SDMS Document ID
2118903
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TAILINGS
(noted as both)
POND 3A EFFLUENT
AND
NEUTRALIZATION - COBALT

Attachment N

Information Request #6

HECLA MINING CO.
APEX UNIT
SAMPLE WORKSHEET

DATE 3-2-95

Environmental Tests R-4731.

BY C.B.

.D.	Ag	ppm	As	ppm	Ba	ppm	Cd	ppm	Cr	ppm	Pb	ppm	Se	ppm	SO4 ppm
	K /	<0.10	/		K /	<3.0	K /	<0.05	K /	<0.50	K /	<0.20	K /	<3.0	1500

HECLA MINING CO.
APEX UNIT
SAMPLE WORKSHEET

Pond 3a effluent

DATE 3/18/95 + 3/20/95

Environmental Tests _____.

BY _____

I.D.	Ag	ppm	As	ppm	~~Ba~~ X Co	ppm	Cd	ppm	Cr	ppm	Pb	ppm	Se	ppm
H-84	3/20		No lamp		0 2.22	83	/	<0.05	/	<0.50	/	<0.20	/	<3.0
H-71	3/18		No lamp		25 3.35	83.7	/	<0.05	/	<0.50	/	<0.20	/	<3.0

Sample I.D. R-4859
POND 3A H2O
5/10

A Wt. _____ g.
Vol. _____ ml.

B Wt. _____ g.
Vol. _____ ml.

C Wt. _____ g.
Vol. _____ ml.

.ement	ppm x dil.	~~Percent~~ ppm	Comments
Ag/Silver		< 0.10	
Al/Aluminum		< 1.00	
As/Arsenic		< 5.00	
Ba/Barium		< 3.00	
Bi/Bismuth		< 0.50	
Ca/Calcium	4.15 X 50	207.5	
Cd/Cadmium		< 0.05	
Co/Cobalt(B)	2.09 X 5	10.5	
~~Co/Cobalt(C)~~			
Cr/Chromium		< 0.50	
Cu/Copper		< 0.09	
Fe/Iron		< 0.30	
K/Potassium	13.0 X 10	130	
Mg/Magnesium	0.35 X 500	175.0	
Mn/Manganese	4.77 X 2.5	11.93	
Mo/Molybdenum		< 1.0	
Na/Sodium	0.93 X 10,000	9 300	
Ni/Nickel		<0.40	
Pb/Lead		< 0.20	
Se/Selenium		<0.0003	
Sb/Antimony		< 1.00	
Sm/Samarium		< 40.0	
V/Vanadium		< 1.0	
W/Tungsten		< 50.0	
Zn/Zinc		< 0.09	
Chloride		6.0 g/l	
Sulfate	50 X 200	10,000	
TDS		15.9 g/l	

pH = 8.12

HECLA MINING CO.
APEX UNIT
SAMPLE WORKSHEET

DATE 4-10-95

Pond 3a effluent Environmental Tests R-4821.

BY

I.D.	X Ag	ppm	X As	ppm	X Ba	ppm	X Cd	ppm	X Cr	ppm	X Pb	ppm	X Se	ppm
4821	/	<0.10			/	<3.0	/	<0.05	/	0.50	/	<0.50	/	<3.00

Sulfates: 0.36 g/l

Pond 3a effluent
4/10/95

HECLA MINING CO.
APEX UNIT
SAMPLE WORKSHEET

DATE

Environmental Tests R-4821

BY

I.D.	X Ag	ppm	X As	ppm	X Ba	ppm	X Cd	ppm	X Cr	ppm	X Pb	ppm	X Se	ppm
4821	/	<0.10			/	<3.0	/	<0.05	/	0.50	/	<0.50	/	<3.00

Sulfates: 8,750 ppm

HECLA MINING CO.
APEX UNIT
SAMPLE WORKSHEET

DATE 4-23-95

Environmental Tests R-4837 3a effluent BY

I.D.	Ag ppm	~~As~~ ppm	Ba ppm	Cd ppm	Cr ppm	Pb ppm	Se ppm
	<0.10		<3.0	<0.05	<0.50	<0.20	<3.0
CO	2.5 2.16	0PM 5.40					
Sulfates	: 50X200	10,000ppm					

Pond 3a effluent
4/25

HECLA MINING CO.
APEX UNIT
SAMPLE WORKSHEET

DATE

Environmental Tests R 4842

BY

I.D.	Ag	ppm	As	ppm	Ba	ppm	Cd	ppm	Cr	ppm	Pb	ppm	Se	ppm
1		<0.10				<3.0		<0.05		<0.50		<0.20		<3.0
Sulfates		:17,000 ppm												

HECLA MINING CO.
APEX UNIT

Reviewed By: C. Bramper

Date: 05-10-95

SAMPLE I.D.
R-4859
Pond 3A Solution.

Note: The minus sign (-) designates "less than".

ELEMENT	ppm	Comments
Silver	-0.1000	By A.A.S. or F.A.
Aluminum	-1.0000	By A.A.S.
Arsenic	-5.0000	By A.A.S.
Barium	-3.0000	By A.A.S.
Bismuth	-0.5000	By A.A.S.
Calcium	207.50000	By A.A.S.
Cadmium	-0.05000	By A.A.S.
Cobalt	10.50000	Ave of Duplicate.
Chromium	-0.50000	By A.A.S.
Copper	-0.09000	By A.A.S.
Iron	-0.3000	By A.A.S.
Potassium	130.00000	By A.A.S.
Magnesium	175.00000	By A.A.S.
Manganese	11.93000	By A.A.S.
Molybdenum	-1.00000	By A.A.S.
Sodium	9300.00	By A.A.S.
Nickel	-0.40000	By A.A.S.
Lead	-0.20000	By A.A.S.
Selenium	-3.00000	By A.A.S.
Antimony	-1.00000	By A.A.S.
Samarium	-40.00000	By A.A.S.
Vanadium	-1.00000	By A.A.S.
Tungsten	-50.00000	By A.A.S.
Zinc	-0.09000	By A.A.S.
Chloride	6000	By Titration
Sulfate	10000	By Spectrophotometer
TDS	15.9	In grams/liter
pH	8.1	

Mine effluent into pond 3a

HECLA MINING CO.
APEX UNIT
SAMPLE WORKSHEET

DATE 6-7-95

Environmental Tests 4901

BY

I.D.	Ag	ppm	As	ppm	Ba	ppm	Cd	ppm	Cr	ppm	Pb	ppm	Se	ppm
	~~2.5~~ 0.19	0.48		<5.00		<3.0		<0.05		0.50		<0.20		<3.00
	CO	PPM												
	5 2.10	11												
	Sulfates		>200 35	7000										

HECLA MINING CO.
APEX UNIT
SAMPLE WORKSHEET

Pond 3a effluent filtered solution sampled 6/14.

DATE _____

Environmental Tests _____.

BY _____

I.D.	Ag	ppm	As	ppm	Ba	ppm	Cd	ppm	Cr	ppm	Pb	ppm	Se	ppm
R-4916	/	<0.10	/	<5.00	/	<3.0	/	<0.05	/	<0.50	/	<0.20	/	<3.0
R-4920-1 WGC 310	2.5 0.18	0.45	/	<5.00	/	<3.0	/	<0.05	/	<0.50	/	<0.20	/	<3.0
R-4922-1 WGC 310	2.5 0.13	0.33	/	<5.0	/	<3.0	X 2.5 0.08	0.20	/	<0.50	/	0.40	/	<3.0
4916	Hg													
4920-1	Hg													
4920-1	Hg													
4916	Co	66.25												

HECLA MINING CO.
APEX UNIT

Reviewed By: _____.

Date: 07-07-95

SAMPLE I.D.
R-4937

Neutralization 6/26

Note: The minus sign (-) designates "less than".

ELEMENT	ppm	Comments
Silver	-0.10	By A.A.S. or F.A.
Aluminum		By A.A.S.
Arsenic	-5.00	By A.A.S.
Barium	-3.00	By A.A.S.
Bismuth		By A.A.S.
Calcium		By A.A.S.
Cadmium	-0.05	By A.A.S.
Cobalt	0.55	Ave of Duplicate.
Chromium	-0.50	By A.A.S.
Copper		By A.A.S.
Iron		By A.A.S.
Potassium		By A.A.S.
Magnesium		By A.A.S.
Manganese		By A.A.S.
Molybdenum		By A.A.S.
Sodium		By A.A.S.
Nickel		By A.A.S.
Lead	-0.20	By A.A.S.
Selenium	-3.00	By A.A.S.
Antimony		By A.A.S.
Samarium		By A.A.S.
Vanadium		By A.A.S.
Tungsten		By A.A.S.
Zinc		By A.A.S.
Chloride		By Titration
Sulfate		By Spectrophotometer
TDS		In grams/liter
pH		

HECLA MINING CO.
APEX UNIT

Reviewed By: _____.

Date: 07-07-95

SAMPLE I.D.
R-4939

Neutralization 6/27

Note: The minus sign (-) designates "less than".

ELEMENT	ppm	Comments
Silver	-0.10	By A.A.S. or F.A.
Aluminum		By A.A.S.
Arsenic	-5.00	By A.A.S.
Barium	-3.00	By A.A.S.
Bismuth		By A.A.S.
Calcium		By A.A.S.
Cadmium	-0.05	By A.A.S.
Cobalt	1.98	Ave of Duplicate.
Chromium	-0.50	By A.A.S.
Copper		By A.A.S.
Iron		By A.A.S.
Potassium		By A.A.S.
Magnesium		By A.A.S.
Manganese		By A.A.S.
Molybdenum		By A.A.S.
Sodium		By A.A.S.
Nickel		By A.A.S.
Lead	-0.20	By A.A.S.
Selenium	-3.00	By A.A.S.
Antimony		By A.A.S.
Samarium		By A.A.S.
Vanadium		By A.A.S.
Tungsten		By A.A.S.
Zinc		By A.A.S.
Chloride		By Titration
Sulfate		By Spectrophotometer
TDS		In grams/liter
pH		

HECLA MINING CO.
APEX UNIT

Reviewed By: _____

Date: 07-07-95

SAMPLE I.D.
R-4942

Neutralization 6/30

Note: The minus sign (-) designates "less than".

ELEMENT	ppm	Comments
Silver	-0.10	By A.A.S. or F.A.
Aluminum		By A.A.S.
Arsenic	-5.00	By A.A.S.
Barium	-3.00	By A.A.S.
Bismuth		By A.A.S.
Calcium		By A.A.S.
Cadmium	-0.05	By A.A.S.
Cobalt	5.75	Ave of Duplicate.
Chromium	-0.50	By A.A.S.
Copper		By A.A.S.
Iron		By A.A.S.
Potassium		By A.A.S.
Magnesium		By A.A.S.
Manganese		By A.A.S.
Molybdenum		By A.A.S.
Sodium		By A.A.S.
Nickel		By A.A.S.
Lead	-0.20	By A.A.S.
Selenium	-3.00	By A.A.S.
Antimony		By A.A.S.
Samarium		By A.A.S.
Vanadium		By A.A.S.
Tungsten		By A.A.S.
Zinc		By A.A.S.
Chloride		By Titration
Sulfate		By Spectrophotometer
TDS		In grams/liter
pH		

HECLA MINING CO.
APEX UNIT

Reviewed By: _____.

Date: 07-11-95

SAMPLE I.D.
R-4944

Neutralization 7/10

Note: The minus sign (-) designates "less than".

ELEMENT	ppm	Comments
Silver	-0.10	By A.A.S. or F.A.
Aluminum		By A.A.S.
Arsenic	-5.00	By A.A.S.
Barium	-3.00	By A.A.S.
Bismuth		By A.A.S.
Calcium		By A.A.S.
Cadmium	-0.05	By A.A.S.
Cobalt	20.00	Ave of Duplicate.
Chromium	-0.50	By A.A.S.
Copper		By A.A.S.
Iron		By A.A.S.
Potassium		By A.A.S.
Magnesium		By A.A.S.
Manganese		By A.A.S.
Molybdenum		By A.A.S.
Sodium		By A.A.S.
Nickel		By A.A.S.
Lead	-0.20	By A.A.S.
Selenium	-3.00	By A.A.S.
Antimony		By A.A.S.
Samarium		By A.A.S.
Vanadium		By A.A.S.
Tungsten		By A.A.S.
Zinc		By A.A.S.
Chloride		By Titration
Sulfate		By Spectrophotometer
TDS		In grams/liter

HECLA MINING CO.
APEX UNIT

Reviewed By: _____.

Date: 07-21-95

SAMPLE I.D.	ELEMENT	ppm	Comments
R-4989-2			
F111 TCLP	Silver	-0.10	By A.A.S. or F.A.
	Aluminum		By A.A.S.
	Arsenic	-5.00	By A.A.S.
	Barium	-3.00	By A.A.S.
	Bismuth		By A.A.S.
	Calcium		By A.A.S.
	Cadmium	-0.05	By A.A.S.
	Cobalt		Ave of Duplicate.
	Chromium	-0.50	By A.A.S.
	Copper		By A.A.S.
	Iron		By A.A.S.
	Potassium		By A.A.S.
	Magnesium		By A.A.S.
	Manganese		By A.A.S.
	Molybdenum		By A.A.S.
	Sodium		By A.A.S.
	Nickel		By A.A.S.
	Lead	-0.20	By A.A.S.
	Selenium	-3.00	By A.A.S.
	Antimony		By A.A.S.
	Samarium		By A.A.S.
	Vanadium		By A.A.S.
	Tungsten		By A.A.S.
	Zinc		By A.A.S.
	Chloride		By Titration
	Sulfate		By Spectrophotomete
	TDS		In grams/liter

Note: The minus sign (-) designates "less than".

Cathay Tails

HECLA MINING CO.
APEX UNIT

Reviewed By: _____.

Date: 07-21-95

SAMPLE I.D.

R-4990-2

Cathay Tails TCLP

Note: The minus sign (-) designates "less than".

ELEMENT	ppm	Comments
Silver	-0.10	By A.A.S. or F.A.
Aluminum		By A.A.S.
Arsenic	-5.00	By A.A.S.
Barium	-3.00	By A.A.S.
Bismuth		By A.A.S.
Calcium		By A.A.S.
Cadmium	-0.05	By A.A.S.
Cobalt		Ave of Duplicate.
Chromium	-0.50	By A.A.S.
Copper		By A.A.S.
Iron		By A.A.S.
Potassium		By A.A.S.
Magnesium		By A.A.S.
Manganese		By A.A.S.
Molybdenum		By A.A.S.
Sodium		By A.A.S.
Nickel		By A.A.S.
Lead	-0.20	By A.A.S.
Selenium	-3.00	By A.A.S.
Antimony		By A.A.S.
Samarium		By A.A.S.
Vanadium		By A.A.S.
Tungsten		By A.A.S.
Zinc		By A.A.S.
Chloride		By Titration
Sulfate		By Spectrophotomete
TDS		In grams/liter

7-24-95
Neutralization Soln.
filtered
(Cathey)

HECLA MINING CO.
APEX UNIT
SAMPLE WORKSHEET

DATE_____

Environmental Tests_____.

BY_____

I.D.	X Ag	ppm	X As	ppm	X Ba	ppm	X Cd	ppm	X Cr	ppm	X Pb	ppm	X Se	ppm
R-4999	/	<0.10	/	<5.00	/	<3.00	/	<0.05	/	<0.50	/	<0.20	/	<3.00

HECLA MINING CO.
APEX UNIT
SAMPLE WORKSHEET

DATE 8-9-95

Environmental Tests Neutralization Solution E-07

BY

I.D.	Ag	ppm	As	ppm	Ba	ppm	Cd	ppm	Cr	ppm	Pb	ppm	Se	ppm
-1	x —	<0.30	x —	<5.00	x —	<3.00	x —	<0.05	x —	<0.50	x 2.5 0.5	1.3	x —	<3.00
-2	x —	<0.30	x —	<5.00	x —	<3.00	x —	<0.05	x —	<0.50	x 2.5 0.8	2.0	x —	<3.00

Reviewed by: C.B.

Hecla Mining Co.
Apex Unit

Date: __-__-__

Sample I.D.
R-5000

A Wt. 3.0068 g.
Vol. _____ ml.

B Wt. _____ g.
Vol. _____ ml.

C Wt. _____ g.
Vol. _____ ml.

7/24/95
Neutralization, filtered/dried solids

Element	ppm x dil.	Percent	Comments
Ag/Silver X	—	<0.001	02 TON
Al/Aluminum			
As/Arsenic X	—	<0.005	
Ba/Barium X	—	<0.0003	
Bi/Bismuth		"	
Ca/Calcium			
Cd/Cadmium X	0.19	0.0006	
Co/Cobalt(B) X	1.94 x 200	1.29	
Co/Cobalt(C)			
Cr/Chromium X	0.69 x 2.5	0.006	
Cu/Copper			
Fe/Iron			
K/Potassium			
Mg/Magnesium			
Mn/Manganese			
Mo/Molybdenum			
Na/Sodium			
Ni/Nickel			
Pb/Lead X	—	<0.00002	
Se/Selenium X	—	<0.0003	
Sb/Antimony			
Sm/Samarium			
V/Vanadium			
W/Tungsten			
Zn/Zinc			
Chloride			
Sulfate			

HECLA MINING CO.
APEX UNIT

Reviewed By: C.B.

Date: 07-31-95

SAMPLE I.D.
Ę-03

Neutralization 7/31/95

Note: The minus sign (-) designates "less than".

ELEMENT	ppm	Comments
Silver	-0.10	By A.A.S. or F.A.
Aluminum		By A.A.S.
Arsenic	-5.00	By A.A.S.
Barium	-3.00	By A.A.S.
Bismuth		By A.A.S.
Calcium		By A.A.S.
Cadmium	-0.05	By A.A.S.
Cobalt	32.10	Ave of Duplicate.
Chromium	-0.50	By A.A.S.
Copper		By A.A.S.
Iron		By A.A.S.
Potassium		By A.A.S.
Magnesium		By A.A.S.
Manganese		By A.A.S.
Molybdenum		By A.A.S.
Sodium		By A.A.S.
Nickel		By A.A.S.
Lead	-0.20	By A.A.S.
Selenium	-3.00	By A.A.S.
Antimony		By A.A.S.
Samarium		By A.A.S.
Vanadium		By A.A.S.
Tungsten		By A.A.S.
Zinc		By A.A.S.
Chloride		By Titration
Sulfate		By Spectrophotometer
TDS		In grams/liter
pH		

HECLA MINING CO.
APEX UNIT
SAMPLE WORKSHEET

DATE 8-9-95

Neutralization Solution
Environmental Tests E-06

BY

I.D.	Ag	ppm	As	ppm	Ba	ppm	Cd	ppm	Cr	ppm	Pb	ppm	Se	ppm
	2.5 0.22	0.55	/	<5.0	/	<3.0	/	<0.05	/	<0.50	/	<0.20	/	<3.0
	Co	PPM						W	RERUN					
	10 2.56	26						5 396	1980					