60001495

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. 94-317C
AUTHOR	C. Wireteer, C. Muerhott, S. Fairclotth L. Bernard
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. North Zone
COMMODITY If not obvious	gold silver
NOTES	Drill log; geology; assay; total depth 1150' handwritten notes 25p.

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: mel
Initials Date
SCANNED: NV Blue
Initials Date

Revised: 1/22/08

94-317c NORTH ZONE

6666 1495 4010

6001495

Hecla
MINING COMPANY

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	94-317	LOCATION	North Zone	REMARKS	
PAGE 1 OF	14	NORTHING	2204406.6	RC to 485	
DATE	12/1	EASTING	482103.5	CORE from 485 to 1150	
LOGGED BY	LJB / CDW	ELEVATION	5382.5		
SCALE	RC 1"=20' CORE 1"=10'	AZIMUTH	27.5°		
TOTAL DEPTH	1150'	INCLINATION	-90.0°		

REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		0-25 Mod clays tanish, array Fe ox chips,	20			0-55 mod clays 25%±5 pale green
		25-55 white, Tan volcaniclastic chips w/ mod-wk clay coatings	40			
		55-95 pale green volcaniclastics w/ orange/Tan FeOx hem matrix chips	60			55-95 wk chl AH wk clays
			80			
		95-105 pale green Ashy chips w/ minor Fe ox clastic chips	100			95-105 wk chl AH.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
0	15	15	OPT <.001	.03		
15	25	10	<.001	.02		
25	35	10	<.001	<.02		
35	45	10	<.001	.02		
45	55	10	<.001	.02		
55	65	10	<.001	<.02		
65	75	10	.001	.02		
75	85	10	<.001	<.02		
85	95	10	<.001	<.02		
95	105	10	<.001	<.02		

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REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		105-155±5 Volcaniclastics pale green clast w/ dk green matrix Some white chips some Fe ox stains + pass matrix	120 140			105-155±5 mod-str chl alt w/ wk Fe ox
		155-205 Ashy-white clast w/ 1-5% pale green chips fine ashy tuff or volcaniclastic ??	160 180 200			115-205 wk py disem & wk chl alt
		215-225 40% white clays 60% white ashy chips w/ mod py disem	220 240		fault ?	215-225 40% white clays, chips w/ mod py disem

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	Ag2
105	115	10	.005	<.02		
115	125	10	<.001	<.02		
125	135	10	<.001	<.02		
135	145	10	<.001	<.02		
145	155	10	.001	<.02		
155	165	10	.002	.07		
165	175	10	.001	.06		
175	185	10	<.001	.05		
185	195	10	.011	3.0		
195	205	10	<.001	<.02		
205	215	10	.001	.02		
215	225	10	.002	.02		
225	235	10	.003	.05		
235	245	10	.004	.09		

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REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		225-315 Lt gray-white Ashy-fine grain Tuff w/ wh-mal py disseminated as cubes / rarely 5% purplish clasts (VC matrix?)	260, 280, 300			
		315-345 rock similar to above w/ volcaniclastic textures white chips, w/ tan-yellow matrix? chips, minor chl chips	320, 340			315-345 v. wh chl alt.
		345-395 Lt green ashy volcaniclastics minor brn matrix fine cubic py disseminated	360, 380			345-405 wh chl alt fine py disseminated; 355-375 poss wh sil?; 365-375 white qtz vn. wk.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
245	255	10	.001	.07		
255	265	10	.001	.03		
265	275	10	.001	.03		
275	285	10	.001	.03		
285	295	10	.005	.03		
295	305	10	.002	.04		
305	315	10	.001	.04		
315	325	10	<.001	.02		
325	335	10	.002	.05		
335	345	10	.007	.04		
345	355	10	.003	6.0		
355	365	10	.024	.06		
365	375	10	.020	.07		
375	385	10	.005	.06		

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REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
							385	395	10	.041	.05		
		395-405 fine Ashy Tuff (lt green)	400				395	405	10	.011	.03		
		405-475 dk green Ashy volcaniclastic w/ ≤ % white/gr. chips & fine clast	420			405-475 mod-str chl Alt. Minor py coating & blebs	405	415	10	.005	.05		
							415	425	10	.005	.06		
							425	435	10	<.001	.02		
			440				435	445	10	<.001	<.02		
							445	455	10	<.001	<.02		
			460				455	465	10	<.001	<.02		
							465	475	10	<.001	<.02		
		475-485 white-Tan chips w/ cubic py (wk) poss fine Alt feldspar	480			wk sil?	475	485	10	.008	.04		
						485-495 NO chips	485	495	10	No sample			
			500										
		↓ SEE 1"=10' CORE LOGS	520										

REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	FROM	TO	W	Au (ppb)	Ag (ppm)	Au2 (ppb)	Ag2 (ppm)
		PRE-COLLAR RUC ↓ 495'				GEOCHEMICAL SAMPLING 495'-932.5' ↓							
BMB		495-525.7' Alkali rhyolite flow/sill/or dike: porphyritic; fine-grained, siliceous aphanitic (sugary) groundmass w/ 3-7% euhedral to subhedral white clay altered sanidine(?) phenocrysts up to 4mm long crudely flow-aligned @ 75'; << green chlorite pseudomorphs after ▭ psismatic equant augite (?) pyroxene phenocrysts; occassional equant anhedral quartz eye phenocrysts. Massive w/ jointing parallel to core axis & at 50-60'. Occassional carbonate-zeolite & sulfide filled vesicles. Minor lithic fragments 495-500' -argillized & pyritized & ser-chl-T	500 505'-petro sample 510 520 530 540 550 560	75' 50' 50' 60' 60'	495-525.7 pale green ser-frac's par. to c.a. & 25' (same as min stx's) & 50-60'	495-525.7' wk silic + mod. arg-T (g/m & feldspar pheno's) + banded ser-T / FeOx stn. + 3% c.g. py-T: min stx's 4-2/ft. @ 25' w/ segregated amber color ser-Q-ill-marc.-Acc. spl. c.g. open-space bar + Q ± ill 510-512'	495	505	10.0'	223	2.7		
				Ba			505	515	10.0'	247	2.7		
LBUD		"BUD TUFF" 525.7-551' Flow-laminated coarse-grained ash-flow tuff: fragment-rich (lithic, devitrified pumice, crystal) clast-supported; pale to med. dark green-sericitic & banded chloritic; angular (5-10%) lithic fragments ash to 3.0 cm size; angular clay-altered feldspar phenocryst fragments ash to 5mm (2-4%); pale green elongated devitr. pumice w/ flattening ratios up to 14:1 - matrix consist of similar composition. Flow-lamination @ 60'			525.7' sharp slickenside fault contact @ 50' 525.7-530' rubbly frac'd w/ slicks parallel to lapilli 530-549' 1-2/ft sev. slicks parallel to flow-lam & @ 50' ⊥ to lam's	525.7-551' v. wk silic. + arg-T of feldspar pheno's + +tr v.f.g. diss. cubic py-T + strong-int. ser ± chl-T; min stx's @ 30-40' & discont. irreg. 5-10° wht. med.g. $CaCO_3$ ± brassy py <1/ft. 0.05-0.3"	525	535	10.0'	59	0.7		
							535	545	10.0'	<5	<0.5		
							545	551	6.0'	<5	<0.05		
		551-566' SAME LITHOLOGY AS ABOVE w/ prominent red-brown FeOx stain. FeOx stain appears to post-date ser-chl alt. Elongated pumice lapilli pref. stained dark brown; lithic fragments selectively pref. stained.			551' conformable gradational (alt.) contact @ 60'	551-566' v. wk silic + arg-T of feldspar pheno's (minor) + relic ser-T/chl-T w/in lithic frags + intense FeOx (hematic) stn of g/m & clasts; min stx's micro-hairline - discont. $CaCO_3$ & occ. 30' 0.05-0.15" $CaCO_3$	551	560	9.0'	<5	<0.5		

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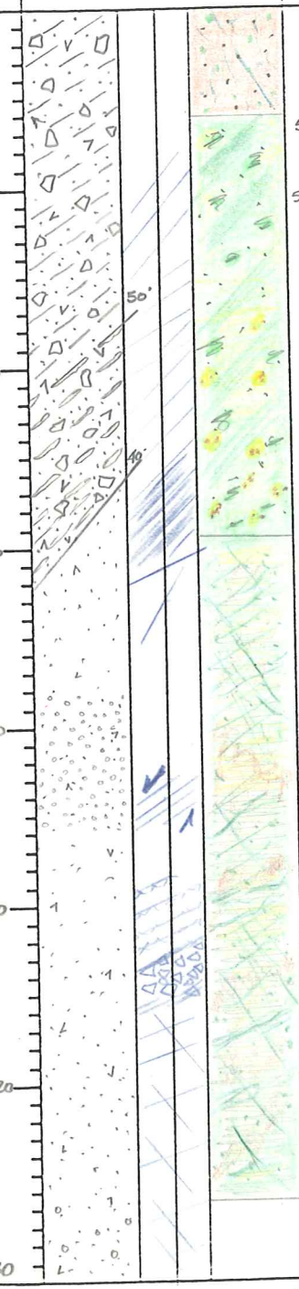
REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		566-589.3' Flow-laminated, coarse-grained lithic, crystal & pumice fragment-rich ash flow tuff. green porphyritic "BUD" same as 525.7-551' -579-587 very coarse pumice lapilli pale green slightly porphyritic w/ flattening ratio's of 5:1 to 10:1 & up to 3.0 cm in length. flow-lamination @ 50° 589.3- Fine to medium grained, massive bedded, moderate to well-sorted, argillized- chloritized airfall tuff w/ pale green ang- pumice lapilli rounded to eliptical LBT -626.5-672.5' finely speckled w/ f. g. green chlorite pseudomorphs ↔ ferromag. microphenocrysts. Darker green mod-sorted, rounded pumice frags	570 580 590 600 610 620 630		566' gradational (alt.) contact 570-589 ser-slicks @ 40-60° 2-3/ft. 587-589.3' sheared rubbly zone 589.3' sharp slick 40° contact 603-605.5 slicks @ 55° w/ prominent R & G stx's @ 50° to dip of slip. 608.5'-612.5' slicks & rubbly micro bx on 65° stx's 612.5-615' angular clast-supported fault bx 617-630' 1-2/ft chl-ser slicks @ 40° & 70°	566-589.3' wk silic + int. ser-T + banded chl-T + ang-T/ser-T of clasts also. occ. silic clasts w/ diss. py + tr wk FeOx stn; min stx's wht barren $CaCO_3$ @ 30', 65' 589.3-526.5' wk silic + mod. ang-T + wk to mod. ser-T + dotted-speckled chl-T ± chl micro hairline stk wk + tr banded FeOx stn. + ND. py-T: min stx's @ 65° & 40° discont. 0.05-0.10' chl + $CaCO_3$ ± hem. <1/ft. 526.5-701' wk silic + frac, diss & banded chl-T + Tr py-T w/ loc. +20% dotts at min stx/frac intersections wk ang-T ± alun salvages; min stx's

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
560	566	6.0'	<5	<0.5		
566	575	9.0'	<5	<0.5		
575	585	10.0'	10	<0.5		
585	589.3	4.3'	5	<0.5		
589.3	600	10.7'	<5	<0.5		
600	610	10.0'	<5	<0.5		
610	620	10.0'	<5	<0.5		
620	626.5	6.5'	<5	<0.5		

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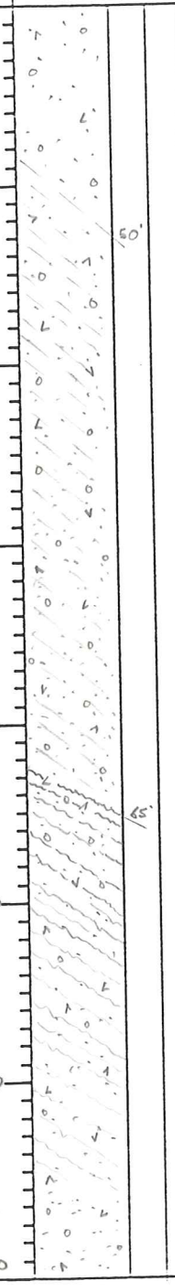
REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		639–672.5 Faint planar-lamination & thin-bedding. @ ~50' 672.5–696' Wavy-laminated at 65' 696–764.7' Massive to faintly planar-laminated, f. to m. grd well to moderately well-sorted ash flow tuff.	640 650 660 670 680 690 700			2-3/ft. chl → $CaCO_3$-ill → py ± py ft marc. 0.05–0.20" @ 20° & 50° abund. micro vnlts < 0.05" FeO_x–$CaCO_3$; Chl-s/n strongest 526.5–633' & 698–701'

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
626.5	635	8.5	<5	<0.5		
635	645	10.0'	90	2.4		
645	655	10.0'	458	1.7	494	
655	665	10.0'	25	1.4		
665	675	10.0	58	0.7		
675	685	10.0	206	2.4		
685	695	10.0	150	2.4		
695	701	6.0'	<5	<0.5		

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REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
			710, 720, 730, 740, 750, 760, 770	55', 65'		701 – 715.5' wkly-mod. silic + relic speckled & discont. irreg chl + wk arg-T + mod ser-T + ND py-T min stx's < 1/ft discont irreg. $CaCO_3$ ± chl ± marc @ 5-40' 0.05-0.10"	701	708	7.0'	16	0.7		
							708	715.5	7.5'	<5	<0.5		
						715.5 – 756' wk silic + int. hem. FeOx stn + clasts w/ relic ser/chl + ND. py-T min stx's 3-9/ft micro hairline 0.001-0.05" $CaCO_3$ (w/ chl frags from previous frac-fill event) ± tr py, → FeOx salvage @ 20-30' & 50-60'	715.5	725	9.5'	<5	<0.5		
							725	735	10.0'	<5	<0.5		
							735	745	10.0'	<5	<0.5		
							745	756	11.0'	<5	<0.5		
		764.7 – Leopard skin or spotted tuff texture w/ fine-grained aphanitic-sugary g/m & abundand flow-aligned vesicles w/ a variety of vesicle-fill incl. $CaCO_3$ ± hem green chl (chrisotbolite), zeolites, opalline SiO_2 flow-lam. fabric @ 65'				756 – 767' wk silic + wk arg-T + ND py-T + wk ser-T ; frac-fill $CaCO_3$ + chl ± FeOx-CaO_3 min stx's @ 5' & 60' discont. stkwk loc 2-4/ft. 0.001-0.10"	756	767	11.0'	<5	<0.5		

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REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		-778-786.5' Intensely stained by hematitic FeOx reddish-purplish brown: f.g. faintly wavy-laminated airfall tephra/tuff.	780	65°	778: gradational-conformable(alt. contact.	767-778' Pale Reddish-purple FeOx stain g/m w/slightly darker purple halo's surrounding $CaCO_3$/chl/opalline SiO_2 filled vesicles; min stx's @ 5-10' w/ $CaCO_3$-ser 0.005 1/ft w/ 0.25-.50" FeOx brn salvages bleeding out pref. on select bedding planes.
		-786.5-798' s.a.a. w/ No. FeOx stn.	790		791.5' 1/2" $CaCO_3$-py unlt @ 65° + Flow lam.	778-786.5 wk silic + int. FeOx stn x-cut by 20-30° barren wht $CaCO_3$ stringers. 786.5-798' wk silic + wk ser-T + faint tr alun + chl lam's & clotts. ± ill + tr - 1% py-T minor min stx's pm. to lam's @ 15° w/ chl ± $CaCO_3$ 1/2" $CaCO_3$ + py @ 65° - controlls distruction of FeOx alt.
		-798-806' s.a.a w/ FeOx stn	800			798-806' s.a. 778-786.5'
		-806-816 + incr. mod. int. chl stn w/in s.a.a. w/ occ. rounded-eliptical pumice frags	810			806-816 + incr. silic + chl-T v. wk arg-T/ser-T/py-T.
		-816-845' v.f to f.g. vitroclastic massive airfall tuff w/ local intervals of auto bx (homolithic bx) generally pale green arg-chl (stkwk of micro hairline chl) w/ pink cast w/ bx zones. sugary texture	820			816-845' wk silic + wk arg-T + stkwk chl-T + tr py-T (as unlt frag's) + loc. wk alun. min stx's <1/ft. Q-$CaCO_3$ + ill + py @ 15-25' 0.10-0.3"
			830			
			840			

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
767	778	11.0'	<5	<0.5	<5	
778	786.5	8.5	<5	<0.5		
786.5	798	11.5	<5	<0.5		
798	806	8.0'	<5	<0.5		
806	816	10.0	11	<0.5		
816	825	9.0'	24	0.6		
825	835	10.0'	461	1.0		

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REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		845–851 Silic. heterolithic tectonic bx w/ sharp 30° contacts angular f.g. tuff frags in open-space xln Q matrix w/ occ. c.g. clasts of $CaCO_3$: matrix & clast-supported.	850			845–851 s. as at left.
		851–878.5' f.g. massive airfall tephra & homolithic (auto bx) bx sugary texture; arg- & chl microhairline 'herring bone' stockwork occ. rounded grey/green pumice frag.	860			851–878.5' wk to wkly mod. silic + tr alun + mod to wk arg-T + stkwk chl-T; min stx's <1/ft. w/ c.g. $CaCO_3$ + py @15-20° & 80°
		878.5–932.5' vitropheric v.f.g. airfall tephra vitroclastic g/m w/ dense fracturing filled by chl ± FeO_x-$CaCO_3$ ± ill. locally developed spheroidal texture	870 880 890 900 910			878.5–932.5' wk to wkly mod. silic + mod. ser-T + microhairline chl-T + tr – 1% v.f.g. diss py-T w/ clotts adj. to min stx's + patchy & salvage alun/lim FeO_x? min stx's 2-8/ft incr ↓ w/ chl → Q → ± ill + py ± $CaCO_3$

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
835	845	10.0'	7195	2.4	0.172 opt	
845	851	6.0'	994	2.0		
851	860	9.0'	170	<0.5		
860	870	10.0'	6	<0.5		
870	878.5	8.5'	<5	<0.5		
878.5	890	11.5'	<5	<0.5		
890	900	10.0'	8	<0.5		
900	910	10.0'	148	0.5		

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REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		932.5–1044.5' F. to. medium grained faintly wavy-lam. w/ bedded 1-2mm rounded pumice (?) fragments: sugary to granular texture greenish-grey to pinkish tan groundmass ? pale green to cream pumill mod. sorted, mod. to mod. hard. loc. siliz. tectonic bx as at right	920 930 940 950 960 970 980	70'	932.5' conf. bdd contact @ 70'	932.5–958' wk siliz + mod. to wk arg-T + mottled g/m alun. + tr diss py-T + 1/4" ser. salvages on ser-chl-ill-sulf min stx's -stkwk 5-10' ? par. to lam's 0.001-0.15" chl → Q → py ± py ft marc ± ill ± spl. py-T > 20% at stx junct. 5-10/ft. 958–991' wk siliz + wk g/m arg-T (mod. arg-T of pumice frags) + tr to 1% lam'd py-T (clotts of > 25% adj. to stx inter-sections) + wk g/m alun + wk 1/4" ser. salvage on stx's + micro "hairline" FeOx/MnOx discont. joints approaching dendritic min stx's 5-10/ft. @ 15', 60' ? par. to lam's 0.001-0.10" ser → chl → brassy py ? < 30-35' chl → Q → ill → py ft marc ± tr cpy/spl.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
910	918	8.0'	74	<0.5		
918	925	7.0'	50	1.0		
925	932.5	7.5'	33	0.6		
WHOLE CORE ASSAY			(OPT)	(OPT)	(OPT)	(OPT)
932.5	938	5.5'	0.015	0.03		
938	943	5.0'	0.005	0.05		
943	948	5.0'	0.008	0.03		
948	953	5.0'	0.002	0.04		
953	958	5.0'	<0.001	0.02		
958	963	5.0'	<0.001	<0.02		
963	968	5.0'	0.117	0.08	0.221	
968	973	5.0'	0.001	0.33		
973	978	5.0'	0.001	<0.02		
978	983	5.0'	0.117	0.07	0.137	

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REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
							983	987	4.0'	<0.001	<0.02		
							987	991	4.0'	0.002	<0.02		
			990			991–1044.5' sugary to gran. mod silic + granular mod. arg-T + wk–mod. alun + 1-3% v.f.g. diss. py-T; min stx's 3-5/ft @ 85° & 10° 0.05-0.15" ser (fragmented) → Q → ill → sulf (marc + py & marc + py) loc. intervals of post min stx crackle bx'iation & added silic. 998.5–1004'; 1006-1006.8'; 1007–1008'; 1009–1012.5'; 1027-1037' 991–1004' in part. vuggy open-space crackle bx's w/ c.g. open space xln bar	991	996	5.0'	0.091	0.11	0.107	
							996	1001		0.012	0.09		
			1000				1001	1006		0.012	0.10		
							1006	1011		0.024	0.10		
			1010				1011	1016		0.021	0.07		
							1016	1021		0.020	0.11		
			1020				1021	1026		0.017	0.09		
							1026	1031		0.218	0.35	0.208	
			1030				1031	1036		1.052	1.19	0.959	23' @ 0.640 Au opt 0.74 Ag opt
		Prob. LBT CBW 12-12-94					1036	1041		0.107	0.19	0.101	
		1044.5 – 1058.5' DOZER TUFF? Fine-grained, siliceous, well-sorted, non-porphyritic, very faintly whispy-laminated. Fracture controlled vn-bx's at 5° 1048–1053' & clast to matrix-supported flow bx – crudely bdd 1054–1058.5'	1040	60°	1044.5' silic tectonic bx @ 60° w/ angular frag's in chalc. SiO2 matrix lower contact ≈ irreg fragmented. @ 1045.4'	1044.5–1058.5' silic tectonic bx @ contact ≈ 1'; wk silic + mod. arg-T decr. ↓ w/ incr. ser-T ↑ + 1-2% spotty-clotted py-T; min stx's 4-7/ft. @ 5-10° & 50-60° 0.01-0.1" w/ chl → Q + CaCO3 + py & marc	1041	1044.5	3.5	1.204	2.09	1.060	
			1050				1044.5	1049	4.5'	0.949	0.24	0.893	

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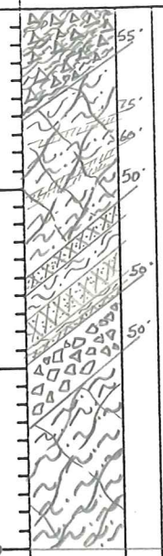
SEC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		1058.5-1114' Ts Oscar Fm. Epiclastic pebble conglomerate & sandstone consisting predominantly of subangular to subrounded fine-grained locally finely-flow laminated /or porphyritic ash flow tuffs & lessor rounded black graphitic slate (JTRa): clast-supported w/ mod. to mod. poor-sorting of f.g to pebble size clasts (2.0 cm); fairly massive but elongated fragment imbricated locally @ 60-75' 1104-1114' s.a.a. bx'iated & silicified intense repl. 1109-1114' 1114-1120' silicified, very fine-grained, aphanitic massive fine-grained tuff - repl. by silic then bx'iated 1114.9-1120 - 1119-1120' 1" massive brassy py Δ + to grey clay gouge 1.5" Δ'ing + sulfide-rich bx-gouge ? 30' green clay gouge slick	1060 1070 1080 1090 1100 1110 1120	60° 30°	1058.5' irreg. flow bx contact 1114' sharp planar fault contact w/ 1" grey sulfi-rich clay gouge @ 60° 1120' sharp planar fault contact @ 30°	1058.5-1109' wk silic + mod. arg-T of clasts loc. clstts of py-T + mod int. ser-T (prop. alt.): min stx's 1-2/ft @ 5-20° 0.05-0.2" w/ Q → py ± minor marc. 1109-1114' +95% silica + diss. 1% f.g. py + ill-filled crackle bx 1114-1120' wk silic + mod arg-T + 1% sulf frags - Nonlts.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
1049	1054	5.0'	0.025	0.08		
1054	1058.5	4.5'	0.026	0.07		
1058.5	1065	6.5'	0.084	0.05	0.096	
1065	1070	5.0'	0.002	<0.02		
1070	1075		0.006	<0.02		
1075	1080		0.010	<0.02		
1080	1085		0.023	0.06		
1085	1090		0.004	<0.02		
1090	1095		0.002	0.05		
1095	1100		0.051	0.38		
1100	1105		0.006	0.05		
1105	1109	4.0'	0.014	0.06		
1109	1114	5.0'	0.065	0.19	0.068	
1114	1120	6.0'	<0.001	<0.02		

HOLE NUMBER 94-317 PAGE 14 OF 14

REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		1120-1150' JTRa: black graphitic slate w/ thin interbedded ripple cross-laminated medium to light grey wollastonite bearing calcareous beds. fault bx'iated ↓ to 1141.5' 1124.5-1133' silic. bx'iated JTRa -1120-1124.5' slicked w/black graphitic gouge @ 55'. -1133-1138' roughly equal prop. of JTRa & silic. bx'iated f. g. tuff w/ 50° bounding fault stx's -1138-1141.5' angular fragments of wkly py-T cream color clay in bx'iated black graphitic slate, bounded by 50° slicks -1141.5-1150' partly silic bx'iated black graphitic slate w/ angular frags of white "bull or sweat vein" quartz	1130 1140 1150		1124.5-1133' planar lam? ripple cross-lam @ 60-75° discont. fragmented.	1120-1124.5' fault gouge w/ JTRa w/ sulf ± Q ± ill unlt fragments 1124.5-1133' mod. silic crackle bx w/ frac-fill of Q → py ± ill 1133-1138' wk silic + wk py-T + wk org-T (ill-stx's) 1138-1141.5' wk silic + fragmented sulf-rich unlts + wk org-T 1141.5-1150' mod. silic crackle bx ± sulf ± tr. ill
		END OF HOLE @ 1150'				

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
1120	1124.5	4.5'	0.001	0.09		
1124.5	1129	4.5'	0.064	0.27	0.048	
1129	1133	4.0'	0.001	0.03		
1133	1138	5.0'	0.001	0.04		
1138	1141.5	3.5'	0.002	0.09		
1141.5	1146	4.5'	0.002	0.05		
1146	1150	4.0'	0.001	0.05		

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # 94-317 DATE: 11-1-94 LOGGED BY: CBW / RK 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 DATA DENSITY g/cc
935	945	97	100	.82	940	R3	1.0	55°	S	.005" py ± ser	939	732.3	295	2.48
945	955	86	95	.47	950	R3	2.2	60°/15	S/R	.005" ser-py	951	492	200	2.46
955	965	92	100	.52	960	R3	2.3	70°/10°	S/R	.005" ser-py	961	543.5	220	2.47
965	975	100	100	.77	970	R3	1.8	55°	R	.005" ser ± py	970	659.2	260	2.53
975	985	100	100	.92	980	R2	0.8	55°	R	.001" ser ± marc	980	578.6	240	2.41
985	995	92	98	.63	990	R2	1.6	55°/35°	R/R	.05" ser-Ca-py	990	682	280	2.44
995	1005	86	97	.77	1000	R2	0.9	80°/10°	S/R	.05-.30" Q-ill-sulf.	1000	638.2	260	2.45
1005	1015	90	97	.74	1010	R2	1.2	80°	R	.05-.2" Q-ill-sulf.	1010	770.7	310	2.49
1015	1025	95	98	.72	1020	R2	1.2	65°	R	.05-.15" s.a.a.	1020	536	215	2.49
1025	1035	95	100	.81	1030	R2	1.4	80°	S	.05-.1" Chl-ser-ill-sulf.	1030	760	308	2.47
1035	1045	98	99	.80	1040	R2	0.9	70°	S	s.a.a.	1040	751.4	305	2.46

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # 94-317 DATE: LOGGED BY: CBW 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 DATA DENSITY (g/cc)
1045	1055	94	100	.65	1050	R3	1.5	50°	R	.001" ser-py		691.2	275	2.51
1055	1065	97	97	.81	1055-1058.8 – R3 1058.8-1065 – R2		0.9	50°	R	.005" ser-ill-sulf.	1058	646	260	2.48
1065	1075	85	97	.68	1070	R2	1.3	75°	R	.001" ser	1070	674.5	290	2.33
1075	1085	95	98	.59	1080	R2	1.0	75	R	.001" ser	1079	619.8	250	2.48
1085	1095	95	98	.65	1090	R2	1.1	70°	R	.005" Q-ser		621.3	250	2.49
1095	1105	93	98	.58	1100	R1	1.0	55°	R	.005" ill-py		567.5	237	2.40
1105	1115	93	97	.82	1110	R2	0.5	50°	K	Nill fault		719.2	270	2.66
1115	1125	5 fault	96	.26	1120	S2	1.3	50°	K	Fault		—	—	—
1125	1135	80	95	.67	1130	R3	1.3	50°	K	.05" ill ± Ca		735	280	2.63
1135	1145	26	96	.65	1140	S2	1.4	50°	K-R	.05" Q-py		—	—	—
1145	1150	87	98	.66	1150	R3	1.2	50°	K	graphitic slicks		703	268	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: 94-317
LABORATORY JOB No. : SP031239
SAMPLE TYPE :

RECEIVED : 10 OCT 1994
REPORTED : 20 OCT 1994
No. SAMPLES : 48

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.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-317
JOB NUMBER : SP031239
REPORTED : 20 OCT 1994

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
94-317 00-15	<0.001		0.03
94-317 15-25	<0.001		0.02
94-317 25-35	<0.001		<0.02
94-317 35-45	<0.001	<0.001	0.02
94-317 45-55	<0.001		0.02
94-317 55-65	<0.001		<0.02
94-317 65-75	0.001		0.02
94-317 75-85	<0.001		<0.02
94-317 85-95	<0.001		<0.02
94-317 95-105	<0.001	<0.001	<0.02
94-317 105-115	0.005		<0.02
94-317 115-125	<0.001		<0.02
94-317 125-135	<0.001		<0.02
94-317 135-145	<0.001		<0.02
94-317 145-155	0.001		<0.02
94-317 155-165	0.002		0.07
94-317 165-175	0.001		0.06
94-317 175-185	<0.001		0.05
94-317 185-195	0.011		3.00
94-317 195-205	<0.001	<0.001	<0.02
94-317 205-215	0.001		0.02
94-317 215-225	0.002		0.02
94-317 225-235	0.003		0.05
94-317 235-245	0.001		0.09
94-317 245-255	0.001	0.001	0.07

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-317
JOB NUMBER : SP031239
REPORTED : 20 OCT 1994

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
94-317 255-265	0.001		0.03
94-317 265-275	0.001		0.03
94-317 275-285	0.001		0.03
94-317 285-295	0.005		0.03
94-317 295-305	0.002		0.04
94-317 305-315	0.001		0.04
94-317 315-325	<0.001		0.02
94-317 325-335	0.002		0.05
94-317 335-345	0.007		0.04
94-317 345-355	0.003		6.00
94-317 355-365	0.024		0.06
94-317 365-375	0.020		0.07
94-317 375-385	0.005		0.06
94-317 385-395	0.026	0.041	0.05
94-317 395-405	0.011		0.03
94-317 405-415	0.005		0.05
94-317 415-425	0.005		0.06
94-317 425-435	<0.001		0.02
94-317 435-445	<0.001		<0.02
94-317 445-455	<0.001		<0.02
94-317 455-465	<0.001	<0.001	<0.02
94-317 465-475	<0.001		<0.02
94-317 475-485	0.008		0.04

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

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CLIENT REFERENCE No: 94-317

LABORATORY JOB No. : SP031540

SAMPLE TYPE :

RECEIVED : 7 NOV 1994

REPORTED : 17 NOV 1994

No. SAMPLES : 54

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au	FA30	15%	ppb	5
Au(R)	FA30	15%	ppb	5
AuGRAV	GRAV	15%	OPT	0.001
Ag	D210	10%	ppm	0.5

SIGNATORY : Sue Faircloth M.S.

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-317
JOB NUMBER : SP031540
REPORTED : 17 NOV 1994

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	AuGRAV GRAV OPT	Ag D210 ppm
94-317 495-505	223			2.7
94-317 505-515	247			2.7
94-317 515-525	1136	1230		2.0
94-317 525-535	59			0.7
94-317 535-545	<5			<0.5
94-317 545-551	<5			<0.5
94-317 551-560	<5			<0.5
94-317 560-566	<5			<0.5
94-317 566-575	<5			<0.5
94-317 575-585	10			<0.5
94-317 585-589.3	5			<0.5
94-317 589.3-600	<5			<0.5
94-317 600-610	<5			<0.5
94-317 610-620	<5			<0.5
94-317 620-626.5	<5			<0.5
94-317 626.5-635	<5			<0.5
94-317 635-645	90			2.4
94-317 645-655	458	494		1.7
94-317 655-665	25			1.4
94-317 665-675	58			0.7
94-317 675-685	206			2.4
94-317 685-695	150			2.4
94-317 695-701	<5			<0.5
94-317 701-708	16			0.7
94-317 708-715.5	<5			<0.5

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-317
JOB NUMBER : SP031540
REPORTED : 17 NOV 1994

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	AuGRAV GRAV OPT	Ag D210 ppm
94-317 715.5-725	<5			<0.5
94-317 725-735	<5			<0.5
94-317 735-745	<5			<0.5
94-317 745-756	<5			<0.5
94-317 756-767	<5			<0.5
94-317 767-778	<5	<5		<0.5
94-317 778-786.5	<5			<0.5
94-317 786.5-798	<5			<0.5
94-317 798-806	<5			<0.5
94-317 806-816	11			<0.5
94-317 816-825	24			0.6
94-317 825-835	461			1.0
94-317 835-845	7195		0.172	2.4
94-317 845-851	994			2.0
94-317 851-860	170			<0.5
94-317 860-870	6			<0.5
94-317 870-880	<5			<0.5
94-317 880-890	<5			<0.5
94-317 890-900	8			<0.5
94-317 900-910	148			0.5
94-317 910-918	74			<0.5
94-317 918-925	50			1.0
94-317 925-932.5	33			0.6

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

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:

CLIENT REFERENCE No: 94-317

LABORATORY JOB No. : SP031538

SAMPLE TYPE :

RECEIVED : 4 NOV 1994

REPORTED : 17 NOV 1994

No. SAMPLES : 45

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

CF to PSY
14U175-477
CM

SIGNATORY : Sue Faircloth M.S.

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-317
JOB NUMBER : SP031538
REPORTED : 17 NOV 1994

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
94-317 932.5-938	0.015			0.03
94-317 938-943	0.005			0.05
94-317 943-948	0.008			0.03
94-317 948-953	0.002			0.04
94-317 953-958	<0.001			0.02
94-317 958-963	<0.001			<0.02
94-317 963-968	0.117		0.221	0.08
94-317 968-973	0.001			0.33
94-317 973-978	0.001			<0.02
94-317 978-983	0.117		0.137	0.07
94-317 983-987	<0.001			<0.02
94-317 987-991	0.002			<0.02
94-317 991-996	0.091		0.107	0.11
94-317 996-1001	0.012			0.09
94-317 1001-1006	0.012			0.10
94-317 1006-1011	0.024			0.10
94-317 1011-1016	0.021			0.07
94-317 1016-1021	0.020			0.11
94-317 1021-1026	0.017			0.09
94-317 1026-1031	0.218		0.208	0.35
94-317 1031-1036	1.052		0.959	1.19
94-317 1036-1041	0.107		0.101	0.19
94-317 1041-1044.5	1.204		1.060	2.09
94-317 1044.5-1049	0.949		0.893	0.24
94-317 1049-1054	0.025			0.08

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-317
JOB NUMBER : SP031538
REPORTED : 17 NOV 1994

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
94-317 1054-1058.5	0.026			0.07
94-317 1058.5-1065	0.084		0.096	0.05
94-317 1065-1070	0.002			<0.02
94-317 1070-1075	0.006			<0.02
94-317 1075-1080	0.010			<0.02
94-317 1080-1085	0.023			0.06
94-317 1085-1090	0.004			<0.02
94-317 1090-1095	0.002			0.05
94-317 1095-1100	0.051			0.38
94-317 1100-1105	0.006			0.05
94-317 1105-1109	0.014			0.06
94-317 1109-1114	0.065		0.068	0.19
94-317 1114-1120	<0.001			<0.02
94-317 1120-1124.5	0.001			0.09
94-317 1124.5-1129	0.064		0.048	0.27
94-317 1129-1133	0.001			0.03
94-317 1133-1138	0.001			0.04
94-317 1138-1141.5	0.002			0.09
94-317 1141.5-1146	0.002			0.05
94-317 1146-1150	0.001			0.05

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
1 INCH

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
down
1 INCH
375

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
down
1 INCH
679

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
1 INCH
down

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
down
1 INCH

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
1 INCH
down
645

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
1 INCH
down
635

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
1 INCH
down
615

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
down
1 INCH
305

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
down
1 INCH
585

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
down
1 INCH
575

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
1 INCH
down
565

ROSEBUD PROJECT
NORTH ZONE
9A: 317
-90°
1 INCH
down
555

545
ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
1 INCH
down

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
1 INCH
down
635

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
1 INCH
down
585

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
down
1 inch
55

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
down
1 INCH
505
508

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
1 INCH
down

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
down
1 INCH

ROSEFIELD PROJECT
NORTH ZONE
94-317
-90°
down
1 INCH
715

KOTLENO FROM
WORK PLANE
194.30
1 1964
-7155

PROJECT
NORTH ZONE
94-317

NORTH ZONE
94-317
1 INCH
735

KONGRID PROJECT
NORTH ZONE
94-317
124

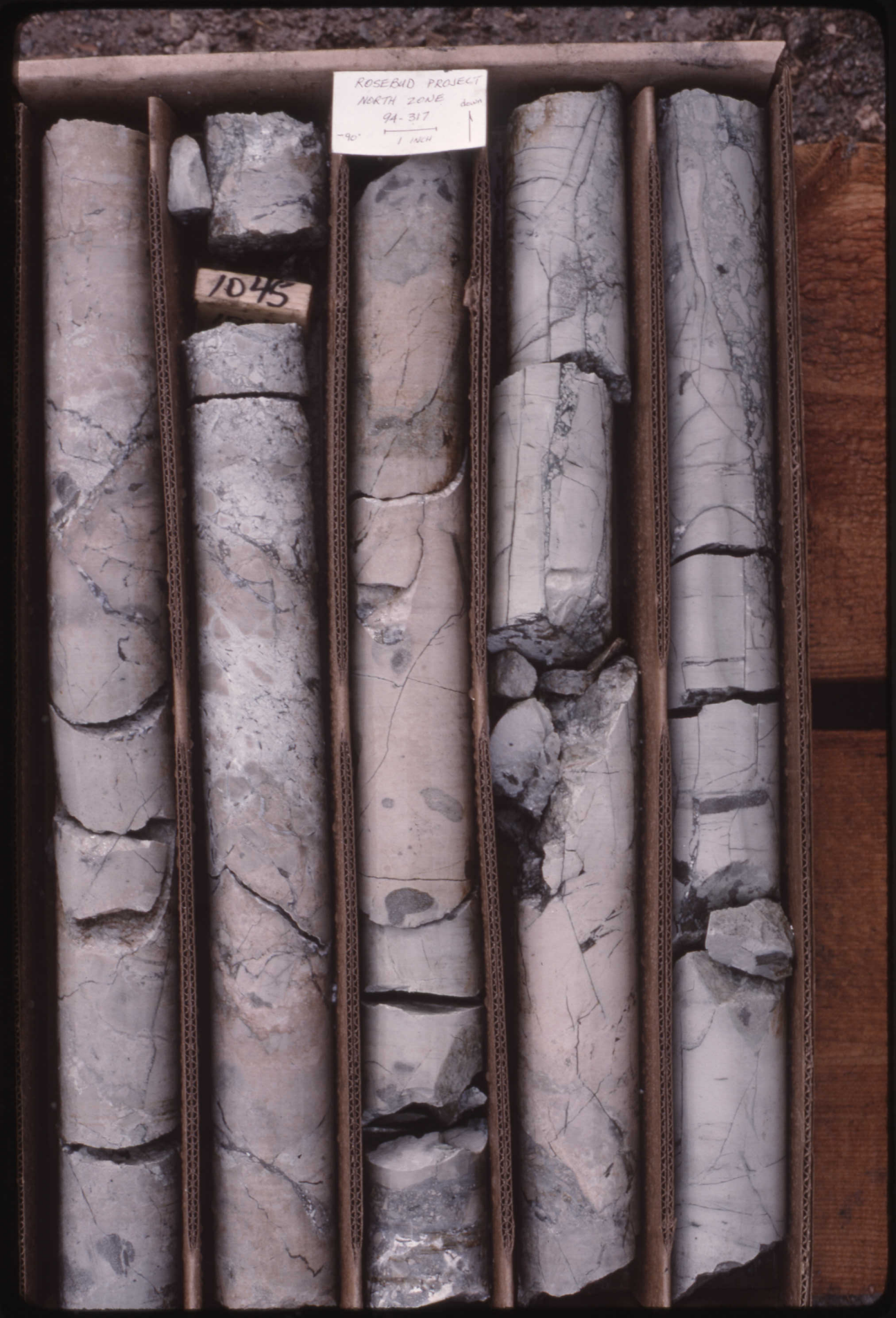
PROJECT
NORTH ZONE
GA-317
-90°
1 mm

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
down
1 INCH
507

KOSLEVO PROJECT
NORTH ZONE
94-317
-90°
1 meter
695

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
down
1 INCH
685

ROSEBUD PROJECT
NORTH ZONE
94-317
-90°
1 INCH
down
1055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