6000 0750

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. RBW-17
AUTHOR	B. Werner; C. Meerhoff, S. King Rogowski
DATE OF DOC(S)	1995 - 1996, 1999
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; Hecla Rosebud Mine
COMMODITY If not obvious	gold; silver
NOTES	drill logs; geology; assay; total depth 2180' handwritten notes; receipts; water 23 p.

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

RBW-17

6000 0750

6040 6780

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

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TOTAL DEPTH 2180

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AREA WATER EXPLORATION PROGRAM
DRILLING CO. LANGO
RIG TYPE RVC.
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	SILICIFICATION 15%	SILICIFICATION +25%	SILICIFICATION MATRIX %	SILICIFICATION CLASTS %	ARGILLIC 5%	ARGILLIC 15%	ARGILLIC +25%	ARGILLIC TYPE	PROPYLITIC % CHLORITE	PROPYLITIC % CALCITE	POTASSIC % K-SPAR	POTASSIC % ALUNITE	OXIDATION 5%	OXIDATION 15%	OXIDATION +25%	VIENING %	VIENING TYPE	MINERALIZATION: SULFIDES 5%	SULFIDES 15%	SULFIDES +25%	PY %	CPY %	MAR %	AG-SUL %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MIXTURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
10		QAL	VOLCANIC ALLUVIUM.																		X																				
20		QAL																		X																					
		QAL																		X																					
30		TR	FINE-GRAINED, SUGARY, SLIGHTLY PORPHYRITIC, RHYOLITIC FLOW? OR ASH-FLOW TUFF.	MH-MS	SUG/PORP	X					BLEACHING X									X													X								
40		TR		MH-MS		X														X													X								
50		TR		MH-MS		X					X								X														X								
60		TR		MH-MS		X					X								X														X								
70		TR		MH-MS		X					X								X					X			100						X	X		X					
80		TR		MH-MS		X					X								X					X									X	X		X					
90		TR		MH-MS		X					X								X					X									X	X		X					
100		TR		MH-MS		X					X								TR															X							
110		TR	FINE-GRAINED, SLIGHTLY PORPHYRITIC RHYOLITIC? FLOW OR ASH FLOW TUFF. INCREASED SiO_2	MH	FG/SP		X				X				PHENO WHT QUAR				X					TR			100							X							
120		TR		MH			X				X								X					TR										X							
130		TR		MH			X				X								X					X									X	X		X					
140		TR	FINE-GRAINED SUGARY RHYOLITIC? FLOW/ ASH-FLOW TUFF. INCREASED LIMONITIC STAINING US, HEMATITIC ABOVE.	MS-MH	SUG/FG	X					X								LIMONITE X					X									X	X		X					
150		TR		MS-MH		X					X								X					X									X	X		X					
160		TR		MS-MH		X					X								X					X									X	X		X					
170		TR		MS-MH		X					X								X					X									X	X		X					
180		TR		MS-MH		X					X								X					X									X	X		X					
190		TC	FINE-GRAINED, SLIGHTLY PORPHYRITIC BASALTIC TO ANDESITIC FLOW OR ASH-FLOW TUFF. COMMON PRIMARY HEMATITE. MINOR BRECCIATION	MH	FG/SP	X					X							PRIMARY Hematite	X					TR									X	X		X					
200		TC		MH		X					X								X					TR									X	X		X					

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210		Tc	FINE-GRAINED, SLIGHTLY PORPHYRITIC LATITIC TO ANDESITIC FLOW OR ASH-FLOW TUFF, COMMON PRIMARY HEMATITE	MS-MH	FG-SP	X					X								X					TR			100						X	X		X					
220		Tc	MINOR "DUCKS BUTTER" CLAY	MS-MH		X					X			DUCKS BUTTER					X					TR									X	X		X					
230		Tc		MS-MH		X					X								X					X									X	X		X					
240		Tc		MS-MH		X					X								X					X									X	X		X					
250		Tc		MS-MH		X					X								X					X									X	X		X					
260		Tc		MS-MH		X					X								X					X									X	X		X					
270		Tc		MS-MH		X					X								X					X									X	X		X					
280		Tc		MS-MH		X					X								X					X									X	X		X					
290		Tc	MINOR BLEACHING	MS-MH		X					BLEACHING X								TR					X									X	X		X					
300		Tc		MS-MH		X					X								TR					X									X	X		X					
310		Tc		MS-MH		X					X								TR					X									X	X		X					
320		Tc		MS-MH		X					X								TR					X									X	X		X					
330		Tc		MS-MH		X					X								X					X									X	X		X					
340		Tc		MS-MH		X					X								X					X									X	X		X					
350		Tc		MS-MH		X					X								X					X									X	X		X					
360		Tc		MS-MH		X					X								X					X									X	X		X					
370		TR	FINE-GRAINED, SLIGHTLY PORPHIRITIC FLOW/ASH-FLOW? TUFF. INCREASED SULFIDES + SiO_2. (RHYOLITIC)	MH			X																	X			100	?						X							
380		TR		MH			X																	X				?						X							
390		TR		MH			X																	X										X							
400		TR		MH			X																	X										X							

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HOLE SIZE
DOWN HOLE SURVEY BY

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410		TR	FINE-GRAINED, SLIGHTLY PORPHYRITIC FLOW/ASH-FLOW TUFF (RHYOLITIC).	MH	FG-SP		X																		X			100							X							
420		TR		MH			X																	X										X							
430		TR	DK REDDISH BROWN SOZ	MH		X																		X										X							
440		FAULT	PROBABLE FAULT	MS-S		X									X									X										X							
450		uBUB?	BUB LIKE, PROPYLITIZED, DK-LT GREEN ASH-FLOW TUFF / TUFF BX. ABUNDANT CHLORITE.	MS-MH	GRAN										X									X										X							
460		uBUB?		MS-MH											X									X										X							
470		uBUB?		MS-MH											X	TR								X										X							
480		uBUB?		MS-MH											X	TR								X										X							
490		uBUB?		MS-MH											X	TR								X										X							
500		uBUB?		MS-MH											X	TR								X										X							
510		uBUB?		MS-MH											X									X										X							
520		uBUB?		MS-MH											X									X										X							
530		?	SLIGHTLY PORPHYRITIC, CLAY ALTERED PLAGIOCLASE PHENOS, VERY SLIGHTLY VESICULAR; SILLED w/ DK GREEN CHLORITIC CLAY, ASH-FLOW TUFF? DK-REDDISH BROWN IN COLOR	MH	SP										X	TR								X											X							
540				MH											X	TR								X										X							
550				MH											X	TR								X										X							
560				MH											X	TR								X										X							
570				MH											X	TR								X										X							
580				MH											X	TR								X										X							
590		?		MH											X	TR								X										X							
600		?	SOFT, ARGILLIZED w/ MINOR PROP ASH-TUFF?	MS	GRAN							X			X									X										X							

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DRILLING CO. LANG
RIG TYPE RUC
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	SILICIFICATION 15%	SILICIFICATION +25%	SILICIFICATION MATRIX %	SILICIFICATION CLASTS %	ARGILLIC 5%	ARGILLIC 15%	ARGILLIC +25%	ARGILLIC TYPE	PROPYLITIC % CHLORITE	PROPYLITIC % CALCITE	POTASSIC % K-SPAR	POTASSIC % ALUNITE	OXIDATION 5%	OXIDATION 15%	OXIDATION +25%	VIENING %	VIENING TYPE	MINERALIZATION: SULFIDES 5%	SULFIDES 15%	SULFIDES +25%	PY %	CPY %	MAR %	AG-SULF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MIXCURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
610		?	MOD SOFT, ARGILLIZED & PROP ASH FLOW TUFF?	MS-	GRAN						X				X									X			100							X							
620		?		MS	GRAN						X				X									X										X							
630		FAULT	SOFT, CLAY LT GREEN, PROBABLE FAULT	S	GRAN/FG								X		X									X										X							
640		FAULT		S									X		X									X										X							
650		FAULT		S									X		X									X										X							
660		TC	DK-REDDISH-BROWN TO GRAY W/ CREAM COLORED CLASTS? LITHIC TO ANDESITIC. MODERATE FM. ASH FLOW TUFF OR FLOW. THE CREAM COLORED CHIPS ARE RHYOLITIC IN COMP.	MH	SP/FG	X					X													X											X							
670		TC		MH		X					X													X										X							
680		TC		MH		X					X													X										X							
690		TC		MH		X					X													X										X							
700		TC		MH		X					X													X										X							
710		TC	POSSIBLE RHYOLITIC DIKE?	MH		X					X													X										X							
720		TC		MH		X					X													X										X							
730		TC		MH		X					X													X										X							
740		TC		MH		X					X													X										X							
750		TC		MH		X					X													X										X							
760		TC		MH		X					X													X										X							
770		TC		MH		X					X													X										X							
780		TC		MH		X					X													X										X							
790		TC		MH		X					X													X										X							
800		TC		MH		X					X													X			X							X							

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DRILLING CO. LANG
RIG TYPE RVC
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	SILICIFICATION 15%	SILICIFICATION +25%	SILICIFICATION MATRIX %	SILICIFICATION CLASTS %	ARGILLIC 5%	ARGILLIC 15%	ARGILLIC +25%	ARGILLIC TYPE	PROPYLITIC % CHLORITE	PROPYLITIC % CALCITE	POTASSIC % K-SPAR	POTASSIC % ALUNITE	OXIDATION 5%	OXIDATION 15%	OXIDATION +25%	VIENING %	VIENING TYPE	MINERALIZATION: SULFIDES 5%	SULFIDES 15%	SULFIDES +25%	PY %	CPY %	MAR %	AG-SULF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MIXCURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
810		TC	DK-REDDISH-BROWN TO GRAY LATTIC TO ANDESITIC CHOCOLATE FM? ASH FLOW. TUFF OR FLOW. MINOR FLOW BANDING.	MH	F6/SP	X				X														X			100							X							
820		TC		MH		X				X														X										X							
830		TC		MH		X				X														X										X							
840		TC		MH		X				X														X										X							
850		TC		MH		X				X														X										X							
860		TC		MH		X				X														X										X							
870		TC		MH		X				X														X										X							
880		TC		MH		X				X														X										X							
890		TC		MH		X				X														X										X							
900		TC		MH		X				X														X										X							
910		TC		MH		X				X														X										X							
920		TC		MH		X				X														X										X							
930		TC		MH		X				X														X										X							
940		TC		MH		X				X														X										X							
950		TC		MH		X				X														X										X							
960		TC		MH		X				X														X										X							
970		TC		MH		X				X														X										X							
980		TC		MH		X				X														X										X							
990		TC?	PROP + ARG ALTERED CHOCOLATE. DK GREY	MS	F6					X														X										X							
1000		TC?		MS	F6					X														X										X							

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RIG TYPE RVC
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FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE
1010		Tc?	GRANULAR to FINE-GRAINED RSH-FLOW TUFF/TUFF BX PROBABLY ALTERED CHOCOLATE FORMATION	M/H	GRAN/FG
1020		Tc?		M/H	
1030		Tc?		MH	
1040		Tc?		M/H	
1050		Tc?		MH	
1060		Tc?		MH	
1070		Tc?		MH	
1080		Tc?		MH	
1090		Tc?		MH	
1100		Tc?		MH	
1110		Tc?		MH	
1120		Tc?		MH	
1130		Tc?		MH	
1140		Tc?		MH	
1150		Tc?		MH	
1160		Tc?		MH	
1170		Tc?	FINE-GRAINED, SLIGHTLY PORP + POT ALT.	MS-MH	FG/SP
1180		Tc?		MS-MH	
1190		Tc?		MS-MH	
1200		Tc?		MS-MH	

FEET	ALTERATION: SILICIFICATION 5%	15%	+25%	MATRIX %	CLASTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE
1010	X									X								
1020		X								X							5	SiO2
1030		X								X							3	SiO2
1040	X									X								
1050	X									X								
1060	X									X								
1070	X									X								
1080	X									X								
1090	X									X								
1100	X									X								
1110		X								X								
1120		X								X								
1130	X									X								
1140	X									X								
1150		X								X		X						
1160	X					X				X		X						
1170	X					X						X						
1180	X					X						X						
1190	X					X						X						
1200	X					X						X						

FEET	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	AG-SULF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MIXCURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1010	X			100							X							
1020		X									X							
1030		X									X							
1040	X										X							
1050	X										X							
1060	X										X							
1070	X										X							
1080	X										X							
1090	X										X							
1100	X										X							
1110		X									X							
1120		X									X							
1130	X										X							
1140	X										X							
1150	X										X							
1160	X										X							
1170	X										X							
1180	X										X							
1190	X										X							
1200	X										X							

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1210		TC	LATITIC to ANDESITIC FLOW	MH	SP	X					X													X			100							X							
1220		TC		MH		X					X													X										X							
1230		TC		MH		X					X													X										X							
1240		TC		MH		X					X													X										X							
1250		TC	LATITIC to ANDESITIC Tuff Bx.	MH	GRAN/SP	X					X													X										X							
1260		TC		MH		X					X													X										X							
1270		TC		MH		X					X													X										X							
1280		TC		MH		X					X													X										X							
1290		TC		MH		X					X													X										X							
		TC		MH		X					X													X										X							
1300		LBUD?	PROPYLITIZED. MATRIX SUPPORTED. Heterolithic ash-flow Tuff - minor epiclastic? component. POTASSIC ALT	MS-MH	GRAN/FG	X					X				X		X							X										X							
1310		LBUD?		MS-MH	FG	X					X				X		X							X										X							
1320		LBUD?		MS-MH	GRAN	X					X				X		X							X										X							
1330		LBUD?		MS-MH		X					X				X		X							X										X							
1340		LBUD?		MS-MH		X					X				X		X							X										X							
1350		LBUD?		MS-MH		X					X				X									X										X							
1360		LBUD?		MS-MH		X					X				X									X										X							
1370		LBUD?		MS-MH		X					X				X									X										X							
1380		LBUD?		MS-MH		X					X				X									X										X							
1390		LBUD?		MS-MH		X					X				X									X										X							
1400		LBUD?		MS-MH		X					X				Y									Y										X							

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HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	SILICIFICATION 15%	SILICIFICATION +25%	SILICIFICATION MATRIX %	SILICIFICATION CLASTS %	ARGILLIC 5%	ARGILLIC 15%	ARGILLIC +25%	ARGILLIC TYPE	PROPYLITIC % CHLORITE	PROPYLITIC % CALCITE	POTASSIC % K-SPAR	POTASSIC % ALUNITE	OXIDATION 5%	OXIDATION 15%	OXIDATION +25%	VIENING %	VIENING TYPE	MINERALIZATION: SULFIDES 5%	SULFIDES 15%	SULFIDES +25%	PY %	CPY %	MAR %	AG-SULF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MIXCURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1410		LBUD	LT to DK GREEN, MATRIX to CLAST SUPPORTED, ASH-FLOW tuff BRECCIA/ EPICLASTIC.	MS-MH	GRAN						X				X									X			100							X							
1420		LBUD		MS-MH							X				X									X										X							
1430		LBUD		MS-MH							X				X									X										X							
1440		LBUD		MS-MH							X				X									X										X							
1450		LBUD		MS-MH							X				X									X										X							
1460		LBUD		MS-MH							X				X									X										X							
1470		LBUD		MS-MH								X			X									X										X							
1480		LBUD		MS-MH								X			X									Y										X							
1490		LBUD		MS-MH								X			Y									X										X							
1500		LBUD		MS-MH							X				X									X										X							
1510		LBUD		MS-MH							X				X									Y										X							
1520		LBUD	LT GREEN to DRK REDDISH BROWN	MS-MH							X				X									Y										X							
1530		LBUD		MS-MH							X				X									X										X							
1540		LBUD		MS-MH							X				X									X										X							
1550		LBUD		MS-MH							X				X									X										X							
1560		LBUD		MS-MH							X				X									Y										X							
1570		LBUD		MS-MH							X				X									Y										X							
1580		LBUD		MS-MH							X				X									Y										X							
1590		LBUD		MS-MH							X				X									X										X							
1600		LBUD		MS-MH							X				X									X										X							

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

HOLE NUMBER RBW-17
PAGE 9 OF 11
DATE 5/3/96
LOGGED BY KDA
TOTAL DEPTH 2180

LOCATION
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA WATER EXPLORATION PROGRAM
DRILLING CO. LANG
RIG TYPE RVC
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	SILICIFICATION 15%	SILICIFICATION +25%	SILICIFICATION MATRIX %	SILICIFICATION CLASTS %	ARGILLIC 5%	ARGILLIC 15%	ARGILLIC +25%	ARGILLIC TYPE	PROPYLITIC % CHLORITE	PROPYLITIC % CALCITE	POTASSIC % K-SPAR	POTASSIC % ALUNITE	OXIDATION 5%	OXIDATION 15%	OXIDATION +25%	VIENING %	VIENING TYPE	MINERALIZATION: SULFIDES 5%	SULFIDES 15%	SULFIDES +25%	PY %	CPY %	MAR %	AG-SULF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MIXTURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1610		LBUD?	DK to LT GREEN, FINE to COARSE GRAINED ASH-FLOW TUFF. APPEARS GRADATIONAL CONTACT (FINING DOWN HOLE)	MS-MH	GRAN/FG						X				X									X			100							X							
1620		LBUD?		MS-MH							X				X									X										X							
1630		LBUD?		MS-MH							X				X									X										X							
1640		LBUD/? LBT	GREENISH-REDDISH BROWN	MS-MH	FG						X				X									X										X							
1650		LBUD/LBT ?		MS-MH							X				X									X										X							
1660				MS-MH							X				X									X										X							
1670			GREENISH-REDDISH BROWN	MS-MH							X				X									X										X							
1680				MS-MH							X				X									X										X							
1690				MS-MH							X				X									X										X							
1700				MS-MH							X				X									X										X							
1710				MS-MH							X				X									X										X							
1720				MS-MH							X				X									X										X							
1730				MS-MH								X			X									X										X							
1740				MS-MH									X		X									X										X							
1750				MS-MH							X				X									X										X							
1760				MS-MH							X				X									X										X							
1770		LBT	PINK MATRIX BRECCIA (FINE-GRAINED) PORTION of LBT ?	MS-MH	GRAN						X				X		X							X										X							
1780		LBT		MS-MH							X				X		X							X										X							
1790		LBT	FINE-GRAINED ASH TUFF of LBT. SLIGHTLY PLANAR LAMINATED	MS-MH	GRAN/FG						X						X							X										X							
1800		LBT		MS-MH	FG						X						X							X			X							X							

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

HOLE NUMBER RBW-17
PAGE 10 OF 11
DATE 5/3/96
LOGGED BY KDA
TOTAL DEPTH 2180

LOCATION
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA WATER EXPLORATION PROGRAM
DRILLING CO. LANGE
RIG TYPE RVC
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	SILICIFICATION 15%	SILICIFICATION +25%	SILICIFICATION MATRIX %	SILICIFICATION CLASTS %	ARGILLIC 5%	ARGILLIC 15%	ARGILLIC +25%	ARGILLIC TYPE	PROPYLITIC % CHLORITE	PROPYLITIC % CALCITE	POTASSIC % K-SPAR	POTASSIC % ALUNITE	OXIDATION 5%	OXIDATION 15%	OXIDATION +25%	VIENING %	VIENING TYPE	MINERALIZATION: SULFIDES 5%	SULFIDES 15%	SULFIDES +25%	PY %	CPY %	MAR %	AG-SULF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MIXTURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1810		LBT	LT GREEN TO PINK FINE-GRAINED ASH-TUFF	MS-MH	F6						X				X		X							X			100							X							
1820		LBT		MS-MH	F6						X				X		X							X										X							
1830		Ta?	FINE-GRAINED, ANDESITE FLOW?	MS-MH	F6																													X							
1840		Ta?		MS-MH	F6																													X							
1850		Ta?		MS-MH	F6																													X							
1860		TOS	SUB-ROUNDED TO SUB-ANGULAR CLAST SUPPORTED, CONGLOMERATE? CONTAINS MINOR ACS	MS-MH	GRAIN						X				X																			X							
1870		TOS		MS-MH							X				X																			X							
1880		TOS		MS-MH							X				X																			X							
1890		TOS		MS-MH							X					X								X			100							X							
1900		TOS		MS-MH							X					X								X										X							
1910		TOS		MS-MH							X					X								X										X							
1920		TOS		MS-MH							X					X								X										X							
1930		TOS		MS-MH							X					X								X										X							
1940		TOS	TIGSAW TEXTURE	MS-MH							X					X								X										X							
1950		TOS		MS-MH							X					X								X										X							
1960		TOS		MS-MH							X					X								X										X							
1970		TOS		MS-MH							X					X								X										X							
1980		TOS		MS-MH							X					X								X										X							
1990		TOS		MS-MH							X					X								X										X							
2000		TOS		MS-MH							X					X								X										X							

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

HOLE NUMBER RBW-17
PAGE 11 OF 11
DATE 5/3/96
LOGGED BY RA
TOTAL DEPTH 2180

LOCATION
NORTHING
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AREA WATER EXPLORATION PROGRAM
DRILLING CO. LANG
RIG TYPE RVC
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	SILICIFICATION 15%	SILICIFICATION +25%	SILICIFICATION MATRIX %	SILICIFICATION CLASTS %	ARGILLIC 5%	ARGILLIC 15%	ARGILLIC +25%	ARGILLIC TYPE	PROPYLITIC % CHLORITE	PROPYLITIC % CALCITE	POTASSIC % K-SPAR	POTASSIC % ALUNITE	OXIDATION 5%	OXIDATION 15%	OXIDATION +25%	VIENING %	VIENING TYPE	MINERALIZATION: SULFIDES 5%	SULFIDES 15%	SULFIDES +25%	PY %	CPY %	MAR %	AG-SULF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MIXCURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
2010		TOS	SUB-ROUNDED TO SUB-ANGULAR, CLAST SUPPORTED CONGLOMERATE W/ JIGSAW TEXTURE	MS-MH	GRAN						X				X									X			100							X							
2020		TOS		MS-MH							X				X									X										X							
2030		TOS		MS-MH							X				X									X										X							
2040		TOS		MS-MH							X				X									X										X							
2050		TOS		MS-MH							X				X									X										X							
2060		TOS		MS-MH							X				X									X										X							
2070		TOS		MS-MH							X				X									X										X							
2080		TOS		MS-MH							X				X									X										X							
2090		TOS		MS-MH							X				X									X										X							
				MS-MH							X				X									X										X							
2100		EXPLOR	FAULT	S	FG									X	X									X			100							X							
				S										X	X									X			100							X							
2110		TD		MH	FG	X					X				X																									
2120		TD	FINE-GRAINED APHANITIC RHYOLITE FLOW - DARKER RHYOLITE minor to mod SiO2	MH		X					X				X									X			100							X							
2130		TD		MH		X					X				X									X										X							
2140		TD		MH		X					X				X									X										X							
2150		TD		MH		X					X				X									X										X							
2160		TD		MH		X					X				X									X										X							
2170		TD		MH		X					X				X									X										X							
2180		TD		MH		X					X				X									X										X							
			TD=2180'																																						

RBW-17

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No.
Permit No.
Basin

NOTICE OF INTENT NO. 29630

1. OWNER HECLA MINING COMPANY
MAILING ADDRESS 6500 MINERAL DR.
COEUR D'ALENE, ID 83814-8788

ADDRESS AT WELL LOCATION
HECLA ROSEBUD MINE

2. LOCATION NE ¼ NE ¼ Sec. 24 T 34 (N)S R 29 E PERSHING County

PERMIT NO. N/A (Issued by Water Resources) | N/A (Parcel No.) | N/A (Subdivision Name)

3. WORK PERFORMED
[X] New Well [ ] Replace [ ] Recondition
[ ] Deepen [ ] Abandon [ ] Other

4. PROPOSED USE
[ ] Domestic [ ] Irrigation [ ] Test
[X] Municipal/Industrial [ ] Monitor [ ] Stock

5. WELL TYPE
[ ] Cable [ ] Rotary [X] RVC
[ ] Air [ ] Other

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
VOLCANICS		0	1310	1310

Date started OCTOBER 30, 19 95
Date completed NOVEMBER 9, 19 95

7. WELL TEST DATA
TEST METHOD: [ ] Bailer [ ] Pump [ ] Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)

8. WELL CONSTRUCTION
Depth Drilled 1310 Feet Depth Cased 1300 Feet

HOLE DIAMETER (BIT SIZE)

		From		To	
20-1/2	Inches	0	Feet	19	Feet
15	Inches	19	Feet	400	Feet
14-3/4	Inches	400	Feet	1310	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
16	62.58	.375	0	19
8-5/8	28.55	.322	+2	1300
8-5/8	28.55	.322	400	500
8-5/8	28.55	.322	820	920

Perforations:
Type perforation LOUVERED & SLOTTED
Size perforation .100
From 380 feet to 400 feet
From 500 feet to 820 feet
From 920 feet to 1300 feet
From feet to feet
From feet to feet

Surface Seal: [X] Yes [ ] No
Depth of Seal 50
Placement Method: [X] Pumped [ ] Poured
Seal Type: [X] Neat Cement [ ] Cement Grout [ ] Concrete Grout

Gravel Packed: [X] Yes [ ] No
From 50 feet to 1310 feet

9. WATER LEVEL
Static water level 148 feet below land surface
Artesian flow N/A G.P.M. N/A P.S.I.
Water temperature °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.

Name LANG EXPLORATORY DRILLING (Contractor)
Address 2286 WEST 1500 SOUTH (Contractor)
SALT LAKE CITY, UTAH 84104

Nevada contractor's license number issued by the State Contractor's Board: 0021976
Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1733

Signed BRYON WERNER (By driller performing actual drilling on site or contractor)
Date JANUARY 4, 1996

(Rev. 3-91) USE ADDITIONAL SHEETS IF NECESSARY (O)-627

RBW-17

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No.
Permit No.
Basin

NOTICE OF INTENT NO. 29630

1. OWNER HECLA MINING COMPANY
MAILING ADDRESS 6500 MINERAL DR.
COEUR D'ALENE, ID 83814-8788

ADDRESS AT WELL LOCATION
HECLA ROSEBUD MINE

2. LOCATION NE ¼ NE ¼ Sec. 24 T. 34 (N)/S R. 29 E. PERSHING County
PERMIT NO. N/A (Issued by Water Resources) | N/A (Parcel No.) | N/A (Subdivision Name)

3. WORK PERFORMED
[X] New Well [ ] Replace [ ] Recondition
[ ] Deepen [ ] Abandon [ ] Other

4. PROPOSED USE
[ ] Domestic [ ] Irrigation [ ] Test
[X] Municipal/Industrial [ ] Monitor [ ] Stock

5. WELL TYPE
[ ] Cable [ ] Rotary [X] RVC
[ ] Air [ ] Other

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
VOLCANICS		0	1310	1310

Date started OCTOBER 30, 19 95
Date completed NOVEMBER 9, 19 95

7. WELL TEST DATA
TEST METHOD: [ ] Bailer [ ] Pump [ ] Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)

8. WELL CONSTRUCTION
Depth Drilled 1310 Feet Depth Cased 1300 Feet

HOLE DIAMETER (BIT SIZE)

		From	To
20-1/2 Inches	0 Feet	19 Feet
15 Inches	19 Feet	400 Feet
14-3/4 Inches	400 Feet	1310 Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
16	62.58	.375	0	19
8-5/8	28.55	.322	+2	1300
8-5/8	28.55	.322	400	500
8-5/8	28.55	.322	820	920

Perforations:
Type perforation LOUVERED & SLOTTED
Size perforation .100
From 380 feet to 400 feet
From 500 feet to 820 feet
From 920 feet to 1300 feet
From feet to feet
From feet to feet

Surface Seal: [X] Yes [ ] No
Depth of Seal 50
Placement Method: [X] Pumped [ ] Poured
Seal Type: [X] Neat Cement [ ] Cement Grout [ ] Concrete Grout

Gravel Packed: [X] Yes [ ] No
From 50 feet to 1310 feet

9. WATER LEVEL
Static water level 148 feet below land surface
Artesian flow N/A G.P.M. N/A P.S.I.
Water temperature °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.

Name LANG EXPLORATORY DRILLING (Contractor)
Address 2286 WEST 1500 SOUTH (Contractor)
SALT LAKE CITY, UTAH 84104

Nevada contractor's license number issued by the State Contractor's Board 0021976

Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1733

Signed BRYON WERNER
By driller performing actual drilling on site or contractor

Date JANUARY 4, 1996

(Rev. 3-91)

USE ADDITIONAL SHEETS IF NECESSARY

(O)-627

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036346

American Assay Laboratories

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

HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF
:
:
:

CLIENT REFERENCE No: RBW-17
No. SAMPLES : 218
MAIN SAMPLE TYPE : DRILL CUTTINGS

RECEIVED : 6 NOV 1995
REPORTED : 4 DEC 1995

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au	FA60	15%	ppb	5
Au(R)	FA60	15%	ppb	5
Ag	D210	10%	ppm	0.5

SIGNATORY : Sue King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036346

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : RBW-17

REPORTED : 4 DEC 1995

SAMPLES	Au FA60 ppb	Au(R) FA60 ppb	Ag D210 ppm
RBW-17 0000-0010	14		<0.5
RBW-17 0010-0020	14		<0.5
RBW-17 0020-0030	5		<0.5
RBW-17 0030-0040	<5		<0.5
RBW-17 0040-0050	13		<0.5
RBW-17 0050-0060	28		<0.5
RBW-17 0060-0070	82		0.5
RBW-17 0070-0080	<5		<0.5
RBW-17 0080-0090	<5		<0.5
RBW-17 0090-0100	<5	<5	<0.5
RBW-17 0100-0110	177		4.2
RBW-17 0110-0120	95		0.7
RBW-17 0120-0130	24		0.5
RBW-17 0130-0140	8		<0.5
RBW-17 0140-0150	<5		<0.5
RBW-17 0150-0160	<5		<0.5
RBW-17 0160-0170	<5		<0.5
RBW-17 0170-0180	14		0.5
RBW-17 0180-0190	<5		<0.5
RBW-17 0190-0200	<5		<0.5
RBW-17 0200-0210	<5		<0.5
RBW-17 0210-0220	<5	<5	<0.5
RBW-17 0220-0230	<5		<0.5
RBW-17 0230-0240	<5		<0.5
RBW-17 0240-0250	<5		<0.5

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036346

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : RBW-17

REPORTED : 4 DEC 1995

SAMPLES	Au FA60 ppb	Au(R) FA60 ppb	Ag D210 ppm
RBW-17 0250-0260	<5		<0.5
RBW-17 0260-0270	<5	<5	<0.5
RBW-17 0270-0280	<5		<0.5
RBW-17 0280-0290	<5		<0.5
RBW-17 0290-0300	21		1.1
RBW-17 0300-0310	<5		<0.5
RBW-17 0310-0320	<5		<0.5
RBW-17 0320-0330	<5		<0.5
RBW-17 0330-0340	<5		<0.5
RBW-17 0340-0350	<5		<0.5
RBW-17 0350-0360	<5		<0.5
RBW-17 0360-0370	<5		<0.5
RBW-17 0370-0380	<5		0.7
RBW-17 0380-0390	<5		0.8
RBW-17 0390-0400	<5		<0.5
RBW-17 0400-0410	<5		1.4
RBW-17 0410-0420	<5		1.0
RBW-17 0420-0430	<5		0.9
RBW-17 0430-0440	<5	<5	1.0
RBW-17 0440-0450	<5		0.7
RBW-17 0450-0460	<5		0.5
RBW-17 0460-0470	<5	<5	<0.5
RBW-17 0470-0480	<5		<0.5
RBW-17 0480-0490	<5		<0.5
RBW-17 0490-0500	<5		<0.5

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036346

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : RBW-17

REPORTED : 4 DEC 1995

SAMPLES	Au FA60 ppb	Au(R) FA60 ppb	Ag D210 ppm
RBW-17 0500-0510	<5		<0.5
RBW-17 0510-0520	<5		<0.5
RBW-17 0520-0530	<5		<0.5
RBW-17 0530-0540	<5		<0.5
RBW-17 0540-0550	<5		<0.5
RBW-17 0550-0560	<5		<0.5
RBW-17 0560-0570	<5		<0.5
RBW-17 0570-0580	<5		<0.5
RBW-17 0580-0590	<5		<0.5
RBW-17 0590-0600	<5	<5	<0.5
RBW-17 0600-0610	<5		<0.5
RBW-17 0610-0620	<5		<0.5
RBW-17 0620-0630	<5		<0.5
RBW-17 0630-0640	<5		<0.5
RBW-17 0640-0650	<5		0.7
RBW-17 0650-0660	<5		0.8
RBW-17 0660-0670	<5		0.9
RBW-17 0670-0680	<5		0.7
RBW-17 0680-0690	<5		1.0
RBW-17 0690-0700	<5	<5	<0.5
RBW-17 0700-0710	<5		0.9
RBW-17 0710-0720	<5		0.7
RBW-17 0720-0730	6		0.8
RBW-17 0730-0740	<5		0.5
RBW-17 0740-0750	<5		0.8

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REPORTED : 4 DEC 1995

SAMPLES	Au FA60 ppb	Au(R) FA60 ppb	Ag D210 ppm
RBW-17 0750-0760	<5		0.9
RBW-17 0760-0770	6		0.9
RBW-17 0770-0780	6		1.1
RBW-17 0780-0790	8		0.9
RBW-17 0790-0800	<5		0.5
RBW-17 0800-0810	8	5	1.0
RBW-17 0810-0820	<5		0.6
RBW-17 0820-0830	8		1.1
RBW-17 0830-0840	<5		<0.5
RBW-17 0840-0850	<5		0.5
RBW-17 0850-0860	<5		<0.5
RBW-17 0860-0870	<5		0.9
RBW-17 0870-0880	8		0.8
RBW-17 0880-0890	11		1.2
RBW-17 0890-0900	7		0.8
RBW-17 0900-0910	9		0.9
RBW-17 0910-0920	8		1.0
RBW-17 0920-0930	14		1.3
RBW-17 0930-0940	6		0.8
RBW-17 0940-0950	7		0.8
RBW-17 0950-0960	9		0.9
RBW-17 0960-0970	9	10	1.0
RBW-17 0970-0980	<5		0.5
RBW-17 0980-0990	8		0.7
RBW-17 0990-1000	6		0.7

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036346

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : RBW-17

REPORTED : 4 DEC 1995

SAMPLES	Au FA60 ppb	Au(R) FA60 ppb	Ag D210 ppm
RBW-17 1000-1010	8		1.0
RBW-17 1010-1020	17		1.6
RBW-17 1020-1030	10		1.1
RBW-17 1030-1040	12		1.2
RBW-17 1040-1050	8		1.1
RBW-17 1050-1060	10		1.1
RBW-17 1060-1070	9		1.0
RBW-17 1070-1080	12		1.2
RBW-17 1080-1090	9	6	0.8
RBW-17 1090-1100	7		0.8
RBW-17 1100-1110	<5		0.7
RBW-17 1110-1120	9		1.1
RBW-17 1120-1130	9		1.0
RBW-17 1130-1140	5		0.7
RBW-17 1140-1150	7		1.0
RBW-17 1150-1160	<5		0.5
RBW-17 1160-1170	9		0.8
RBW-17 1170-1180	5		0.6
RBW-17 1180-1190	8	6	1.0
RBW-17 1190-1200	<5	<5	0.7
RBW-17 1200-1210	10		1.3
RBW-17 1210-1220	<5		0.6
RBW-17 1220-1230	<5	<5	<0.5
RBW-17 1230-1240	<5		<0.5
RBW-17 1240-1250	7		0.8

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036346

American Assay Laboratories

CLIENT : HECLA MINING CO.
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REFERENCE : RBW-17

REPORTED : 4 DEC 1995

SAMPLES	Au FA60 ppb	Au(R) FA60 ppb	Ag D210 ppm
RBW-17 1250-1260	<5		<0.5
RBW-17 1260-1270	7		0.8
RBW-17 1270-1280	5		0.7
RBW-17 1280-1290	8		1.0
RBW-17 1290-1300	<5		0.5
RBW-17 1300-1310	11		0.5
RBW-17 1310-1320	<5		<0.5
RBW-17 1320-1330	<5		0.5
RBW-17 1330-1340	<5		<0.5
RBW-17 1340-1350	<5		<0.5
RBW-17 1350-1360	5		<0.5
RBW-17 1360-1370	5		0.5
RBW-17 1370-1380	5		<0.5
RBW-17 1380-1390	<5		<0.5
RBW-17 1390-1400	<5		<0.5
RBW-17 1400-1410	<5		<0.5
RBW-17 1410-1420	<5		<0.5
RBW-17 1420-1430	<5		<0.5
RBW-17 1430-1440	<5		<0.5
RBW-17 1440-1450	<5		<0.5
RBW-17 1450-1460	<5		<0.5
RBW-17 1460-1470	<5	<5	<0.5
RBW-17 1470-1480	<5		<0.5
RBW-17 1480-1490	<5		<0.5
RBW-17 1490-1500	<5		0.5

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036346

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : RBW-17

REPORTED : 4 DEC 1995

SAMPLES	Au FA60 ppb	Au(R) FA60 ppb	Ag D210 ppm
RBW-17 1500-1510	<5		0.5
RBW-17 1510-1520	<5		<0.5
RBW-17 1520-1530	6		<0.5
RBW-17 1530-1540	<5		<0.5
RBW-17 1540-1550	<5		<0.5
RBW-17 1550-1560	<5		<0.5
RBW-17 1560-1570	9		<0.5
RBW-17 1570-1580	<5		<0.5
RBW-17 1580-1590	<5		<0.5
RBW-17 1590-1600	<5	<5	<0.5
RBW-17 1600-1610	<5		<0.5
RBW-17 1610-1620	<5		<0.5
RBW-17 1620-1630	8		<0.5
RBW-17 1630-1640	<5	<5	<0.5
RBW-17 1640-1650	<5		<0.5
RBW-17 1650-1660	<5		<0.5
RBW-17 1660-1670	<5		<0.5
RBW-17 1670-1680	<5	<5	<0.5
RBW-17 1680-1690	<5		<0.5
RBW-17 1690-1700	<5		<0.5
RBW-17 1700-1710	<5		<0.5
RBW-17 1710-1720	<5	<5	<0.5
RBW-17 1720-1730	8		<0.5
RBW-17 1730-1740	16		0.9
RBW-17 1740-1750	<5		<0.5

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036346

American Assay Laboratories

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PROJECT : ROSEBUD
REFERENCE : RBW-17

REPORTED : 4 DEC 1995

SAMPLES	Au FA60 ppb	Au(R) FA60 ppb	Ag D210 ppm
RBW-17 1750-1760	12		<0.5
RBW-17 1760-1770	<5		<0.5
RBW-17 1770-1780	<5		0.5
RBW-17 1780-1790	12		0.8
RBW-17 1790-1800	74		0.7
RBW-17 1800-1810	<5		<0.5
RBW-17 1810-1820	<5		<0.5
RBW-17 1820-1830	<5		<0.5
RBW-17 1830-1840	<5		<0.5
RBW-17 1840-1850	<5		<0.5
RBW-17 1850-1860	<5		<0.5
RBW-17 1860-1870	<5	<5	<0.5
RBW-17 1870-1880	<5		<0.5
RBW-17 1880-1890	<5		<0.5
RBW-17 1890-1900	<5		<0.5
RBW-17 1900-1910	<5		<0.5
RBW-17 1910-1920	<5		<0.5
RBW-17 1920-1930	<5	<5	<0.5
RBW-17 1930-1940	<5		<0.5
RBW-17 1940-1950	<5		<0.5
RBW-17 1950-1960	<5		<0.5
RBW-17 1960-1970	13		0.6
RBW-17 1970-1980	<5		<0.5
RBW-17 1980-1990	<5	<5	<0.5
RBW-17 1990-2000	<5		<0.5

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036346

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : RBW-17

REPORTED : 4 DEC 1995

SAMPLES	Au FA60 ppb	Au(R) FA60 ppb	Ag D210 ppm
RBW-17 2000-2010	<5		<0.5
RBW-17 2010-2020	<5		<0.5
RBW-17 2020-2030	<5		<0.5
RBW-17 2030-2040	<5		<0.5
RBW-17 2040-2050	8		0.8
RBW-17 2050-2060	13		0.5
RBW-17 2060-2070	12		<0.5
RBW-17 2070-2080	<5		<0.5
RBW-17 2080-2090	12		0.7
RBW-17 2090-2100	7		0.5
RBW-17 2100-2110	12	8	<0.5
RBW-17 2110-2120	5		<0.5
RBW-17 2120-2130	7		0.8
RBW-17 2130-2140	6		0.5
RBW-17 2140-2150	14		0.7
RBW-17 2150-2160	12		0.6
RBW-17 2160-2170	10		<0.5
RBW-17 2170-2180	<5		<0.5

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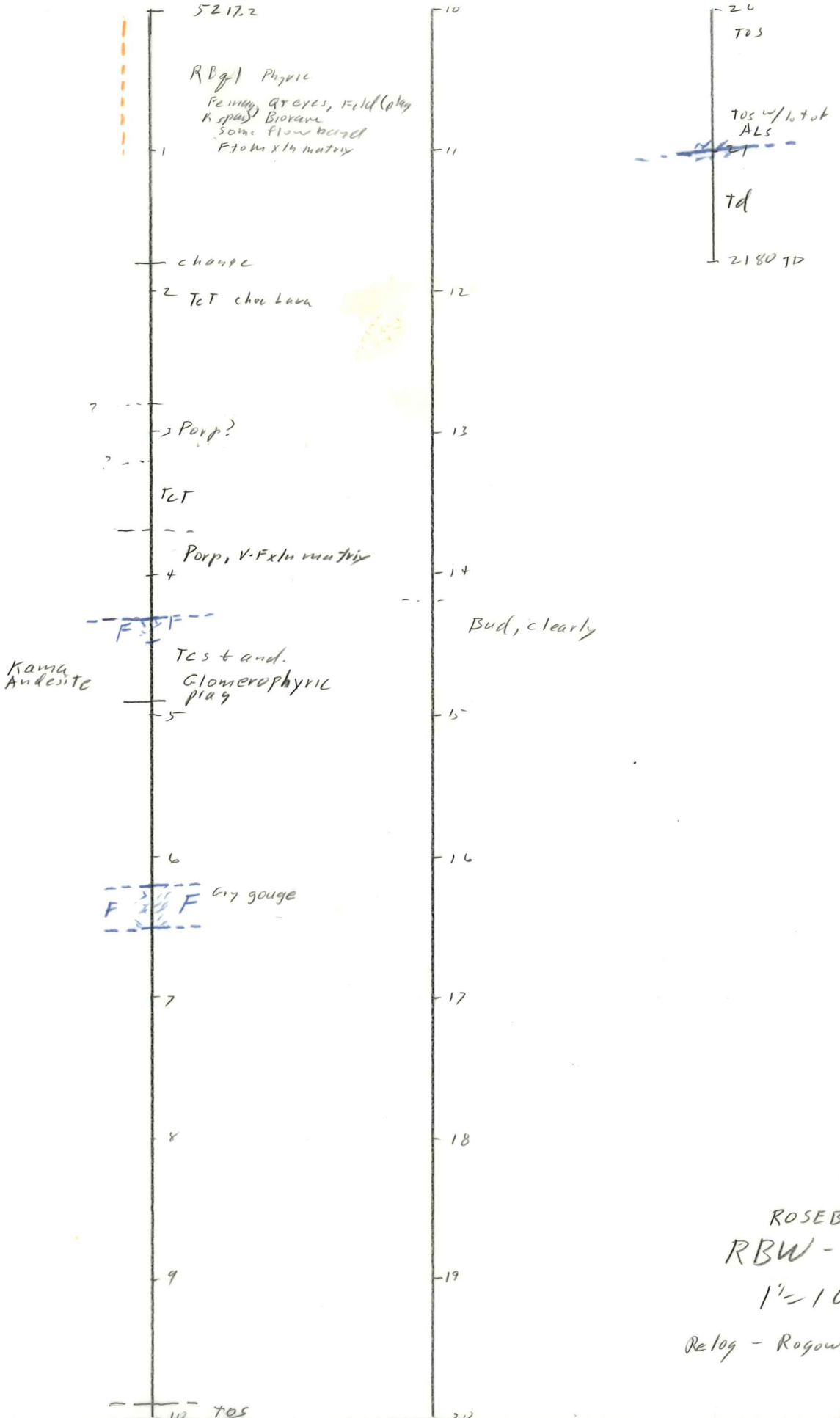
E 476 9240



From 45.0 to 880 looks like a mix of many rock types — Don't know what to call it.

ROSEBUD
RBW-17
1" = 100'

Relog - Rogowski 12 Apr 99