6000 0819

Mining District File Summary Sheet

DISTRICT	Rosebud
DIST_NO	4010
COUNTY If different from written on document	Pershing
TITLE If not obvious	Rosebud Drill Hole File - Hole No. D-16-94
AUTHOR	C. Winchester; C. Muerhott; S. Fairloth
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; Hecla Mining Co.; Rosebud Project South Zone
COMMODITY If not obvious	gold; silver
NOTES	Drill log; geology; assay; total depth 260'; receipt; handwritten notes 13p.

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 5/1/08
Initials Date

DB:
Initials Date

SCANNED:
Initials Date

Revised: 1/22/08

D-16-94 South Zone

60000819
4010

6000 0819

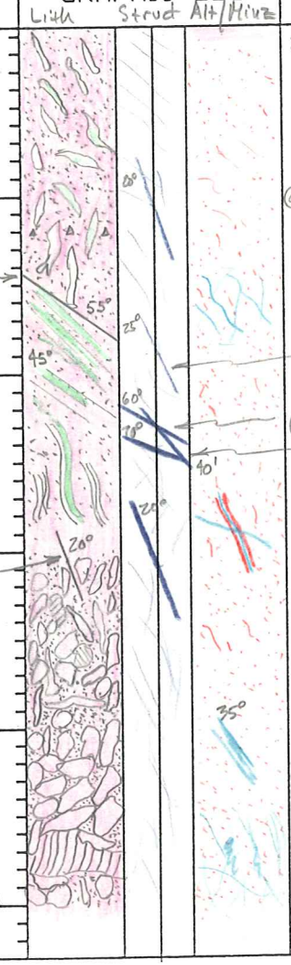
Hecla
MINING COMPANY

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	D 16-94	LOCATION	South Zone	REMARKS	Ndbgm (.18') core, all
PAGE 1 OF 5		NORTHING	2203491.7		core assayed, no geo-technical data
DATE	10/26/1994	EASTING	481412.6		measured, core photographed.
LOGGED BY	Martin A. Nelson	ELEVATION	4729.0		
SCALE		AZIMUTH	133.5		
TOTAL DEPTH	260'	INCLINATION	34.0°		

%REC	RQD	LITHOLOGY	STRUCTURE	ALTERATION AND MINERALIZATION
70% 5'	9%	0'–16' FINE grained lithic tuff, pinkish-tan matrix, w/ very pale green-light gray lithics. Lithics are elongate 1/4"-3", many have fluidal internal structures, locally the interval is a breccia	2-3 fxs/ft.	0'–16' PALE green sericitized lithics in a pink-tan alunitized matrix. WEAK MARCASITE/white clays on fxs. 1% f.g. py dissem throughout. Waxy, green sericite on fxs.
86% 15'	30%		@10' 3/16" fx w/ marc, $CaCO_3$	
94% 20'	36%	16'–30.5' FINE ash tuff, layered, w/ local fluidal structures. MATRIX 70°-80° tan-pink alunite, interspersed w/ local bxs.	2-3 fx/ft	14'–18.5' local, irregular 1/4"-3/8" white $CaCO_3$ veining.
94% 30'	43%		3/16" gray/grn ser @ 23' 3" gouge/rubble w/ser @ 24' 2" gouge/rubble w/ser	16'–30.5' Pervasively tan-pink $AlSO_4$'tion, w/ 1/16"-1/4" intercalated layers ser'ized. Tr - 1% py throughout.
95% 40'	63%	30.5' – 54' Fine ash tuff breccia. +/- contact. Tan-pink matrix w/ angular/sub-rounded 1/4"-1' clasts. Clasts are generally of the same composition as the matrix. Breccia is clast supported		30.5'– @ 29' two distinct $CaCO_3$ veinlets: ① 1/2" massive white $CaCO_3$ w/ OS ② 3/8" gray $CaCO_3$ w/ marc, sericite. .5%-1% frag py dissem. throughout - marc on fxs and veinlets.
94% 50'	48%			45'-51' 5-7 1/4" white $CaCO_3$ UNITS + irregular $CaCO_3$ masses @ 51' $AlSO_4$ weakens

GRAPHIC LOG (Lith / Struct / Alt/Miner.)



ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
0	5	5	.006	.66		
5	10	5	.004	.05		
10	15	5	.013	.10		
15	20	5	.011	.17	.012	
20	25	5	.022	.30		
25	30	5	.011	.09		
30	35	5	.004	.08		
35	40	5	.022	.21		
40	45	5	.030	1.70		
45	50	5	.041	.54		
50	55	5	.020	.29		

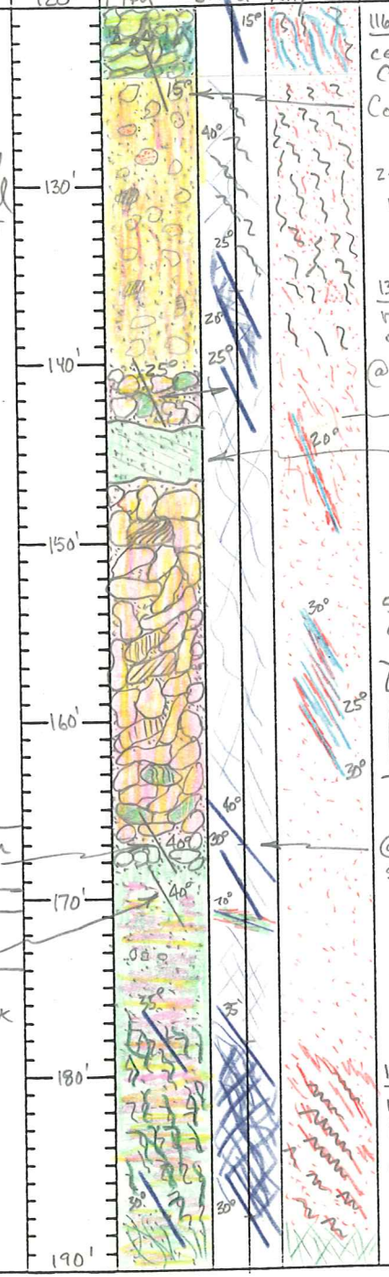
HOLE NUMBER D16-94 PAGE 2 OF 5

REC 50'	RQD	LITHOLOGY	FT 50'	GRAPHIC LOG (Lith, Struct, Alt/Miner)	STRUCTURE	ALTERATION AND MINERALIZATION
92%	57%	54'-89' Fine ash tuff breccia, typically clast supported, 1/8"-6.8" sub-rounded-rounded lithics. Light gray to very pale tan/pink, moderately indurated - slight "ring" w/ hammerblow. Probably moderately silicified? Several different composition clasts - some show layering. Silicification intensifies.			3-4 fxs/ft	51'- wk $AlSO_4$'tion
60'			60'		no major/large structures. 60'-70' Very broken	@ +/-60° SiO_2'tion intensifies; 60'-62' several 1/4"-3/8" white $CaCO_3$ veinlets, irregular $CaCO_3$
93%	23%			20°	2-3 fxs/ft @ 30°-40° to c.a.	@66' 3/4" white $CaCO_3$ w/ marc @ edges of vnlt.
70'			70'	15°		@72' 3/8" $CaCO_3$/marc. @ 73'-74' 3-4 $CaCO_3$ vnlts, white clay, Tr Blue-Blk s=
92%	55%	74'-76' Clasts alunitized				
80'			80'		← Argillization begins	
98%	82%	Some clasts alunitized		50° 50°		@ 82' white clays on fxs start
90'		89'-99.5' Layered fine ash tuff (contact +/-20°)	90'	20° 20°	broken @ contact; marcasite on margins	80'-89' wk, pale green sericitization; @ 88' 1" white, coarse $CaCO_3$ w/ marc, 2ns on margins.
94%	48%	99.5'-108' Fine ash tuff breccia (irregular)		35° 35°	3/8" $CaCO_3$, marc, blk-sooty s=	@ 90 1/2' 3/4" coarse, white $CaCO_3$ w/ marc, blk sooty s=
100'			100'			
93%	60%	108'-116.5' Layered fine ash tuff (flow?), w/ irregular bxs. Has directional flow features. Well indurated - rings @ hammerblow. (+/-contact)		30° 10°	Broken @ contact, Strong coarse $CaCO_3$ veinlets (1"-2")	@ 104' 1" coarse white $CaCO_3$ w/ marc on margins; @ 106' 2" coarse white $CaCO_3$ w/ marc on margins
110'			110'	30° -15°		108-116.5' mod SiO_2'd, moderate alun'tion, weak ser'tion.
95%	71%	116.5'-124' Contact between layered ash tuff and tuff breccia. (Contact @ 20°; @ 120' Driller: "Lgt" (per min?))		50° 20°	Strong coarse $CaCO_3$ veins	116.5'-124' wk. ser'tion, mod. SiO_2'tion, Strong $CaCO_3$ veining.
120'			120'			

ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
55	60	5	.003	.08		
55	60	5	.003	.08		
60	65	5	.018	.14		
65	70	5	.013	.25		
70	75	5	.008	.11		
75	80	5	.002	.06		
80	85	5	.006	.08		
85	90	5	.030	.08		
90	95	5	.028	.08		
95	100	5	.004	.05		
100	105	5	.003	.04		
105	110	5	.005	.04		
110	115	5	.005	.05		
115	120	5	.020	.13		
120	125	5	.002	.04		

HOLE NUMBER D16-94 PAGE 3 OF 5

REC 120'	RQD	LITHOLOGY
93%	66%	116.5'-124' Contact between layered ash tuff and tuff breccia, silicified w/ strong, COARSE white $CaCO_3$ veining, and $CaCO_3$ flooding.
99%	43%	124'-142' Fine grained ash tuff w/ ~10%-15% matrix supported 1/8"-3/4" sub-angular to rounded lithics of several different compositions. Interval is well indurated, mod "ring" w/ hammer. NOT layered.
93%	67%	142'-169' Lithic tuff composed of angular-sub-angular, clast supported, 1/8"-1" clasts of several compositions. Moderately indurated - "rings" w/ hammerblow. Not layered.
103%	68%	
95%	66%	
100%	56%	169'-185' Fine ash tuff, not layered, moderately sericitized. Occasional aggregates of small lithics. Interval is soft - breaks @ hammerblow. White clays on fxs. Medium green w/ tan-pink alunitized areas.
100%	36%	
96%	61%	(see next page)



STRUCTURE	ALTERATION AND MINERALIZATION
116.5'-124' interval is healed/cemented w/ coarse, white $CaCO_3$. Contact probably @ 15°	116.5'-124' also $CaCO_3$ flooding of irregular fx's. Marcasite @ margins of $CaCO_3$.
2-4 fxs w/ clays, marc/ft. Most @ +/- 40° to c.a.	124'-142' Dissem f.g. py throughout. clays, marc, on fxs. Interval is mod SiO_2, weakly-mod'ly alsoy'd
136'-138' V. broken, 1"-1½" rubble w/ strong white clays.	136'-138' V. strong white clays on fxs, wk blk $S^=$, marcasite
@142' small fault @ contact	138'-145' 1% dissem py+marc.
1/16" fx w/ marc, $CaCO_3$.	142'-167' Moderately alunitized, some clasts sericitized, moderately SiO_2'd throughout 1% dissem. f.g. py + marcasite throughout.
large lithic	
5-6 fxs/ft @ +/- 40°-50° to c.a. - many $CaCO_3$/marc.	155.5'-161' Interval cut by 9 subparallel 1/4"-1/2" COARSE $CaCO_3$ filled fxs w/ marcasite on margins. Some w/ weak $S^=$
Strong $CaCO_3$/marc/$S^=$ fxs.	
@167' 2"-3" fault w/ ser, chlorite, marc, blk $S^=$	@+/- 167' alunitization intensity starts to decrease, sericitization increases in intensity. White clays on fxs moderate. wk blk $S^=$ w/ white clays on fxs.
2-3 fxs/ft.	
178'-187' V. broken, rubble + 2"-3" pieces. Most fxs/faults @ 30° to c.a.	178'-187' Strong white clays on fxs, strong chlorite on fxs, and in aggregates. Ruby, blue-blk $S^=$ w/ white clays on fxs, marc + py.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
125	130	5	.002	.05		
130	136	6	.005	.09		
136	138	2	.008	.14		
138	143	5	.005	.18		
143	148	5	.007	.17		
148	155	7	.027	2.89		
155	161	6	.056	18.44	.053 (2)	
161	167	6	.009	1.14		
167	172	5	.126	8.28	.143 (2)	
172	178	6	.059	7.46	.067 (2)	
178	183	5	.510	9.80	.492 (2)	
183	187	4	4.702	22.20	4.801 (2)	

HOLE NUMBER D16-94 PAGE 4 OF 5

REC	RQD	LITHOLOGY	FT 190'	GRAPHIC LOG (Lith, Struct, Alt/Miner)	STRUCTURE	ALTERATION AND MINERALIZATION
(on page 3)		185'–214' White-very light gray fine ash tuff, probably not layered. Interval is moderately soft, probably bleached. Occasional faint quartz phenos – (could this be a rhyolite?) Green on white is distinctive. Interval is probably argillized.			185'– Cut by 10's to 100's of hairline–1/8" fxs @ all orientations.	185'–214' Strong chlorite on fxs. Tr–.5% f.g. py dissem throughout, hairline gray/blk s=, MARC on fxs. No clays w/ vein. White clays on fxs!
195'					196'–211' Drilled down gray/qtz marcasite vein.	@211' wk. BASDy in vug.
90%	58%		200'			
205'		gray, vuggy, qtz vein, gray qtz, marc.			204.5'–207' very brkn, 1/2"–1" rubble.	
96%	55%		210'			
215'		214'–230' Pale - Medium green fine ash tuff, soft, not indurated, not layered				214'–230' weak-mod. Chlorite + seritization throughout. Chlorite on hairline veinlets, fxs. Tr–.5% py throughout (less py than "normal" in this interval)
93%	42%		220'		221'–223' Broken, 1"–2" rubble, wk. white clays,	
225'		local lithic tuffs	230'			
		(go to page 5)	240'			
			250'			
			260'			

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
187	192	5	.120	6.82	.116(g)	
192	196	4	.066	8.20	.077(g)	
196	201	5	.117	.88	.109(g)	
201	206	5	.014	.30		
206	211	5	.017	.30		
211	216	5	.008	.17		
216	221	5	.007	.31		
221	226	5	.009	.12		
226	231	5	.005	.12		

HOLE NUMBER D-16-94 PAGE 5 OF 5

%REC	RQD	LITHOLOGY	FT 230'	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		231-238' Clast-supported, homogeneous crackle breccia w/ angular clasts of fine-grained, well-sorted, massive bedded airfall tephra/tuff in a chloritic groundmass of smaller clasts. Grading downward into bedded fine-grained airfall - shattered w/ chloritic stockwork parallel to ? ⊥ to bdd. Moderately-soft to moderate. Redrill 1.5" @ 245' Driller Note: H_2O @245' @ 4 gpm Note: block @ 255' is marked as 245'	240 250 260		235' ← Redrill 3" 238' bedded contact @ 70° bdd @ 65° 241-245.5' frac'd rubbly on 15-20° sty	231-238' weak silic g.m, w/ mod. intense ang. clasts; strong chl. g.m.; wk py-ii (Tr - 1%) f.g. diss. py. 238-241' mod. intense silic. w/ wk to mod. py-ii; ? x-cutting marc. + ill @ 20° 241-260' v. wk silic. mod. intense ang. ? chl.; v. wk py-ii. (Tr); ill on frac's @ 5°
		238-241' Silicified, fine-grained airfall tuff and tuff breccia, pale pink to light green sandy, moderately hard, 241-251' Moderately-soft to moderate, pale green, fine-grained, thin-bedded, airfall tephra/tuff, clayey, well-sorted. Planar-thin-bedded laminations @ 65° 251-260' Clast-supported, homogeneous crackle and tuff breccia in fine-grained airfall tephra/tuff - vitroclastic groundmass.				

FROM	TO	W	Au	Ag	Au2	Ag2
231	235	4.0	.005	.07		
235	240	5.0	.013	.36		
240	245	5.0	.008	.15		
245	250	5.0	.010	.18		
250	255	5.0	.014	.16		
255	260	5.0	.006	.11		

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # D-16-94 DATE: 9-6-94 LOGGED BY: RK/CBW PAGE 1 OF 1

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)
231	235	90	90	.70	232'	300	0.25	40°	R	.05" clay gouge	232	322	150	2.15
235	245	49	80	.31	242	0	1.4	50°	S-K	.01-.05" clay gouge + ill	242	488.5	225	2.17
245	255	26	86	.14	251	0	1.2	20°	S	.05-.1" Py + ill	251	406.5	180	2.26
255	260	62	78	.52	259	375	1.2	45°	S	.01-.05" ill + Py	259	287	130	2.21

SAMPLE SUBMITTAL FORM

American Assay Laboratories Inc.

Sparks Office
1500 Glendale Ave.
Nevada 89431
Box 71060
Reno, NV. 89570
Telephone
(702) 356-0606
Fax
(702) 356-1413

Elko Office
2320 Last Chance Rd.
Nevada 89801
Box 2908
Elko, NV. 89801
Telephone
(702) 738-9100
Fax
(702) 738-2594

Company: HECLA MINING COMPANY

Address:

Telephone Number: ( ) Fax Number: ( )

Project Name: ROSEBUD Purchase Order Number:

Transport Company: Waybill Number:

Date Shipped: Number of Packages: 6 [ ] Prepaid [ ] Collect

9/6/94

ANALYSIS REQUIRED

SAMPLE	TYPE	ELEMENTS REQUIRED
D-16-94 231-235	CORE	2 AT FIRE ASSAY Au & Ag
235-240		W/ HECLA ROSEBUD
240-245		CUSTOM PREP
245-250		
250-255		
255-260		* GRAV FINISH ON ALL
~~[illegible]~~		Au ≥ 0.05 opt

COARSE REJECTS (Normally Discarded)

[ ] Return COD after analysis complete
[ ] By prior arrangements

PULPS (Normally Stored Free For One Month)

[ ] Discard after one month
[ ] Return COD after one month
[ ] By prior arrangements

RESULTS AND INVOICES TO BE SENT TO:

Please mark invoice person and address [I]

(1) Charlie Muerhoff

(2)

(3)

Comments:

CLIENT FILE COPY

SAMPLE SUBMITTAL FORM

American Assay Laboratories Inc.

Sparks Office
1500 Glendale Ave.
Nevada 89431
Box 71060
Reno, NV. 89570
Telephone
(702) 356-0606
Fax
(702) 356-1413

Elko Office
2320 Last Chance Rd.
Nevada 89801
Box 2908
Elko, NV. 89801
Telephone
(702) 738-9100
Fax
(702) 738-2594

Company: Hecla Mining Co.

Address:

Telephone Number: ( ) Fax Number: ( )

Project Name: Rosebud Purchase Order Number:

Transport Company: Waybill Number:

Date Shipped: 10/28/94 Number of Packages: [ ] Prepaid [ ] Collect

ANALYSIS REQUIRED

D16-94 SAMPLE				TYPE	ELEMENTS REQUIRED
0'-5'	75'-80'	148'-155'	226'-231'	CORE	2 AT FA for Au + Ag
5'-10'	80'-85'	155'-161'	E.O.H.		
10'-15'	85'-90'	161'-167'			Hecla Rosebud Custom Prep
15'-20'	90'-95'	167'-172'			
20'-25'	95'-100'	172'-178'			Grav. finish on all Au ≥ 5 opt.
25'-30'	100'-105'	178'-183'			
30'-35'	105'-110'	183'-187'			
35'-40'	110'-115'	187'-192'			
40'-45'	115'-120'	192'-196'			
45'-50'	120'-125'	196'-201'			
50'-55'	125'-130'	201'-206'			
55'-60'	130'-136'	206'-211'			
60'-65'	136'-138'	211'-216'			
65'-70'	138'-143'	216'-221'			
70'-75'	143'-148'	221'-226'			

COARSE REJECTS (Normally Discarded)

[ ] Return COD after analysis complete
[ ] By prior arrangements

PULPS (Normally Stored Free For One Month)

[ ] Discard after one month
[ ] Return COD after one month
[ ] By prior arrangements

RESULTS AND INVOICES TO BE SENT TO:

Please mark invoice person and address [I]

(1) Charles Muerhoff

(2)

(3)

Comments:

CLIENT FILE COPY

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
:
:
:

CLIENT REFERENCE No: D-16-94
LABORATORY JOB No. : SP030843
SAMPLE TYPE :

RECEIVED : 12 SEP 1994
REPORTED : 22 SEP 1994
No. SAMPLES : 6

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

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-16-94
JOB NUMBER : SP030843
REPORTED : 22 SEP 1994

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Ag(OZ) D210 OPT
D-16-94 231-235	0.005		0.07
D-16-94 235-240	0.013		0.36
D-16-94 240-245	0.008		0.15
D-16-94 245-250	0.010		0.18
D-16-94 250-255	0.014		0.16
D-16-94 255-260	0.006		0.11

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
:
:
:

CLIENT REFERENCE No: D-16-94
LABORATORY JOB No. : SP031466
SAMPLE TYPE :

RECEIVED : 29 OCT 1994
REPORTED : 9 NOV 1994
No. SAMPLES : 46

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au(OZ)	FA60	15%	OPT	0.001
Au(RZ)	FA60	15%	OPT	0.001
AuGRAV	GRAV	15%	OPT	0.001
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Sue Faircloth M.S.

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-16-94
JOB NUMBER : SP031466
REPORTED : 9 NOV 1994

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-16-94 000-005	0.006			0.66
D-16-94 005-010	0.004			0.05
D-16-94 010-015	0.013			0.10
D-16-94 015-020	0.011	0.012		0.17
D-16-94 020-025	0.022			0.30
D-16-94 025-030	0.011			0.09
D-16-94 030-035	0.004			0.08
D-16-94 035-040	0.022			0.21
D-16-94 040-045	0.030			1.70
D-16-94 045-050	0.041			0.54
D-16-94 050-055	0.020			0.29
D-16-94 055-060	0.003			0.08
D-16-94 060-065	0.018			0.14
D-16-94 065-070	0.013			0.25
D-16-94 070-075	0.008			0.11
D-16-94 075-080	0.002			0.06
D-16-94 080-085	0.006			0.08
D-16-94 085-090	0.030			0.08
D-16-94 090-095	0.028			0.08
D-16-94 095-100	0.004			0.05
D-16-94 100-105	0.003			0.04
D-16-94 105-110	0.005			0.04
D-16-94 110-115	0.005			0.05
D-16-94 115-120	0.020			0.13
D-16-94 120-125	0.002			0.04

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-16-94
JOB NUMBER : SP031466
REPORTED : 9 NOV 1994

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-16-94 125-130	0.002			0.05
D-16-94 130-136	0.005			0.09
D-16-94 136-138	0.008			0.14
D-16-94 138-143	0.005			0.18
D-16-94 143-148	0.007			0.17
D-16-94 148-155	0.027			2.89
D-16-94 155-161	0.056		0.053	18.44
D-16-94 161-167	0.009			1.14
D-16-94 167-172	0.126		0.143	8.28
D-16-94 172-178	0.059		0.067	7.46
D-16-94 178-183	0.510		0.492	9.80
D-16-94 183-187	4.702		4.801	22.20
D-16-94 187-192	0.120		0.116	6.82
D-16-94 192-196	0.066		0.077	8.20
D-16-94 196-201	0.117		0.109	0.88
D-16-94 201-206	0.014			0.30
D-16-94 206-211	0.017			0.30
D-16-94 211-216	0.008			0.17
D-16-94 216-221	0.007			0.31
D-16-94 221-226	0.009			0.12
D-16-94 226-231	0.005			0.12