

Company Name Thompson Bros Coal
 Project 001 Strip Passive Treatment
 Site Name 001 Strip Mine



AMD TREAT

Costs

AMD TREAT MAIN COST FORM

AMD TREAT

<u>Passive Treatment</u>	<u>A</u>	<u>S</u>	
Vertical Flow Pond	2	0	\$110,902
Anoxic Limestone Drain			\$0
Anaerobic Wetlands			\$0
Aerobic Wetlands			\$0
Manganese Removal Bed			\$0
Oxic Limestone Channel	1	0	\$11,347
Limestone Bed			\$0
BIO Reactor			\$0
Passive Subtotal:			\$122,249
<u>Active Treatment</u>			
Caustic Soda			\$0
Hydrated Lime			\$0
Pebble Quick Lime			\$0
Ammonia			\$0
Oxidants			\$0
Soda Ash			\$0
Active Subtotal:			\$0
<u>Ancillary Cost</u>			
Ponds	3	0	\$15,167
Roads			\$0
Land Access			\$0
Ditching			\$0
Engineering Cost			\$0
Ancillary Subtotal:			\$15,167
Other Cost (Capital Cost)			\$20,689
Total Capital Cost:			\$158,105
<u>Annual Costs</u>			
Sampling	1	0	\$2,405
Labor	1	0	\$1,820
Maintenance	1	0	\$5,534
Pumping			\$0
Chemical Cost			\$0
Oxidant Chem Cost			\$0
Sludge Removal	1	0	\$620
Other Cost (Annual Cost)			\$0
Land Access (Annual Cost)			\$0
Total Annual Cost:			\$10,379
Other Cost	1	0	

Water Quality

Calculated Acidity mg/L
 Alkalinity mg/L

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

Design Flow gpm
 Typical Flow gpm
 Total Iron mg/L
 Aluminum mg/L
 Manganese mg/L
 pH su
 Ferric Iron mg/L
 Ferrous Iron mg/L
 Sulfate mg/L
 Filtered Fe mg/L
 Filtered Al mg/L
 Filtered Mn mg/L
 Specific Conductivity uS/cm
 Total Dissolved Solids mg/L
 Dissolved Oxygen mg/L
 Typical Acid Loading tons/yr

**Total Annual Cost: per
 1000 Gal of H2O Treated \$1,682**



**AMD TREAT
VERTICAL FLOW POND (VFP)**

AMDTREAT

FP Name B

**Opening Screen
Water Parameters**

**Influent Water
Parameters
that Affect VFP**

Calculated Acidity

mg/L

Alkalinity

mg/L

Calculate Net
Acidity
(Acid-Alkalinity)

Enter Net Acidity
manually

Net Acidity
(Hot Acidity)

mg/L

Design Flow

gpm

Typical Flow

gpm

Total Iron

mg/L

Aluminum

mg/L

Manganese

mg/L

Record Number

1 of 2

SIZING METHODS Select One

1. Tons of Limestone Needed	<input type="text" value="882"/>
2. Tons of Limestone Needed	<input type="text" value="703"/>
3. Tons of Limestone Needed	<input type="text" value="3,412"/>
4. Tons of Limestone Needed	<input type="text" value="520"/>
5. Tons of Limestone Needed	<input type="text" value="1,684"/>

- VFP Based on Acidity Neutralization
 - VFP Based on Retention Time
 - VFP Based on Alkalinity Generation Rate
 - VFP Based on Tons Limestone Entered
 - VFP Based on Dimensions
6. Retention Time hours
7. Alkalinity Generation Rate g/m2/day
8. Limestone Needed tons
9. Length at Top of Freeboard ft
10. Width at Top of Freeboard ft

- 11. % Void Space of LS. Bed %
- 12. System Life years
- 13. Limestone Purity %
- 14. Limestone Efficiency %
- 15. Density of Loose Limestone lbs/ft3
- 16. Limestone Unit Cost \$/ton
- 17. LS Placement Unit Cost \$/yd3
- 18. Slope of Pond Sides : (Run of Slope : Rise of Slope)
- 19. Freeboard Depth ft
- 20. Free Standing Water Depth ft
- 21. Organic Matter Depth ft
- 22. Organic Matter Unit Cost \$/yd3
- 23. Organic Matter Spreading Unit Cost \$/yd3
- 24. Limestone Depth ft
- 25. Excavation Unit Cost \$/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 \$/yd2

29. Clearing and Grubbing?

- 30a. Land Multiplier ratio
- 30b. Clear/Grub Acres acres
- 31. Clear and Grub Unit Cost \$/acre

32. Nbr. of Valves nbr

33. Unit Cost of Valves \$ ea.

AMDTreat Piping Costs

- 34. Total Length of Effluent / Influent Pipe ft
- 35. Pipe Install Rate ft/hr
- 36. Labor Rate \$/hr
- 37. Segment Len. of Trunk Pipe ft/pipe seg.
- 38. Trunk Pipe Cost \$/ft
- 39. Trunk Coupler Cost \$/coupler
- 40. Spur Cost \$/ft
- 41. Spur Coupler Cost \$/spur
- 42. "T" Connector Cost \$/T coupler
- 43. Segment Len. of Spur Pipe ft/pipe seg.
- 44. Spur Pipe Spacing ft

Custom Piping Costs

	Length	Diameter	Unit Cost
45. Pipe #1	<input type="text"/> ft	<input type="text"/> in	<input type="text"/> \$
46. Pipe #2	<input type="text"/> ft	<input type="text"/> in	<input type="text"/> \$
47. Pipe #3	<input type="text"/> ft	<input type="text"/> in	<input type="text"/> \$

VFP Sizing Summaries

48. Length at Top of Freeboard	<input type="text" value="118.65"/> ft
49. Width at Top of Freeboard	<input type="text" value="71.32"/> ft
50. Freeboard Volume	<input type="text" value="819"/> yd3
51. Water Surface Area	<input type="text" value="6,327"/> ft2
52. Total Water Volume	<input type="text" value="421"/> yd3
53. Organic Matter Volume	<input type="text" value="178"/> yd3
54. Limestone Surface Area	<input type="text" value="4,480"/> ft2
55. Limestone Volume	<input type="text" value="408.46"/> yd3
56. Excavation Volume	<input type="text" value="1,006.2"/> yd3
57. Clear and Grub Area	<input type="text" value="0.2"/> acr.
58. Liner Area	<input type="text" value="0.0"/> ft2
59. Theoretical Retention Time	<input type="text" value="11.82"/> hrs

VFP Cost Summaries

60. Organic Matter Cost	<input type="text" value="3,533"/> \$
61. Limestone Cost	<input type="text" value="11,440"/> \$
62. Limestone and Organic Matter Placement Cost	<input type="text" value="794"/> \$
63. Excavation Cost	<input type="text" value="5,534"/> \$
64. Liner Cost	<input type="text" value="0"/> \$
65. Clear and Grub Cost	<input type="text" value="378"/> \$
66. Valve Cost	<input type="text" value="0"/> \$
67. Pipe Cost	<input type="text" value="7,609"/> \$
68. Total Cost	<input type="text" value="29,289"/> \$

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**AMD TREAT
VERTICAL FLOW POND (VFP)**

AMDTREAT

VFP Name D

Opening Screen Water Parameters

Influent Water Parameters that Affect VFP

Calculated Acidity
 mg/L
Alkalinity
 mg/L

Calculate Net Acidity (Acid-Alkalinity)

Enter Net Acidity manually
Net Acidity (Hot Acidity)
 mg/L

Design Flow
 gpm
Typical Flow
 gpm
Total Iron
 mg/L
Aluminum
 mg/L
Manganese
 mg/L

Record Number
2 of 2

SIZING METHODS Select One

- 1. Tons of Limestone Needed
- 2. Tons of Limestone Needed
- 3. Tons of Limestone Needed
- 4. Tons of Limestone Needed
- 5. Tons of Limestone Needed

- VFP Based on Acidity Neutralization
- VFP Based on Retention Time
- VFP Based on Alkalinity Generation Rate
- VFP Based on Tons Limestone Entered
- VFP Based on Dimensions
- 6. Retention Time hours
- 7. Alkalinity Generation Rate g/m2/day
- 8. Limestone Needed tons
- 9. Length at Top of Freeboard ft
- 10. Width at Top of Freeboard ft

- 11. % Void Space of LS. Bed %
- 12. System Life years
- 13. Limestone Purity %
- 14. Limestone Efficiency %
- 15. Density of Loose Limestone lbs/ft3
- 16. Limestone Unit Cost \$/ton
- 17. LS Placement Unit Cost \$/yd3
- 18. Slope of Pond Sides : (Run of Slope : Rise of Slope)
- 19. Freeboard Depth ft
- 20. Free Standing Water Depth ft
- 21. Organic Matter Depth ft
- 22. Organic Matter Unit Cost \$/yd3
- 23. Organic Matter Spreading Unit Cost \$/yd3
- 24. Limestone Depth ft
- 25. Excavation Unit Cost \$/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 \$/yd2

- 29. Clearing and Grubbing?
 - 30a. Land Multiplier ratio
 - 30b. Clear/Grub Acres acres
 - 31. Clear and Grub Unit Cost \$/acre
 - 32. Nbr. of Vaives nbr
 - 33. Unit Cost of Vaives \$ ea.

- AMDTreat Piping Costs
 - 34. Total Length of Effluent / Influent Pipe ft
 - 35. Pipe Install Rate ft/hr
 - 36. Labor Rate \$/hr
 - 37. Segment Len. of Trunk Pipe ft/pipe seg.
 - 38. Trunk Pipe Cost \$/ft
 - 39. Trunk Coupler Cost \$/coupler
 - 40. Spur Cost \$/ft
 - 41. Spur Coupler Cost \$/spur
 - 42. "T" Connector Cost \$/T coupler
 - 43. Segment Len. of Spur Pipe ft/pipe seg.
 - 44. Spur Pipe Spacing ft

- Custom Piping Costs

	Length	Diameter	Unit Cost
45. Pipe #1	<input type="text"/> ft	<input type="text"/> in	<input type="text"/> \$
46. Pipe #2	<input type="text"/> ft	<input type="text"/> in	<input type="text"/> \$
47. Pipe #3	<input type="text"/> ft	<input type="text"/> in	<input type="text"/> \$

VFP Sizing Summaries

- 48. Length at Top of Freeboard ft
- 49. Width at Top of Freeboard ft
- 50. Freeboard Volume yd3
- 51. Water Surface Area ft2
- 52. Total Water Volume yd3
- 53. Organic Matter Volume yd3
- 54. Limestone Surface Area ft2
- 55. Limestone Volume yd3
- 56. Excavation Volume yd3
- 57. Clear and Grub Area acr.
- 58. Liner Area ft2
- 59. Theoretical Retention Time hrs

VFP Cost Summaries

- 60. Organic Matter Cost \$
- 61. Limestone Cost \$
- 62. Limestone and Organic Matter Placement Cost \$
- 63. Excavation Cost \$
- 64. Liner Cost \$
- 65. Clear and Grub Cost \$
- 66. Valve Cost \$
- 67. Pipe Cost \$
- 68. Total Cost \$

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Company Name Thompson Bros Coal
 Project 001 Strip Passive Treatment
 Site Name 001 Strip Mine

Printed on 06/09/2008



AMDTREAT

AMD TREAT

Oxic Limestone Channel (OLC)

Oxic Limestone Channel Name Conveyance Channel

- 1. Ditch Length Rock ft
- 2. Bottom Width of the Ditch ft
- 3. Ditch Depth ft
- 4. Geo Textile Unit Cost \$/yd2
- 5. Length of GeoTextile ft
- 6. Slope Ratio of Ditch Sides

Run		Rise
<input type="text" value="2.00"/>	:	<input type="text" value="1.00"/>
- 7. Surveying?
- 8. Survey Rate acres/day
- 9. Survey Unit Cost \$/day
- 10. Clearing and Grubbing?
- 11. Clear and Grub Cost \$/acre

- 12. Ditch Depth of Limestone ft
- 13. Cost of Limestone \$/yd3
- 14. Cost to Place Limestone \$/yd3
- 15. Excavation Unit Cost \$/yd3
- 16. Revegetation Unit Cost \$/acre

OLC Sub-Totals

- 17. Excavation Cost \$
- 18. Survey Cost \$
- 19. Clear and Grub Cost \$
- 20. Limestone Cost \$
- 21. Filter Fabric Cost \$
- 22. Revegetation Cost \$

23. Total Cost \$

Record Number 1 of 1

Company Name Thompson Bros Coal
 Project 001 Strip Passive Treatment
 Site Name 001 Strip Mine

Printed on 06/09/2008



AMDTREAT

AMD TREAT PONDS

Pond Name Equalization Basin

Pond Design Based On:

Retention Time

1. Desired Retention Time hours

2. Include Sludge Removal?

3. Sludge Removal Frequency times/year

4. Titration?

5. Sludge Rate gal sludge/
gal H2O

6. Percent Solids %

7. Sludge Density lbs./gal

Pond Size

8. Pond Length at Top of Freeboard ft

9. Pond Width at Top of Freeboard ft

Run Rise

10. Slope Ratio of Pond Sides :

11. Freeboard Depth ft

12. Water Depth ft

13. Excavation Unit Cost \$/yd3

14. Total Length of Effluent / Influent Pipe ft

15. Unit Cost of Pipe \$/ft

Liner Cost

No Liner

Clay Liner

16. Clay Liner Unit Cost \$/yd3

17. Thickness of Clay Liner ft

Synthetic Liner

18. Synthetic Liner Unit Cost \$/yd2

19. Clearing and Grubbing?

20. Land Multiplier ratio

21. Clear/Grub Acres acres

22. Clear and Grub Unit Cost \$/acre

23. Revegetation Cost \$/acre

24. Cost of Baffles \$

Calculated Pond Dimensions per Pond

25. Length at Top of Freeboard ft

26. Width at Top of Freeboard ft

27. Freeboard Volume yd3

28. Water Volume yd3

29. Estimated Annual Sludge yd3/yr

30. Volume of Sludge per Removal yd3/removal

31. Excavation Volume acre ft

32. Excavation Volume yd3

33. Clear and Grub Area acres

34. Liner Area yd2

35. Calculated Retention Time hours

Ponds Sub-Totals per Pond

36. Excavation Cost \$

37. Pipe Cost \$

38. Liner Cost \$

39. Clearing and Grubbing Cost \$

40. Revegetation Cost \$

41. Baffle Cost \$

42. Estimated Cost \$

43. Accept Minimum Pond Cost?

The Recommended Minimum Construction Cost of Building a Pond is \$ 5,000

44. Recommended Minimum Cost \$

45. Total Cost \$

Opening Screen Water Parameters

Influent Water Parameters that Affect Ponds

Calculated Acidity mg/L

Alkalinity mg/L

Calculate Net Acidity (Acid-Alkalinity)

Enter Net Acidity manually

Net Acidity (Hot Acidity) mg/L

Design Flow gpm

Typical Flow gpm

Total Iron mg/L

Aluminum mg/L

Manganese mg/L

Record Number
1 of 3

Company Name Thompson Bros Coal
 Project 001 Strip Passive Treatment
 Site Name 001 Strip Mine

Printed on 06/09/2008



AMD TREAT PONDS

AMDTREAT

Pond Name Settling Basin C

Pond Design Based On:

Retention Time

1. Desired Retention Time hours

2. Include Sludge Removal?

3. Sludge Removal Frequency times/year

4. Titration?

5. Sludge Rate gal sludge/
gal H2O

6. Percent Solids %

7. Sludge Density lbs./gal

Pond Size

8. Pond Length at Top of Freeboard ft

9. Pond Width at Top of Freeboard ft

	Run	Rise	
10. Slope Ratio of Pond Sides	<input type="text" value="2.0"/> :	<input type="text" value="1"/>	
11. Freeboard Depth	<input type="text" value="2.0"/>	ft	
12. Water Depth	<input type="text" value="4.0"/>	ft	
13. Excavation Unit Cost	<input type="text" value="5.50"/>	\$/yd3	
14. Total Length of Effluent / Influent Pipe	<input type="text" value="0.00"/>	ft	
15. Unit Cost of Pipe	<input type="text" value="10.00"/>	\$/ft	

Liner Cost

No Liner

Clay Liner

16. Clay Liner Unit Cost \$/yd3

17. Thickness of Clay Liner ft

Synthetic Liner

18. Synthetic Liner Unit Cost \$/yd2

19. Clearing and Grubbing?

20. Land Multiplier ratio

21. Clear/Grub Acres acres

22. Clear and Grub Unit Cost \$/acre

23. Revegetation Cost \$/acre

24. Cost of Baffles \$

Calculated Pond Dimensions per Pond

25. Length at Top of Freeboard ft

26. Width at Top of Freeboard ft

27. Freeboard Volume yd3

28. Water Volume yd3

29. Estimated Annual Sludge yd3/yr

30. Volume of Sludge per Removal yd3/removal

31. Excavation Volume acre ft

32. Excavation Volume yd3

33. Clear and Grub Area acres

34. Liner Area yd2

35. Calculated Retention Time hours

Ponds Sub-Totals per Pond

36. Excavation Cost \$

37. Pipe Cost \$

38. Liner Cost \$

39. Clearing and Grubbing Cost \$

40. Revegetation Cost \$

41. Baffle Cost \$

42. Estimated Cost \$

43. Accept Minimum Pond Cost?

The Recommended Minimum Construction Cost of Building a Pond is \$ 5,000

44. Recommended Minimum Cost \$

45. Total Cost \$

Opening Screen Water Parameters

Influent Water Parameters that Affect Ponds

Calculated Acidity mg/L

Alkalinity mg/L

Calculate Net Acidity (Acid-Alkalinity)

Enter Net Acidity manually

Net Acidity (Hot Acidity) mg/L

Design Flow gpm

Typical Flow gpm

Total Iron mg/L

Aluminum mg/L

Manganese mg/L

Record Number
2 of 3

Company Name Thompson Bros Coal
 Project 001 Strip Passive Treatment
 Site Name 001 Strip Mine

Printed on 06/09/2008



AMD TREAT PONDS

AMDTREAT

Pond Name Settling Basin E

Pond Design Based On:

Retention Time

1. Desired Retention Time hours



3. Sludge Removal Frequency times/year

4. Titration?

5. Sludge Rate gal sludge/
gal H2O

6. Percent Solids %

7. Sludge Density lbs./gal

Pond Size

8. Pond Length at Top of Freeboard ft

9. Pond Width at Top of Freeboard ft

Run Rise

10. Slope Ratio of Pond Sides :

11. Freeboard Depth ft

12. Water Depth ft

13. Excavation Unit Cost \$/yd3

14. Total Length of Effluent / Influent Pipe ft

15. Unit Cost of Pipe \$/ft

Liner Cost

No Liner

Clay Liner

16. Clay Liner Unit Cost \$/yd3

17. Thickness of Clay Liner ft

Synthetic Liner

18. Synthetic Liner Unit Cost \$/yd2

19. Clearing and Grubbing?

20. Land Multiplier ratio

21. Clear/Grub Acres acres

22. Clear and Grub Unit Cost \$/acre

23. Revegetation Cost \$/acre

24. Cost of Baffles \$

Calculated Pond Dimensions per Pond

25. Length at Top of Freeboard ft

26. Width at Top of Freeboard ft

27. Freeboard Volume yd3

28. Water Volume yd3

29. Estimated Annual Sludge yd3/yr

30. Volume of Sludge per Removal yd3/ removal

31. Excavation Volume acre ft

32. Excavation Volume yd3

33. Clear and Grub Area acres

34. Liner Area yd2

35. Calculated Retention Time hours

Ponds Sub-Totals per Pond

36. Excavation Cost \$

37. Pipe Cost \$

38. Liner Cost \$

39. Clearing and Grubbing Cost \$

40. Revegetation Cost \$

41. Baffle Cost \$

42. Estimated Cost \$

Opening Screen Water Parameters

Influent Water Parameters that Affect Ponds

Calculated Acidity mg/L

Alkalinity mg/L

Calculate Net Acidity (Acid-Alkalinity)

Enter Net Acidity manually

Net Acidity (Hot Acidity) mg/L

Design Flow

gpm

Typical Flow

gpm

Total Iron

mg/L

Aluminum

mg/L

Manganese

mg/L

Record Number

3 of 3

Company Name Thompson Bros Coal
 Project 001 Strip Passive Treatment
 Site Name 001 Strip Mine



**AMD TREAT
OTHER COST**

AMDTREAT

Other Cost Name

A.	B.	C.	D.	E.
Description of Item	Unit Cost Per Item	Quantity	Total Item Cost	Capital Cost Annual Cost
1. Ditch Excavation	7.49	311	2,329	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
2. Ditch Rock	17.33	90	1,559	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
3. (4) inlet water level control structures	2,000.00	4	8,000	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
4. (4) outlet control structures	2,200.00	4	8,800	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
5.	0.00	0	0	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
6.	0.00	0	0	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
7.	0.00	0	0	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
8.	0.00	0	0	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
9.	0.00	0	0	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
10.	0.00	0	0	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
11.	0.00	0	0	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
12.	0.00	0	0	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
13.	0.00	0	0	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
14.	0.00	0	0	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost
15.	0.00	0	0	<input checked="" type="radio"/> Capital Cost <input type="radio"/> Annual Cost

Record Number
1 of 1

Current Capital Cost \$
 Current Annual Cost \$

Total Capital Cost \$
 Total Annual Cost \$



AMDTREAT

AMD TREAT SAMPLING

Sampling Name

Estimate Sampling Cost

1. Unit Labor Cost \$/hr

2. Collection Time per Sample hours/sample

3. Travel Time hr

4. Sample Frequency samples/mo

5. Lab Cost Per Sample \$/sample

6. Number of Sample Points points

Enter Established Annual Sampling Cost

7. Actual Annual Sampling Cost \$

Sampling Sub-Totals

8. Yearly Sample Analysis Cost \$

9. Yearly Travel Cost \$

10. Yearly Collection Cost \$

11. Sampling Cost \$

Record Number 1 of 1

Company Name Thompson Bros Coal
Project 001 Strip Passive Treatment
Site Name 001 Strip Mine

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AMD TREAT

AMD TREAT
LABOR

Labor Name

Estimate Labor Cost

1. Site Visits per Week

2. Site Labor Time per Visit hours

3. Travel Time per Visit hours

4. Unit Labor Cost \$/hour

Enter Established Annual Labor Cost

5. Actual Annual Labor Cost \$

6. Total Cost \$

Record Number 1 of 1

Company Name Thompson Bros Coal
Project 001 Strip Passive Treatment
Site Name 001 Strip Mine



AMD TREAT

AMD TREAT

MAINTANENCE

Estimate Maintenance Cost

- 1. Percent of Active Cost %
- 2. Percent of Passive Cost %
- 3. Percent of Ancillary Cost * %
- 4. Percent of Other Capital Cost %

Enter Established Annual Maintenance Cost

5. Annual Maintenance Cost \$

Maintenance Sub-Totals

- 6 Total Maintenance Active Cost \$
- 7. Total Maintenance Passive Cost \$
- 8. Total Maintenance Ancillary Cost \$
- 9. Total Maintenance Other Capital Cost \$
- 10. Total Maintenance Cost \$

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

Company Name Thompson Bros Coal
 Project 001 Strip Passive Treatment
 Site Name 001 Strip Mine



AMDTREAT

AMD TREAT SLUDGE REMOVAL

Opening Screen Water Parameters

Sludge Removal Name

RECEIVED TIME JUN. 9. 3:01PM

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Influent Water Parameters that Affect Sludge Removal

Calculated Acidity mg/L

Alkalinity mg/L

Calculate Net Acidity (Acid-Alkalinity)

Enter Net Acidity manually

Net Acidity (Hot Acidity) mg/L

Design Flow gpm

Typical Flow gpm

Total Iron mg/L

Aluminum mg/L

Manganese mg/L

Selection for Method of Removing Sludge

1. Select One

Sludge Removal by \$ per Gallon

2. Sludge Removal Unit Cost 0.06 \$/gal

Sludge Removal by Vacuum Truck

3. Vacuum Truck Unit Cost \$/hr

4. Mobilization Cost \$

5. Hours to be Used hr

Sludge Removal by Mechanical Excavation

6. Mechanical Excavation Unit Rate \$/hr

7. Mobilization Cost \$

8. Hours to be Used hr

Sludge Removal by Lagoon Cleaner

9. Lagoon Cleaning Unit Rate \$/hr

10. Mobilization Cost \$

11. Hours to be Used hr

Actual Sludge Removal Cost

12. Actual Sludge Removal Cost \$

13. Off Site Disposal Cost 0.00 \$

Concentrations from Main Water Quality Screen

14. Iron Concentration 14.07 mg/L

15. Manganese Concentration 49.89 mg/L

16. Aluminum Concentration 17.24 mg/L

17. Total Miscellaneous Concentration 0 mg/L

18. Percent Solids 5.00 %

19. Sludge Density 8.33 lbs/gal

20. Titration?

21. Gal. of Sludge per Gal of Water Treated gal

22. Estimated Sludge Volume 51 yd³/yr

Cost for Sludge Removal Types

23. Removal by \$ per Gallon 620 \$

24. Removal by Vacuum Truck 0 \$

25. Removal by Mechanical Excavation 0 \$

26. Removal by Lagoon Cleaner 0 \$

27. Actual Sludge Removal Cost 0 \$

Sludge Removal Sub-Totals

28. Currently Selected Removal Cost Plus Off Site Disposal Cost 620 \$

Record Number 1 of 1

Company Name Thompson Bros Coal

Project 001 Strip Passive Treatment

Site Name 001 Strip Mine



AMD TREAT RECAPITIALIZATION COST

AMDTREAT

Calculation Period yrs Inflation Rate % Net Return Rate %

Recapitalization Name

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 Matter	13,370	1	13,370	7	10	53,436
2. VFP Ls	46,926	1	46,926	7	10	187,551
3. VFP Excavation	21,231	1	21,231	7	10	84,855
4. VFP Pipes	25,132	1	25,132	20	3	27,474
5. OLC Ls	7,450	1	7,450	7	10	29,776
6. Inlet Water control structures	2,000	4	8,000	20	3	8,746
7. Outlet Water control structures	2,200	4	8,800	20	3	9,620
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 \$ PV Grand Total \$