Printed On 06/04/2008

Company Name Bernice Mining
Project Bernice Lewis Passive Trt
Site Name Bernice Lewis Passive Trt

AMD TREAT

Costs AMD TREAT MAIN COST FORM

AMDTREAT

Passive Treatment	A	S	
Vertical Flow Pond	1	0	$132,011
Anoxic Limestone Drain			$0
Anaerobic Wetlands			$0
Aerobic Wetlands			$0
Manganese Removal Bed			$0
Oxic Limestone Channel			$0
Limestone Bed			$0
BIO Reactor			$0
Passive Subtotal:			**$132,011**
Active Treatment			
Caustic Soda			$0
Hydrated Lime			$0
Pebble Quick Lime			$0
Ammonia			$0
Oxidants			$0
Soda Ash			$0
Active Subtotal:			**$0**
Ancillary Cost			
Ponds	2	0	$24,999
Roads	1	0	$2,243
Land Access			$0
Ditching	1	0	$1,860
Engineering Cost			$0
Ancillary Subtotal:			**$29,102**
Other Cost (Capital Cost)			$3,500
Total Capital Cost:			**$164,613**
Annual Costs			
Sampling	1	0	$1,259
Labor	1	0	$2,402
Maintenance	1	0	$2,025
Pumping			$0
Chemical Cost			$0
Oxidant Chem Cost			$0
Sludge Removal			$0
Other Cost (Annual Cost)			$0
Land Access (Annual Cost)			$0
Total Annual Cost:			**$5,686**
Other Cost	1	0	

Water Quality

Calculated Acidity	0.00	mg/L
Alkalinity	0.00	mg/L

◉ Calculate Net Acidity (Acid-Alkalinity)
Enter Net Acidity manually 73.0
Net Acidity (Hot Acidity) 73.00 mg/L

Design Flow	75.00	gpm
Typical Flow	42.00	gpm
Total Iron	10.00	mg/L
Aluminum	4.00	mg/L
Manganese	4.00	mg/L
pH	3.60	su
Ferric Iron	0.00	mg/L
Ferrous Iron	0.00	mg/L
Sulfate	151.00	mg/L
Filtered Fe	0.00	mg/L
Filtered Al	0.00	mg/L
Filtered Mn	0.00	mg/L
Specific Conductivity	0.00	uS/cm
Total Dissolved Solids	0.00	mg/L
Dissolved Oxygen	0.00	mg/L
Typical Acid Loading	6.7	tons/yr

Total Annual Cost: per 1000 Gal of H2O Treated $0.257

Company Name Bernice Mining

Project Bernice Lewis Passive Trt

Site Name Bernice Lewis Passive Trt

Printed on 05/20/2008

AMD TREAT
VERTICAL FLOW POND (VFP)

AMDTREAT

VFP Name: Bernice PTS

☑ **Opening Screen Water Parameters**

SIZING METHODS Select One

1. Tons of Limestone Needed	469	VFP Based on Acidity Neutralization
2. Tons of Limestone Needed	1,055	○ VFP Based on Retention Time
3. Tons of Limestone Needed	1,817	○ VFP Based on Alkalinity Generation Rate
4. Tons of Limestone Needed	1,410	◉ VFP Based on Tons Limestone Entered
5. Tons of Limestone Needed	1,684	○ VFP Based on Dimensions

6. Retention Time ____ hours
7. Alkalinity Generation Rate ____ g/m2/day
8. Limestone Needed 1,410 tons
9. Length at Top of Freeboard ____ ft
10. Width at Top of Freeboard ____ ft

Influent Water Parameters that Affect VFP

Calculated Acidity 0.00 mg/L

Alkalinity 0.00 mg/L

◉ Calculate Net Acidity (Acid-Alkalinity)

◉ Enter Net Acidity manually

Net Acidity (Hot Acidity) 73.00 mg/L

Design Flow 75.00 gpm

Typical Flow 42.00 gpm

Total Iron 10.00 mg/L

Aluminum 4.00 mg/L

Manganese 4.00 mg/L

Record Number
1 of 1

11. % Void Space of LS. Bed	43.00	%
12. System Life	20.00	years
13. Limestone Purity	85.00	%
14. Limestone Efficiency	60.00	%
15. Density of Loose Limestone	94.30	lbs/ft3
16. Limestone Unit Cost	22.00	$/ton
17. LS Placement Unit Cost	0.00	$/yd3

Run of Slope : Rise of Slope

18. Slope of Pond Sides 2.0 : 1

19. Freeboard Depth	3.00	ft
20. Free Standing Water Depth	2.0	ft
21. Organic Matter Depth	1.0	ft
22. Organic Matter Unit Cost	20.00	$/yd3
23. Organic Matter Spreading Unit Cost	4.50	$/yd3
24. Limestone Depth	3.0	ft
25. Excavation Unit Cost	15.00	$/yd3

Liner Cost

○ No Liner

○ Clay Liner

11. Clay Liner Unit Cost ____ $/yd3

12. Thickness of Clay Liner ____ ft

◉ Synthetic Liner

13. Synthetic Liner Unit Cost 10.76 $/yd2

☑ 29. Clearing and Grubbing?

○ 30a. Land Multiplier	____	ratio
◉ 30b. Clear/Grub Acres	2	acres
31. Clear and Grub Unit Cost	1300.00	$/acre
32. Nbr. of Valves	0	nbr
33. Unit Cost of Valves	3500.00	$ ea.

◉ AMDTreat Piping Costs

34. Total Length of Effluent / Influent Pipe	20	ft
35. Pipe Install Rate	10.00	ft/hr
36. Labor Rate	40.00	$/hr
37. Segment Len. of Trunk Pipe	20	ft/pipe seg.
38. Trunk Pipe Cost	17.00	$/ft
39. Trunk Coupler Cost	7.50	$/coupler
40. Spur Cost	8.20	$/ft
41. Spur Coupler Cost	4.00	$/spur
42. "T" Connector Cost	100.00	$/T coupler
43. Segment Len. of Spur Pipe	20	ft/pipe seg.
44. Spur Pipe Spacing	9.0	ft

○ Custom Piping Costs

	Length		Diameter		Unit Cost	
45. Pipe #1	____	ft	____	in	____	$
46. Pipe #2	____	ft	____	in	____	$
47. Pipe #3	____	ft	____	in	____	$

VFP Sizing Summaries

48. Length at Top of Freeboard	174.14	ft
49. Width at Top of Freeboard	99.07	ft
50. Freeboard Volume	1,740	yd3
51. Water Surface Area	14,118	ft2
52. Total Water Volume	973	yd3
53. Organic Matter Volume	434	yd3
54. Limestone Surface Area	11,271	ft2
55. Limestone Volume	1,107.57	yd3
56. Excavation Volume	2,515.4	yd3
57. Clear and Grub Area	2.0	acr.
58. Liner Area	2,789.5	ft2
59. Theoretical Retention Time	21.37	hrs

VFP Cost Summaries

60. Organic Matter Cost	8,687	$
61. Limestone Cost	31,020	$
62. Limestone and Organic Matter Placement Cost	1,954	$
63. Excavation Cost	37,732	$
64. Liner Cost	30,015	$
65. Clear and Grub Cost	2,600	$
66. Valve Cost	0	$
67. Pipe Cost	20,003	$
68. Total Cost	132,011	$

Company Name Bernice Mining

Project Bernice Lewis Passive Trt

Site Name Bernice Lewis Passive Trt

Printed on 06/04/2008

AMD TREAT

PONDS

AMDTREAT

Pond Name: Collection Forebay

Pond Design Based On:

- (•) Retention Time
  - 1. Desired Retention Time: 24.0 hours
  - [ ]
  - 3. Sludge Removal Frequency: [redacted] times/year
  - [x] 4. Titration?
    - 5. Sludge Rate: [redacted] gal sludge/ gal H2O
    - 6. Percent Solids: [redacted] %
    - 7. Sludge Density: [redacted] lbs./gal
- ( ) Pond Size
  - 8. Pond Length at Top of Freeboard: [redacted] ft
  - 9. Pond Width at Top of Freeboard: [redacted] ft

	Run		Rise	
10. Slope Ratio of Pond Sides	2.0	:	1	
11. Freeboard Depth	2.0			ft
12. Water Depth	4.0			ft
13. Excavation Unit Cost	27.00			$/yd3
14. Total Length of Effluent / Influent Pipe	0.00			ft
15. Unit Cost of Pipe	10.00			$/ft

Liner Cost

- (•) No Liner
- ( ) Clay Liner
  - 16. Clay Liner Unit Cost: [redacted] $/yd3
  - 17. Thickness of Clay Liner: [redacted] ft
- ( ) Synthetic Liner
  - 18. Synthetic Liner Unit Cost: [redacted] $/yd2

[x] 19. Clearing and Grubbing?

- (•) 20. Land Multiplier: 2.00 ratio
- ( ) 21. Clear/Grub Acres: [redacted] acres
- 22. Clear and Grub Unit Cost: 1300.00 $/acre

23. Revegetation Cost: 1500.00 $/acre

24. Cost of Baffles: 0 $

[ ] **Opening Screen Water Parameters**

Influent Water Parameters that Affect Ponds

Calculated Acidity: [redacted] mg/L

Alkalinity: [redacted] mg/L

- ( ) Calculate Net Acidity (Acid-Alkalinity)
- (•) Enter Net Acidity manually

Net Acidity (Hot Acidity): [redacted] mg/L

Design Flow: 75.00 gpm

Typical Flow: 42.00 gpm

Total Iron: 10.00 mg/L

Aluminum: 4.00 mg/L

Manganese: 4.00 mg/L

Record Number 1 of 2

Calculated Pond Dimensions per Pond

25. Length at Top of Freeboard	104	ft
26. Width at Top of Freeboard	56	ft
27. Freeboard Volume	926	yd3
28. Water Volume	534	yd3
29. Estimated Annual Sludge	0	yd3/yr
30. Volume of Sludge per Removal	0	yd3/ removal
31. Excavation Volume	0.33	acre ft
32. Excavation Volume	534	yd3
33. Clear and Grub Area	0.27	acres
34. Liner Area	0	yd2
35. Calculated Retention Time	24	hours

Ponds Sub-Totals per Pond

36. Excavation Cost	14,437	$
37. Pipe Cost	0	$
38. Liner Cost	0	$
39. Clearing and Grubbing Cost	352	$
40. Revegetation Cost	203	$
41. Baffle Cost	0	$
42. Estimated Cost	14,994	$

Company Name Bernice Mining
Project Bernice Lewis Passive Trt
Site Name Bernice Lewis Passive Trt

Printed on 06/04/2008

AMD TREAT

PONDS

AMDTREAT

Pond Name: Energy Disippation Pool

Pond Design Based On:

- (•) Retention Time
  - 1. Desired Retention Time: 24.0 hours
- ☐
  - 3. Sludge Removal Frequency: [redacted] times/year
  - ☐ 4. Titration?
    - 5. Sludge Rate: [redacted] gal sludge/ gal H2O
    - 6. Percent Solids: [redacted] %
    - 7. Sludge Density: [redacted] lbs./gal
- ( ) Pond Size
  - 8. Pond Length at Top of Freeboard: [redacted] ft
  - 9. Pond Width at Top of Freeboard: [redacted] ft

	Run		Rise
10. Slope Ratio of Pond Sides	2.0	:	1

- 11. Freeboard Depth: 2.0 ft
- 12. Water Depth: 4.0 ft
- 13. Excavation Unit Cost: 18.52 $/yd3
- 14. Total Length of Effluent / Influent Pipe: 0.00 ft
- 15. Unit Cost of Pipe: 10.00 $/ft

Liner Cost

- (•) No Liner
- ( ) Clay Liner
  - 16. Clay Liner Unit Cost: [redacted] $/yd3
  - 17. Thickness of Clay Liner: [redacted] ft
- ( ) Synthetic Liner
  - 18. Synthetic Liner Unit Cost: [redacted] $/yd2

☐ 19. Clearing and Grubbing?

- (•) 20. Land Multiplier: [redacted] ratio
- (•) 21. Clear/Grub Acres: [redacted] acres
- 22. Clear and Grub Unit Cost: [redacted] $/acre

- 23. Revegetation Cost: 1500.00 $/acre
- 24. Cost of Baffles: 0 $

☐ **Opening Screen Water Parameters**

Influent Water Parameters that Affect Ponds

Calculated Acidity: [redacted] mg/L
Alkalinity: [redacted] mg/L

- ( ) Calculate Net Acidity (Acid-Alkalinity)
- (•) Enter Net Acidity manually

Net Acidity (Hot Acidity): [redacted] mg/L

Design Flow: 75.00 gpm
Typical Flow: 42.00 gpm
Total Iron: 10.00 mg/L
Aluminum: 4.00 mg/L
Manganese: 4.00 mg/L

Record Number 2 of 2

Calculated Pond Dimensions per Pond

25. Length at Top of Freeboard	104	ft
26. Width at Top of Freeboard	56	ft
27. Freeboard Volume	926	yd3
28. Water Volume	534	yd3
29. Estimated Annual Sludge	0	yd3/yr
30. Volume of Sludge per Removal	0	yd3/ removal
31. Excavation Volume	0.33	acre ft
32. Excavation Volume	534	yd3
33. Clear and Grub Area	0.20	acres
34. Liner Area	0	yd2
35. Calculated Retention Time	24	hours

Ponds Sub-Totals per Pond

36. Excavation Cost	9,903	$
37. Pipe Cost	0	$
38. Liner Cost	0	$
39. Clearing and Grubbing Cost	0	$
40. Revegetation Cost	101	$
41. Baffle Cost	0	$

42. Estimated Cost: 10,005 $

RECEIVED TIME JUN. 5. 11:52AM PRINT TIME JUN. 5. 12:00PM

Company Name Bernice Mining

Project Bernice Lewis Passive Trt

Site Name Bernice Lewis Passive Trt

Printed on 05/20/2008

AMD TREAT

ROADS

AMDTREAT

Road Name

1. Road Length	200	ft
2. Road Width	15	ft
3. Road Depth	1.00	ft
4. Aggregate Unit Cost	20.00	$/yd3
5. GeoTextile Length	0	ft
6. GeoTextile Unit Cost	0.50	$/yd2
7. Length of Silt Fence	0	ft
8. Unit Cost of Silt Fence	1.00	$/ft
☐ 9. Surveying?		
10. Survey Rate		acres/day
11. Survey Unit Cost		$/day
☐ 12. Clearing and Grubbing?		
13. Clear and Grub Cost		$/acre

Record Number 1 of 1

14. Reveg Unit Cost	1500.00	$/acre
15. Culvert Unit Cost	30.00	$/ft
16. Culvert Length	0	ft

Roads Sub-Totals

17. Road Surface Cost	2,222	$
18. GeoTextile Cost	0	$
19. Silt Fence Cost	0	$
20. Culvert Cost	0	$
21. Revegetation Cost	21	$
22. Survey Cost	0	$
23. Clear and Grub Cost	0	$
24. Total Cost	2,243	$

Company Name Bernice Mining

Project Bernice Lewis Passive Trt

Site Name Bernice Lewis Passive Trt

Printed on 05/20/2008

AMD TREAT

DITCHING

AMDTREAT

Ditching Name

1. Ditch Length Rock	50	ft
2. Ditch Length Grass	0	ft
3. Bottom Width of Ditch	4.0	ft
4. Ditch Depth	3.00	ft
5. Geo Textile Unit Cost	3.00	$/yd2
6. Length of Geo Textile	0	ft

7. Slope Ratio of Ditch Sides — Run 2.00 : Rise 1.00

☐ 8. Surveying?

9. Survey Rate		acres/day
10. Survey Unit Cost		$/day

☐ 11. Clearing and Grubbing?

12. Clear and Grub Cost		$/acre

Record Number 1 of 1

13. Ditch Depth of Rock	1.50	ft
14. Cost of Ditch Surface Rock	20.00	$/yd3
15. Cost to Place Rock	12.00	$/yd3
16. Excavation Unit Cost	5.50	$/yd3
17. Length of Silt Fence	0.00	ft
18. Unit Cost of Silt Fence	1.15	$/ft
19. Revegetation Unit Cost	1500.00	$/acre

Ditching Sub-Totals

20. Excavation Cost	306	$
21. Survey Cost	0	$
22. Clear and Grub Cost	0	$
23. Aggregate Cost	1,548	$
24. Filter Fabric Cost	0	$
25. Silt Fence Cost	0	$
26. Revegetation Cost	6	$
27. Total Cost	1,860	$

Printed on 05/20/2008

Company Name Bernice Mining

Project Bernice Lewis Passive Trt

Site Name Bernice Lewis Passive Trt

AMD TREAT

OTHER COST

AMDTREAT

Oher Cost Name Drain and Flume

	A. Description of Item	B. Unit Cost Per Item	C. Quantity	D. Total Item Cost	E. Capital Cost Annual Cost
1.	AgriDrain	2,500.00	1	2,500	Capital Cost / Annual Cost
2.	H Flume	1,000.00	1	1,000	Capital Cost / Annual Cost
3.		0.00	0	0	Capital Cost / Annual Cost
4.		0.00	0	0	Capital Cost / Annual Cost
5.		0.00	0	0	Capital Cost / Annual Cost
6.		0.00	0	0	Capital Cost / Annual Cost
7.		0.00	0	0	Capital Cost / Annual Cost
8.		0.00	0	0	Capital Cost / Annual Cost
9.		0.00	0	0	Capital Cost / Annual Cost
10.		0.00	0	0	Capital Cost / Annual Cost
11.		0.00	0	0	Capital Cost / Annual Cost
12.		0.00	0	0	Capital Cost / Annual Cost
13.		0.00	0	0	Capital Cost / Annual Cost
14.		0.00	0	0	Capital Cost / Annual Cost
15.		0.00	0	0	Capital Cost / Annual Cost

Record Number
1 of 1

Curent Capital Cost 3,500 $
Current Annual Cost 0 $

Total Capital Cost 3,500 $
Total Annual Cost 0 $

Company Name Bernice Mining

Project Bernice Lewis Passive Trt

Site Name Bernice Lewis Passive Trt

Printed on 05/20/2008

AMD TREAT

SAMPLING

Sampling Name: Quarterly

Estimate Sampling Cost

1. Unit Labor Cost	35.00	$/hr
2. Collection Time per Sample	0.50	hours/sample
3. Travel Time	2.00	hr
4. Sample Frequency	0.66	samples/mo
5. Lab Cost Per Sample	27.00	$/sample
6. Number of Sample Points	2	points

Enter Established Annual Sampling Cost

7. Actual Annual Sampling Cost		$

Sampling Sub-Totals

8. Yearly Sample Analysis Cost	428	$
9. Yearly Travel Cost	554	$
10. Yearly Collection Cost	277	$
11. Sampling Cost	1,259	$

Record Number 1 of 1

Company Name Bernice Mining

Project Bernice Lewis Passive Trt

Site Name Bernice Lewis Passive Trt

Printed on 05/20/2008

AMD TREAT

LABOR

Labor Name

Estimate Labor Cost

1. Site Visits per Week	0.33	
2. Site Labor Time per Visit	2.00	hours
3. Travel Time per Visit	2.00	hours
4. Unit Labor Cost	35.00	$/hour

Enter Established Annual Labor Cost

5. Actual Annual Labor Cost		$

6. Total Cost	2,402	$

Record Number 1 of 1

Printed on 05/20/2008

Company Name Bernice Mining

Project Bernice Lewis Passive Trt

Site Name Bernice Lewis Passive Trt

AMD TREAT

MAINTANENCE

(•) **Estimate Maintenance Cost**

1. Percent of Active Cost	3.50	%
2. Percent of Passive Cost	1.00	%
3. Percent of Ancillary Cost *	2.00	%
4. Percent of Other Capital Cost	3.50	%

( ) **Enter Established Annual Maintenance Cost**

5. Annual Maintenance Cost		$

Maintenance Sub-Totals

6 Total Maintenance Active Cost	0	$
7. Total Maintenance Passive Cost	1,320	$
8. Total Maintenance Ancillary Cost	582	$
9. Total Maintenance Other Capital Cost	122	$
10. Total Maintenance Cost	2,025	$

* Ancillary Cost does int include Cost for Land Access and Engineering Cost

Company Name Bernice Mining

Project Bernice Lewis Passive Trt

Site Name Bernice Lewis Passive Trt

AMD TREAT
RECAPITIZALITION COST

AMDTREAT

Calculation Period 75 yrs Inflation Rate 3.10 % Net Return Rate 6.00 %

Recapitizalition Name Bernice Lewis PTS

A.	B	C	D	E	F	G
Description of Item	Unit Cost Per Item	Quantity	Total Item Cost	Life Cycle	Number of Periods	Total PV
1. VFP Organic Material	8,687	1	8,687	7	10	34,720
2. VFP Ls	31,020	1	31,020	20	3	33,911
3. VFP Material Placement	1,954	1	1,954	20	3	2,136
4. VFP Material Excavation	13,835	1	13,835	20	3	15,124
5. VFP Liner	15,342	1	15,342	40	1	5,058
6. VFP Piping	15,472	1	15,472	20	3	16,914
7.	0	0	0	0	0	0
8.	0	0	0	0	0	0
9.	0	0	0	0	0	0
10.	0	0	0	0	0	0
11.	0	0	0	0	0	0
12.	0	0	0	0	0	0
13.	0	0	0	0	0	0
14.	0	0	0	0	0	0
15.	0	0	0	0	0	0
16.	0	0	0	0	0	0
17.	0	0	0	0	0	0
18.	0	0	0	0	0	0
19.	0	0	0	0	0	0
20.	0	0	0	0	0	0

Total Capital Cost 86,310 $ PV Grand Total 107,863 $