60000724

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. 95-348
AUTHOR	C. Muerhoff; S. King
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; Hecla Mining Co.; Rosebud Project Far East Zone
COMMODITY If not obvious	gold; silver
NOTES	drill logs; geology; assay; total depth 764' directional survey; handwritten notes; receipts 31 p. 1 oversized sheet

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 4/30/08 (Initials / Date)

DB: (Initials / Date)

SCANNED: (Initials / Date)

Revised: 1/22/08

95-348

6000 0724

4010

Hecla
MINING COMPANY

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	95-348	LOCATION	FAR EAST ZONE	REMARKS	
PAGE 1 OF 11		NORTHING			
DATE	9/21/95	EASTING			
LOGGED BY	KDA	ELEVATION			
SCALE	1"=10'	AZIMUTH	S37°W (217)		
TOTAL DEPTH	764'	INCLINATION	-60°		

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		0-28' - Colluvium. 28-214' - Moderately soft to soft, porphyritic, flow-laminated (planar), latitic? flow or ash-flow tuff. Color varies depending on alteration from lt green to buff, to brownish-yellow, to lt grey. Phenocrysts make up ≈ 5% of the rock and are euhedral to subhedral, plagioclase or sanadine phenocrysts have been totally replaced by green chloritic clay to buff colored clay to greenish-yellow "bucks butter" clay. This interval contains "blebs" of graphitic material where less altered and "ghost graphitic blebs" where more altered. 101.7-122.2' - matrix supported breccia (volcanic).	10 20 30 40 50	 20 35	28-65.4' - ± Pale green clay ± limonite ± bucks butter clay ± turgite filled fractures ⇒ .11 fr/ft @ 70-80° to CA. 1.07 fr/ft @ 50-60° to CA. .64 fr/ft @ 30-40° to CA .35 fr/ft @ 0-20° to CA	28-65.4' - Pale green to greenish yellow in color. Soft to moderately soft. Propylitic alteration overprinted by argillization. This interval contains no visible sulfides. Turgite coated fractures are common.

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	Ag2
28	32					
32	37					
37	42					
42	47					
47	52					

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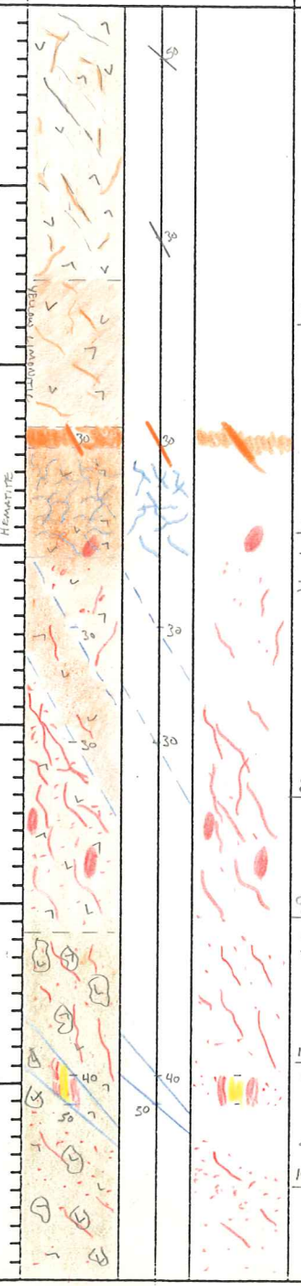
%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		65.4' – Gradational "Alteration" Contact from minor to moderate "yellow" limonitic staining above 65.4' to moderate to intense "yellow" limonitic staining below 65.4'. 73.5' – Gradational "Alteration" Contact from moderate to intense "yellow" limonitic staining above 73.5' to dark red to reddish-brown below 73.5'. 101.7' – Gradational "Alteration" Contact between grey argillic sulfide rich above 101.7' and argillic bucks butter alteration below 101.7'. 101.7-109.7' – Moderately soft to moderately hard, greenish-yellow in color. Contains up to 6% pyrite ± marcasite, common "bucks butter" clay, and trace amounts of possible Ag-Sulfo?. Also contains "pyrite blebs". Argillic and bucks butter alteration. 109.7-111.1' – Moderately soft to moderately hard, greenish yellow in color. Interval contains 1-2" wide vertical fracture filled w/ ∝ ½" wide brownish-red busted up quartz vein. The remaining ½-1½" of fracture is filled w/ fine-grained sulfides (pyrite & cpy) and carbonaceous or graphitic or Au-Sulfo material. This stuff should run	60 70 80 90 100 110 120		65.4-73.5' – Greenish yellow to yellow limonitic clay ± turgite filled fractures ⇒ .37 fr/ft @ 70-80° to CA. 1.36 fr/ft @ 50-60° to CA 1.24 fr/ft @ 30-40° to CA .37 fr/ft @ 0-20° to CA. 73.5-80.7' – Sheared clay. Texture of the rock is still indentifyable, only is clay. 80.7-84.7' – Pyrite + Selenite ± Ag-Sulfo? filled fractures .25 fr/ft @ 70° to CA. 1.00 fr/ft @ 50-60° to CA .50 fr/ft @ 30-40° to CA .50 fr/ft @ 0-20° to CA. 84.7-91' – FeO_x ± pyrite ± selenite ± barite filled fractures ⇒ .16 fr/ft @ 50-60° to CA. 1.27 fr/ft @ 30-40° to CA 1.27 fr/ft @ 0-20° to CA. 91-101.7' – Pyrite ± carbonaceous/graphitic coated ± marcasite fractures ⇒ .84 fr/ft @ 50-60° to CA. 1.22 fr/ft @ 30-40° to CA. 1.03 fr/ft @ 0-20° to CA. 101.7-109' – Pyrite ± marcasite & Ag-Sulfo coated fractures ⇒ .55 fr/ft @ 50-60° to CA .96 fr/ft @ 30-40° to CA 2.88 fr/ft @ 0-20° to CA. 109.7-111.1' –	65.4-73.5' – Soft, greenish-yellow to yellow "limonitic", argillized interval. Minor turgite. No sulfides visible. 73.5'-74.7' – Soft, red-reddish-brown, hematite. Hematite stringer ¼" wide w/specularite @ 30° to CA 74.7-80.7' – Soft buff to lt reddish brown hematitically stained. Entire interval consists of clay. Shear zone ⇒ no matter where core is broke ⇒ slickensides in all orientation. This interval contains up to 1% pyrite. Minor selenite (Gypsum) veinlets are present. Argillized. 80.7-84.7' – Soft, lt. gray, unoxidized. Contains up to 10% disseminate pyrite pyrite nodules and marcasite. Argillized 50-70% clay, moderate selenite (Gypsum) veining, and trace amounts of possible Ag-Sulfo? 84.7-91' – Moderately soft, buff colored w/ red hematite FeOx and yellowish limonitic FeOx staining. Argillized & oxidized. Contains up to 1% un-oxidized pyrite, and possibly trace amounts of sulfur?, trace amounts of gypsum and barite. 91-101.7' – Lt-dk grey. Moderately soft to soft. Interval is argillized & contains up to 10% fine-grained pyrite. Fracture surfaces contain moderate amounts of black graphitic or carbonaceous material w/ trace amounts of possible Ag-Sulfo.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
52	57					
57	62					
62	65.4					
65.4	70.4					
70.4	73.5					
73.5	74.7					
74.7	77.7					
77.7	80.7					
80.7	84.7					
84.7	88					
88	91					
91	96					
96	101.7					
101.7	106					
106	109.7					
109.7	111.1					
111.1	116					
116	121					

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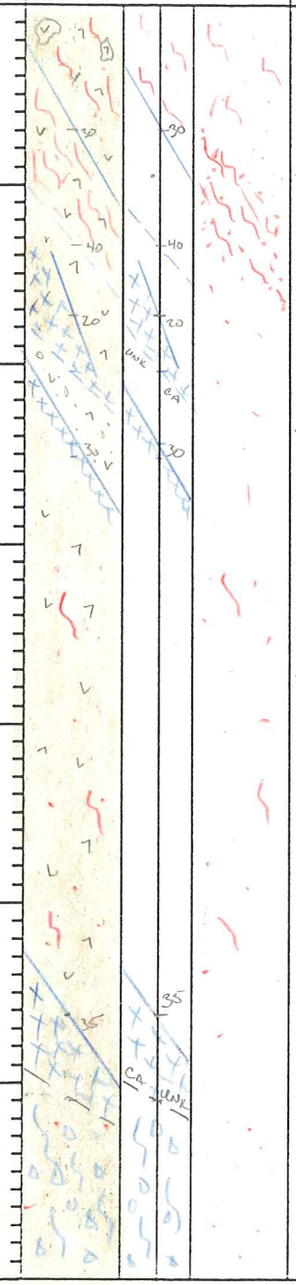
%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
					111.1-127' - Pyrite ± carbonaceous filled & coated fractures ⇒ .13 fr/ft @ 50-60° to CA. 1.26 fr/ft @ 30-40° to CA. 1.38 fr/ft @ 0-20° to CA. 127-133.4' - Pyrite ± carb ?± grey sulfos filled fractures ⇒ .16 fr/ft @ 50° to CA 1.56 fr/ft @ 30-40° to CA. 3.13 fr/ft @ 0-20° to CA. 133.4-137.4' - Pyrite + "Ducks Butter Clay" ± carb? filled fractures ⇒ .75 fr/ft @ 30-40° to CA 2.00 fr/ft @ 0-20° to CA. 137.4-140.5' - Rubble zone 140.5-144.4' - Ducks Butter Clay filled fractures ⇒ .26 fr/ft @ 60° to CA .51 fr/ft @ 30-40° to CA .51 fr/ft @ 0-20° to CA. 144.4-145' - Rubble zone. 145-176.3' - Greenish-yellow clay ± pyrite ± marcasite ± barite filled fractures ⇒ .03 fr/ft @ 70° to CA. .32 fr/ft @ 50-60° to CA .93 fr/ft @ 30-40° to CA .58 fr/ft @ 0-20° to CA. 176.3-181' - Rubble zone. 181-191' - Clay filled fault breccia zone.	111.1-127' - Moderately hard, "greenish-yellow. Ducks Butter Clay" and alteration intensity increases towards bottom of interval. Contains approximately 5% pyrite as disseminations and fracture fillings. Minor graphite or carbonaceous coatings on fractures. Argillized. 127-133.4' - Moderately soft-moderately hard, greenish-yellow in color. "Ducks Butter" clay persists. Contains up to 15% pyrite as disseminations, "blebs" and fracture fills. Strong fine-grained carbonaceous or graphitic fracture coatings & fills. White "kaolinite" clay moderately present along same fractures. 133.4-137.4 - Same as 111.1-127'. 140.5-144.4' - Drab green, unfractured, minor "Ducks Butter Clay" and pyrite (diss) up to 1%. 144-176.3' - Moderately soft, lt greenish yellow in color. Contains up to .5% disseminated pyrite pyritohedrons, and .5% pyrite along fractures. Minor amounts of barite along fractures. Interval is argillized. 176.3-181' - Pyrite coated fractures w/in rubble zone 181-191' - Minor disseminated sulfides (pyrite) w/ moderate "Ducks Butter" clay.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
121	126					
126	127					
127	129.6					
129.6	133.4					
133.4	137.4					
137.4	140.5					
140.5	144.4					
144.4	145					
145	150					
150	155					
155	157					
157	162					
162	167					
167	172					
172	176.3					
176	181					
181	186					
186	191					

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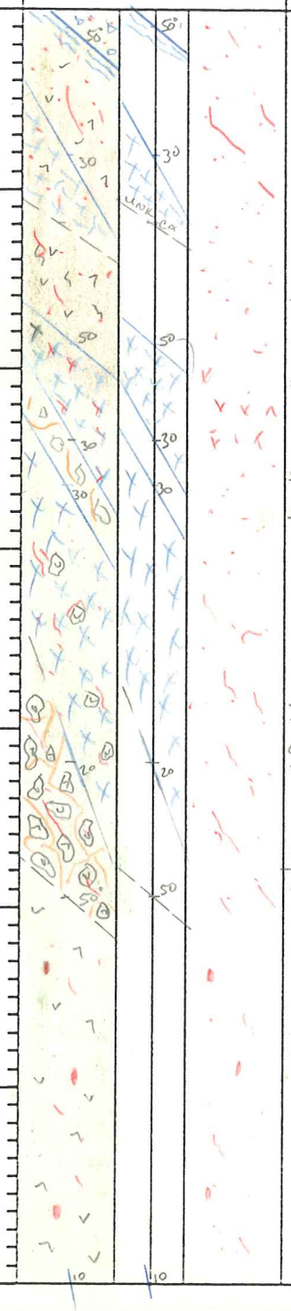
%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		214-239.5' - MODERATELY SOFT to MODERATELY HARD, LT GREEN w/ LT BROWNISH RED MATRIX IN COLOR, MATRIX SUPPORTED, LAPILLI VOLCANIC BRECCIA, CLASTS ARE SLIGHTLY PORPHYRITIC, LATITIC TO ANDESITIC IN COMPOSITION. 239.5-280.5' - MODERATELY SOFT to MODERATELY HARD, SLIGHTLY PORPHYRITIC, LT GREEN (PROPYLITIZED), LATITIC to ANDESITIC, ASH-FLOW TUFF OR FLOW. Contains up to 5% PHENOCRYSTS of GREEN CHLORITIC CLAY After PLAGIOCLASE OR SANIDINE ⇒ EUHEDRAL TO SUBHEDRAL. ALSO CONTAINS UP TO 5% LAPILLI SIZED "GRAPHITIC BLEBS" WHICH SOME HAVE BEEN REPLACED BY PYRITE.	200 210 220 230 240 250 260		191'-191.5' - 5' WIDE FAULT ZONE @ 50° to CA. 191.5-198.2' - PYRITE ± "BUCKS BUTTER" CLAY ± CARBONACEOUS MATERIAL FILLED FRACTURES ⇒ .75 FR/FT @ 50-60° to CA 1.34 FR/FT @ 30-40° to CA .90 FR/FT @ 0-20° to CA 198.2-202' - RUBBLE ZONE 202-208.8' - "BUCKS BUTTER" CLAY ± PYRITE ± MARCASITE FILLED FRACTURES ⇒ .59 FR/FT @ 50-60° to CA. .88 FR/FT @ 30-40° to CA .88 FR/FT @ 0-20° to CA 208.8-214' - RUBBLE ZONE. 214-216.7' - GREEN CHLORITIC CLAY ± PYRITE FILLED FRACTURES ⇒ .37 FR/FT @ 50° to CA. .74 FR/FT @ 40° to CA .74 FR/FT @ 20° to CA. 216.7-232' - RUBBLE ZONE. 232-239.5' - GREEN CHLORITIC CLAY + PYRITE ± CPY ± Ag-Sulfos? ± GRAPHITIC MATERIAL FILLED FRACTURES ⇒ .80 FR/FT @ 50-60° to CA .67 FR/FT @ 30-40° to CA. .53 FR/FT @ 0-20° to CA. 239.5-260' - GREEN CHLORITIC CLAY ± PYRITE FILLED FRACTURES ⇒ .10 FR/FT @ 70-90° to CA .98 FR/FT @ 50-60° to CA .98 FR/FT @ 30-40° to CA. .20 FR/FT @ 0-20° to CA.	191.5-198.2' - MODERATELY SOFT, GREENISH/GRAYISH yellow in color. up to 2% PYRITE ± MARCASITE & CARBONACEOUS MATERIAL PRESENT IN WHAT APPEARS TO BE DISSEMINATED FORM? 202-208.8' - MODERATELY SOFT, GREENISH yellow in Color. ABUNDANT "BUCKS BUTTER" CLAY ALONG FRACTURES. up to 2% PYRITE ± MARCASITE. ARGILLIZED 208.8-214' - up to 2% PYRITE ± MARCASITE. 214-216.7' - MINOR HEMATITE PRESENT IN BRECCIA MATRIX. INTERVAL CONTAINS up to 1% PYRITE ALONG FRACTURES. 216.7-232' - GREEN CHLORITIC CLAY + PYRITE COATED CLASTS OR FRAGMENTS in the Rubble Zone. PROPYLITIZED. 232-239.5' - PROPYLITIZED w/ MINOR ARGILLIZATION. SOME FRACTURES FILLED w/ PYRITE AND TRACE AMOUNTS OF CPY AND BLACK Ag-Sulfo? = Could BE GRAPHITIC. 239.5-260' - up to 1% DISSEMINATED PYRITE AND 1% "BLEB" PYRITE, AND 1% FRACTURE COATED PYRITE. INTERVAL IS PROPYLITIZED.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
191	195					
195	198.2					
198.2	202					
202	204					
204	208.8					
208.8	214					
214	216.7					
216.7	220					
220	223					
223	232					
(only 1% core from this interval)						
232	237					
237	239.5					
239.5	242					
242	247					
247	252					
252	257					
257	260					

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%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		280.5-282.9' - LT to DK BROWNISH-RED, MODERATELY HARD, SLIGHTLY PORPHYRITIC LATITIC FLOW OR ASH-FLOW TUFF. SAME ROCK AS AT 239.5-280.5' ONLY NOT PROPYLITIZED. 282.9-289' - MODERATELY SOFT TO SOFT, LT-DK GREEN, - SAME ROCK AS ABOVE ONLY PROPYLITIZED. 289-312' - DARK REDDISH BROWN, MODERATELY HARD, SLIGHTLY PORPHYRITIC, LATITIC ASH-FLOW TUFF OR FLOW. SAME AS ABOVE ONLY NOT PROPYLITIZED. 312-328.7' - MODERATELY SOFT to MODERATELY HARD, LT GREEN, SLIGHTLY PORPHYRITIC, LATITIC FLOW OR ASH-FLOW TUFF. FINE-GRAINED. SAME ROCK UNIT AS ABOVE ONLY PROPYLITIZED. 328.7' - GRADATIONAL "ALTERATION" contact BETWEEN PROPYLITIC AND HEMATITIC ALTERATION.	270 280 290 300 310 320 330	10 20 10 10 20 10 30 30 40 40 30 30 30 30 UNK CA	260-280.5' - GREEN CHLORITIC CLAY ± PYRITE ± GRAPHITIC MATERIAL FILLED FRACTURES ⇒ .10 FR/FT @ 50-60° to CA. .59 FR/FT @ 30-40° to CA. .54 FR/FT @ 0-20° to CA 280.5'-282.9' - GREEN & BROWN CHLORITIC & HEMATITIC CLAY FILLED FRACTURES ⇒ .42 FR/FT @ 60° to CA 1.25 FR/FT @ 30-40° to CA .42 FR/FT @ 0-20° to CA. 282.9-289' - GREEN CHLORITIC CLAY FILLED FRACTURES ⇒ .16 FR/FT @ 40° to CA. .49 FR/FT @ 0-20° to CA. 289-289.5' - CLAY GOUGE FAULT. 289.5-308' - HEMATITE CLAY ± CALCITE FILLED FRACTURES ⇒ .11 FR/FT @ 80° to CA. .32 FR/FT @ 50-60° to CA. .97 FR/FT @ 30-40° to CA .49 FR/FT @ 0-20° to CA. 308-312' - RUBBLE ZONE. 312-316.1' - RUBBLE ZONE. 316.1-317.4' - GREEN CHLORITIC CLAY ± PYRITE FILLED FRACTURES 1.54 FR/FT @ 30° to CA. 317.4-321.6' - RUBBLE ZONE. 321.6-322.6' - GREEN CHLORITIC CLAY ± PYRITE FILLED FRACTURES 4.00 FR/FT @ 30-40° to CA. 1.00 FR/FT @ 0-20° to CA. 322.6-327' - RUBBLE ZONE. 327-328.7' - GREEN CHLORITIC CLAY ± PYRITE FILLED FRACTURES 3.53 FR/FT @ 30-40° to CA.	260-261' - up to 2% PYRITE w/ BLACK GRAPHITIC CLAY FILLED FRACTURES @ 10-20° to CA. 261-280.5' - PROPYLITIZED w/ up to 1% PYRITE. MINOR CARBONACEOUS OR GRAPHITIC COATED FRACTURES. 280.5-282.9' - HEMATITICALLY ALTERED 282.9-289' - PROPYLITIZED w/up to 1% PYRITE. 289.5-308' - $CaCO_3$ FILLED FRACTURES & STOCKWORKS COMMON IN this INTERVAL. DISSEMINATE HEMATITE ALSO PRESENT. GRAPHITIC "BLEBS" COMMON. 312-328.7' - PROPYLITIZED w/COMMON DISSEMINATED AND STOCKWORK/VEINLET $CaCO_3$. DISSEMINATED PYRITE up to 1%. GREEN CHLORITIC CLAY REPLACES PHENOS of plag AND/OR SANADINE, AND FILLS FRACTURES. PYRITE "BLEBS" also COMMON.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
260	261					
261	266					
266	270					
270	275					
275	280.5					
280.5	282.9					
282.9	287					
287	289					
289	289.5					
289.5	294					
294	299					
299	304					
304	308					
308	312					
312	316.1					
316.1	317.4					
317.4	321.6					
321.6	322.6					
322.6	327					
327	328.7					

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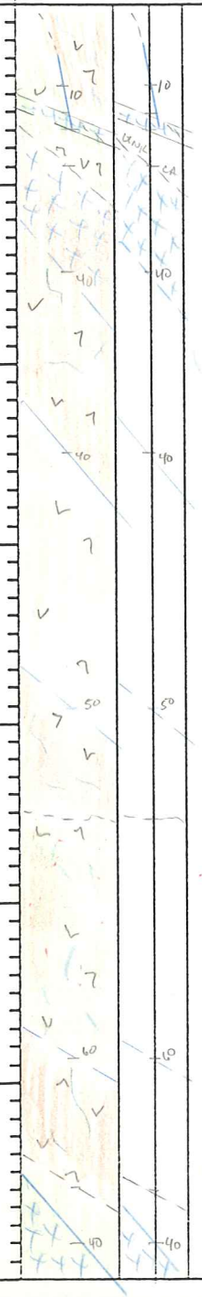
%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		328.7-334.7' - MODERATELY HARD, SAME ROCK UNIT AS 312-328.7' - ONLY UN-PROPYLITIZED. 334.7-338.2' - PROPYLITIZED PORTION OF THE ABOVE ROCK UNIT. LT GREEN. 338.2-355.4' - BROWNISH-RED HEMATITICALLY ALTERED PORTION of ROCK unit DESCRIBED ABOVE 355.4-369' - LT GREEN, PROPYLITIZED PORTION of ROCK UNIT ABOVE. 369-375.5' - BROWNISH-RED, MOD HARD. LATITIC UNIT - SAME AS ABOVE. 375.5-388.8' - MODERATELY HARD, LT GREEN PROPYLITIZED LATITIC unit - flow or ASH-FLOW tuff - SAME AS ABOVE. 388.8-395.6' - SAME AS 369-375.5'. 395.6-406.3' - SAME AS 375.5-388.8'-	340 350 360 370 380 390 400		328.7-334.7' - HEMATITIC ± CACO3 CLAY + HEMATITE ± GREEN CHLORITIC CLAY ± PYRITE FILLED FRACTURES ⇒ .17 FR/FT @ 50-60° to CA 2.50 FR/FT @ 30-40° to CA .67 FR/FT @ 0-20° to CA 334.7-336.2' - CALCITE ± GREEN CHORITIC CLAY FILLED FRACTURES: .67 FR/FT @ 50° to CA 1.33 FR/FT @ 0-20° to CA 336.2-337' - RUBBLE ZONE 339.7-345.2' - RUBBLE ZONE 345.2-355.4' - CALCITE FILLED FRACTURES: .09 FR/FT @ 70° to CA. .38 FR/FT @ 50-60° to CA 1.57 FR/FT @ 30-40° to CA .392 FR/FT @ 0-20° to CA 355.4-369' - GREEN CHLORITIC CLAY ± PYRITE FILLED FRACTURES: .81 FR/FT @ 50-60° to CA. .81 FR/FT @ 30-40° to CA. .74 FR/FT @ 0-20° to CA. 369-375.5' - CaCo3 ± HEMATITIC CLAY FILLED FRACTURES .31 FR/FT @ 70° to CA .92 FR/FT @ 50-60° to CA .61 FR/FT @ 30-40° to CA .31 FR/FT @ 0-20° to CA 375.5-388.8' - GREEN CHLORITIC CLAY ± PYRITE FILLED FRACTURES: .23 FR/FT @ 70° to CA .68 FR/FT @ 50-60° to CA .75 FR/FT @ 30-40° to CA .30 FR/FT @ 0-20° to CA 388.8-399' - GREEN CHLORITIC CLAY ± HEMATITIC CLAY ± CACO3 FILL 1.47 FR/FT @ 50-60° to CA. 1.18 FR/FT @ 30-40° to CA. .78 FR/FT @ 0-20° to CA. 399-402.8' - RUBBLE ZONE	328.7-334.7' - Calcite veinlets common. 334.7-338.2' - PROPYLITIC ALTERATION ASSOCIATED w/ RUBBLE ZONE @ 336.2-337'. 338.2-355.4' - Common CaCO3 veinlets. 355.4-369 - PROPYLITIZED. 369-375.5' - HEMATITICALLY ALTERED w/ common CaCO3 375.5-388.8' - PROPYLITIZED, Common CaCO3 AND up to 1% PYRITE as DISSEMINATIONS & FRACTURE FILLS. 388.8-395.6' - HEMATITICALLY ALTERED w/ common CaCO3 veinlets 395.6-406.3' - PROPYLITIZED. w/ up to 1% PYRITE & trace Amounts of GRAPHITIC MATERIAL ALONG FRACTURES.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
328.7	334.7					
334.7	336.2					
336.2	337					
337	338.2					
338.2	339.7					
339.7	345.2					
345.2	350					
350	355.4					
355.4	359					
359	364					
364	369					
369	373					
373	375.5					
375.5	380.5					
380.5	385.5					
385.5	388.8					
388.8	393					
393	395.6					
395.6	399					

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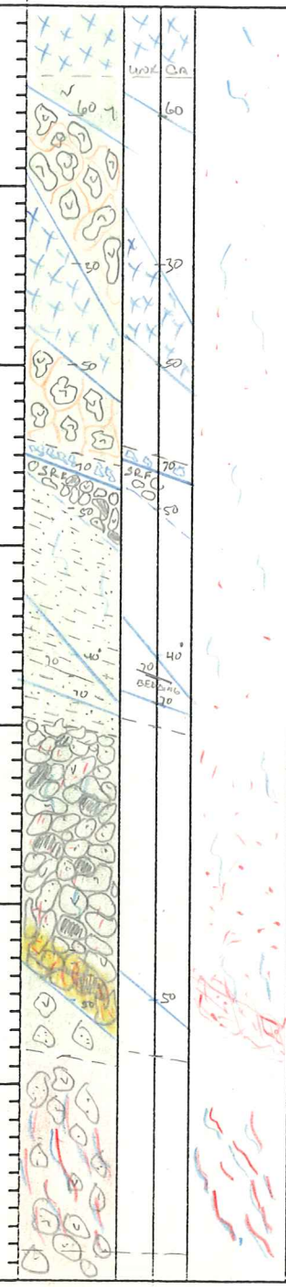
%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		406.3 - 476.1' — MODERATELY HARD to MODERATELY SOFT, REDDISH-BROWN (WHERE UNPROPYLITIZED) to LT GREEN (WHERE PROPYLITIZED) IN COLOR, SLIGHTLY PORPHYRITIC, LATITIC FLOW OR ASH-FLOW-TUFF. this is SAME ROCK UNIT as FROM 28' to 476.1'. Unit Contains GRAPHITIC "BLEBS" WHERE HEMATITICALLY ALTERERED WHICH ARE IN TURN PYRITE "BLEBS" WHERE OVERPRINTED BY PROPYLITIZATION.	410 420 430 440 450 460 470	60 60 60 60 UNK CA 30 UNK CA	406 - 419.4' - $CaCO_3$ ± GREEN CHLORITIC CLAY & BROWN HEMATITIC CLAY FILLED FRACTURES ⇒ .12 FR/FT @ 70° to CA. .60 FR/FT @ 50°to60° to CA. .48 FR/FT @ 30-40° to CA .24 FR/FT @ 0-20° to CA. 419.4-428.4' - $CaCO_3$ ± GREEN CHLORITIC CLAY ± PYRITE FILLED FRACTURES ⇒ .22 FR/FT @ 70° to CA .78 FR/FT @ 50-60° to CA. .44 FR/FT @ 30-40° to CA. .56 FR/FT @ 0-20° to CA. 428.4-435.2' - RUBBLE FAULT ZONE. ROCK IS BRECCIATED w/ MATRIX of GREEN CHLORITIC CLAY. 435.2-444' - GREEN CHLORITIC CLAY ± GRAPHITIC FILLED FRACTURES .11 FR/FT @ 50° to CA. 1.48 FR/FT @ 50-60° to CA. .80 FR/FT @ 30-40° to CA. .80 FR/FT @ 0-20° to CA. 444-466.3' - HEMATITIC CLAY ± GREEN CHLORITIC CLAY ± $CaCO_3$ FILLED FRACTURES ⇒ .14 FR/FT @ 70° to CA. .76 FR/FT @ 50-60° to CA. .76 FR/FT @ 30-40° to CA .90 FR/FT @ 0-20° to CA. 466.3'-468.2' - GREEN CHLORITIC CLAY FILLED FRACTURES ⇒ ± $CaCO_3$. .53 FR/FT @ 50° to CA. 2.11 FR/FT @ 30-40° to CA 468.2-474' - RUBBLE ZONE	406.3-419.4' - HEMATITICALLY ALTERED. Moderate Amounts of $CaCO_3$. 419.4-444' - PROPYLITIZED, MOD SOFT. TRACE Amounts of $CaCO_3$ as veinlets & FRACTURE FILLS w/ common $CaCO_3$ AS DISSEMINATIONS. Contains up to 2% PYRITE AS FRACTURE FILLS AND DISSEMINATIONS & "BLEBS" MINOR GRAPHITIC FRACTURE COATINGS @ 435.2-444'. 444-466.3' - HEMATITICALLY ALTERED MODERATE $CaCO_3$ VEINLETS & FRAC. FILL. GRAPHITIC "BLEBS" COMMON. 466.3 - 476.1' - PROPYLITIZED w/ MODERATE $CaCO_3$ veinlets & DISSEMINATIONS.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
399	402.8					
402.8	406.3					
406.3	411					
411	416					
416	419.4					
419.4	424.4					
424.4	428.4					
428.4	432					
432	435.2					
435.2	440					
440	444					
444	448					
448	453					
453	458					
458	463					
463	466.3					
466.3	468					
468	470					

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		476.1 - 494.7' - MODERATELY SOFT, GREEN to Buff COLORED CLASTS IN A REDDISH BROWN MATRIX, MATRIX SUPPORTED, MONOLITHIC, VOLCANIC BRECCIA. 494.7 - 496' - SOUTH RIDGE FAULT BRECCIA ZONE - ROCK FLOUR/ CLAY MATRIX (HANGING WALL) 496' - SOUTH RIDGE FAULT. Tos? 496 - 498' - DARK GREEN, MODERATELY SOFT, HETEROLITHIC, SUB-ROUNDED TO SUB-ANGULAR, LAPILLI SIZED, CLAST SUPPORTED CONGLOMERATE. CLASTS UP TO 2" IN DIAMETER. CLASTS ARE COMPOSED OF LATITIC? ASH-FLOW TUFFS, FLOWS, AND AULD LANG SYNE META SEDS (BLACK). Tos? 498 - 510.2' - MODERATELY SOFT to MODERATELY HARD, FINE-GRAINED (COARSE ASH-ASH SIZE), WELL SORTED, GREEN, HETEROLITHIC EPICLASTIC. (ALSO INCLUDES AULD LANG SYNE CLASTS). NORMALLY GRADED. Tos? 510.2 - 525.3' - GREEN MODERATELY HARD TO HARD, WELL SORTED, HETEROLITHIC, SUB-ROUNDED TO SUB-ANGULAR, LAPILLI SIZED, CLAST SUPPORTED CONGLOMERATE. CLASTS UP TO 2" IN DIAMETER AVERAGEING 3/4". CLASTS ARE COMPOSED OF LATITIC? ASH-FLOW TUFFS - FLOWS, EPICLASTICS, AND AULD LANG SYNE META-SEDIMENTS. GRADATIONAL NORMALLY GRADED CONTACT WITH FINE-GRAINED UNIT @ 510.2'. Tos? 525.3 - 575.9' - MODERATELY HARD to HARD, POORLY SORTED, LT BROWN to CREAM to LT GREEN IN COLOR, HETEROLITHIC, LAPILLI, MATRIX to CLAST SUPPORTED CONGLOMERATE. CLASTS ARE SIMILAR TO THOSE DESCRIBED ABOVE ONLY THERE ARE NO AULD LANG SYNE META-SEDIMENT CLASTS.	480 490 500 510 520 530 540		474-476.1' - GREEN CHLORITIC CLAY + $CaCO_3$ FILLED FRACTURES ⇒ .48 FR/FT @ 70° to CA. 1.91 FR/FT @ 50-60° to CA .95 FR/FT @ 30-40° to CA. .48 FR/FT @ 0-20° to CA. 476.1 - 484.5' - GREEN CHLORITIC CLAY ± PYRITE ± $CaCO_3$ ± PY FILLED FRACTURES ⇒ .12 FR/FT @ 80° to CA. .83 FR/FT @ 50-60° to CA. .83 FR/FT @ 30-40° to CA .24 FR/FT @ 0-20° to CA. 484.5 - 490' - RUBBLE ZONE 490-494.7' - GREEN CHLORITIC CLAY ± PYRITE ± GRAPHITIC MATERIAL FILLED FRACTURES. .43 FR/FT @ 70° to CA. .21 FR/FT @ 50° to CA .21 FR/FT @ 10° to CA 494.7 - 496' - SOUTH RIDGE FAULT GOUGE & BRECCIA ZONE. 496-498' - GREEN CHLORITIC CLAY ± PYRITE ± $CaCO_3$ FILLED FRACTURES ⇒ .50 FR/FT @ 70° to CA .50 FR/FT @ 60° to CA .50 FR/FT @ 10° to CA. 506.2' - CALCITE AND CHLORITIC CLAY FAULT 508.8' - BEDDING PLANE FAULT. 498-510.2' - GREEN CHLORITIC CLAY ± PYRITE ± $CaCO_3$ FILLED FRACTURES ⇒ .33 FR/FT @ 70° to CA. .33 FR/FT @ 50-60° to CA. .41 FR/FT @ 30-40° to CA. .33 FR/FT @ 0-20° to CA. 510-522.8' - CALCITE + PYRITE ± CPY ± GREEN CHLORITIC CLAY FILLED FRACTURES .08 FR/FT @ 50° to CA .47 FR/FT @ 30-40° to CA .08 FR/FT @ 0-20° to CA. 522.8-525.3' - PYRITE ± $CaCO_3$ ± CPY ± GREEN CHLORITIC CLAY FILLED FRACTURES ⇒ .40 FR/FT @ 50° to CA. .80 FR/FT @ 30-40° to CA .80 FR/FT @ 0-20° to CA 525.3-528.5' - GREEN CHLORITIC CLAY ± PYRITE ± $CaCO_3$ FILLED FRACTURES ⇒ .63 FR/FT @ 80° to CA. 1.88 FR/FT @ 50-60° to CA. .63 FR/FT @ 30-40° to CA. .31 FR/FT @ 0-20° to CA. 528.5-538.3' - CALCITE + PYRITE + CPY? + BLACK MINERAL FILLED FRACTURES ⇒ .20 FR/FT @ 70-80° to CA .20 FR/FT @ 50-60° to CA .20 FR/FT @ 30-40° to CA. 2.04 FR/FT @ 0-20° to CA.	476.1 - 494.7' - HEMATITICALLY ALTERED MATRIX SUPPORTED BRECCIA OVERPRINTED BY PROPYLITIZATION. DISSEMINATED & FRACTURE COATED PYRITE up to 2%. TRACE AMOUNTS of $CaCO_3$. 494.7 - 496' - UP TO 1% PYRITE AND COMMON GRAPHITIC MATERIAL. 496 - 510.2' - PROPYLITIZED, DISSEMINATED PYRITE up to 1%. $CaCO_3$ veinlets & FRACTURE FILL COMMON. 510.2 - 522.8' - PROPYLITIZED, COMMON $CaCO_3$ veinlets up to .5". DISSEMINATED AND FRACTURE COATED PYRITE up to 5%. TRACE AMOUNTS of CPY AND GRAPHITIC MATERIAL. 522.8 - 525.3' - PROPYLITIZED OVERPRINTED BY MODERATE TO INTENSE SILICIFICATION (SILICA FLOODING). DISSEMINATED PYRITE up to 7%. MODERATE $CaCO_3$ veinlets. 525.3 - 528.5' - PROPYLITIZED, GREEN CHLORITIC CLAY AND TRACE AMOUNTS of DISSEMINATED PYRITE AND $CaCO_3$ veinlets. 528.5 - 538.3 - COMMON $CaCO_3$ veinlets W/ ASSOCIATED PYRITE, CPY?, AND A BLACK FINE GRAINED MINERAL ⇒ Ag-Sulfo? ROCK IS BLEACHED W/ A Buff COLOR. THESE veinlets PREFER THE 0-20° to CA ORIENTATION.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
470	474					
474	476.1					
476.1	480					
480	484.5					
484.5	490					
490	494.7					
494.7	496					
496	498					
498	502					
502	505.2					
505.2	510.2					
510.2	512.8					
512.8	517.8					
517.8	522.8					
522.8	525.3					
525.3	528.5					
528.5	532					
532	535					
535	538.3					

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		575.9-584.5' - MODERATELY SOFT, FINE-GRAINED APHANITIC ASH OR EPICLASTIC. 584.5-694.1' - MODERATELY HARD to HARD, MONOLITHIC, POORLY SORTED VOLCANIC BRECCIA. CLASTS ARE APHANITIC PROBABLY RHYOLITIC IN COMPOSITION. BRECCIA IS CLAST SUPORTED. CREAM to LT GRAY IN COLOR. MUCH of THIS INTERVAL CONTAINS "CRACKLE BRECCIAS & STOCKWORKS w/MATRIX of $CaCO_3$ - SiO_2 - ? SOME of the CLASTS SHOW FLOW LAMINATIONS.	550 560 570 580 590 600 610	UNK CA 30° UNK CA 30 30	538.3-555.9' - CALCITE + PYRITE + Cpy + BLACK Ag sulfo? FILLS FRACTURES) .17 FR/FT @ 50-60° to CA. .23 FR/FT @ 30-40° to CA. .48 FR/FT @ 0-20° to CA. 555.9-561' - PYRITE + Cpy FILLS FRACTURES) .78 FR/FT @ 30-40° to CA. 1.18 FR/FT @ 0-20° to CA. 561-575.9' - Calcite + PYRITE ± Cpy ± BLACK Ag-Sulfo? FRACTURES) .07 FR/FT @ 50-60° to CA. .40 FR/FT @ 30-40° to CA .34 FR/FT @ 0-20° to CA. 575.9-584.5' - GREEN CHLORITIC CLAY ± $CaCO_3$ ± PYRITE ± Cpy FRACTURES .23 FR/FT @ 50-60° to CA .81 FR/FT @ 30-60° to CA .46 FR/FT @ 0-20° to CA 584.5'-602' - SiO_2 + $CaCO_3$ + Py + Cpy + BLACK Ag-Sulfo? FILLED FRACTURES) .11 FR/FT @ 50-60° to CA. 1.60 FR/FT @ 30-40° to CA .51 FR/FT @ 0-20° to CA. 602-607' - PYRITE + Cpy BORDERED BY BLACK Ag-Sulfo? FRACTURES) .80 FR/FT @ 30-40° to CA. 1.80 FR/FT @ 0-20° to CA. 607-620.3' - PYRITE ± Cpy ± BK Sulfo FRACTURES) .08 FR/FT @ 70° to CA. .45 FR/FT @ 50-60° to CA. .15 FR/FT @ 30-40° to CA. .08 FR/FT @ 0-20° to CA.	538.3-555.9' - SLIGHTLY PROPYLITIZED OVERPRINTED BY ARGILLIC BLEACHING. DISSEMINATED PYRITE up to 1%. MINOR Amounts of Calcite VEINING w/PYRITE, Cpy, + BLACK SILVER? MINERAL. 555.9-561' - BROWNISH GREY SILICA FLOODED. UP TO 5% PYRITE & Cpy (could be TARNISHED PYRITE) w/ TRACES of BLACK Ag Sulfo? 561-575.9' - PROPYLITIZED w/ DISSEMINATED PYRITE ± BLACK Ag-Sulfo? up to 2%. ALSO CONTAINS CALCITE + PYRITE + Cpy ± BLACK Ag-Sulfo? VEINLETS & STOCKWORKS 575.9-584.5' - PROPYLITIZED w/ GREEN CHLORITIC CLAY, MINOR $CaCO_3$ VEINLETS w/ PYR-Cpy-BLACK Sulfos? DISSEMINATED PYRITE + Cpy + BLACK Ag-Sulfos? up to 3%. 584.5-602' - MODERATELY to INTENSELY SILICIFIED. ABUNDANT $CaCO_3$ + PYR + Cpy + BLACK Sulfo? VEINING 602-607' - ARGILLIZED & BLEACHED OVERPRINTED BY MINOR SILICIFICATION. CONTAINS up to 0.5% sulfide VEINLETS CONSISTING of PYRITE ± Cpy BORDERED BY soft BLACK Ag-Sulfo? THIN (1 mm) $CaCO_3$ stockwork. Up to 5% DISS Py ± Cpy? 607-620.3' - ARGILLIZED & BLEACHED OVERPRINTED BY MINOR SILICIFICATION. Contains TRACE Amounts of Py-Cpy BORDERED BY BLACK Ag-Sulfos? FRACTURES. Contains up to 5% DISSEMINATED PYRITE AND? Cpy?. the? Cpy? MINERAL HAS THE FORM of MARCASITE WITH A BORNITE LIKE IRREDESCENCE TARNISH common w/Cpy.

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	Ag2
538.3	542					
542	547					
547	552					
552	555.9					
55.9	561					
561	566					
566	571					
571	575.9					
575.9	581					
581	584.5					
584.5	589					
589	592					
592	597					
597	602					
602	607					
607	612					

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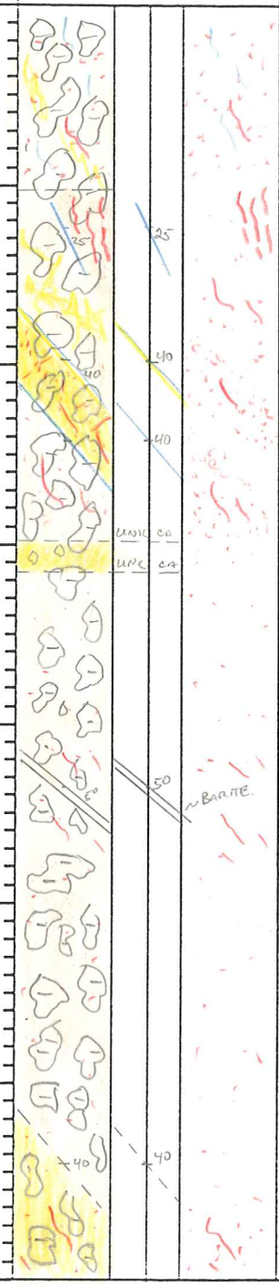
%REC	RQD	LITHOLOGY	FT

GRAPHIC LOG

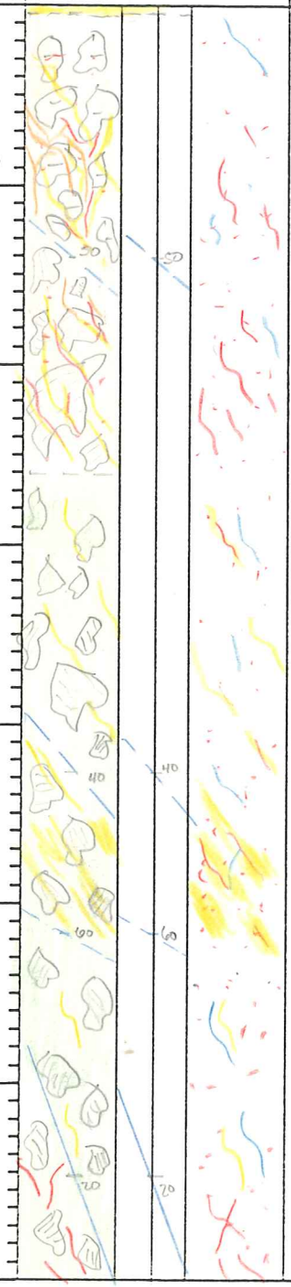


STRUCTURE	ALTERATION AND MINERALIZATION
620.3 - 622.6' - PYRITE + BLACK Ag-Sulfo FRACTURES => .44 FR/FT @ 50° to CA .44 FR/FT @ 40° to CA 1.74 FR/FT @ 0-20° to CA.	620.3-622.6' - ARGILLIZED & BLEACHED NO SILICIFICATION. Contains several PYRITE + BLACK Ag-Sulfo? veinlet FRACTURES. Also contains up to 1% DISS. Py.
622.6-629.7' - PYRITE ± Cpy + BLACK sulfos? COATED FRACTURES => .28 FR/FT @ 50° to CA. .99 FR/FT @ 40° to CA .42 FR/FT @ 0-20° to CA.	622.6-629.7' - ARGILLIZED & BLEACHED w/ MODERATE SILICA CRACKLE BRECCIATION Contains up to 4% DISSEMINATED PYRITE & PYRITE ± Cpy & BLACK Ag Sulfo solts? SILICA IS CHALCEDONIC & CREAM COLOR
629.7-634.2' - QUARTZ ± OPEN SPACE, ± PYRITE FILLED FRACTS. .44 FR/FT @ 50° to CA .89 FR/FT @ 30-40° to CA.	629.7-634.2' - SILICA FLOODED CRACKLE BRECCIA. SILICA IS CHALCEDONIC & DARK GREY IN COLOR DUE TO DISS Py. PYRITE up to 15%. MINOR OPEN SPACE FRACTURES
634.2-639.7' - CREAM CLAY ± PYRITE COATED FRACTURES: .18 FR/FT @ 50° to CA .73 FR/FT @ 30-40° to CA.	634.2-639.7' - ARGILLIZED & BLEACHED. Contains up to 1% DISSEMINATED PYRITE
641.7-65.5' - 0 FR/FT	639.7-641.7' - SILICA FLOODED w/ BROWNISH GRAY QUARTZ. up to 0.5% PYRITE.
652-662' - PYRITE ± BARITE FILLED FRACTURES => 1.70 FR/FT @ 50-60° to CA. .40 FR/FT @ 40° to CA. .20 FR/FT @ 0-20° to CA.	641.7-674.5' - ARGILLIZED & BLEACHED w/ MINOR SILICIFICATION. Contains up to 2% DISSEMINATED & FRACTURE PYRITE. Contains MINOR BARITE (@ 253.7' a .75" BARITE veinlet @ 50° to CA.
662-674.5' - Ø FR/FT.	
674.5-680.4' - QUARTZ + PYRITE FRACTURES => .43 FR/FT @ 50-60° to CA .21 FR/FT @ 70° to CA 1.49 FR/FT @ 30-40° to CA .21 FR/FT @ 0-20° to CA.	674.5-680.4' - SILICA FLOODED. COMMON OPEN SPACE FRACTURES & VOIDS w/ QUARTZ & CHALCEDONY. FEW contain MARCASITE BLADES. QUARTZ IS CLEAR to LT GREY VARYING w/ DISS Py content. MINOR AMOUNTS of the QUARTZ IS BROWNISH RED. DISSEMINATED & FRACTURE PYRITE up to 4%. MINOR MARCASITE.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
612	617					
617	620.3					
620.3	622.6					
622.6	627					
627	629.7					
629.7	634.2					
634.2	639.7					
639.7	641.7					
641.7	643.5					
643.5	648.5					
648.5	653					
653	654					
654	659					
659	664					
664	669					
669	674.5					
674.5	679.2					
679.2	680.4					

HOLE NUMBER _____ PAGE 10 OF 11

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		694.1 - 764' TD - Hard to Moderately soft, Buff to LT Green. Poorly sorted, Clast to Matrix Supported, Monolithic, Volcanic Breccia. Clast are flow laminated (Planar laminations) and Aphanitic. Probably Rhyolitic in Composition. Clasts are Lapilli sized w/ common Blocks.	690 700 710 720 730 740 750		680.4 - 694.1 - Quartz ± Marcasite blades fractures ⇒ .95 fr/ft @ 50-60° to CA. 1.39 fr/ft @ 30-40° to CA. .29 fr/ft @ 0-20° to CA 694.1 - 706.1' - Quartz + - Marcasite ± Pyrite ± $CaCO_3$ Filled fractures ⇒ .50 fr/ft @ 70-90° to CA. 1.25 fr/ft @ 50-60° to CA. .67 fr/ft @ 30-40° to CA. 706.1 - 722.8' - Green chloritic clay + Pyrite ≡ Cpy fractures .12 fr/ft @ 50-60° to CA. .54 fr/ft @ 30-40° to CA. 722.8 - 731.9' - Pyrite + Quartz ± Marcasite ± Lime Green clay. fractures ⇒ .22 fr/ft @ 60° to CA. .33 fr/ft @ 40° to CA. 731.9 - 745.1' - Pyrite ± ≡ Cpy filled fractures ⇒ .08 fr/ft @ 70° to CA .38 fr/ft @ 50-60° to CA. .38 fr/ft @ 30-40° to CA 745.1 - 764 TD - Pyrite ± Cpy ± Black Ag Sulfo? Fractures .37 fr/ft @ 50-60° to CA .37 fr/ft @ 30-40° to CA. .32 fr/ft @ 0-20° to CA.	680.4 - 706.1' - Argillized & bleached w/ common Silica stockworks & veinlets and greenish gray clay stockwork. Silica veinlets are usually open w/ Marcasite blades up to .30" wide. Calcite veinlets are present but rare. Interval contains up to 2% disseminated Pyrite. 706.1 - 722.8' - Propylitized and green. Disseminated Pyrite up to 3%. Trace amounts of Pyrite ± Cpy veinlets. 722.8 - 731.9' - Propylitized w/ moderate silica flooding & open space filling. Pyrite pyritohedrons in open space ± Marcasite w/ up to 3% Dissem. Py. Minor $CaCO_3$. 731.9 - 745.1' - Propylitized w/ minor $CaCO_3$, and silicified. Pyrite up to 2% as disseminations. Pyrite ± Cpy (trace) fractures common. 745.1 - 764' TD - Propylitized. Common Pyrite veinlets ± Cpy w/ Black Ag-Sulfo? Border. This mineral sequence also occurs as disseminations.

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	Ag2
680.4	685.5					
685.5	689.5					
689.5	694.1					
694.1	699.5					
699.5	702.5					
702.5	706.1					
706.1	709					
709	714					
714	719					
719	722.8					
722.8	727.8					
727.8	731.9					
731.9	736.9					
736.9	741					
741	745.1					
745.1	750					

HOLE NUMBER _____ PAGE 11 OF 11

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
			760				750	755					
			764 TD				755	760					
							760	764					

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # 95-348 DATE: 9/20/95 LOGGED BY: LDA PAGE 1 OF 9

DRILL RUN		SOLID CORE	TOTAL CORE	RQD	ROCK STRENGTH		FRACTURE DATA				DENSITY DATA			
FROM	TO	RECOVERY (%)	RECOVERY (%)		DOWNHOLE DEPTH	POINT LOAD INDEX (psi)	FRACTURE DENSITY/FT.	AVG. ANGLE TO C.A.	ROUGHNESS	INFILL	DOWNHOLE DEPTH	SAMPLE WEIGHT (g)	DISPLACEMENT (cc)	DENSITY (g/cc)
28	32	83	93	50										
32	42	96	107	62										
42	52	100	100	86										
52	62	82	98	61							53	371	170	2.18
62	72	99	101	75										
72	82	95	99	80							72	463	200	2.32
82	92	92	104	76										
92	102	75	100	49										
102	112	89	98	43							102	480	180	2.67
112	122	100	100	75										
122	132	94	100	70										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # 95-348 DATE: 9/20/95 LOGGED BY: KDA PAGE 2 OF 9

DRILL RUN		SOLID CORE	TOTAL CORE	RQD	ROCK STRENGTH		FRACTURE DATA				DENSITY DATA			
FROM	TO	RECOVERY (%)	RECOVERY (%)		DOWNHOLE DEPTH	POINT LOAD INDEX (psi)	FRACTURE DENSITY/FT.	AVG. ANGLE TO C.A.	ROUGHNESS	INFILL	DOWNHOLE DEPTH	SAMPLE WEIGHT (g)	DISPLACEMENT (cc)	DENSITY (g/cc)
132	140.5	66	81	55							132	539	240	2.25
140.5	145	89	118	76										
145	156	75	82	51										
156	162	100	100	72										
162	172	85	94	55							162	335	150	2.23
172	181	83	89	56										
181	190	100	100	51										
190	195	110	110	98										
195	202	46	81	39							202	531.5	240	2.22
202	210	60	99	41										
210	214	Ø	65	Ø										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # 95-348 DATE: 9/25/95 LOGGED BY: EDA PAGE 3 OF 9

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)
214	220	30	92	18							215	816	365	2.24
220	223	Ø	73	Ø										
223	MISMATCH 232	Ø	11	03										
232	241	94	94	67										
241	242	100	100	30										
242	253	88	88	82										
253	260	98	99	50							253	816	340	2.40
260	262	50	95	Ø										
262	266	75	90	48										
266	270	88	100	25										
270	280	54	68	50										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # 95-348 DATE: 9/25/95 LOGGED BY: DA PAGE 4 OF 9

DRILL RUN		SOLID CORE RECOVERY (%)	TOTAL CORE RECOVERY (%)	RQD	ROCK STRENGTH		FRACTURE DATA				DENSITY DATA			
FROM	TO				DOWNHOLE DEPTH	POINT LOAD INDEX (psi)	FRACTURE DENSITY/FT.	AVG. ANGLE TO C.A.	ROUGHNESS	INFILL	DOWNHOLE DEPTH	SAMPLE WEIGHT (g)	DISPLACEMENT (cc)	DENSITY g/cc
280	289.5	73	83	39							282	851	340	2.50
289.5	294	87	93	53										
294	302	100	100	86										
302	309	84	100	66							302	481	200	2.41
309	312	Ø	67	Ø										
312	315	63	100	13										
315	318	43	87	30										
318	320	Ø	100	Ø										
320	323.5	51	94	51										
233.5	327	37	100	33										
327	331.5	102	102	51										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # 95-348 DATE: 9/26/95 LOGGED BY: ABA PAGE 5 OF 9

DRILL RUN		SOLID CORE RECOVERY (%)	TOTAL CORE RECOVERY (%)	RQD	ROCK STRENGTH		FRACTURE DATA				DENSITY DATA			
FROM	TO				DOWNHOLE DEPTH	POINT LOAD INDEX (psi)	FRACTURE DENSITY/FT.	AVG. ANGLE TO C.A.	ROUGHNESS	INFILL	DOWNHOLE DEPTH	SAMPLE WEIGHT (g)	DISPLACEMENT (cc)	DENSITY (g/cc)
331.5	337	84	98	58							332	679.3	280	2.43
337	342	35	100	28										
342	345	60	100	43										
345	352	91	91	61										
352	352.5	100	100	Ø										
352.5	359	72	85	50										
359	369	102	102	88										
369	379.2	86	98	75							369	5.28	240	2.20
379.2	387	80	97	60										
387	397	100	100	71							391	479.7	200	2.40
397	401.5	53	100	42										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # 95-348 DATE: 9/26/95 LOGGED BY: KDA PAGE 6 OF 9

DRILL RUN		SOLID CORE RECOVERY (%)	TOTAL CORE RECOVERY (%)	RQD	ROCK STRENGTH		FRACTURE DATA				DENSITY DATA			
FROM	TO				DOWNHOLE DEPTH	POINT LOAD INDEX (psi)	FRACTURE DENSITY/FT.	AVG. ANGLE TO C.A.	ROUGHNESS	INFILL	DOWNHOLE DEPTH	SAMPLE WEIGHT (g)	DISPLACEMENT (cc)	DENSITY (g/cc)
401.5	404	92	108	56										
404	412	100	100	86										
412	422	97	97	91										
422	430	80	94	80							422	499	220	2.27
430	435	52	100	08										
435	441	90	92	38										
441	448	104	104	74										
448	458	99	99	84										
458	468	100	100	94							464	400	180	2.22
468	474	15	83	10										
474	482	91	98	75										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # 95-348 DATE: 9/26/95 LOGGED BY: AA PAGE 7 OF 9

DRILL RUN		SOLID CORE	TOTAL CORE	RQD	ROCK STRENGTH		FRACTURE DATA				DENSITY DATA			
FROM	TO	RECOVERY (%)	RECOVERY (%)		DOWNHOLE DEPTH	POINT LOAD INDEX (psi)	FRACTURE DENSITY/FT.	AVG. ANGLE TO C.A.	ROUGHNESS	INFILL	DOWNHOLE DEPTH	SAMPLE WEIGHT (g)	DISPLACEMENT (cc)	DENSITY (g/cc)
482	490	69	100	50							488	394	170	2.32
490	495	90	94	78										
495	502	90	97	64										
502	512	102	102	72							503	564	220	2.56
512	522	99	99	94							520	855	340	2.51
522	532	100	101	90										
532	542	98	98	98										
542	552	100	100	100										
552	562	100	100	94							562	402	180	2.23
562	572	100	100	100										
572	582	97	97	97										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # 95-348 DATE: 9/28/95 LOGGED BY: LA PAGE 8 OF 9

DRILL RUN		SOLID CORE	TOTAL CORE	RQD	ROCK STRENGTH		FRACTURE DATA				DENSITY DATA			
FROM	TO	RECOVERY (%)	RECOVERY (%)		DOWNHOLE DEPTH	POINT LOAD INDEX (psi)	FRACTURE DENSITY/FT.	AVG. ANGLE TO C.A.	ROUGHNESS	INFILL	DOWNHOLE DEPTH	SAMPLE WEIGHT (g)	DISPLACEMENT (cc)	DENSITY (g/cc)
582	592	97	97	97										
592	602	98	98	98										
602	612	101	101	99							603	801	350	2.29
612	622	97	100	93										
622	632	101	101	96										
632	638.5	82	92	69							632	504.5	200	2.52
638.5	648.5	103	103	76										
648.5	658.7	99	100	84							648	459	200	2.30
658.7	669	100	100	86										
669	679.2	103	103	101							679	651	260	2.50
679.2	689.5	98	98	89										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # 95-348 DATE: 10/1/95 LOGGED BY: LDA PAGE 9 OF 9

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)
689.5	699.5	103	103	98										
699.5	709	108	108	103							699.5	723.5	310	2.33
709	719	100	100	97										
719	730	92	92	88	2 POSSIBLE AREAS IN INTERVAL OF UVGS ⇒ Explaining 11 foot Run.									
730	740	100	100	96										
740	750	99	99	90										
750	760	100	100	100										
760	764	100	100	100							763	747	295	2.53
	TD													

DRILLHOLE DIP AND DIRECTION MEASUREMENTS WITH REFLEX FOTOBOR DDI

CUSTOMER: HECLA
CUSTOMER REFERENCE: ROSEBUD
SURVEYOR: CHARLIE MUERHOFF
DATE: 09-23-95
DRILL HOLE: 95-348
NO CASING

COLLAR POSITION

X(FT)	Y(FT)	Z(FT)	DIP (DEG.)	DIR. (DEG.)
483676.5	2203826	5389.78	58.99	221.99

POSITION AT 730 FT

X(FT)	Y(FT)	Z(FT)	DIP (DEG.)	DIR. (DEG.)
483384.9	2203587	4764.65	58.08	217.78

LOCAL COORDINATES AT 730 FT
Y-LOC= -17.59 FT TO THE LEFT
Z-LOC= .78 FT UPWARDS

N

RESULTS

STATION (FT)	X(FT)	Y(FT)	Z(FT)	DIP (DEG.)	DIR. (DEG.)
0	483676.5	2203826	5389.78	58.99	221.99
20	483668.9	2203819	5372.63	59.18	221.79
40	483661.3	2203812	5355.45	59.23	221.54
60	483653.6	2203806	5338.26	59.29	221.41
80	483645.9	2203799	5321.06	59.34	221.3
100	483638.3	2203792	5303.85	59.35	221.5
* 100	51.19	-.3	-.37		
120	483630.6	2203785	5286.65	59.34	221.3
140	483623	2203779	5269.45	59.34	221.11
160	483615.3	2203772	5252.25	59.39	220.96
180	483607.6	2203765	5235.04	59.42	220.81
200	483599.9	2203759	5217.82	59.24	220.64
* 200	102.23	-1	-.94		
220	483592.1	2203752	5200.64	59.18	220.45
240	483584.3	2203745	5183.46	59.1	220.25
260	483576.5	2203739	5166.31	59.03	220.07
280	483568.6	2203732	5149.17	58.9	219.89
300	483560.6	2203726	5132.05	58.75	219.78
* 300	153.36	-2.89	-1.28		
320	483552.6	2203719	5114.95	58.71	219.72
340	483544.6	2203713	5097.86	58.72	219.44
360	483536.6	2203706	5080.77	58.74	219.28
380	483528.5	2203699	5063.67	58.83	219.2
400	483520.5	2203693	5046.55	58.85	218.93
* 400	205.14	-5.37	-.93		
420	483512.4	2203686	5029.44	58.87	218.72
440	483504.4	2203680	5012.32	58.7	218.59
460	483496.3	2203673	4995.24	58.61	218.45
480	483488.1	2203667	4978.16	58.69	218.15
500	483479.9	2203660	4961.07	58.62	217.83
* 500	256.99	-8.46	-.51		
520	483471.7	2203654	4943.99	58.69	217.74
540	483463.4	2203648	4926.91	58.74	217.34
560	483455.2	2203641	4909.81	58.72	217.19
580	483446.9	2203635	4892.72	58.69	217.25
600	483438.7	2203629	4875.63	58.69	217.32
* 600	308.89	-12.42	-.03		
620	483430.4	2203622	4858.54	58.74	217.39
640	483422.2	2203616	4841.44	58.85	217.25
660	483413.9	2203610	4824.33	58.77	217.29
680	483405.6	2203603	4807.24	58.56	217.43
700	483397.4	2203597	4790.17	58.4	217.62
* 700	360.82	-16.41	.47		
730	483384.9	2203587	4764.65	58.08	217.78
* 730	376.53	-17.59	.78		

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT : SP035775

American Assay Laboratories

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

HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF
:
:
:

CLIENT REFERENCE No: 95-348 RECEIVED : 3 OCT 1995

No. SAMPLES : 148 REPORTED : 13 OCT 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
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Sue King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT : SP035775

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 95-348

REPORTED : 13 OCT 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
95-348 28-32	<0.001		<0.02
95-348 32-37	<0.001		<0.02
95-348 37-42	<0.001		<0.02
95-348 42-47	<0.001		<0.02
95-348 47-52	<0.001	<0.001	<0.02
95-348 52-57	0.001		0.10
95-348 57-62	0.002		0.03
95-348 62-65.4	0.002		0.08
95-348 65.4-70.4	<0.001		0.07
95-348 70.4-73.5	<0.001		0.07
95-348 73.5-74.7	<0.001		0.07
95-348 74.7-77.7	<0.001		0.06
95-348 77.7-80.7	<0.001		0.20
95-348 80.7-84.7	<0.001	<0.001	0.04
95-348 84.7-88	0.009		0.43
95-348 88-91	<0.001		0.02
95-348 91-96	0.001		0.05
95-348 96-101.7	0.001		0.03
95-348 101.7-106	0.001		0.05
95-348 106-109.7	0.001		0.07
95-348 109.7-111.1	0.006	0.007	0.39
95-348 111.1-116	0.002		0.12
95-348 116-121	0.001		0.24
95-348 121-126	0.001		0.04
95-348 126-127	<0.001		0.06

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT : SP035775

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 95-348

REPORTED : 13 OCT 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
95-348 127-129.6	0.011		1.03
95-348 129.6-133.4	0.004		0.13
95-348 133.4-137.4	0.001		0.05
95-348 137.4-140.5	<0.001	<0.001	0.04
95-348 140.5-144.4	<0.001		<0.02
95-348 144.4-145	<0.001		<0.02
95-348 145-150	<0.001		<0.02
95-348 150-155	<0.001		<0.02
95-348 155-157	<0.001		<0.02
95-348 157-162	<0.001		<0.02
95-348 162-167	<0.001	<0.001	<0.02
95-348 167-172	0.008		0.09
95-348 172-176.3	0.006		0.06
95-348 176.3-181	<0.001		0.03
95-348 181-186	<0.001		0.02
95-348 186-191	<0.001		<0.02
95-348 191-195	<0.001	<0.001	<0.02
95-348 195-198.2	<0.001		<0.02
95-348 198.2-202	<0.001		<0.02
95-348 202-204	<0.001		0.05
95-348 204-208.8	0.001		0.06
95-348 208.8-214	0.006		0.22
95-348 214-216.7	0.005		0.20
95-348 216.7-220	0.006		0.54
95-348 220-223	<0.001		0.03

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT : SP035775

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 95-348

REPORTED : 13 OCT 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
95-348 223-232	<0.001		0.05
95-348 232-237	<0.001		0.03
95-348 237-239.5	0.004		0.13
95-348 239.5-242	0.002	0.002	0.11
35-348 242-247	<0.001		0.11
35-348 247-252	0.006		1.21
35-348 252-257	0.003		0.17
35-348 257-260	0.005		0.24
35-348 260-261	0.006		0.39
35-348 261-266	0.005		0.10
35-348 266-270	0.013		0.41
35-348 270-275	<0.001	<0.001	0.03
35-348 275-280.5	0.006		0.13
35-348 280.5-282.9	<0.001		<0.02
35-348 282.9-287	0.005		0.09
35-348 287-289	<0.001		0.04
35-348 289-289.5	0.001	0.001	0.03
35-348 289.5-294	<0.001		<0.02
35-348 294-299	<0.001		<0.02
35-348 299-304	<0.001		<0.02
35-348 304-308	<0.001		<0.02
35-348 308-312	<0.001		<0.02
35-348 312-316.1	<0.001		0.02
35-348 316.1-317.4	<0.001		0.02
35-348 317.4-321.6	<0.001		0.03

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT : SP035775

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 95-348

REPORTED : 13 OCT 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
35-348 321.6-322.6	0.001	0.001	0.04
35-348 322.6-327	0.002		0.05
35-348 327-328.7	<0.001		<0.02
35-348 328.7-334.7	<0.001		<0.02
35-348 334.7-336.2	<0.001		0.02
35-348 336.2-337	<0.001		0.02
35-348 337-338.2	<0.001		<0.02
35-348 338.2-339.7	<0.001		<0.02
35-348 339.7-345.2	<0.001		<0.02
35-348 345.2-350	<0.001		<0.02
35-348 350-355.4	<0.001		<0.02
35-348 355.4-359	0.002		0.02
35-348 359-364	0.002		0.06
35-348 364-369	<0.001		0.02
35-348 369-373	<0.001		<0.02
35-348 373-375.5	<0.001		<0.02
35-348 375.5-380	<0.001		<0.02
35-348 380.5-385.5	0.001		0.03
35-348 385.5-388.8	<0.001		<0.02
35-348 388.8-393	<0.001		<0.02
35-348 393-395.6	<0.001		<0.02
35-348 395.6-399	<0.001	<0.001	<0.02
35-348 399-402.8	0.009		0.12
35-348 402.8-406.3	0.001		0.03
35-348 406.3-411	<0.001		<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT : SP035775

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 95-348

REPORTED : 13 OCT 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
35-348 411-416	<0.001	<0.001	<0.02
35-348 416-419.4	<0.001		<0.02
35-348 419.4-424.4	0.001		<0.02
35-348 424.4-428.4	0.003		0.03
35-348 428.4-432	0.005		0.17
35-348 432-435.2	0.046		0.35
35-348 435.2-440	0.003		0.06
35-348 440-444	0.009		0.07
35-348 444-448	<0.001	<0.001	<0.02
35-348 448-453	<0.001		<0.02
35-348 453-458	<0.001		<0.02
35-348 458-463	<0.001		<0.02
35-348 463-466.3	<0.001		<0.02
35-348 466.3-468	<0.001		<0.02
35-348 468-470	<0.001		0.03
35-348 470-474	<0.001		0.04
35-348 474-476.1	<0.001		0.02
35-348 476.1-480	<0.001		0.03
35-348 480-484.5	0.001		0.05
35-348 484.5-490	0.002		0.07
35-348 490-494.7	0.006	0.006	0.15
35-348 494.7-496	0.017	0.019	0.53
35-348 496-498	<0.001		0.02
35-348 498-502	<0.001		<0.02
35-348 502-505.2	<0.001		<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT : SP035775

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 95-348

REPORTED : 13 OCT 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
35-348 505.2-510.2	<0.001	<0.001	<0.02
35-348 510.2-512.8	<0.001		<0.02
35-348 512.8-517.8	<0.001		<0.02
35-348 517.8-522.8	0.001		<0.02
35-348 522.8-525.3	0.002		0.04
35-348 525.3-528.5	<0.001		<0.02
35-348 528.5-532	<0.001		0.03
35-348 532-535	0.013		0.08
35-348 535-538.3	<0.001		0.06
35-348 538.3-542	<0.001		0.03
35-348 542-547	<0.001		0.03
35-348 547-552	0.005	0.006	0.04
35-348 552-555.9	0.002		0.03
35-348 555.9-561	0.002		0.02
35-348 561-566	<0.001		0.20
35-348 566-571	<0.001		<0.02
35-348 571-575.9	<0.001		<0.02
35-348 575.9-581	<0.001		<0.02
35-348 581-584.5	<0.001		<0.02
35-348 584.5-589	<0.001		<0.02
35-348 589-592	0.007		<0.02
35-348 592-597	0.001		0.03
35-348 597-602	<0.001		0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT : SP035888

American Assay Laboratories

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HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF
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:

CLIENT REFERENCE No: 95-348 RECEIVED : 9 OCT 1995

No. SAMPLES : 39 REPORTED : 24 OCT 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
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Sue King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT : SP035888

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 95-348

REPORTED : 24 OCT 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
95-348 602-607	<0.001		<0.02
95-348 607-612	<0.001		<0.02
95-348 612-617	<0.001		<0.02
95-348 617-620.3	<0.001		<0.02
95-348 620.3-622.6	0.001		<0.02
95-348 622.6-627.7	<0.001	<0.001	<0.02
95-348 627.7-629.7	<0.001		<0.02
95-348 629.7-634.2	0.001		0.02
95-348 634.2-639.7	<0.001		0.02
95-348 639.7-641.7	<0.001		<0.02
95-348 641.7-643.5	<0.001		<0.02
95-348 643.5-648.5	<0.001		0.02
95-348 648.5-653	<0.001	<0.001	0.02
95-348 653-654	0.057		0.11
95-348 654-659	0.001		0.03
95-348 659-664	0.001		0.02
95-348 664-669	<0.001		<0.02
95-348 669-674.5	<0.001	<0.001	<0.02
95-348 674.5-679.2	0.004		0.03
95-348 679.2-680.4	0.001		0.03
95-348 680.4-685.5	0.001		0.04
95-348 685.5-689.5	0.002		0.03
95-348 689.5-694.1	0.001		0.03
95-348 694.1-699.5	0.001		0.02
95-348 699.5-702.5	0.024		0.05

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT : SP035888

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 95-348

REPORTED : 24 OCT 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
95-348 702.5-706.1	0.001		0.03
95-348 706.1-709	<0.001		0.02
95-348 709-714	<0.001		0.02
95-348 714-719	<0.001		0.02
95-348 719-722.8	0.002		0.05
95-348 722.8-727.8	0.001		0.04
95-348 727.8-731.9	0.001		<0.02
95-348 731.9-736.9	0.001	0.001	0.03
95-348 736.9-741	0.001		0.04
95-348 741-745.1	<0.001		0.03
95-348 745.1-750	<0.001		<0.02
95-348 750-755	<0.001		<0.02
95-348 755-760	<0.001	<0.001	<0.02
95-348 760-764	0.003		<0.02

FIELD NOTE SHEET

REFLEX–FOTOBOR DDI

BY CM

DRILLHOLE 95-348

LOCATION Far East bearing S42°W

DIP -59° DATE 9/23/95

TIME MIN	DEPTH	NOTES	DEPTH	NOTES	TIME MIN	DEPTH	NOTES	DEPTH	NOTES
1	set up				31	480			
2	set up				32	500			
3	set up				33	520			
4	set up				34	540			
5	0				35	560			
6	0				36	580			
7	0	did not blow shot			37	600			
8	20				38	620			
9	40				39	640			
10	60				40	660			
11	80				41	680			
12	100				42	700			
13	120				43				
14	140				44	Coming out of hole			
15	160				45				
16	180				46				
17	200				47				
18	220				48				
19	240				49				
20	260				50				
21	280				51				
22	300				52				
23	320				53				
24	340				54				
25	360				55				
26	380				56				
27	400				57				
28	420				58				
29	440				59				
30	460				60				

764
14
750
12
738
40
698
700