				(2) 0.5" & 0.75" barren wht c. xln $CaCO_3$ @ 50'	380	383	3.0'	0.002	0.14		
383	383	TD @ 383' s.g. carbonate + sulfide-rich g.m.			tectonic $CaCO_3$ healed bx								

ANALYSIS REPORT

American Assay Laboratories Inc.

RENO: 1500 Glendale Ave,SPARKS 89431
P.O. Box 71060, RENO 89570
Ph (702)356 0606 Fax 3561413

HECLA MINING CO.

REPORT : SP 029244 2 Page(s) Date : 06/08/94

Client reference : 94-301C Project : ROSEBUD

Cost code :

Copies to : CHARLIE MUERHOFF

Samples : Type Preparation code
Received : 05/25/94

Analysis	Code	Quality Parameter	Detection	Units
Au(OZ)	FA60	Acc. 15 %	0.001	OZ/TON
Au(RZ)	FA60	Acc. 15 %	0.001	OZ/TON
Ag(OZ)	D210	Prec.10 %	0.02	OZ/TON

QA Manager : Sue Faircloth M.S.

ANALYSIS REPORT

American Assay Laboratories Inc.

REPORT : SP 029244

Sample	Au(OZ) OZ/TON	Au(RZ) OZ/TON	Ag(OZ) OZ/TON
94-301C 7-14	0.002		0.03
94-301C 14-20	<0.001		0.04
94-301C 20-25	<0.001		0.07
94-301C 25-30	<0.001		0.05
94-301C 30-35	<0.001		0.04
94-301C 35-40	0.001		0.07
94-301C 40-45	<0.001		0.07
94-301C 45-47	0.003	0.003	0.13
94-301C 47-50	<0.001		0.06
94-301C 50-55	<0.001		0.07
94-301C 55-60	<0.001		0.10
94-301C 60-65	0.004		0.08
94-301C 65-70	0.002		0.08
94-301C 70-75	0.003		0.09
94-301C 75-80	0.002		0.09
94-301C 80-85	0.006	0.005	0.14
94-301C 85-89	0.002		0.09
94-301C 89-92.5	0.006		0.10
94-301C 92.5-94	0.003		0.13
94-301C 94-100	0.003		0.10
94-301C 100-105	0.010		0.22
94-301C 105-109	0.012		0.33
94-301C 109-113.3	0.005		0.11
94-301C 113.3-119	0.004		0.08
94-301C 119-125	0.004		0.12

Please refer to the cover sheet for further analysis details.

ANALYSIS REPORT

American Assay Laboratories Inc.

REPORT : SP 029244

Sample	Au(OZ) OZ/TON	Au(RZ) OZ/TON	Ag(OZ) OZ/TON
94-301C 125-130	0.015		0.10
94-301C 130-135	0.002		0.04
94-301C 135-140	0.001		0.15
94-301C 140-145	0.002		0.10
94-301C 145-150	0.001		0.06
94-301C 150-156	0.002		0.06

Please refer to the cover sheet for further analysis details.

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: 94-301C
LABORATORY JOB No. : SP029596
SAMPLE TYPE :

RECEIVED : 17/06/94
REPORTED : 28/06/94
No. SAMPLES : 52

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 : 94-301C
JOB NUMBER : SP029596
REPORTED : 28/06/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
94-301C 156-158.8	0.003		0.09
94-301C 158.8-162	0.002		0.08
94-301C 162-165	0.003		0.06
94-301C 165-170	0.002		0.06
94-301C 170-175	0.005		0.10
94-301C 175-180	0.005		0.05
94-301C 180-185	<0.001		0.04
94-301C 185-190	0.002		0.07
94-301C 190-195	0.003		0.08
94-301C 195-200	0.001		0.05
94-301C 200-206	0.001		0.05
94-301C 206-210	0.002		0.08
94-301C 210-215	0.002		0.08
94-301C 215-219.4	0.001		0.05
94-301C 219.4-224	0.001		0.06
94-301C 224-228	0.002		0.07
94-301C 228-233	0.004		0.08
94-301C 233-238	0.002		0.09
94-301C 238-243	0.003		0.07
94-301C 243-247.5	0.002		0.06
94-301C 247.5-250	0.005		0.09
94-301C 250-254	0.005		0.11
94-301C 254-258	0.007		0.12
94-301C 258-263.3	0.022		0.12
94-301C 263.3-269	0.004		0.13

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-301C
JOB NUMBER : SP029596
REPORTED : 28/06/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
94-301C 269-272	0.009		0.08
94-301C 272-276	0.009	0.011	0.09
94-301C 276-279	0.017		0.08
94-301C 279-283	0.013		0.09
94-301C 283-285	0.008		0.10
94-301C 285-290	0.006		0.09
94-301C 290-293.3	0.010		0.13
94-301C 293.3-297	0.032		0.36
94-301C 297-301	0.042		0.15
94-301C 301-306	0.037		0.33
94-301C 306-311	0.025		1.02
94-301C 311-315	0.012		0.14
94-301C 315-320	0.006		0.16
94-301C 320-325	0.002		0.05
94-301C 325-330	0.002		0.05
94-301C 330-334.5	<0.001		0.02
94-301C 334.5-341	0.004		0.05
94-301C 341-347	0.003		0.05
94-301C 347-352	0.001		0.03
94-301C 352-353	0.006		0.12
94-301C 353-354.7	0.005		0.05
94-301C 354.7-360	0.001		0.03
94-301C 360-365	<0.001		0.03
94-301C 365-370	<0.001		0.02
94-301C 370-375	<0.001		0.03

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-301C
JOB NUMBER : SP029596
REPORTED : 28/06/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
94-301C 375-380	0.001		0.03
94-301C 380-383	0.002		0.14

WELL 301 C
DEPTH
PICTURE NO. 100'
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

WELL 301 C
DEPTH
PICTURE NO. 15'
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

WELL 301 C
DEPTH
PICTURE NO. 300'
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

WELL 301 C
DEPTH
PICTURE NO. 200'
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

WELL 301 C
DEPTH
PICTURE NO. 300
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

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
5
5
5

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
W
8
7
6
5
4
3
2
1
5
5
5
5

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
5
5
5

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
5
5
5

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
0
5
5
5