Printed on **05/20/2008**

Company Name CHEWS CONTRACTING
Project ABS DISCHARGES
Site Name LITTLE D (LD1)

AMD TREAT

Costs AMD TREAT MAIN COST FORM

AMDTREAT

Passive Treatment	A	S	
Vertical Flow Pond			$0
Anoxic Limestone Drain	1	0	$2,441
Anaerobic Wetlands			$0
Aerobic Wetlands			$0
Manganese Removal Bed			$0
Oxic Limestone Channel			$0
Limestone Bed			$0
BIO Reactor			$0
Passive Subtotal:			**$2,441**
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	1	0	$5,000
Roads			$0
Land Access			$0
Ditching			$0
Engineering Cost	1	0	$744
Ancillary Subtotal:			**$5,744**
Other Cost (Capital Cost)			$0
Total Capital Cost:			**$8,185**
Annual Costs			
Sampling	1	0	$1,147
Labor	1	0	$1,820
Maintenance	1	0	$199
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:			**$3,166**
Other Cost			

Water Quality

Calculated Acidity	0.00	mg/L
Alkalinity	0.00	mg/L

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

Net Acidity (Hot Acidity)	114.00	mg/L
Design Flow	7.00	gpm
Typical Flow	7.00	gpm
Total Iron	3.67	mg/L
Aluminum	1.53	mg/L
Manganese	42.60	mg/L
pH	3.60	su
Ferric Iron	0.00	mg/L
Ferrous Iron	0.00	mg/L
Sulfate	0.00	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	1.7	tons/yr

Total Annual Cost: per 1000 Gal of H2O Treated **$0.859**

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COMMENTS:

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AMD TREAT

ANOXIC LIMESTONE DRAIN (ALD)

AMDTREAT

ALD Name

SIZING METHODS Select One

1. Tons of Limestone Needed	68	(•) ALD Based on Acidity Neutralization
2. Tons of Limestone Needed	92	( ) ALD Based on Retention Time
3. Tons of Limestone Needed	0	( ) ALD Based on Tons Limestone Entered
4. Tons of Limestone Needed	3,772	( ) ALD Based on Dimensions Entered

5. Retention Time		hours
6. Limestone Needed		tons
7. Top Length ALD		ft
8. Top Width ALD		ft

☑ **Opening Screen Water Parameters**

Influent Water Parameters that Affect ALD

Calculated Acidity 0.00 mg/L
Alkalinity 0.00 mg/L

( ) Calculate Net Acidity (Acid-Alkalinity)
( ) Enter Net Acidity manually
Net Acidity (Hot Acidity) 114.0000 mg/L

Design Flow 7.00 gpm
Typical Flow 7.00 gpm
Total Iron 3.67 mg/L
Aluminum 1.53 mg/L
Manganese 42.60 mg/L

9. System Life	20.0	years
10. Limestone Purity	85.00	%
11. Limestone Efficiency	60.00	%
12. % Void Space of Limestone Bed	43.00	%
13. Limestone Depth	4.00	ft
14. Density of Loose Limestone	94.30	lbs/ft3
15. Limestone Unit Cost	22.00	$/ton
16. Limestone Placement Unit Cost	0.00	$/yd3
17. Soil Cover Depth	2.00	ft

	Length		Width
18. Length to Width Ratio	4.00	:	1

19. Excavation Unit Cost	5.50	$/yd3
20. Soil Replacement Unit Cost	4.50	$/yd3
21. Liner Unit Cost	2.60	$/yd2
22. Total Length of Effluent / Influent Pipe	0.00	ft
23. Unit Cost of Pipe	15.00	$/ft

☑ 24. Clearing and Grubbing?

(•) 25a. Land Multiplier	1.5	ratio
( ) 25b. Clear/Grub Acres		acres
26. Clear and Grub Unit Cost	1300	$/acre

ALD Sizing Summaries

27.Top Width	9.52	ft
28. Top Length	38.11	ft
29. Limestone Surface Area	363.1	ft2
30. Limestone Volume	53	yd3
31. Excavation Volume	80.6	yd3
32. Clear & Grub Area	0.01	acres
33. Liner Area	135	ft2
34. Theoretical Retention Time	11.12	hrs

ALD Cost Summaries

35. Limestone Cost	1,506	$
36. Excavation Cost	443	$
37. Limestone Placement Cost	0	$
38. PipeCost	0	$
39. Liner Cost	353	$
40. Clear and Grub Cost	16	$
41. Soil Replacement Cost	121	$
42. Total Cost	2,441	$

Record Number 1 of 1

Company Name CHEWS CONTRACTING

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AMD TREAT

PONDS

AMDTREAT

Pond Name

Pond Design Based On:

- (•) Retention Time
  - 1. Desired Retention Time: 24.0 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	2.0	:	1	
11. Freeboard Depth	2.0			ft
12. Water Depth	4.0			ft
13. Excavation Unit Cost	5.50			$/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: 5.00 $/yd3
  - 17. Thickness of Clay Liner: 1.0 ft
- ( ) Synthetic Liner
  - 18. Synthetic Liner Unit Cost: $/yd2

[x] 19. Clearing and Grubbing?

- (•) 20. Land Multiplier: 1.50 ratio
- ( ) 21. Clear/Grub Acres: acres
- 22. Clear and Grub Unit Cost: 1300.00 $/acre

23. Revegetation Cost: 1500.00 $/acre

24. Cost of Baffles: 0 $

Calculated Pond Dimensions per Pond

25. Length at Top of Freeboard	45	ft
26. Width at Top of Freeboard	26	ft
27. Freeboard Volume	120	yd3
28. Water Volume	49	yd3
29. Estimated Annual Sludge	0	yd3/yr
30. Volume of Sludge per Removal	0	yd3/ removal
31. Excavation Volume	0.03	acre ft
32. Excavation Volume	49	yd3
33. Clear and Grub Area	0.04	acres
34. Liner Area	214	yd2
35. Calculated Retention Time	24	hours

Ponds Sub-Totals per Pond

36. Excavation Cost	537	$
37. Pipe Cost	0	$
38. Liner Cost	239	$
39. Clearing and Grubbing Cost	54	$
40. Revegetation Cost	20	$
41. Baffle Cost	0	$
[x] 42. Estimated Cost	852	$

[x] 43. Accept Minimum Pond Cost?

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

44. Recommended Minimum Cost: 5,000 $

45. Total Cost: 5,000 $

[x] **Opening Screen Water Parameters**

Influent Water Parameters that Affect Ponds

Calculated Acidity: 0.00 mg/L

Alkalinity: 0.00 mg/L

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

Net Acidity (Hot Acidity): 114.00 mg/L

Design Flow: 7.00 gpm

Typical Flow: 7.00 gpm

Total Iron: 3.67 mg/L

Aluminum: 1.53 mg/L

Manganese: 42.60 mg/L

Record Number 1 of 1

Company Name CHEWS CONTRACTING

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AMD TREAT

ENGINEERING COST

1. Capital Cost *	7,441	$
(•) 2. Per Cent of Capital Cost	10.00	%
( ) 3. Actual Engineering Cost		$
4. Total Engineering Cost	744	$

*** Total Capital Cost minus Engineering and Land Access Capital Cost**

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AMD TREAT

SAMPLING

Sampling Name

Estimate Sampling Cost

1. Unit Labor Cost	35.00	$/hr
2. Collection Time per Sample	0.33	hours/sample
3. Travel Time	1.00	hr
4. Sample Frequency	1.30	samples/mo
5. Lab Cost Per Sample	27.00	$/sample
6. Number of Sample Points	1	points

Enter Established Annual Sampling Cost

7. Actual Annual Sampling Cost		$

Sampling Sub-Totals

8. Yearly Sample Analysis Cost	421	$
9. Yearly Travel Cost	546	$
10. Yearly Collection Cost	180	$
11. Sampling Cost	1,147	$

Record Number 1 of 1

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AMD TREAT

LABOR

Labor Name

Estimate Labor Cost

1. Site Visits per Week	0.25	
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	1,820	$

Record Number 1 of 1

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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 *	3.50	%
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	24	$
8. Total Maintenance Ancillary Cost	175	$
9. Total Maintenance Other Capital Cost	0	$
10. Total Maintenance Cost	199	$

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

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AMD TREAT
RECAPITIZALITION COST

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

Recapitizalition 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. ALD Ls	1,506	1	1,506	20	3	1,646
2. ALD Excavation	443	1	443	20	3	484
3. ALD Liner Cost	353	1	353	20	3	386
4.	0	0	0	0	0	0
5.	0	0	0	0	0	0
6.	0	0	0	0	0	0
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 2,302 $ PV Grand Total 2,517 $

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