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December 2, 2011

Solid Waste Section
Asheville Regional Office

December 2, 2011

North Carolina Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section
2090 U.S. Highway 70
Swannanoa, NC 28778

Attention: Mr. Larry Frost
Regional Engineer

**Reference: Request for Additional Information Regarding
Financial Assurance Estimate of Probable Cost
Lincoln County Landfill**
S&ME Project No: 1356-11-013
NC Engineering License No. F-0176

Dear Mr. Frost:

The following letter is in response to the North Carolina Department of Environment and Natural Resources (NCDENR) e-mail dated November 8, 2011, from Jaclynne Drummond (NCDENR) to Julie Petersen (S&ME, Inc.). S&ME, Inc. (S&ME), on behalf of Lincoln County, has prepared a potential assessment and corrective action cost estimate for financial assurance for the Lincoln County Landfill. Please find attached to this letter an estimate of probable cost in 2011 dollars.

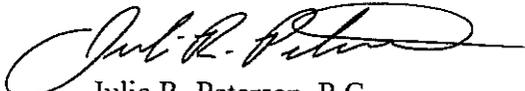
S&ME prepared this estimate of probable cost for potential assessment and corrective actions based on our recent experience with similar projects and our understanding of the rules and requirements in effect. The cost estimate was prepared using an assumed scenario of a release at the Municipal Solid Waste (MSW) landfill. The selected remedy assumed was natural attenuation with a monitoring period of 20 years. The cost estimate has been separated into fifteen tasks that correspond with the "Draft Financial Assurance Cost Estimate Summary for Potential Assessment and Corrective Action for Municipal

Solid Waste Landfills" list of rule based items. Assumptions made as to the number of wells installed and sampled are included in the cost estimate under the respective task.

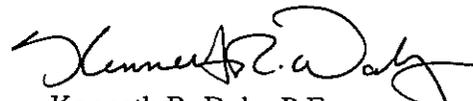
If you should have any questions or need additional information pertaining to this letter, please do not hesitate to contact us at your convenience.

Sincerely,

S&ME, Inc.



Julie R. Petersen, P.G.
Project Manager/Senior Geologist



Kenneth R. Daly, P.E.
Senior Project Engineer

Senior reviewed by: Jason S. Reeves, P.E., Senior Project Engineer

Attachments: Corrective Action Estimate of Probable Cost Summary
Corrective Action Estimate of Probable Cost

cc: Jackie Drummond, NCDENR
Burns Whittaker, Lincoln County
Mark Bivins, Lincoln County

Corrective Action Estimate of Probable Cost Summary (2011 Dollars)

Lincoln County Landfill

S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK	RULE	DESCRIPTION	ESTIMATED COST
TASK 1	15A NCAC 13B .1634	Appendix II Background Sampling of Groundwater Monitoring Network (4 events per sampling location)	\$ 83,100.00
TASK 2	15A NCAC 13B .1634	Installation of at least two wells (deep and shallow) at the compliance boundary	\$ 18,500.00
TASK 3	15A NCAC 13B .1634	Appendix II Sampling of Original Well Network and Compliance Boundary Wells Annually (First Semi-Annual Monitoring Event)	\$ 27,000.00
TASK 4	15A NCAC 13B .1634	Appendix I and II Detects Sampling of Original Well Network and Compliance Boundary Wells Annually (Second Semi-Annual Monitoring Event)	\$ 20,800.00
TASK 5	15A NCAC 13B .1634	Installation of additional monitoring wells to characterize the nature and extent (N&E) of the plume	\$ 60,000.00
TASK 6	15A NCAC 13B .1634	Appendix II Background Sampling of N&E Monitoring Network (4 events per sampling location)	\$ 47,300.00
TASK 7	15A NCAC 13B .1634	Appendix II Sampling of N&E Well Network Annually (First Semi-Annual Monitoring Event)	\$ 15,800.00
TASK 8	15A NCAC 13B .1634	Appendix I and II Detects Sampling of N&E Well Network Annually (Second Semi-Annual Monitoring Event)	\$ 13,200.00
TASK 9	15A NCAC 13B .1635	Assessment of Corrective Measures (Report, Public Notice, Public Meeting)	\$ 35,900.00
TASK 10	15A NCAC 13B .1636	Selection of Remedy	\$ 20,100.00
TASK 11	15A NCAC 13B .1636 and .1637	Corrective Action Plan Submittal, Approval, and Implementation	\$ 911,800.00
TASK 12	15A NCAC 13B .1636 and .1637	Installation of Additional Monitoring Wells to Monitor Effectiveness of Selected Remedy	\$ 37,200.00
TASK 13	15A NCAC 13B .1636 and .1637	Maintenance and Repair of Additional Monitoring Wells	\$ 7,500.00
TASK 14	15A NCAC 13B .1636 and .1637	Sampling and Analysis of Additional Monitoring Wells	\$ -
TASK 15	15A NCAC 13B .1637	Corrective Action Remedy is Complete	\$ 10,300.00

ESTIMATE OF PROBABLE COST FOR CORRECTIVE ACTION	\$ 1,308,500.00
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Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 1							
15A NCAC 13B .1634							
Appendix II Background Sampling of Groundwater Monitoring Network							
(4 events per sampling location)							
20 MSW Well Locations, 3 Days to Sample							
Field Work (4 events)							
Technician Time (2 techs)	240	hours	at	\$	66.00	per hour	\$ 15,840.00
Mileage	1200	miles	at	\$	0.52	per mile	\$ 624.00
Water Level Probe	12	days	at	\$	30.00	per day	\$ 360.00
pH Meter	12	days	at	\$	35.00	per day	\$ 420.00
Conductivity Meter	12	days	at	\$	38.00	per day	\$ 456.00
Gator Rental	12	days	at	\$	140.00	per week	\$ 1,680.00
Disposable Teflon Bailers	7	cases	at	\$	189.00	per case	\$ 1,323.00
Disposables (Tubing, Gloves, Ropes etc)	1	each	at	\$	600.00	per each	\$ 600.00
							<u>\$ 21,303.00</u>
Analytical (4 events)							
Appendix II - Volatiles	84	each	at	\$	115.00	per each	\$ 9,660.00
Appendix II - Semi Volatiles	80	each	at	\$	195.50	per each	\$ 15,640.00
Appendix II - Pesticides/PCB	80	each	at	\$	103.50	per each	\$ 8,280.00
Appendix II - Herbicides	80	each	at	\$	118.45	per each	\$ 9,476.00
Appendix II - Metals	80	each	at	\$	103.50	per each	\$ 8,280.00
Appendix II - CN	80	each	at	\$	41.40	per each	\$ 3,312.00
Appendix II - Sulfide	80	each	at	\$	17.25	per each	\$ 1,380.00
							<u>\$ 56,028.00</u>
Reporting (1 event)							
Senior Professional (P5)	2	hour	at	\$	121.00	per hour	\$ 242.00
Registered Professional (P4)	8	hours	at	\$	110.00	per hours	\$ 880.00
Project Professional (P3)	40	hours	at	\$	99.00	per hours	\$ 3,960.00
CAD Operator	8	hours	at	\$	66.00	per hours	\$ 528.00
Administration	4	hours	at	\$	44.00	per hours	\$ 176.00
							<u>\$ 5,786.00</u>
TASK 1 TOTAL							\$ 83,117.00

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 2							
15A NCAC 13B .1634							
Installation of at least two wells (deep and shallow) at the compliance boundary							
Drilling Services (3 days)							
Drill Rig Mobilization	1	each	at	\$	500.00	per each	\$ 500.00
Soil Test Boring (0-50 ft depth) 4.25 ID Augers	50	feet	at	\$	12.50	per foot	\$ 625.00
Auger Boring (0-50 ft depth) 4.25 ID Augers	50	feet	at	\$	8.00	per foot	\$ 400.00
Rock Coring - Set up, per hole	1	each	at	\$	131.25	per each	\$ 131.25
Installation of Temporary NW Casing	50	feet	at	\$	5.25	per foot	\$ 262.50
NQ Coring	25	feet	at	\$	42.00	per foot	\$ 1,050.00
Installation of Type II Monitor Well, 2-inch	125	feet	at	\$	26.25	per foot	\$ 3,281.25
Above Grade Protective Casing, 2-inch wells	2	each	at	\$	178.50	per each	\$ 357.00
Steam Cleaner	2	days	at	\$	131.25	per day	\$ 262.50
Grout Plant	1	day	at	\$	105.00	per day	\$ 105.00
Water Trailer	3	days	at	\$	78.75	per day	\$ 236.25
Non-drilling time (water hauling, decon, etc.)	4	hours	at	\$	110.00	per hour	\$ 440.00
							<u>\$ 7,650.75</u>
Drilling Oversight (3 days)							
Project Professional (P3)	30	hours	at	\$	99.00	per hour	\$ 2,970.00
Mileage	300	miles	at	\$	0.52	per mile	\$ 156.00
Water Level Meter	3	days	at	\$	30.00	per day	\$ 90.00
							<u>\$ 3,216.00</u>
Well Development and Slug Testing (2 days)							
Project Professional (P3)	20	hours	at	\$	99.00	per hour	\$ 1,980.00
Mileage	200	miles	at	\$	0.52	per mile	\$ 104.00
Water Level Meter	2	days	at	\$	30.00	per day	\$ 60.00
Pressure Transducer and Data Logger	1	day	at	\$	50.00	per day	\$ 50.00
Battery Operated Well Pump	2	days	at	\$	25.00	per day	\$ 50.00
							<u>\$ 2,244.00</u>
Soil Laboratory Classification (for porosity estimates)							
Atterburg Limits	1	each	at	\$	68.25	per each	\$ 68.25
Grain Size with Hydrometer	1	each	at	\$	99.75	per each	\$ 99.75
Specific Gravity	1	each	at	\$	47.25	per each	\$ 47.25
							<u>\$ 215.25</u>
Well Survey							
Project Professional (P3)	2	hours	at	\$	99.00	per hour	\$ 198.00
Subcontracted Survey Cost	1	each	at	\$	1,500.00	per each	\$ 1,500.00
							<u>\$ 1,698.00</u>
Boring Logs, Well Logs, and Estimation of Groundwater Flow							
Registered Professional (P4)	4	hours	at	\$	110.00	per hours	\$ 440.00
Project Professional (P3)	24	hours	at	\$	99.00	per hours	\$ 2,376.00
CAD Operator	8	hours	at	\$	66.00	per hours	\$ 528.00
Administration	4	hours	at	\$	44.00	per hours	\$ 176.00
							<u>\$ 3,520.00</u>
TASK 2 TOTAL							\$ 18,544.00

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 3							
15A NCAC 13B .1634							
Appendix II Sampling of Original Well Network and Compliance Boundary Wells Annually							
(First Semi-Annual Monitoring Event)							
22 MSW Well Locations, 3 Days to Sample							
Field Work (1 event)							
Technician Time (2 techs)	60	hours	at	\$	66.00	per hour	\$ 3,960.00
Mileage	300	miles	at	\$	0.52	per mile	\$ 156.00
Water Level Probe	3	days	at	\$	30.00	per day	\$ 90.00
pH Meter	3	days	at	\$	35.00	per day	\$ 105.00
Conductivity Meter	3	days	at	\$	38.00	per day	\$ 114.00
Gator Rental	3	days	at	\$	140.00	per week	\$ 420.00
Disposable Teflon Bailers	2	cases	at	\$	189.00	per case	\$ 378.00
Disposables (Tubing, Gloves, Ropes etc)	1	each	at	\$	150.00	per each	\$ 150.00
							<u>\$ 5,373.00</u>
Analytical (1 event)							
Appendix II - Volatiles	23	each	at	\$	115.00	per each	\$ 2,645.00
Appendix II - Semi Volatiles	22	each	at	\$	195.50	per each	\$ 4,301.00
Appendix II - Pesticides/PCB	22	each	at	\$	103.50	per each	\$ 2,277.00
Appendix II - Herbicides	22	each	at	\$	118.45	per each	\$ 2,605.90
Appendix II - Metals	22	each	at	\$	103.50	per each	\$ 2,277.00
Appendix II - CN	22	each	at	\$	41.40	per each	\$ 910.80
Appendix II - Sulfide	22	each	at	\$	17.25	per each	\$ 379.50
							<u>\$ 15,396.20</u>
Reporting (1 event)							
Senior Professional (P5)	2	hour	at	\$	121.00	per hour	\$ 242.00
Registered Professional (P4)	12	hours	at	\$	110.00	per hours	\$ 1,320.00
Project Professional (P3)	40	hours	at	\$	99.00	per hours	\$ 3,960.00
CAD Operator	8	hours	at	\$	66.00	per hours	\$ 528.00
Administration	4	hours	at	\$	44.00	per hours	\$ 176.00
							<u>\$ 6,226.00</u>
TASK 3 TOTAL							\$ 26,995.20

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 4							
15A NCAC 13B .1634							
Appendix I and II Detects Sampling of Original Well Network and Compliance Boundary Wells Annually							
(Second Semi-Annual Monitoring Event)							
<u>22 MSW Well Locations, 3 Days to Sample</u>							
Field Work (1 event)							
Technician Time (2 techs)	60	hours	at	\$	66.00	per hour	\$ 3,960.00
Mileage	300	miles	at	\$	0.52	per mile	\$ 156.00
Water Level Probe	3	days	at	\$	30.00	per day	\$ 90.00
pH Meter	3	days	at	\$	35.00	per day	\$ 105.00
Conductivity Meter	3	days	at	\$	38.00	per day	\$ 114.00
Gator Rental	3	days	at	\$	140.00	per week	\$ 420.00
Disposable Teflon Bailers	2	cases	at	\$	189.00	per case	\$ 378.00
Disposables (Tubing, Gloves, Ropes etc)	1	each	at	\$	150.00	per each	\$ 150.00
							<u>\$ 5,373.00</u>
Analytical (1 event) Assume Appendix I VOCs, Appendix I Metals, and Appendix II Semi's							
Appendix II - Volatiles	23	each	at	\$	115.00	per each	\$ 2,645.00
Appendix II - Semi Volatiles	22	each	at	\$	195.50	per each	\$ 4,301.00
Appendix II - Pesticides/PCB	0	each	at	\$	103.50	per each	\$ -
Appendix II - Herbicides	0	each	at	\$	118.45	per each	\$ -
Appendix II - Metals	22	each	at	\$	103.50	per each	\$ 2,277.00
Appendix II - CN	0	each	at	\$	41.40	per each	\$ -
Appendix II - Sulfide	0	each	at	\$	17.25	per each	\$ -
							<u>\$ 9,223.00</u>
Reporting (1 event)							
Senior Professional (P5)	2	hour	at	\$	121.00	per hour	\$ 242.00
Registered Professional (P4)	12	hours	at	\$	110.00	per hours	\$ 1,320.00
Project Professional (P3)	40	hours	at	\$	99.00	per hours	\$ 3,960.00
CAD Operator	8	hours	at	\$	66.00	per hours	\$ 528.00
Administration	4	hours	at	\$	44.00	per hours	\$ 176.00
							<u>\$ 6,226.00</u>
TASK 4 TOTAL							\$ 20,822.00

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 5							
15A NCAC 13B .1634							
Installation of additional monitoring wells to characterize the nature and extent (N&E) of the plume							
Assume 6 shallow and 3 deep wells							
Drilling Services (12 days)							
Drill Rig Mobilization	1	each	at	\$	500.00	per each	\$ 500.00
Soil Test Boring (0-50 ft depth) 4.25 ID Augers	300	feet	at	\$	12.50	per foot	\$ 3,750.00
Auger Boring (0-50 ft depth) 4.25 ID Augers	150	feet	at	\$	8.00	per foot	\$ 1,200.00
Rock Coring - Set up, per hole	3	each	at	\$	131.25	per each	\$ 393.75
Installation of Temporary NW Casing	150	feet	at	\$	5.25	per foot	\$ 787.50
NQ Coring	75	feet	at	\$	42.00	per foot	\$ 3,150.00
Installation of Type II Monitor Well, 2-inch	525	feet	at	\$	26.25	per foot	\$ 13,781.25
Above Grade Protective Casing, 2-inch wells	9	each	at	\$	178.50	per each	\$ 1,606.50
Steam Cleaner	12	days	at	\$	131.25	per day	\$ 1,575.00
Grout Plant	4	day	at	\$	105.00	per day	\$ 420.00
Water Trailer	12	days	at	\$	78.75	per day	\$ 945.00
Non-drilling time (water hauling, decon, etc.)	12	hours	at	\$	110.00	per hour	\$ 1,320.00
							\$ 29,429.00
Drilling Oversight (12 days)							
Project Professional (P3)	120	hours	at	\$	99.00	per hour	\$ 11,880.00
Mileage	1200	miles	at	\$	0.52	per mile	\$ 624.00
Water Level Meter	12	days	at	\$	30.00	per day	\$ 360.00
							\$ 12,864.00
Well Development and Slug Testing (5 days)							
Project Professional (P3)	50	hours	at	\$	99.00	per hour	\$ 4,950.00
Mileage	500	miles	at	\$	0.52	per mile	\$ 260.00
Water Level Meter	5	days	at	\$	30.00	per day	\$ 150.00
Pressure Transducer and Data Logger	3	day	at	\$	50.00	per day	\$ 150.00
Battery Operated Well Pump	5	days	at	\$	25.00	per day	\$ 125.00
							\$ 5,635.00
Soil Laboratory Classification (for porosity estimates)							
Atterburg Limits	6	each	at	\$	68.25	per each	\$ 409.50
Grain Size with Hydrometer	6	each	at	\$	99.75	per each	\$ 598.50
Specific Gravity	6	each	at	\$	47.25	per each	\$ 283.50
							\$ 1,291.50
Well Survey							
Project Professional (P3)	2	hours	at	\$	99.00	per hour	\$ 198.00
Subcontracted Survey Cost	1	each	at	\$	5,000.00	per each	\$ 5,000.00
							\$ 5,198.00
Boring Logs, Well Logs, and Estimation of Groundwater Flow							
Registered Professional (P4)	8	hours	at	\$	110.00	per hours	\$ 880.00
Project Professional (P3)	40	hours	at	\$	99.00	per hours	\$ 3,960.00
CAD Operator	8	hours	at	\$	66.00	per hours	\$ 528.00
Administration	4	hours	at	\$	44.00	per hours	\$ 176.00
							\$ 5,544.00
TASK 5 TOTAL							\$ 59,961.50

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 6							
15A NCAC 13B .1634							
Appendix II Background Sampling of N&E Monitoring Network							
(4 events per sampling location)							
9 N&E Well Locations, 2 Days to Sample							
Field Work (4 events)							
Technician Time (2 techs)	160	hours	at	\$	66.00	per hour	\$ 10,560.00
Mileage	800	miles	at	\$	0.52	per mile	\$ 416.00
Water Level Probe	8	days	at	\$	30.00	per day	\$ 240.00
pH Meter	8	days	at	\$	35.00	per day	\$ 280.00
Conductivity Meter	8	days	at	\$	38.00	per day	\$ 304.00
Gator Rental	8	days	at	\$	140.00	per week	\$ 1,120.00
Disposable Teflon Bailers	3	cases	at	\$	189.00	per case	\$ 567.00
Disposables (Tubing, Gloves, Ropes etc)	1	each	at	\$	600.00	per each	\$ 600.00
							\$ 14,087.00
Analytical (4 events)							
Appendix II - Volatiles	40	each	at	\$	115.00	per each	\$ 4,600.00
Appendix II - Semi Volatiles	36	each	at	\$	195.50	per each	\$ 7,038.00
Appendix II - Pesticides/PCB	36	each	at	\$	103.50	per each	\$ 3,726.00
Appendix II - Herbicides	36	each	at	\$	118.45	per each	\$ 4,264.20
Appendix II - Metals	36	each	at	\$	103.50	per each	\$ 3,726.00
Appendix II - CN	36	each	at	\$	41.40	per each	\$ 1,490.40
Appendix II - Sulfide	36	each	at	\$	17.25	per each	\$ 621.00
							\$ 25,465.60
Reporting (1 event)							
Senior Professional (P5)	4	hour	at	\$	121.00	per hour	\$ 484.00
Registered Professional (P4)	24	hours	at	\$	110.00	per hours	\$ 2,640.00
Project Professional (P3)	40	hours	at	\$	99.00	per hours	\$ 3,960.00
CAD Operator	8	hours	at	\$	66.00	per hours	\$ 528.00
Administration	4	hours	at	\$	44.00	per hours	\$ 176.00
							\$ 7,788.00
TASK 6 TOTAL							\$ 47,340.60

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 7						
15A NCAC 13B .1634						
Appendix II Sampling of N&E Well Network Annually						
(First Semi-Annual Monitoring Event)						
9 N&E Well Locations, 2 Days to Sample						
Field Work (1 event)						
Technician Time (2 techs)	40	hours	at \$	66.00	per hour	\$ 2,640.00
Mileage	200	miles	at \$	0.52	per mile	\$ 104.00
Water Level Probe	2	day	at \$	30.00	per day	\$ 60.00
pH Meter	2	day	at \$	35.00	per day	\$ 70.00
Conductivity Meter	2	day	at \$	38.00	per day	\$ 76.00
Gator Rental	2	day	at \$	140.00	per week	\$ 280.00
Disposable Teflon Bailers	1	case	at \$	189.00	per case	\$ 189.00
Disposables (Tubing, Gloves, Ropes etc)	1	each	at \$	200.00	per each	\$ 200.00
						\$ 3,619.00
Analytical (1 event)						
Appendix II - Volatiles	10	each	at \$	115.00	per each	\$ 1,150.00
Appendix II - Semi Volatiles	9	each	at \$	195.50	per each	\$ 1,759.50
Appendix II - Pesticides/PCB	9	each	at \$	103.50	per each	\$ 931.50
Appendix II - Herbicides	9	each	at \$	118.45	per each	\$ 1,066.05
Appendix II - Metals	9	each	at \$	103.50	per each	\$ 931.50
Appendix II - CN	9	each	at \$	41.40	per each	\$ 372.60
Appendix II - Sulfide	9	each	at \$	17.25	per each	\$ 155.25
						\$ 6,366.40
Reporting (1 event)						
Senior Professional (P5)	2	hour	at \$	121.00	per hour	\$ 242.00
Registered Professional (P4)	8	hours	at \$	110.00	per hours	\$ 880.00
Project Professional (P3)	40	hours	at \$	99.00	per hours	\$ 3,960.00
CAD Operator	8	hours	at \$	66.00	per hours	\$ 528.00
Administration	4	hours	at \$	44.00	per hours	\$ 176.00
						\$ 5,786.00
TASK 7 TOTAL						\$ 15,771.40

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 8							
15A NCAC 13B .1634							
Appendix I and II Detects Sampling of N&E Well Network Annually							
(Second Semi-Annual Monitoring Event)							
9 N&E Well Locations, 2 Days to Sample							
Field Work (1 event)							
Technician Time (2 techs)	40	hours	at	\$	66.00	per hour	\$ 2,640.00
Mileage	200	miles	at	\$	0.52	per mile	\$ 104.00
Water Level Probe	2	day	at	\$	30.00	per day	\$ 60.00
pH Meter	2	day	at	\$	35.00	per day	\$ 70.00
Conductivity Meter	2	day	at	\$	38.00	per day	\$ 76.00
Gator Rental	2	day	at	\$	140.00	per week	\$ 280.00
Disposable Teflon Bailers	1	case	at	\$	189.00	per case	\$ 189.00
Disposables (Tubing, Gloves, Ropes etc)	1	each	at	\$	150.00	per each	\$ 150.00
							\$ 3,569.00
Analytical (1 event) Assume Appendix I VOCs, Appendix I Metals, and Appendix II Semi's							
Appendix II - Volatiles	10	each	at	\$	115.00	per each	\$ 1,150.00
Appendix II - Semi Volatiles	9	each	at	\$	195.50	per each	\$ 1,759.50
Appendix II - Pesticides/PCB	0	each	at	\$	103.50	per each	\$ -
Appendix II - Herbicides	0	each	at	\$	118.45	per each	\$ -
Appendix II - Metals	9	each	at	\$	103.50	per each	\$ 931.50
Appendix II - CN	0	each	at	\$	41.40	per each	\$ -
Appendix II - Sulfide	0	each	at	\$	17.25	per each	\$ -
							\$ 3,841.00
Reporting (1 event)							
Senior Professional (P5)	2	hour	at	\$	121.00	per hour	\$ 242.00
Registered Professional (P4)	8	hours	at	\$	110.00	per hours	\$ 880.00
Project Professional (P3)	40	hours	at	\$	99.00	per hours	\$ 3,960.00
CAD Operator	8	hours	at	\$	66.00	per hours	\$ 528.00
Administration	4	hours	at	\$	44.00	per hours	\$ 176.00
							\$ 5,786.00
TASK 8 TOTAL							\$ 13,196.00

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 9							
15A NCAC 13B .1635							
Assessment of Corrective Measures							
(Report, Public Notice, Public Meeting)							
ACM Report							
Senior Professional (P5)	10	hours	at	\$ 121.00	per	hour	\$ 1,210.00
Registered Professional (P4)	120	hours	at	\$ 110.00	per	hours	\$ 13,200.00
Project Professional (P3)	120	hours	at	\$ 99.00	per	hours	\$ 11,880.00
CAD Operator	40	hours	at	\$ 66.00	per	hours	\$ 2,640.00
Administration	8	hours	at	\$ 44.00	per	hours	\$ 352.00
							<u>\$ 29,282.00</u>
Public Notice							
Senior Professional (P5)	0.5	hour	at	\$ 121.00	per	hour	\$ 60.50
Registered Professional (P4)	12	hours	at	\$ 110.00	per	hours	\$ 1,320.00
Administration	4	hours	at	\$ 44.00	per	hours	\$ 176.00
Estimated Advertisement Costs	1	each	at	\$ 1,500.00	per	each	\$ 1,500.00
							<u>\$ 3,056.50</u>
Public Meeting							
Senior Professional (P5)	8	hours	at	\$ 121.00	per	hour	\$ 968.00
Registered Professional (P4)	24	hours	at	\$ 110.00	per	hours	\$ 2,640.00
							<u>\$ 3,608.00</u>
TASK 9 TOTAL							\$ 35,946.50

TASK 10							
15A NCAC 13B .1636							
Selection of Remedy							
Permit Modification Application							
Senior Professional (P5)	4	hours	at	\$ 121.00	per	hour	\$ 484.00
Registered Professional (P4)	40	hours	at	\$ 110.00	per	hours	\$ 4,400.00
Administration	4	hours	at	\$ 44.00	per	hours	\$ 176.00
							<u>\$ 5,060.00</u>
Permit Modification Fee							
Estimated Fee	1	each	at	\$ 15,000.00	per	each	\$ 15,000.00
							<u>\$ 15,000.00</u>
TASK 10 TOTAL							\$ 20,060.00

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 11							
15A NCAC 13B .1636 and .1637							
Corrective Action Plan Submittal, Approval, and Implementation							
CAP Report							
Senior Professional (P5)	12	hours	at	\$	121.00	per hour	\$ 1,452.00
Registered Professional (P4)	40	hours	at	\$	110.00	per hours	\$ 4,400.00
Project Professional (P3)	40	hours	at	\$	99.00	per hours	\$ 3,960.00
CAD Operator	8	hours	at	\$	66.00	per hours	\$ 528.00
Administration	4	hours	at	\$	44.00	per hours	\$ 176.00
							<u>\$ 10,516.00</u>
CAP Implementation (Assume MNA)							
Baseline Sampling of MNA Performance Parameters							
(Assume 1 background well, 10 performance wells, and 4 sentinel wells)							
Field Work (4 events, 3 days per event)							
Technician Time (2 techs)	240	hours	at	\$	66.00	per hour	\$ 15,840.00
Mileage	1200	miles	at	\$	0.52	per mile	\$ 624.00
Water Level Probe	12	days	at	\$	30.00	per day	\$ 360.00
Multi-parameter meter with flow cell (Hydrolab)	12	days	at	\$	125.00	per day	\$ 1,500.00
Hydrolab Calibration Consumables	4	each	at	\$	90.00	per each	\$ 360.00
Turbidity Meter	12	days	at	\$	35.00	per day	\$ 420.00
Gator Rental	4	weeks	at	\$	140.00	per week	\$ 560.00
Bladder Pump (including controls)	12	days	at	\$	135.00	per day	\$ 1,620.00
Disposable Bladders (pack of 10)	6	each	at	\$	115.00	per each	\$ 690.00
Dedicated Tubing (1 time expense)	1	each	at	\$	2,000.00	per each	\$ 2,000.00
							<u>\$ 23,974.00</u>
Analytical (4 events)							
Nitrate	60	each	at	\$	17.25	per each	\$ 1,035.00
Iron	60	each	at	\$	13.80	per each	\$ 828.00
Sulfate	60	each	at	\$	19.55	per each	\$ 1,173.00
Sulfide	60	each	at	\$	17.25	per each	\$ 1,035.00
Methane, Ethane, Ethene, CO2	60	each	at	\$	126.50	per each	\$ 7,590.00
TOC/BOD/COD	60	each	at	\$	126.50	per each	\$ 7,590.00
Alkalinity	60	each	at	\$	17.25	per each	\$ 1,035.00
Chloride	60	each	at	\$	17.25	per each	\$ 1,035.00
Volatile Fatty Acids	60	each	at	\$	126.50	per each	\$ 7,590.00
							<u>\$ 28,911.00</u>
Reporting and MNA Screening Model (4 events)							
Senior Professional (P5)	32	hour	at	\$	121.00	per hour	\$ 3,872.00
Registered Professional (P4)	160	hours	at	\$	110.00	per hours	\$ 17,600.00
Project Professional (P3)	128	hours	at	\$	99.00	per hours	\$ 12,672.00
CAD Operator	24	hours	at	\$	66.00	per hours	\$ 1,584.00
Administration	16	hours	at	\$	44.00	per hours	\$ 704.00
							<u>\$ 36,432.00</u>

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

MNA Effectiveness Sampling and Reporting

(Assume 1 background well, 10 performance wells, and 4 sentinel wells to be sampled semi-annually for 20 years)

Field Work (40 events, 3 days per event)

Technician Time (2 techs)	2400	hours	at	\$	66.00	per	hour	\$	158,400.00
Mileage	12000	miles	at	\$	0.52	per	mile	\$	6,240.00
Water Level Probe	120	days	at	\$	30.00	per	day	\$	3,600.00
Multi-parameter meter with flow cell (Hydrolab)	120	days	at	\$	125.00	per	day	\$	15,000.00
Hydrolab Calibration Consumables	40	each	at	\$	90.00	per	each	\$	3,600.00
Turbidity Meter	120	days	at	\$	35.00	per	day	\$	4,200.00
Gator Rental	40	weeks	at	\$	140.00	per	week	\$	5,600.00
Bladder Pump (including controls)	120	days	at	\$	135.00	per	day	\$	16,200.00
Disposable Bladders (pack of 10)	60	each	at	\$	115.00	per	each	\$	6,900.00
									\$ 219,740.00

Analytical (40 events)

Appendix II - Volatiles	640	each	at	\$	115.00	per	each	\$	73,600.00
Appendix II - Semi Volatiles	600	each	at	\$	195.50	per	each	\$	117,300.00
Appendix II - Metals	600	each	at	\$	103.50	per	each	\$	62,100.00
Nitrate	600	each	at	\$	17.25	per	each	\$	10,350.00
Iron	600	each	at	\$	13.80	per	each	\$	8,280.00
Sulfate	600	each	at	\$	19.55	per	each	\$	11,730.00
Sulfide	600	each	at	\$	17.25	per	each	\$	10,350.00
Methane, Ethane, Ethene, CO2	600	each	at	\$	126.50	per	each	\$	75,900.00
TOC/BOD/COD	600	each	at	\$	126.50	per	each	\$	75,900.00
Alkalinity	600	each	at	\$	17.25	per	each	\$	10,350.00
Chloride	600	each	at	\$	17.25	per	each	\$	10,350.00
Volatile Fatty Acids	600	each	at	\$	126.50	per	each	\$	75,900.00
									\$ 542,110.00

Corrective Action Evaluation Report (4 reports, 1 report every 5 years)

Senior Professional (P5)	40	hour	at	\$	121.00	per	hour	\$	4,840.00
Registered Professional (P4)	240	hours	at	\$	110.00	per	hours	\$	26,400.00
Project Professional (P3)	160	hours	at	\$	99.00	per	hours	\$	15,840.00
CAD Operator	32	hours	at	\$	66.00	per	hours	\$	2,112.00
Administration	20	hours	at	\$	44.00	per	hours	\$	880.00
									\$ 50,072.00

TASK 11 TOTAL

\$ 911,755.00

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 12							
15A NCAC 13B .1636 and .1637							
Installation of Additional Monitoring Wells to Monitor Effectiveness of Selected Remedy							
Installation of 3 Performance Wells and 3 Sentinel Wells							
Drilling Services (7 days)							
Drill Rig Mobilization	1	each	at	\$ 500.00	per	each	\$ 500.00
Soil Test Boring (0-50 ft depth) 4.25 ID Augers	300	feet	at	\$ 12.50	per	foot	\$ 3,750.00
Installation of Type II Monitor Well, 2-inch	300	feet	at	\$ 26.25	per	foot	\$ 7,875.00
Above Grade Protective Casing, 2-inch wells	6	each	at	\$ 178.50	per	each	\$ 1,071.00
Steam Cleaner	7	days	at	\$ 131.25	per	day	\$ 918.75
Grout Plant	3	day	at	\$ 105.00	per	day	\$ 315.00
Non-drilling time (water hauling, decon, etc.)	7	hours	at	\$ 110.00	per	hour	\$ 770.00
							<u>\$ 15,199.75</u>
Drilling Oversight (7 days)							
Project Professional (P3)	70	hours	at	\$ 99.00	per	hour	\$ 6,930.00
Mileage	700	miles	at	\$ 0.52	per	mile	\$ 364.00
Water Level Meter	7	days	at	\$ 30.00	per	day	\$ 210.00
							<u>\$ 7,504.00</u>
Well Development and Slug Testing (4 days)							
Project Professional (P3)	40	hours	at	\$ 99.00	per	hour	\$ 3,960.00
Mileage	400	miles	at	\$ 0.52	per	mile	\$ 208.00
Water Level Meter	4	days	at	\$ 30.00	per	day	\$ 120.00
Pressure Transducer and Data Logger	2	day	at	\$ 50.00	per	day	\$ 100.00
Battery Operated Well Pump	4	days	at	\$ 25.00	per	day	\$ 100.00
							<u>\$ 4,488.00</u>
Soil Laboratory Classification (for porosity estimates)							
Atterburg Limits	6	each	at	\$ 68.25	per	each	\$ 409.50
Grain Size with Hydrometer	6	each	at	\$ 99.75	per	each	\$ 598.50
Specific Gravity	6	each	at	\$ 47.25	per	each	\$ 283.50
							<u>\$ 1,291.50</u>
Well Survey							
Project Professional (P3)	2	hours	at	\$ 99.00	per	hour	\$ 198.00
Subcontracted Survey Cost	1	each	at	\$ 3,000.00	per	each	\$ 3,000.00
							<u>\$ 3,198.00</u>
Boring Logs, Well Logs, and Estimation of Groundwater Flow							
Registered Professional (P4)	8	hours	at	\$ 110.00	per	hours	\$ 880.00
Project Professional (P3)	40	hours	at	\$ 99.00	per	hours	\$ 3,960.00
CAD Operator	8	hours	at	\$ 66.00	per	hours	\$ 528.00
Administration	4	hours	at	\$ 44.00	per	hours	\$ 176.00
							<u>\$ 5,544.00</u>
TASK 12 TOTAL							\$ 37,225.25

Corrective Action Estimate of Probable Cost (2011 Dollars)

Lincoln County Landfill
 S&ME Project No. 1356-11-013

Assumed Scenario: Release at MSW Landfill, Monitored Natural Attenuation as Selected Remedy.

TASK 13						
15A NCAC 13B .1636 and .1637						
Maintenance and Repair of Additional Monitoring Wells						
<u>Assume Repair of 5 Protective Covers</u>						
Drilling Services						
Repair of Protective Cover (Lump Sum)	5	each	at	\$ 1,500.00	per	each
					\$	7,500.00
					\$	7,500.00
TASK 13 TOTAL						\$ 7,500.00
TASK 14						
15A NCAC 13B .1636 and .1637						
Sampling and Analysis of Additional Monitoring Wells						
This item is included in Task 11						
TASK 14 TOTAL						\$ -
TASK 15						
15A NCAC 13B .1637						
Corrective Action Remedy is Complete						
Report Demonstrating Corrective Action is Complete						
Senior Professional (P5)	12	hour	at	\$ 121.00	per	hour
Registered Professional (P4)	40	hours	at	\$ 110.00	per	hours
Project Professional (P3)	32	hours	at	\$ 99.00	per	hours
CAD Operator	16	hours	at	\$ 66.00	per	hours
Administration	6	hours	at	\$ 44.00	per	hours
					\$	10,340.00
					\$	10,340.00
TASK 15 TOTAL						\$ 10,340.00