

APPENDIX B

Closure and Long-term Care Cost Estimates

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**Financial Assurance Responsibility
Closure and Long-term Care Cost Estimates
Tomoka Farms Road Landfill
Volusia County, Florida
December 2011**

As part of the North Cell closure permit renewal application, cost estimates for closure and long-term care of the North Cell, and cost estimates for long-term care of the South Cell Landfill are being re-calculated according to 62-701.630(3)(a), FAC. The North Cell Phase 2 Expansion Area has not yet been constructed and therefore, this area has not been included in the cost estimates.

The basis for cost estimates include 2011 pricing, FDEP-submitted closure design and regulations contained in Chapter 62-701 of the Florida Administrative Code (FAC). Revised cost estimates are provided on FDEP Forms 62-701.900(28). These signed and sealed FDEP Forms are provided in Attachment R-1. Attachment R-2 includes the necessary calculations and explanations on the quantities/unit prices used on FDEP Forms (Attachment R-1). Quotes from third-party sources are provided in Attachment R-3.

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Attachment R-1
FDEP Form 62-701.900(28)

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Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Print Form

Reset Form

DEP Form # 62-701.900(28), F.A.C.

Form Title: Closure Cost Estimating Form
For Solid Waste Facilities

Effective Date: January 6, 2010

Incorporated in Rule 62-701.630(3), F.A.C.

CLOSURE COST ESTIMATING FORM FOR SOLID WASTE FACILITIES

Date of DEP Approval: _____

I. GENERAL INFORMATION:

Facility Name: Tomoka Farms Road Landfill-North Cell, Phase I, Class I WACS ID: 27540
Permit Application or Consent Order No.: SF64-0078767-0023 Expiration Date: 3/3/2013
Facility Address: 1990 Tomoka Farms Road, Daytona Beach, Florida
Permittee or Owner/Operator: Volusia County Solid Waste Division
Mailing Address: 3151 East New York Avenue, DeLand, Florida 32724

Latitude: 29° 07' 50" Longitude: 81° 06' 02"
Coordinate Method: AutoCAD/GPS Datum: NAD 1983/90 (east)
Collected by: J.E. Zapert Company/Affiliation: Sliger & Associates, Inc.

Solid Waste Disposal Units Included in Estimate:

Phase / Cell	Acres	Date Unit Began Accepting Waste	Active Life of Unit From Date of Initial Receipt of Waste	If active: Remaining life of unit	If closed: Date last waste received	If closed: Official date of closing
North Cell	65.65	June 1999	11.25 years	5.58 years	NA	NA

Total disposal unit acreage included in this estimate: Closure: 65.65 Long-Term Care: 65.65

Facility type: ☒ Class I ☐ Class III ☐ C&D Debris Disposal
(Check all that apply) ☐ Other: _____

II. TYPE OF FINANCIAL ASSURANCE DOCUMENT (Check type)

- | | | |
|--|--|--|
| <input type="checkbox"/> Letter of Credit* | <input type="checkbox"/> Insurance Certificate | <input checked="" type="checkbox"/> Escrow Account |
| <input type="checkbox"/> Performance Bond* | <input type="checkbox"/> Financial Test | <input type="checkbox"/> Form 29 (FA Deferral) |
| <input type="checkbox"/> Guarantee Bond* | <input type="checkbox"/> Trust Fund Agreement | |

* - Indicates mechanisms that require the use of a Standby Trust Fund Agreement

Northwest District
160 Government Center
Pensacola, FL 32502-5794
850-595-8360

Northeast District
7825 Baymeadows Way, Ste. B200
Jacksonville, FL 32256-7590
904-807-3300

Central District
3319 Maguire Blvd., Ste. 232
Orlando, FL 32803-3767
407-894-7555

Southwest District
13051 N. Telecom Pkwy.
Tempe Terrace, FL 33637
813-632-7600

South District
2295 Victoria Ave., Ste. 364
Fort Myers, FL 33901-3881
239-332-6975

Southeast District
400 N. Congress Ave., Ste. 200
West Palm Beach, FL 33401
561-681-6600

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III. ESTIMATE ADJUSTMENT

40 CFR Part 264 Subpart H as adopted by reference in Rule 62-701.630, Florida Administrative Code, (F.A.C.) sets forth the method of annual cost estimate adjustment. Cost estimates may be adjusted by using an inflation factor or by recalculating the maximum costs of closure in current dollars. Select one of the methods of cost estimate adjustment below.

☐ (a) Inflation Factor Adjustment

☒ (b) Recalculated or New Cost Estimates

Inflation adjustment using an inflation factor may only be made when a Department approved closure cost estimate exists and no changes have occurred in the facility operation which would necessitate modification to the closure plan. The inflation factor is derived from the most recent Implicit Price Deflator for Gross National Product published by the U.S. Department of Commerce in its survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year. The inflation factor may also be obtained from the Solid Waste website www.dep.state.fl.us/waste/categories/swfr or call the Financial Coordinator at (850) 245-8706.

This adjustment is based on the Department approved closing cost estimate dated: _____

Latest Department Approved
Closing Cost Estimate:

Current Year Inflation
Factor, e.g. 1.02

Inflation Adjusted Closing
Cost Estimate:

x

=

This adjustment is based on the Department approved long-term care cost estimate dated: _____

Latest Department Approved
Annual Long-Term Care
Cost Estimate:

Current Year Inflation
Factor, e.g. 1.02

Inflation Adjusted Annual
Long-Term Care Cost
Estimate:

x

=

Number of Years of Long Term Care Remaining:

x

Inflation Adjusted Long-Term Care Cost Estimate:

=

Signature by: ☐ Owner/Operator

☒ Engineer

(check what applies)

Signature

Address

Name & Title

City, State, Zip Code

Date

E-Mail Address

Telephone Number

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IV. ESTIMATED CLOSING COST (check what applies)

☒ Recalculated Cost Estimate

☐ New Facility Cost Estimate

Notes: 1. Cost estimates for the time period when the extent and manner of landfill operation makes closing most exp

2. Cost estimate must be certified by a professional engineer.

3. Cost estimates based on third party suppliers of material, equipment and labor at fair market value.

4. In some cases, a price quote in support of individual item estimates may be required.

Description	Unit	Number of Units	Cost / Unit	Total Cost
1. Proposed Monitoring Wells (Do not include wells already in existence.)				
	EA			
Subtotal Proposed Monitoring Wells:				
2. Slope and Fill (bedding layer between waste and barrier layer):				
Excavation	CY			
Placement and Spreading	CY			
Compaction	CY			
Off-Site Material	CY			
Delivery	CY			
Subtotal Slope and Fill:				
3. Cover Material (Barrier Layer):				
Off-Site Clay- On-Site Soil	CY	183,799	\$5.25	\$964,944.75
Synthetics - 40 mil	SY	364,097	\$4.50	\$1,638,436.50
Synthetics - GCL	SY			
Synthetics - Geonet	SY			
Synthetics - Other (explain)	SY	364,097	\$6.75	\$2,457,654.75
Double Sided Geocomposite				
Subtotal Cover Material:				\$5,061,036.00
4. Top Soil Cover:				
Off-Site Material- On-Site Soil	CY	61,266	\$5.50	\$336,963.00
Delivery	CY			
Spread	CY			
Subtotal Top Soil Cover:				\$336,963.00
5. Vegetative Layer				
Sodding	SY	323,929	\$2.25	\$728,840.25
Hydroseeding	AC	5.41	\$2,250.00	\$12,172.50
Fertilizer	AC			
Mulch	AC			
Other (explain)				
Subtotal Vegetative Layer:				\$741,012.75
6. Stormwater Control System:				
Earthwork	CY			
Grading	SY			
Piping	LF	6,778	\$22.01	\$149,183.78
Ditches	LF			
Berms	LF			
Control Structures	EA	12	\$3,787.50	\$45,450.00
Other (explain)	LS	1	\$399,404.48	\$399,404.48
See Attachment R-2				
Subtotal Stormwater Control System:				\$594,038.26

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Description	Unit	Number of Units	Cost / Unit	Total Cost
7. Passive Gas Control:				
Wells	EA	_____	_____	_____
Pipe and Fittings	LF	_____	_____	_____
Monitoring Probes	EA	_____	_____	_____
NSPS/Title V requirements	LS	1	_____	_____
Subtotal Passive Gas Control:				_____
8. Active Gas Extraction Control:				
Traps	EA	_____	_____	_____
Sumps	EA	_____	_____	_____
Flare Assembly	EA	_____	_____	_____
Flame Arrestor	EA	_____	_____	_____
Mist Eliminator	EA	_____	_____	_____
Flow Meter	EA	_____	_____	_____
Blowers	EA	_____	_____	_____
Collection System	LF	_____	_____	_____
Other (explain) _____	LS	1	\$795,044.33	\$795,044.33
Subtotal Active Gas Extraction Control:				\$795,044.33
<i>See Attachment R-3</i>				
9. Security System:				
Fencing	LF	1	\$2,000.00	\$2,000.00
Gate(s)	EA	_____	_____	_____
Sign(s)	EA	_____	_____	_____
Subtotal Security System:				\$2,000.00
10. Engineering:				
Closure Plan Report	LS	1	\$50,000.00	\$50,000.00
Certified Engineering Drawings	LS	1	\$25,000.00	\$25,000.00
NSPS/Title V Air Permit	LS	1	\$20,000.00	\$20,000.00
Final Survey	LS	1	\$25,000.00	\$25,000.00
Certification of Closure	LS	1	\$50,000.00	\$50,000.00
Other (explain) _____	_____	_____	_____	_____
Subtotal Engineering:				\$170,000.00

Description	Hours	Cost / Hour	Hours	Cost / Hour	Total Cost
11. Professional Services					
	<u>Contract Management</u>		<u>Quality Assurance</u>		
P.E. Supervisor	160	\$130.00	80	\$130.00	\$31,200.00
On-Site Engineer	300	\$100.00	180	\$100.00	\$48,000.00
Office Engineer	200	\$100.00	144	\$100.00	\$34,400.00
On-Site Technician	_____	_____	2,992	\$65.00	\$194,480.00
Other (explain) _____	_____	_____	1	\$50,000	\$50,000.00
Lump Sum Amount	_____	_____	_____	_____	_____

Description	Unit	Number of Units	Cost / Unit	Total Cost
Quality Assurance Testing	LS	1	\$50,000.00	\$50,000.00
Subtotal Professional Services:				\$408,080.00

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Subtotal of 1-11 Above: \$8,108,174.34

12. Contingency 10 % of Subtotal of 1-11 Above \$810,817.43

Subtotal Contingency: \$810,817.43

Estimated Closing Cost Subtotal: \$8,918,991.77

Description	Total Cost
13. Site Specific Costs	
Mobilization	<u>\$445,949.59</u>
Waste Tire Facility	<u> </u>
Materials Recovery Facility	<u> </u>
Special Wastes	<u> </u>
Leachate Management System Modification	<u> </u>
Other (explain) <u> </u>	<u> </u>
	Subtotal Site Specific Costs: <u>\$445,949.59</u>

TOTAL ESTIMATED CLOSING COSTS (\$): \$9,364,941.36

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V. ANNUAL COST FOR LONG-TERM CARE

See 62-701.600(1)a.1., 62-701.620(1), 62-701.630(3)a. and 62-701.730(11)b. F.A.C. for required term length. For landfills certified closed and Department accepted, enter the remaining long-term care length as "Other" and provide years remaining.

(Check Term Length) ☐ 5 Years ☐ 20 Years ☒ 30 Years ☐ Other, ___ Years

Notes: 1. Cost estimates must be certified by a professional engineer.

2. Cost estimates based on third party suppliers of material, equipment and labor at fair market value.

3. In some cases, a price quote in support of individual item estimates may be required.

All items must be addressed. Attach a detailed explanation for all entries left blank.

Description	Sampling Frequency (Events / Year)	Number of Wells	(Cost / Well) / Event	Annual Cost
1. Groundwater Monitoring [62-701.510(6), and (8)(a)]				
Monthly	12			
Quarterly	4			
Semi-Annually	2			
Annually	1			
Subtotal Groundwater Monitoring:				
2. Surface Water Monitoring [62-701.510(4), and (8)(b)]				
Monthly	12			
Quarterly	4			
Semi-Annually	2	7	\$426.36	\$5,969.04
Annually	1			
Subtotal Surface Water Monitoring:				\$5,969.04
3. Gas Monitoring [62-701.400(10)]				
Monthly	12			
Quarterly	4	1	\$2,305.75	\$9,223.00
Semi-Annually	2			
Annually	1			
Subtotal Gas Monitoring:				\$9,223.00
4. Leachate Monitoring [62-701.510(5), (6)(b) and 62-701.510(8)c]				
Monthly	12			
Quarterly	4			
Semi-Annually	2			
Annually	1	1	\$1,095.00	\$1,095.00
Other (explain) _____				
Subtotal Leachate Monitoring:				\$1,095.00

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
5. Leachate Collection/Treatment Systems Maintenance				
<u>Maintenance</u>				
Collection Pipes	LF	10,100	\$0.22	\$2,222.00
Sumps, Traps	EA			
Lift Stations	EA			
Cleaning	LS	1	\$1,350.00	\$1,350.00
Tanks	EA			

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Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
5. (continued)				
<u>Impoundments</u>				
Liner Repair	SY	20	\$9.00	\$180.00
Sludge Removal	CY			
<u>Aeration Systems</u>				
Floating Aerators	EA			
Spray Aerators	EA			
<u>Disposal</u>				
Off-site (Includes transportation and disposal)	1000 gallon	1,000	\$30.00	\$30,000.00
Subtotal Leachate Collection / Treatment Systems Maintenance:				\$33,752.00
6. Groundwater Monitoring Well Maintenance				
Monitoring Wells	LF	1	\$500.00	\$500.00
Replacement	EA			
Abandonment	EA			
Subtotal Groundwater Monitoring Well Maintenance:				\$500.00
7. Gas System Maintenance				
Piping, Vents	LF	1	\$5,000.00	\$5,000.00
Blowers	EA	1	\$1,200.00	\$1,200.00
Flaring Units	EA	1	\$400.00	\$400.00
Meters, Valves	EA	1	\$500.00	\$500.00
Compressors	EA			
Flame Arrestors	EA	1	\$1,200.00	\$1,200.00
Operation	LS	1	\$24,840.00	\$24,840.00
Subtotal Gas System Maintenance:				\$33,140.00
8. Landscape Maintenance				
Mowing	AC	65.65	\$262.80	\$17,252.82
Fertilizer	AC			
Subtotal Landscape Maintenance:				\$17,252.82
9. Erosion Control and Cover Maintenance				
Sodding	SY	7.164	\$2.25	\$16,119.00
Regrading	AC			
Liner Repair	SY	1.194	\$9.00	\$10,746.00
Clay	CY	796	\$5.44	\$4,330.24
Subtotal Erosion Control and Cover Maintenance:				\$31,195.24
10. Storm Water Management System Maintenance				
Conveyance Maintenance	LS	1	\$5,000.00	\$5,000.00
Subtotal Storm Water Management System Maintenance:				\$5,000.00
11. Security System Maintenance				
Fences	LS	1	\$500.00	\$500.00
Gate(s)	EA			
Sign(s)	EA			
Subtotal Security System Maintenance:				\$500.00

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Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
12. Utilities	LS	1	\$1,800.00	\$1,800.00
			Subtotal Utilities:	\$1,800.00

13. Leachate Collection/Treatment Systems Operation

Operation

P.E. Supervisor	HR			
On-Site Engineer	HR			
Office Engineer	HR			
OnSite Technician	HR	104	\$65.00	\$6,760.00
Materials	LS	1		
			Subtotal Leachate Collection/Treatment Systems Operation:	\$6,760.00

14. Administrative

P.E. Supervisor	HR	30	\$135.00	\$4,050.00
On-Site Engineer	HR	48	\$75.00	\$3,600.00
Office Engineer	HR	60	\$75.00	\$4,500.00
OnSite Technician	HR			
Other	HR	30	\$35.00	\$1,050.00

Administrative Assistant

Subtotal Administrative: \$13,200.00

Subtotal of 1-14 Above: \$159,387.10

15. Contingency	10	% of Subtotal of 1-14 Above		\$15,938.71
			Subtotal Contingency:	\$15,938.71

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
16. Site Specific Costs				
			Subtotal Site Specific Costs:	

ANNUAL LONG-TERM CARE COST (\$ / YEAR): \$175,325.81

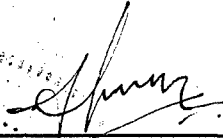
Number of Years of Long-Term Care: 30

TOTAL LONG-TERM CARE COST (\$): \$5,259,774.30

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VI. CERTIFICATION BY ENGINEER

This is to certify that the Cost Estimates pertaining to the engineering features of this solid waste management facility have been examined by me and found to conform to engineering principles applicable to such facilities. In my professional judgment, the Cost Estimates are a true, correct and complete representation of the financial liabilities for closing and/or long-term care of the facility and comply with the requirements of Rule 62-701.630 F.A.C. and all other Department of Environmental Protection rules, and statutes of the State of Florida. It is understood that the Cost Estimates shall be submitted to the Department annually, revised or adjusted as required by Rule 62-701.630(4), F.A.C.



Signature

Kanishka Perera, Project Manager
Name and Title (please type)

12/06/11

Date

67647

Florida Registration Number
(please affix seal)

200 W. Forsyth St., Ste. 800

Mailing Address

Jacksonville, FL 32202-4321

City, State, Zip Code

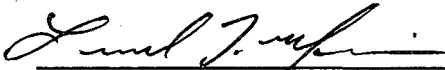
Kanishka.Perera@hdrinc.com

E-Mail address (if available)

(904)-598-8900

Telephone Number

VII. SIGNATURE BY OWNER/OPERATOR



Signature of Applicant

Leonard Marion, Director

Name and Title (please type)

lmarion@co.volusia.fl.us

E-Mail address (if available)

3151 East New York Avenue

Mailing Address

DeLand, FL 32724

City, State, Zip Code

(386)-943-7889

Telephone Number

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DEP Central Dist.



Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Print Form

Reset Form

DEP Form # 62-701.900(28), F.A.C.

Form Title: Closure Cost Estimating Form
For Solid Waste Facilities

Effective Date: January 6, 2010

Incorporated in Rule 62-701.630(3), F.A.C.

CLOSURE COST ESTIMATING FORM FOR SOLID WASTE FACILITIES

Date of DEP Approval: _____

I. GENERAL INFORMATION:

Facility Name: Tomoka Farms Road Landfill- South Cell WACS ID: 27540
Permit Application or Consent Order No.: SF64-0078767-022 Expiration Date: 3/3/2013
Facility Address: 1990 Tomoka Farms Road, Daytona Beach, Florida
Permittee or Owner/Operator: Volusia County Solid Waste Division
Mailing Address: 3151 East New York Avenue, DeLand, Florida 32724

Latitude: 29 ° 07 ' 50 " Longitude: 81 ° 06 ' 02 "
Coordinate Method: AutoCAD/GPS Datum: NAD 1983/90 (east)
Collected by: J.E. Zapert Company/Affiliation: Sliger & Associates, Inc.

Solid Waste Disposal Units Included in Estimate:

Phase / Cell	Acres	Date Unit Began Accepting Waste	Active Life of Unit From Date of Initial Receipt of Waste	If active: Remaining life of unit	If closed: Date last waste received	If closed: Official date of closing
South Cell	114	June 1978	Approx. 23 years	NA	2001	2001

Total disposal unit acreage included in this estimate: Closure: NA Long-Term Care: 114

Facility type: ☒ Class I ☒ Class III ☒ C&D Debris Disposal
(Check all that apply) ☐ Other: _____

II. TYPE OF FINANCIAL ASSURANCE DOCUMENT (Check type)

- | | | |
|--|--|--|
| <input type="checkbox"/> Letter of Credit* | <input type="checkbox"/> Insurance Certificate | <input checked="" type="checkbox"/> Escrow Account |
| <input type="checkbox"/> Performance Bond* | <input type="checkbox"/> Financial Test | <input type="checkbox"/> Form 29 (FA Deferral) |
| <input type="checkbox"/> Guarantee Bond* | <input type="checkbox"/> Trust Fund Agreement | |

* - Indicates mechanisms that require the use of a Standby Trust Fund Agreement

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Central District
3319 Maguire Blvd., Ste. 232
Orlando, FL 32803-3767
407-894-7555

Southwest District
13051 N. Telecom Pkwy.
Tempe Terrace, FL 33637
813-632-7600

South District
2295 Victoria Ave., Ste. 364
Fort Myers, FL 33901-3681
239-332-6975

Southeast District
400 N. Congress Ave., Ste. 200
West Palm Beach, FL 33401
561-861-6600

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III. ESTIMATE ADJUSTMENT

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☐ (a) Inflation Factor Adjustment

☒ (b) Recalculated or New Cost Estimates

Inflation adjustment using an inflation factor may only be made when a Department approved closure cost estimate exists and no changes have occurred in the facility operation which would necessitate modification to the closure plan. The inflation factor is derived from the most recent Implicit Price Deflator for Gross National Product published by the U.S. Department of Commerce in its survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year. The inflation factor may also be obtained from the Solid Waste website www.dep.state.fl.us/waste/categories/swfr or call the Financial Coordinator at (850) 245-8706.

This adjustment is based on the Department approved closing cost estimate dated: _____

Latest Department Approved Closing Cost Estimate:	Current Year Inflation Factor, e.g. 1.02	Inflation Adjusted Closing Cost Estimate:
_____	_____	_____
	x	=

This adjustment is based on the Department approved long-term care cost estimate dated: _____

Latest Department Approved Annual Long-Term Care Cost Estimate:	Current Year Inflation Factor, e.g. 1.02	Inflation Adjusted Annual Long-Term Care Cost Estimate:
_____	_____	_____
	x	=
Number of Years of Long Term Care Remaining:		x

Inflation Adjusted Long-Term Care Cost Estimate:		=

Signature by: ☐ Owner/Operator ☒ Engineer (check what applies)

Signature

Address

Name & Title

City, State, Zip Code

Date

E-Mail Address

Telephone Number

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IV. ESTIMATED CLOSING COST (check what applies) NOT APPLICABLE

☐ Recalculated Cost Estimate

☐ New Facility Cost Estimate

- Notes: 1. Cost estimates for the time period when the extent and manner of landfill operation makes closing most exp
2. Cost estimate must be certified by a professional engineer.
3. Cost estimates based on third party suppliers of material, equipment and labor at fair market value.
4. In some cases, a price quote in support of individual item estimates may be required.

Description	Unit	Number of Units	Cost / Unit	Total Cost
1. Proposed Monitoring Wells (Do not include wells already in existence.)				
	EA			
Subtotal Proposed Monitoring Wells:				
2. Slope and Fill (bedding layer between waste and barrier layer):				
Excavation	CY			
Placement and Spreading	CY			
Compaction	CY			
Off-Site Material	CY			
Delivery	CY			
Subtotal Slope and Fill:				
3. Cover Material (Barrier Layer):				
Off-Site Clay	CY			
Synthetics - 40 mil	SY			
Synthetics - GCL	SY			
Synthetics - Geonet	SY			
Synthetics - Other (explain)				
Subtotal Cover Material:				
4. Top Soil Cover:				
Off-Site Material	CY			
Delivery	CY			
Spread	CY			
Subtotal Top Soil Cover:				
5. Vegetative Layer				
Sodding	SY			
Hydroseeding	AC			
Fertilizer	AC			
Mulch	AC			
Other (explain)				
Subtotal Vegetative Layer:				
6. Stormwater Control System:				
Earthwork	CY			
Grading	SY			
Piping	LF			
Ditches	LF			
Berms	LF			
Control Structures	EA			
Other (explain)				
Subtotal Stormwater Control System:				

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Description	Unit	Number of Units	Cost / Unit	Total Cost
7. Passive Gas Control:				
Wells	EA	_____	_____	_____
Pipe and Fittings	LF	_____	_____	_____
Monitoring Probes	EA	_____	_____	_____
NSPS/Title V requirements	LS	1	_____	_____
Subtotal Passive Gas Control:				_____
8. Active Gas Extraction Control:				
Traps	EA	_____	_____	_____
Sumps	EA	_____	_____	_____
Flare Assembly	EA	_____	_____	_____
Flame Arrestor	EA	_____	_____	_____
Mist Eliminator	EA	_____	_____	_____
Flow Meter	EA	_____	_____	_____
Blowers	EA	_____	_____	_____
Collection System	LF	_____	_____	_____
Other (explain) _____	_____	_____	_____	_____
Subtotal Active Gas Extraction Control:				_____
9. Security System:				
Fencing	LF	_____	_____	_____
Gate(s)	EA	_____	_____	_____
Sign(s)	EA	_____	_____	_____
Subtotal Security System:				_____
10. Engineering:				
Closure Plan Report	LS	1	_____	_____
Certified Engineering Drawings	LS	1	_____	_____
NSPS/Title V Air Permit	LS	1	_____	_____
Final Survey	LS	1	_____	_____
Certification of Closure	LS	1	_____	_____
Other (explain) _____	_____	_____	_____	_____
Subtotal Engineering:				_____

Description	Hours	Cost / Hour	Hours	Cost / Hour	Total Cost
11. Professional Services					
	<u>Contract Management</u>		<u>Quality Assurance</u>		
P.E. Supervisor	_____	_____	_____	_____	_____
On-Site Engineer	_____	_____	_____	_____	_____
Office Engineer	_____	_____	_____	_____	_____
On-Site Technician	_____	_____	_____	_____	_____
Other (explain) _____	_____	_____	_____	_____	_____

Description	Unit	Number of Units	Cost / Unit	Total Cost
Quality Assurance Testing	LS	1	_____	_____
Subtotal Professional Services:				_____

Subtotal of 1-11 Above: _____

12. Contingency _____ % of Subtotal of 1-11 Above

Subtotal Contingency: _____

Estimated Closing Cost Subtotal: _____

Description	Total Cost
13. Site Specific Costs	
Mobilization	_____
Waste Tire Facility	_____
Materials Recovery Facility	_____
Special Wastes	_____
Leachate Management System Modification	_____
Other (explain) _____	_____
_____	_____
	Subtotal Site Specific Costs: _____

TOTAL ESTIMATED CLOSING COSTS (\$): _____

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V. ANNUAL COST FOR LONG-TERM CARE

See 62-701.600(1)a.1., 62-701.620(1), 62-701.630(3)a. and 62-701.730(11)b. F.A.C. for required term length. For landfills certified closed and Department accepted, enter the remaining long-term care length as "Other" and provide years remaining.

(Check Term Length) ☐ 5 Years ☐ 20 Years ☒ 30 Years ☐ Other, ___ Years

Notes: 1. Cost estimates must be certified by a professional engineer.

2. Cost estimates based on third party suppliers of material, equipment and labor at fair market value.

3. In some cases, a price quote in support of individual item estimates may be required.

All items must be addressed. Attach a detailed explanation for all entries left blank.

Description	Sampling Frequency (Events / Year)	Number of Wells	(Cost / Well) / Event	Annual Cost
1. Groundwater Monitoring [62-701.510(6), and (8)(a)]				
Monthly	12	_____	_____	_____
Quarterly	4	_____	_____	_____
Semi-Annually	2	54	\$268.43	\$28,990.44
Annually	1	_____	_____	_____
Subtotal Groundwater Monitoring:				\$28,990.44
2. Surface Water Monitoring [62-701.510(4), and (8)(b)]				
Monthly	12	_____	_____	_____
Quarterly	4	_____	_____	_____
Semi-Annually	2	_____	_____	_____
Annually	1	_____	_____	_____
Subtotal Surface Water Monitoring:				_____
3. Gas Monitoring [62-701.400(10)]				
Monthly	12	_____	_____	_____
Quarterly	4	1	\$1,161.50	\$4,646.00
Semi-Annually	2	_____	_____	_____
Annually	1	_____	_____	_____
Subtotal Gas Monitoring:				\$4,646.00
4. Leachate Monitoring [62-701.510(5), (6)(b) and 62-701.510(8)(c)]				
Monthly	12	_____	_____	_____
Quarterly	4	_____	_____	_____
Semi-Annually	2	_____	_____	_____
Annually	1	_____	_____	_____
Other (explain) _____	_____	_____	_____	_____
Subtotal Leachate Monitoring:				_____

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
5. Leachate Collection/Treatment Systems Maintenance				
<u>Maintenance</u>				
Collection Pipes	LF	_____	_____	_____
Sumps, Traps	EA	_____	_____	_____
Lift Stations	EA	_____	_____	_____
Cleaning	_____	1	_____	_____
Tanks	EA	_____	_____	_____

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
5. (continued)				
<u>Impoundments</u>				
Liner Repair	SY	_____	_____	_____
Sludge Removal	CY	_____	_____	_____
<u>Aeration Systems</u>				
Floating Aerators	EA	_____	_____	_____
Spray Aerators	EA	_____	_____	_____
<u>Disposal</u>				
Off-site (Includes transportation and disposal)	1000 gallon	_____	_____	_____
Subtotal Leachate Collection / Treatment Systems Maintenance:				_____
6. Groundwater Monitoring Well Maintenance				
Monitoring Wells	LF	_____	_____	_____
Replacement	EA	_____	_____	_____
Abandonment	EA	_____	_____	_____
Subtotal Groundwater Monitoring Well Maintenance:				_____
7. Gas System Maintenance				
Piping, Vents	LF	_____	_____	_____
Blowers	EA	_____	_____	_____
Flaring Units	EA	_____	_____	_____
Meters, Valves	EA	_____	_____	_____
Compressors	EA	_____	_____	_____
Flame Arrestors	EA	_____	_____	_____
Operation	LS	1	_____	_____
Subtotal Gas System Maintenance:				_____
8. Landscape Maintenance				
Mowing	AC	114	\$262.80	\$29,959.20
Fertilizer	AC	_____	_____	_____
Subtotal Landscape Maintenance:				\$29,959.20
9. Erosion Control and Cover Maintenance				
Sodding	SY	6,201	\$2.25	\$13,952.25
Regrading	AC	_____	_____	_____
Liner Repair	SY	1,034	\$9.00	\$9,306.00
Clay	CY	689	\$5.44	\$3,748.16
Subtotal Erosion Control and Cover Maintenance:				\$27,006.41
10. Storm Water Management System Maintenance				
Conveyance Maintenance	LS	1	_____	_____
Subtotal Storm Water Management System Maintenance:				_____
11. Security System Maintenance				
Fences	LS	1	_____	_____
Gate(s)	EA	_____	_____	_____
Sign(s)	EA	_____	_____	_____
Subtotal Security System Maintenance:				_____

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
12. Utilities	LS	<u>1</u>		
			Subtotal Utilities:	
13. Leachate Collection/Treatment Systems Operation				
<u>Operation</u>				
P.E. Supervisor	HR	<u> </u>	<u> </u>	<u> </u>
On-Site Engineer	HR	<u> </u>	<u> </u>	<u> </u>
Office Engineer	HR	<u> </u>	<u> </u>	<u> </u>
OnSite Technician	HR	<u> </u>	<u> </u>	<u> </u>
Materials	LS	<u>1</u>	<u> </u>	<u> </u>
Subtotal Leachate Collection/Treatment Systems Operation:				
14. Administrative				
P.E. Supervisor	HR	<u>30</u>	<u>\$135.00</u>	<u>\$4,050.00</u>
On-Site Engineer	HR	<u>48</u>	<u>\$75.00</u>	<u>\$3,600.00</u>
Office Engineer	HR	<u>60</u>	<u>\$75.00</u>	<u>\$4,500.00</u>
OnSite Technician	HR	<u> </u>	<u> </u>	<u> </u>
Other <u> </u>	HR	<u>30</u>	<u>\$35.00</u>	<u>\$1,050.00</u>
<u>Administrative Assistant</u>			Subtotal Administrative:	<u>\$13,200.00</u>
Subtotal of 1-14 Above:				<u>\$103,802.05</u>
15. Contingency	<u>10</u>	% of Subtotal of 1-14 Above		<u>\$10,380.21</u>
			Subtotal Contingency:	<u>\$10,380.21</u>

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
16. Site Specific Costs				
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Subtotal Site Specific Costs:				

ANNUAL LONG-TERM CARE COST (\$ / YEAR): \$114,182.26

Number of Years of Long-Term Care: 30

TOTAL LONG-TERM CARE COST (\$): \$3,425,467.65

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VI. CERTIFICATION BY ENGINEER

This is to certify that the Cost Estimates pertaining to the engineering features of this solid waste management facility have been examined by me and found to conform to engineering principles applicable to such facilities. In my professional judgment, the Cost Estimates are a true, correct and complete representation of the financial liabilities for closing and/or long-term care of the facility and comply with the requirements of Rule 62-701.630 F.A.C. and all other Department of Environmental Protection rules, and statutes of the State of Florida. It is understood that the Cost Estimates shall be submitted to the Department annually, revised or adjusted as required by Rule 62-701.630(4), F.A.C.



Signature

Kanishka Perera, Project Manager

Name and Title (please type)

12/06/11

Date

67647

Florida Registration Number
(please affix seal)

200 W. Forsyth St., Ste. 800

Mailing Address

Jacksonville, FL 32202-4321

City, State, Zip Code

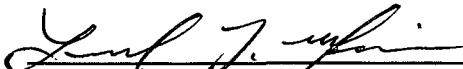
Kanishka.Perera@hdrinc.com

E-Mail address (if available)

(904)-598-8900

Telephone Number

VII. SIGNATURE BY OWNER/OPERATOR



Signature of Applicant

Leonard Marion, Director

Name and Title (please type)

lmarion@co.volusia.fl.us

E-Mail address (if available)

3151 East New York Avenue

Mailing Address

DeLand, FL 32724

City, State, Zip Code

(386)-943-7889

Telephone Number

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Attachment R-2
Cost Estimates Calculations

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Computation



Project	Tomoka Farms Road Landfill - Closure Permit Renewal	Computed	K. Singh
System	Financial Assurance Calculations	Date	9/27/2011
Component	North Cell Closure and Long Term Care Cost Estimates	Reviewed	K. Perera
Task		Date	11/21/2011

Purpose

To perform the necessary calculations and provide explanations on the quantities/unit prices used on FDEP Forms (Attachment R-1).

Calculation

Note that the North Cell Phase 2 Expansion Area has not yet been constructed and therefore, this area has not been included in the cost estimates.

Waste Footprint = 65.65 AC (excluding Phase 2)

Total Surface Area = Side Slope Area + Top Area

3D- Side Slope Area = 2,915,365 ft² (obtained from AutoCAD civil 3D)

3D- Top Area = 235,476 ft² (obtained from AutoCAD civil 3D)

Total Surface Area = 3,150,841 ft²

Item 1 - Monitoring Wells

Monitoring wells are already in place and therefore are not included as part of the closure construction estimate.

Item 2 - Slope and Fill

A 12" bedding layer will be installed over waste once the intermediate cover grades are achieved as a part of on-going landfill operations and therefore, the associated cost is not included in this cost estimate.

Item 3 - Cover Material

The final cover for North Cell will consist of 40-mil textured geomembrane, double sided geocomposite drainage layer and 18" layer of cover soil. The cover soil is increased by 5% to account for soil bulking and other soil losses, and the geosynthetics are adjusted by 4% to account for seams, destructive testing, waste and booting.

(a) 18" Cover Soil:

Volume of Cover Soil in 18" layer = 4,962,574 ft³ = 183,799 CY

Unit Price of CY Cover Soil (installed) = \$5.25 (Source: see Attachment R-3)

Total cost for 18" Cover Soil = \$964,944.75

(b) Geomembrane Liner 40-mil LLDPE:

Quantity of textured 40-mil geomembrane = 3,276,874 ft² = 364,097 SY

Per SY cost of textured 40-mil LLDPE (installed) = \$4.50 (Source: see Attachment R-3)

Total cost of textured geomembrane = \$1,638,436.50

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Project	Tomoka Farms Road Landfill - Closure Permit Renewal	Computed	K. Singh
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(c) Double Sided Geocomposite:

Quantity of double sided geocomposite = 3,276,874 ft² = 364,097 SY
 Per SY cost of geocomposite (installed) = \$6.75 (Source: see Attachment R-3)
 Total Cost of geocomposite = \$2,457,654.75

Item 4 - 6" Top Soil

Top soil quantity is increased by 5% to account for soil bulking and other soil losses.

Volume of top Soil in 6" layer = 1,654,191 ft³ = 61,266 CY
 Unit cost of CY Top Soil (installed) = \$5.50 (Source: see Attachment R-3)
 Total cost for 6" Top Soil = \$336,963.00

Item 5 - Vegetation

Sodding (on the side slopes):

Side slope area = 2,915,365 ft² = 323,929 SY
 Per SY cost of sodding = \$2.25 (Source: see Attachment R-3)
 Total cost of sodding = \$728,840.25

Hydroseeding (on top surface):

Top surface area = 5.41 AC
 Per AC cost of hydroseeding = \$2,250.00 (Source: see Attachment R-3)
 Total cost of hydroseeding = \$12,172.50

Item 6 - Stormwater Control System

(a) Earthwork, grading, ditches and berms are installed as a part of on-going landfill operations and therefore are not included as a part of the closure cost estimates.

(b) Piping:

Quantity of 18" downrain pipe = 5,222 LF
 Per LF cost of 18" downrain pipe = \$20.20 (Source: see Attachment R-3)
 Total cost of 18" piping = \$105,484.40

Quantity of 24" downrain pipe = 1,556 LF
 Per LF cost of 24" downrain pipe = \$28.09 (Source: see Attachment R-3)
 Total cost of 24" piping = \$43,708.04

Total quantity of piping = 6,778 LF
 Average Unit cost of piping = \$22.01 per LF

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Computation



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(c) Control Structures (Energy Dissipater):

Estimated control structures for closure area = 12
 Cost of each control structure (installed) = \$3,787.50 (Source: see Attachment R-3)
 Total cost of control structures = \$45,450.00

(d) Others:

Estimated number of down drain double inlets = 42
 Cost of each double inlet (installed) = \$6,383.44 (Source: see Attachment R-3)
 Total cost of down drain inlets = \$268,104.48

Per AC cost of sediment and erosion control = \$2,000.00
 (Based on HDR Experience on similar LF sites)

Total sediment and erosion control cost = \$131,300.00

Total "other" cost associated with = \$399,404.48
 stormwater control system

Item 7 - Passive Gas Control

No passive gas control system is proposed as a part of the North Cell closure.

Item 8 - Active Gas Control System

It is assumed that 20 vertical wells (2,152 LF) will be installed to complete the existing active gas collection and control system. Items associated with installation of the 20 wells are:

- 7 Condensate Sumps
- 18" Header Pipe (1,029 LF)
- 16" Header Pipe (945 LF)
- 6" Lateral Pipe (2,676 LF)
- 4" Lateral Pipe (2,482 LF)
- 10 Access Points
- One 18" Header Isolation Valve Box Assembly
- One 16" Header Isolation Valve Box Assembly
- 20 Pipe Boots
- 17 Wells will Require Benching

Please refer to Attachment R-3 for detailed cost estimates of the gas collection and control system (GCCS) items mentioned above.

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Sheet 3 of 7

Computation



Project	Tomoka Farms Road Landfill - Closure Permit Renewal	Computed	K. Singh
System	Financial Assurance Calculations	Date	9/27/2011
Component	North Cell Closure and Long Term Care Cost Estimates	Reviewed	K. Perera
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Item 9 - Security System

Perimeter fencing, gates and signs already exists at the Tomoka Farms Road Landfill. A \$2,000 lump sum can be allocated for additional signs at North Cell as part of the closure costs.

Items 10 and 11 - Closure Permit, Contracts, CQA and Certification

Numbers are based on HDR experience. Please note that two on-site technicians will be required for the 25 week construction period.

Item 12 - Contingency

10% of total closure cost will be allocated as contingency cost.

Item 13 - Site Specific Costs

The mobilization fee has been estimated to be 5% of Items 1 through 11. This cost includes the cost associated with Cell stabilized access road.

LONG-TERM CARE COSTS

Item 1 - Groundwater Monitoring (Semi-Annual)

Cost of groundwater monitoring has been included in long term care cost of South Cell.

Item 2 - Surface water Monitoring (Semi-Annual)

Number of surface water monitoring locations = 7

From Master Agreement (provided in Attachment R-3) per test cost:

Ammonia as N, Hardness as CaCO₃, Organic Carbon,
TDS, TSS, BOD, COD, Nitrogen as N, Nitrate as N, = \$ 182.00
Phosphates, Chlorophyll A, and Fecal Coliform

Iron, Mercury, and Sodium = \$ 31.50

40 CFR Part 258 Appendix I Parameters = \$ 190.00

Total testing cost per monitoring location = \$ 403.50

Total testing cost for 7 locations = \$2,824.50

Assuming 4 hours of sampling @ \$40 per
hour, total surface water monitoring cost = \$ 2,984.50
per semi-annual event

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Project	Tomoka Farms Road Landfill - Closure Permit Renewal	Computed	K. Singh
System	Financial Assurance Calculations	Date	9/27/2011
Component	North Cell Closure and Long Term Care Cost Estimates	Reviewed	K. Perera
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Item 3 - Gas Monitoring (Quarterly)

Costs associated with Quarterly Gas Monitoring

Number of gas monitoring locations = 8
 Estimated time required for sampling, travel = 1 day (assuming 10 hours per day)
 on-site and submit results to FDEP
 Daily rental price of GEM 2000 monitor = \$ 110.00 (Source: see Attachment R-3)
 Hourly rate of field technician = \$ 65.00
 Miscellaneous expenses = \$ 250.00
 (15% profit and contingency fee is added to the sum)
 Gas monitoring cost per event = \$1,161.50

Costs associated with Quarterly Surface Monitoring

Estimated time required for sampling, travel = 1 day (assuming 10 hours per day)
 on-site and submit results to FDEP
 Daily rental price of RKI Eagle series multi gas detector = \$ 95.00 (Source: see Attachment R-3)
 Hourly rate of field technician = \$ 65.00
 Miscellaneous expenses = \$ 250.00
 (15% profit and contingency fee is added to the sum)
 Surface monitoring cost per event = \$1,144.25

Total quarterly gas monitoring and surface monitoring cost = \$2,305.75

Item 4 - Leachate Monitoring (Annual)

From Master Agreement (provided in Attachment R-3) per test cost:

Ammonia as N, Chlorides, Nitrate as N, TSS, Bicarbonates, Cyanide, Sulfide, and Metals = \$ 185.00
 40 CFR Part 258 Appendix II Parameters = \$ 750.00

Assuming 4 hours of sampling @ \$40 per hour, annual leachate monitoring cost = \$ 1,095.00

Item 5 - Leachate Collection and Treatment System

Maintenance: Maintenance of leachate collection and treatment system includes maintenance of collection pipes (10,100 FT @ \$0.22 per LF), and maintenance of sumps, tarps, lift stations and cleaning (allocated an annual lump sum amount of \$1,350). Note that cleaning will be required once every 5 years.

Impoundments: It is assumed that 20 SY of liner repairs will be required every year @ \$9.00 per SY.

Leachate Disposal: Leachate disposal cost has been provided by the Volusia County.

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Project	Tomoka Farms Road Landfill - Closure Permit Renewal	Computed	K. Singh
System	Financial Assurance Calculations	Date	9/27/2011
Component	North Cell Closure and Long Term Care Cost Estimates	Reviewed	K. Perera
Task		Date	11/21/2011

Item 6 - Groundwater Monitoring Well Maintenance

It was assumed that a new groundwater well would need to be installed every five years. The cost is based on HDR experience on similar LF sites.

Item 7 - Gas System Maintenance

To estimate the cost of maintaining the active gas collection system, maintenance of the well field and flare station were taken into consideration. Routine maintenance includes replacing the thermocouples in the flare stack every few months, inspecting and cleaning of the flare arrestor and replacing the bearings on the blower. Installation of replacement collection wells, especially in the years immediately after closure, was budgeted in addition to replacement of the blower every fifteen years. It was assumed a field technician would be needed for 20 hours per month (20 hours @ \$65 per hour, \$500 misc expenses, and 15% profit and contingency fee) to monitor the collection wells, perform wellfield adjustments and document readings.

Item 8 - Landscape Maintenance

A quote of \$65.70 per AC was provided by the RS Means Book. A mowing frequency of four times per year was assumed, i.e., \$262.80 per AC (refer to Attachment R-3)

Item 9 - Erosion Control and Cover Maintenance

To account for erosion control and cover maintenance in the post closure care period, repair of the final cover (including sod, liner and soil fill material) and re-grading were considered. An annual average soil loss of 796 CY was calculated using the United Soil Loss Equation (USLE). This is a conservative assumption since it is assumed that 60% of the ground is covered by vegetation. Please refer to Attachment R-4 for further explanation of the USLE equation.

For financial assurance estimation, it is assumed that soil will erode in channels that will cut an average of six inches deep into the final cover.

- Sodding: Assuming 150% area of machinery disturbance, quantity of sod (in terms of area)

$$\frac{796 \text{ CY}}{1} \times \frac{27 \text{ CF}}{1 \text{ CY}} \times \frac{150 \%}{100} \times \frac{1}{0.5 \text{ FT}} = 64,476 \text{ SF} = 7,164 \text{ SY}$$

Refer to Item 5 of North Cell Closure Cost estimates for unit cost of sodding.

- Replacement of Soil: The cost for replacement of soil was estimated to be the 25% of the soil fill and 75% of the topsoil costs provided in the closure cost section (See Items 3 and 4 of the Closure Cost Estimates of North Cell). This unit cost includes material cost, spreading and placement. The unit cost provided is \$5.44/CY (\$5.25 * 0.25 + \$5.50 * 0.75).

- Liner Repair: Assuming 25% of the soil loss area will require liner repairs, quantity of liner repairs,

$$\frac{796 \text{ CY}}{1} \times \frac{27 \text{ CF}}{1 \text{ CY}} \times \frac{25 \%}{100} \times \frac{1}{0.5 \text{ FT}} = 10,746 \text{ SF} = 1,194 \text{ SY}$$

Refer to Item 5 of North Cell Long Term Cost Estimates for unit cost of liner repairs.

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Job No. 170995

Calc No.

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Project	Tomoka Farms Road Landfill - Closure Permit Renewal	Computed	K. Singh
System	Financial Assurance Calculations	Date	9/27/2011
Component	North Cell Closure and Long Term Care Cost Estimates	Reviewed	K. Perera
Task		Date	11/21/2011

Item 10 - Storm Water Management System Maintenance

A lump sum amount of \$5,000 has been allocated for annual storm water management system maintenance.

Items 11 and 12 - Security System Maintenance and Utilities

For budgetary purposes, \$500 is allocated towards fences, gate(s) and sign(s), and \$1,800 has been allocated towards utilities. The cost include fence maintenance around South Cell as well.

Item 13 - Leachate Collection/Treatment System Operation

It is assumed that a technician will be needed for an average of eight hours per every four weeks to monitor, inspect, and maintain the system.

Item 14 - Administrative

Based on HDR's experience.

Item 15 - Contingency

A 10% of total closure cost will be allocated as contingency cost.

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Project	Tomoka Farms Road Landfill - Closure Permit Renewal	Computed	K. Singh
System	Financial Assurance Calculations	Date	9/27/2011
Component	South Cell Long Term Care Cost Estimates	Reviewed	K. Perera
Task		Date	11/21/2011

Purpose

To perform the necessary calculations and provide explanations on the quantities/unit prices used on FDEP Forms (Attachment R-1).

Calculation

Item 1 - Groundwater Monitoring (Semi-Annual)

Number of groundwater monitoring locations = 54

From Master Agreement (provided in Attachment R-3) per test cost:

Ammonia as N, Chlorides, Nitrate as N, TSS, Iron, Mercury, and Sodium = \$ 72.50

40 CFR Part 258 Appendix I Parameters = \$ 190.00

Total testing cost per monitoring location = \$ 262.50

Total testing cost for 54 locations = \$ 14,175.00

Assuming 8 hours of sampling @ \$40 per hour, total groundwater monitoring cost per semi-annual event = \$ 14,495.00

Item 2 - Surface water Monitoring (Semi-Annual)

Cost of surface water monitoring has been included in long term care cost of North Cell.

Item 3 - Gas Monitoring (Quarterly)

Cost of gas monitoring has been included in long term care cost of North Cell.

Item 4 - Leachate Monitoring (Annual)

Cost of leachate monitoring has been included in long term care cost of North Cell.

Item 5 - Leachate Collection and Treatment System

Not applicable for South Cell.

Item 6 - Groundwater Monitoring Well Maintenance

Cost of groundwater monitoring well maintenance has been included in long term care cost of North Cell to be compatible with existing Financial Assurance for North and South Cells.

Item 7 - Gas System Maintenance

Cost of gas system maintenance has been included in long term care cost of North Cell.

Item 8 - Landscape Maintenance

A quote of \$65.70 per AC was provided by the RS Means Book. A mowing frequency of four times per year was assumed, i.e., \$262.80 per AC (refer to Attachment R-3)

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Project	Tomoka Farms Road Landfill - Closure Permit Renewal	Computed	K. Singh
System	Financial Assurance Calculations	Date	9/27/2011
Component	South Cell Long Term Care Cost Estimates	Reviewed	K. Perera
Task		Date	11/21/2011

Item 9 - Erosion Control and Cover Maintenance

To account for erosion control and cover maintenance in the post closure care period, reconstruction of the final cover (including sod, liner and soil fill material) and re-grading were considered. An annual average soil loss of 689 CY was calculated using the United Soil Loss Equation (USLE). This is a conservative assumption since it is assumed that 60% of the ground is covered by vegetation. Please refer to Attachment R-4 for further explanation of the USLE equation.

For financial assurance estimation, it is assumed that soil will erode in channels that will cut an average of six inches deep into the final cover.

- Sodding: Assuming 150% area of machinery disturbance, quantity of sod (in terms of area)

$$\frac{689 \text{ CY}}{1} \times \frac{27 \text{ CF}}{1 \text{ CY}} \times \frac{150 \%}{100} \times \frac{1}{0.5 \text{ FT}} = 55,809 \text{ SF} = 6,201 \text{ SY}$$

Refer to Item 5 of North Cell Closure Cost estimates for unit cost of sodding.

- Replacement of Soil: The cost for replacement of soil was estimated to be the 25% of the soil fill and 75% of the topsoil costs provided in the closure cost section (See Items 3 and 4 of the Closure Cost Estimates of North Cell). This unit cost includes material cost, spreading and placement. The unit cost provided is \$5.44/CY (\$5.25 * 0.25 + \$5.50 * 0.75).

- Liner Repair: Assuming 25% of the soil loss area will require liner repairs, quantity of liner repairs,

$$\frac{689 \text{ CY}}{1} \times \frac{27 \text{ CF}}{1 \text{ CY}} \times \frac{25 \%}{100} \times \frac{1}{0.5 \text{ FT}} = 9,302 \text{ SF} = 1,034 \text{ SY}$$

Refer to Item 5 of North Cell Long Term Cost Estimates for unit cost of liner repairs.

Item 10 - Storm Water Management System Maintenance

Cost of stormwater management system maintenance has been included in long term care cost of North Cell.

Items 11 and 12 - Security System Maintenance and Utilities

Cost of security system maintenance and utilities has been included in long term care cost of North Cell.

Item 13 - Leachate Collection/Treatment System Operation

Cost of leachate collection/treatment system operation has been included in long term care cost of North Cell.

Item 14 - Administrative

Based on HDR's experience.

Item 15 - Contingency

A 10% of total closure cost will be allocated as contingency cost.

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**Attachment R-3
Third-Party Quotes**

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Singh, Karamjit

From: Perera, Kanishka
Sent: Thursday, October 13, 2011 5:44 PM
To: Singh, Karamjit
Subject: FW: request for unit cost data for Volusia
Attachments: Cost Estimate Quantities.xlsx

From: John Jacobs [<mailto:JJacobs@comanco.com>]
Sent: Thursday, October 06, 2011 2:46 PM
To: Perera, Kanishka
Cc: Troy Watral
Subject: FW: request for unit cost data for Volusia

Good afternoon,

Please find attached our assessment of the budgetary costs of the closure project at Volusia. We did not provide a price for the E&S item as it would be difficult to define by the acre. We hope that you find this information helpful. Please let us know if you should have any questions or require any additional information.

Regards,

John Jacobs
Senior Estimator
COMANCO Environmental Corporation
4301 Sterling Commerce Drive
Plant City, FL 33566
Office 813-988-8829
FAX 813-386-7385
Cell 813-714-2253



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From: Perera, Kanishka [<mailto:Kanishka.Perera@hdrinc.com>]
Sent: Wednesday, September 28, 2011 6:53 PM
To: Troy Watral
Cc: Singh, Karamjit
Subject: FW: request for unit cost data for Volusia

Troy

The Tomoka Farms Road landfill in Volusia County, FL is required to demonstrate that they will be able to pay for the required closure funds if decided to close prematurely. Accordingly FDEP request Volusia County to revise and submit a financial assurance estimate for closure costs. HDR developed following cost items associate with closure. Appreciate if you could let us know the unit prices for each of the item if available based on the following:

- Assume on-site borrow source for cover soil and top soil. The borrow source is located approximately 2 miles from the construction site and will require excavation, loading, transportation, unloading, placement and nominal compaction.
- All costs shall include material, transportation and installation
- The costs shall be based on 2011 cost data

North Cell Closure Cost

Item No.	Description	Quantity	Unit	Unit Price	Total Cost	
1	18" Cover soil	175,047	CY			Assume borrow source
2	6" Top soil	58,349	CY			Assume borrow source
3	Textured 40-mil LLDPE	350,093	SY			
4	Double sided geocomposite	350,093	SY			Assume 300 mil Fab
5	Sodding	323,929	SY			
6	Hydroseeding	5.41	AC			
7	Erosion and Sediment Control	65.65	AC			

If you do not have unit cost data for all of the items above, feel free to send the items you have unit cost data. Thank you for your time.

Thanks

KANISHKA PERERA PHD,
PE

HDR Engineering, Inc.
Project Manager | Professional Associate - Landfill Services

200 W. Forsyth Street, Ste. 800 | Jacksonville, FL 32202
904-598-8978 | c: 904-482-8285
kanishka.perera@hdrinc.com | hdrinc.com

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North Cell Closure Cost

Item No.	Description	Quantity	Unit	Unit Price	Total Cost	Comments
1	18" Cover soil	175,047	CY	\$5.25	\$918,995.19	Assume borrow source consist of silty sand type soil
2	6" Top soil	58,349	CY	\$5.50	\$320,918.95	Assume borrow source consist of silty sand type soil
3	Textured 40-mil LLDPE	350,093	SY	\$4.50	\$1,575,420.32	
4	Double sided geocomposite	350,093	SY	\$6.75	\$2,363,130.48	
5	Sodding	323,929	SY	\$2.25	\$728,841.16	
6	Hydroseeding	5.41	AC	\$2,250.00	\$12,163.02	
7	Erosion and Sediment Control	65.65	AC		\$0.00	

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City Cost Indexes

DIVISION		FLORIDA																				
		MIAMI			ORLANDO			PANAMA CITY			PENSACOLA			ST. PETERSBURG			TALLAHASSEE					
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL			
015433 CONTRACTOR EQUIPMENT		90.4	90.4		97.8	97.8		97.8	97.8		97.8	97.8		97.8	97.8		97.8	97.8		97.8	97.8	
0241, 31 - 34	SITE & INFRASTRUCTURE, DEMOLITION	105.1	77.1	85.6	119.0	88.3	97.6	134.2	86.5	100.1	130.8	87.8	100.9	117.2	88.1	96.9	114.5	87.5	95.7			
0310	Concrete Forming & Accessories	97.7	77.0	79.8	94.5	80.2	82.1	94.0	47.4	53.7	92.0	57.4	62.0	93.0	52.2	57.7	96.9	48.7	55.2			
0320	Concrete Reinforcing	86.0	80.5	83.2	86.0	77.7	81.7	89.7	58.9	74.0	92.1	58.8	75.1	89.1	66.2	77.4	86.0	62.4	73.9			
0330	Cast-in-Place Concrete	106.3	85.7	98.5	123.1	76.5	105.5	99.1	52.8	81.6	122.4	71.3	103.1	105.7	69.5	92.0	103.9	60.5	87.5			
03	CONCRETE	95.9	81.7	89.2	105.3	79.4	93.2	98.0	52.7								94.6	57.1	77.1			
04	MASONRY	86.1	80.2	82.6	90.6	73.1	80.1	90.8	52.7								85.7	89.4	56.1	69.4		
05	METALS	102.8	94.4	99.9	103.7	92.2	99.8	97.9	71.1								95.9	91.9	84.5	89.4		
06	WOOD, PLASTICS & COMPOSITES	97.3	75.2	84.8	95.4	84.3	89.1	94.6	46.1								69.2	93.2	46.1	66.1		
07	THERMAL & MOISTURE PROTECTION	102.7	83.6	95.5	95.2	82.5	90.4	94.3	55.1								82.0	99.8	78.4	91.1		
08	OPENINGS	97.5	73.2	91.5	100.1	74.7	93.8	97.7	41.1								87.9	100.6	50.5	88.2		
0920	Plaster & Gypsum Board	92.8	75.0	80.5	105.8	84.3	90.9	93.4	45.1								62.9	111.1	45.0	65.4		
0950, 0980	Ceilings & Acoustic Treatment	94.1	75.0	81.9	98.4	84.3	89.4	93.2	45.1								65.5	98.4	45.0	64.4		
0960	Flooring	124.0	78.6	111.5	116.8	79.3	106.4	116.0	46.1								99.7	116.6	60.6	101.2		
0970, 0990	Wall Finishes & Painting/Coating	106.1	58.2	77.3	111.0	61.1	81.0	111.0	52.1								76.5	111.0	48.1	73.2		
09	FINISHES	104.4	74.7	88.3	106.9	78.6	91.6	105.5	47.1								76.0	107.2	49.6	75.9		
COVERS	DIVS. 10 - 14, 25, 28, 41, 43, 44	100.0	89.8	97.8	100.0	86.4	97.1	100.0	54.2	90.3	100.0	54.4	90.3	100.0	61.5	91.8	100.0	77.8	95.3			
21, 22, 23	FIRE SUPPRESSION, PLUMBING & HVAC	99.8	74.4	89.3	99.7	64.1	85.0	99.8	42.1	76.1	99.8	59.1	83.0	99.8	57.2	82.2	99.8	44.0	76.8			
26, 27, 3370	ELECTRICAL, COMMUNICATIONS & UTIL.	106.3	78.8	91.9	106.5	48.4	76.1	97.0	46.4	70.6	101.1	58.6	78.9	98.7	51.5	74.0	106.4	46.0	74.8			
MF2004	WEIGHTED AVERAGE	100.1	79.4	90.9	102.2	73.2	89.4	99.5	53.1	79.0	102.2	64.4	85.5	101.6	61.6	83.9	99.2	57.7	80.9			
DIVISION		FLORIDA									GEORGIA											
		TAMPA			ALBANY			ATLANTA			AUGUSTA			COLUMBUS			MACON					
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL			
015433 CONTRACTOR EQUIPMENT			97.8	97.8		91.2	91.2		93.1	93.1		92.6	92.6		91.2	91.2		102.1	102.1			
0241, 31 - 34	SITE & INFRASTRUCTURE, DEMOLITION	117.6	88.8	97.5	101.9	78.4	85.6	103.6	94.4	97.2	100.0	92.1	94.5	101.8	78.7	85.7	102.3	94.2	96.6			
0310	Concrete Forming & Accessories	95.6	84.3	85.8	94.1	47.7	54.0	96.2	75.0	77.9	94.0	68.3	71.8	94.0	59.7	64.4	93.3	56.9	61.8			
0320	Concrete Reinforcing	86.0	104.3	95.3	85.8	87.1	86.5	90.5	88.8	89.6	91.5	75.8	83.5	86.0	88.1	87.0	87.1	87.4	87.2			
0330	Cast-in-Place Concrete	103.2	75.8	92.9	99.8	49.0	80.6	110.5	73.0	96.3	104.4	51.2	84.2	99.3	58.1	83.7	98.0	51.6	80.5			
03	CONCRETE	94.2	86.0	90.4	92.3	57.2	75.9	99.8	77.0	89.1	95.2	64.1	80.7	92.1	65.8	79.8	91.6	62.2	77.9			
04	MASONRY	87.8	84.4	85.8	89.5	43.9	62.1	89.5	71.4	78.6	89.6	43.5	61.9	88.7	61.6	72.4	101.2	41.6	65.4			
05	METALS	100.0	103.8	101.3	97.5	88.2	94.3	90.9	81.0	87.6	89.8	72.7	84.0	96.9	90.6	94.7	93.2	89.8	92.1			
06	WOOD, PLASTICS & COMPOSITES	96.8	86.8	91.1	94.7	42.4	65.1	94.0	76.7	84.2	91.4	73.8	81.4	94.7	58.3	74.1	104.5	57.2	77.7			
07	THERMAL & MOISTURE PROTECTION	94.0	94.1	94.0	91.6	62.7	80.7	91.8	76.4	86.0	91.4	58.5	79.0	91.5	63.8	81.0	90.1	65.3	80.7			
08	OPENINGS	100.1	83.8	96.1	97.5	49.0	85.5	98.7	73.8	92.5	93.0	65.6	86.2	97.5	59.6	88.1	95.7	58.1	86.4			
0920	Plaster & Gypsum Board	95.3	86.9	89.5	95.1	41.2	57.8	113.6	76.4	87.9	112.3	73.4	85.4	95.1	57.5	69.1	104.4	56.4	71.2			
0950, 0980	Ceilings & Acoustic Treatment	98.4	86.9	91.1	97.5	41.2	61.6	106.8	76.4	87.4	107.7	73.4	85.9	97.5	57.5	72.1	92.6	56.4	69.6			
0960	Flooring	116.6	60.9	101.2	116.6	33.2	93.6	89.4	70.2	84.1	88.3	42.3	75.6	116.6	54.3	99.4	90.9	39.1	76.5			
0970, 0990	Wall Finishes & Painting/Coating	111.0	66.2	84.0	106.1	55.5	75.6	97.5	86.2	90.7	97.5	40.6	63.3	106.1	67.5	82.9	108.2	55.5	76.5			
09	FINISHES	105.7	77.9	90.6	102.8	43.9	70.8	97.7	75.2	85.5	97.2	61.1	77.6	102.8	58.7	78.8	91.0	52.3	70.0			
COVERS	DIVS. 10 - 14, 25, 28, 41, 43, 44	100.0	86.5	97.1	100.0	77.2	95.2	100.0	81.8	96.1	100.0	68.1	91.1	100.0	79.2	95.6	100.0	77.0	95.1			
21, 22, 23	FIRE SUPPRESSION, PLUMBING & HVAC	99.8	91.7	96.4	99.7	69.9	87.4	100.0	76.0	90.1	100.0	69.4	87.4	99.8	52.6	80.4	99.8	67.7	86.6			
26, 27, 3370	ELECTRICAL, COMMUNICATIONS & UTIL.	98.4	51.5	73.9	93.8	57.0	74.6	98.4	77.1	87.3	99.7	69.3	83.8	94.0	74.3	83.7	92.8	63.6	77.5			
MF2004	WEIGHTED AVERAGE	99.2	83.3	92.2	97.1	61.7	81.5	97.4	77.8	88.8	96.0	66.5	83.0	97.0	66.2	83.4	95.8	65.8	82.6			
DIVISION		GEORGIA									HAWAII				IDAHO							
		SAVANNAH			VALDOSTA			HONOLULU			STATES & POSS., GUAM		BOISE			LEWISTON						
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL			
015433 CONTRACTOR EQUIPMENT			92.2	92.2		91.2	91.2		99.8	99.8		166.6	166.6		100.7	100.7		94.6	94.6			
0241, 31 - 34	SITE & INFRASTRUCTURE, DEMOLITION	104.4	79.3	86.9	112.2	78.5	88.7	134.6	106.3	114.9	172.3	105.9	126.0	76.7	99.8	92.8	83.2	95.3	91.6			
0310	Concrete Forming & Accessories	94.1	53.0	58.6	84.7	46.8	51.9	116.4	136.8	134.0	111.4	62.8	69.3	99.9	72.2	75.9	122.7	60.8	69.1			
0320	Concrete Reinforcing	86.8	76.0	81.3	87.8	73.8	80.7	113.0	107.1	110.0	205.9	33.5	117.9	98.3	69.2	83.5	106.5	91.0	98.6			
0330	Cast-in-Place Concrete	115.9	50.5	91.2	97.6	53.1	80.8	168.1	121.2	150.3	171.1	113.1	149.1	92.7	77.9	87.1	104.2	86.6	97.5			
03	CONCRETE	100.4	57.9	80.5	96.3	55.7	77.3	139.9	124.6	132.7	154.2	75.1	117.2	102.5	73.8	89.1	113.7	75.8	96.0			
04	MASONRY	88.6	54.3	68.0	94.3	49.3	67.3	122.9	124.9	124.1	187.2	48.4	103.8	126.2	62.0	87.6	128.1	82.2	100.5			
05	METALS	93.6	84.7	90.6	96.5	83.8	92.2	131.3	102.1	121.5	142.2	80.0	121.2	102.5	72.9	92.5	96.4	84.2	92.3			
06	WOOD, PLASTICS & COMPOSITES	110.4	50.0	76.2	83.3	41.3	59.5	108.1	141.5	127.0	108.4	64.2	83.3	93.5	72.9	81.8	104.9	53.2	75.6			
07	THERMAL & MOISTURE PROTECTION	93.9	58.2	80.4	91.7	63.5	81.1	116.5	123.2	119.0	122.9	70.2	103.0	93.4	68.3	83.9	144.8	75.1	118.5			
08	OPENINGS	98.7	50.3	86.7	93.0	44.7	81.0	106.0	129.9	111.9	105.5	54.3	92.8	93.0	68.3	86.9	112.6	60.0	99.6			
0920	Plaster & Gypsum Board	94.1	49.0	62.9	87.3	40.1	54.6	133.6	142.5	139.8	211.9	51.6	100.9	89.8	72.0	77.5	157.4	51.8	84.3			
0950, 0980	Ceilings & Acoustic Treatment	98.4	49.0	66.9	93.2	40.1	59.4	116.2	142.5	132.9	233.1	51.6	117.5	125.5	72.0	91.4	161.2	51.8	91.5			
0960	Flooring	117.4	49.9	98.8	108.8	41.7	90.3	165.2	128.4	155.0	164.9</											

33 41 Storm Utility Drainage Piping

33 41 13 - Public Storm Utility Drainage Piping

33 41 13.50 Piping, Drainage & Sewage, Corrug. HDPE Type S		Crew	Daily Output	Labor-Hours	Unit	Material	2010 Bare Costs		Total	Total Incl O&P
							Labor	Equipment		
0010	PIPING, DRAINAGE & SEWAGE, CORRUGATED HDPE TYPE S									
0020	Not including excavation & backfill, bell & spigot									
1000	With gaskets, 4" diameter	B-20	425	.056	L.F.	.80	2.09		2.89	4.09
1010	6" diameter		400	.060		1.82	2.22		4.04	5.40
1020	8" diameter		380	.063		3.47	2.33		5.80	7.40
1030	10" diameter		370	.065		4.80	2.40		7.20	9
1040	12" diameter		340	.071		6.55	2.61		9.16	11.20
1050	15" diameter		300	.080		8.85	2.95		11.80	14.30
1060	18" diameter	B-21	275	.102		12.65	3.87	.50	17.02	20.50
1070	24" diameter		250	.112		19.60	4.26	.55	24.41	28.50
1080	30" diameter		200	.140		31	5.30	.69	36.99	43
1090	36" diameter		180	.156		39.50	5.90	.77	46.17	53.50
1100	42" diameter		175	.160		49	6.10	.79	55.89	64
1110	48" diameter		170	.165		64	6.25	.81	71.06	80.50
1120	54" diameter		160	.175		88.50	6.45	.86	106.01	119
1130	60" diameter							.92	123.02	138
1135	Add 15% to material pipe cost for water tight connection									
1140	HDPE type s, elbows 12" diameter								134.50	184
1150	15" diameter								182	244
1160	18" diameter							15.35	271.35	350
1170	24" diameter							15.35	426.35	520
1180	30" diameter							17.25	615.25	740
1190	36" diameter							17.25	750.25	885
1240	HDPE type s, Tee 12" diameter								249	330
1260	15" diameter								293	385
1280	18" diameter								23	412
1300	24" diameter							27.50	519.50	660
1320	30" diameter		5	5.600		525	213	27.50	765.50	935
1340	36" diameter		4	7		685	266	34.50	985.50	1,200
1360	42" diameter		4	7		1,175	266	34.50	1,475.50	1,750
1380	48" diameter		4	7		1,950	266	34.50	2,250.50	2,600
1400	Add to basic installation cost for each split coupling joint									
1402	HDPE type s, split coupling, 12" diameter	B-20	17	1.412	Ea.	5.95	52		57.95	87
1420	15" diameter		15	1.600		6.60	59		65.60	98.50
1440	18" diameter		13	1.846		11.45	68		79.45	118
1460	24" diameter		12	2		16.75	74		90.75	132
1480	30" diameter		10	2.400		27.50	88.50		116	167
1500	36" diameter		9	2.667		35.50	98.50		134	191
1520	42" diameter		8	3		42.50	111		153.50	218
1540	48" diameter		8	3		54.50	111		165.50	231

RS Means 2010- Piping Cost:

18" Pipe = \$20.50 per LF

24" Pipe = \$28.50 per LF

City Factor = 0.976

Inflation Factor = 1.01 (based on FDEP Web site)

Total 18" Pipe = \$20.50 * 0.976 * 1.01 = \$20.20

Total 24" Pipe = \$28.50 * 0.976 * 1.01 = \$28.09

33 41 13.60 Sewage/Drainage Collection, Concrete Pipe

0010	SEWAGE/DRAINAGE COLLECTION, CONCRETE PIPE									
0020	Not including excavation or backfill									
0050	Box culvert, cast in place, 6' x 6'	C-15	16	4.500	L.F.	188	176		364	475
0060	8' x 8'		14	5.143		277	201		478	615
0070	12' x 12'		10	7.200		545	282		827	1,025
0100	Box culvert, precast, base price, 8' long, 6' x 3'	B-69	140	.343		294	12.40	11.05	317.45	355
0150	6' x 7'		125	.384		445	13.90	12.35	471.25	525
0200	8' x 3'		133	.361		405	13.05	11.60	429.65	480
0250	8' x 8'		100	.480		545	17.35	15.45	577.80	645
0300	10' x 3'		110	.436		600	15.80	14.05	629.85	700
0350	10' x 8'		80	.600		680	21.50	19.30	720.80	805

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Item Average Unit Cost

From 2010/01/01 to 2010/12/31

Contract Type: ('CC') STATEWIDE

Displaying: VALID ITEMS WITH HITS

From: 0102 2 1 To: 0999999999

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Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0430175124	7	\$42.20	\$498,898.35	11,822.000	LF	N	PIPE CULV, OPT MATL, ROUND, 24"S/CD
0430175130	7	\$54.87	\$256,736.79	4,679.000	LF	N	PIPE CULV, OPT MATL, ROUND, 30"S/CD
0430175136	5	\$64.42	\$539,227.55	8,371.000	LF	N	PIPE CULV, OPT MATL, ROUND, 36"S/CD
0430175142	2	\$95.66	\$211,688.00	2,213.000	LF	N	PIPE CULV, OPT MATL, ROUND, 42"S/CD
0430175148	4	\$126.80	\$299,385.52	2,361.000	LF	N	PIPE CULV, OPT MATL, ROUND, 48"S/CD
0430175160	1	\$175.00	\$63,350.00	362.000	LF	N	PIPE CULV, OPT MATL, ROUND, 60"S/CD
0430175166	1	\$400.00	\$14,400.00	36.000	LF	N	PIPE CULV, OPT MATL, ROUND, 66"S/CD
0430175218	3	\$38.86	\$221,945.66	5,711.000	LF	N	PIPE CULV, OPT MATL, OTHER, 18"S/CD
0430175224	1	\$54.00					IPE CULV, OPT MATL, OTHER, 24"S/CD
0430175230	3	\$67.65					IPE CULV, OPT MATL, OTHER, 30"S/CD
0430175236	3	\$82.61					IPE CULV, OPT MATL, OTHER, 36"S/CD
0430175242	1	\$130.00					IPE CULV, OPT MATL, OTHER, 42"S/CD
0430175248	1	\$350.00					IPE CULV, OPT MATL, OTHER, 48"S/CD
0430200 25	1	\$1,200.00					LARED END SECTION, CONCRETE, 18"
0430200 38	1	\$1,888.59					LARED END SECTION, CONCRETE, 36"
0430610025	2	\$1,956.88					-ENDWALL,STD 261,1:6 SLP, 18"
0430610125	1	\$1,383.65					-ENDWALL,STD 261,1:4 SLP, 18"
0430610129	1	\$1,728.03	\$1,728.03	1.000	EA	N	U-ENDWALL,STD 261,1:4 SLP, 24"
0430610133	1	\$2,066.51	\$2,066.51	1.000	EA	N	U-ENDWALL,STD 261,1:4 SLP, 30"
0430610225	1	\$773.05	\$2,319.15	3.000	EA	N	U-ENDWALL,STD 261,1:3 SLP, 18"
0430610229	1	\$996.01	\$3,984.04	4.000	EA	N	U-ENDWALL,STD 261,1:3 SLP, 24"
0430610325	1	\$1,053.50	\$5,267.50	5.000	EA	N	U-ENDWALL,STD 261,1:2 SLP, 18"
0430611025	2	\$1,183.00	\$5,915.00	5.000	EA	N	U-ENDWALL,STD 261,BAFFLES,1:6 SLP, 18"
0430611029	1	\$3,750.00	\$3,750.00	1.000	EA	N	U-ENDWALL,STD 261,BAFFLES,1:6 SLP, 24"
0430611123	2	\$1,626.65	\$3,253.29	2.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:4 SLP, 15"
0430611125	4	\$1,465.08	\$19,046.10	13.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:4 SLP, 18"
0430611129	3	\$2,512.50	\$10,050.00	4.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:4 SLP, 24"
0430611225	2	\$2,624.95	\$5,249.90	2.000	EA	N	U-ENDWALL, BAFFLES, STD 261,1:3 SLP,18"
0430611323	2	\$1,090.00	\$2,180.00	2.000	EA	N	U-ENDWALL, BAFFLES, STD 261,1:2 SLP,15"
0430611325	7	\$2,023.14	\$86,994.90	43.000	EA	N	U-ENDWALL, BAFFLES, STD 261,1:2 SLP,18"
0430612133	1	\$10,392.37	\$83,138.96	8.000	EA	N	U-ENDWALL, GRATE,STD 261,1:4 SLP,30"
0430830	9	\$217.54	\$57,646.94	265.000	CY	N	PIPE FILLING AND PLUGGING
0430880 03	1	\$32,450.00	\$32,450.00	1.000	EA	N	FLAP GATES, 37-48"
0430950	15	\$98.69	\$337,009.16	3,414.900	CY	N	DESILTING CONCRETE BOX CULVERT,
0430963 1	4	\$9.45	\$2,984.64	316.000	LF	N	PVC PIPE FOR BACK OF SIDEWALK, 4"

FDOT Estimates- Control Structure Cost:

Average cost (each)= \$3,750

Inflation Factor = 1.01 (based on FDEP Web site)

Total cost = \$3,750 * 1.01 = \$3,787.50

33 41 Storm Utility Drainage Piping

33 41 13 - Public Storm Utility Drainage Piping

33 41 13.50 Piping, Drainage & Sewage, Corrug. HDPE Type S		Crew	Daily Output	Labor Hours	Unit	Material	2010 Labor	2010 Bare Costs Equipment	Total	Total Incl O&P
PIPING, DRAINAGE & SEWAGE, CORRUGATED HDPE TYPE S										
Not including excavation & backfill, bell & spigot										
1000	With gaskets, 4" diameter	B-20	425	.056	L.F.	.80	2.09		2.89	4.09
1010	6" diameter		400	.060		1.82	2.22		4.04	5.40
1020	8" diameter		380	.063		3.47	2.33		5.80	7.40
1030	10" diameter		370	.065		4.80	2.40		7.20	9
1040	12" diameter		340	.071		6.55	2.61		9.16	11.20
1050	15" diameter		300	.080		8.85	2.95		11.80	14.30
1060	18" diameter	B-21	275	.102		12.65	3.87	.50	17.02	20.50
1070	24" diameter		250	.112		19.60	4.26	.55	24.41	28.50
1080	30" diameter		200	.140		31	5.30	.69	36.99	43
1090	36" diameter		180	.156		39.50	5.90	.77	46.17	53.50
1100	42" diameter		175	.160		49	6.10	.79	55.89	64
1110	48" diameter		170	.165		64	6.25	.81	71.06	80.50
1120	54" diameter		160	.175		98.50	6.65	.86	106.01	119
1130	60" diameter		150	.187		115	7.10	.92	123.02	138
Add 15% to material pipe cost for water tight connection bell & spigot										
1140	HDPE type s, elbows 12" diameter	B-20	11	2.182	Eq.	54	80.50		134.50	184
1150	15" diameter	"	9	2.667		83.50	98.50		182	244
1160	18" diameter	B-21	9	3.111		138	118	15.35	271.35	350
1170	24" diameter		9	3.111		293	118	15.35	426.35	520
1180	30" diameter		8	3.500		465	133	17.25	615.25	740
1190	36" diameter		8	3.500		600	133	17.25	750.25	885
1240	HDPE type s, Tee 12" diameter	B-20	7	3.429		122	127		249	330
1260	15" diameter	"	6	4		145	148		293	385
1280	18" diameter	B-21	6	4.667		212	177	23	412	530
1300	24" diameter		5	5.600		279	213	27.50	519.50	660
1320	30" diameter		5	5.600		525	213	27.50	765.50	935
1340	36" diameter		4	7		685	266	34.50	985.50	1,200
1360	42" diameter		4	7		1,175	266	34.50	1,475.50	1,750
1380	48" diameter		4	7		1,950	266	34.50	2,250.50	2,600
Add to basic installation cost for eq										
HDPE type s, split coupling, 1										
1420	15" diameter									
1440	18" diameter									
1460	24" diameter									
1480	30" diameter									
1500	36" diameter									
1520	42" diameter									
1540	48" diameter									
RS Means 2010- Inlet Cost:										
A single Inlet includes a tee and 45 degrees elbow along with approx. 50 SY concrete pad .										
City Factor = 0.976										
Total cost of two Inlets = 2 * 0.976 * (\$350 * 1.15 + \$530) = \$1,820.24										
Total cost of concrete (from FDOT estimates) = 50 * \$90 = \$4,500										
Total cost of double Inlet = \$6,320.24										
Inflation Factor = 1.01 (based on FDEP Web site)										
Total cost = \$6,320.24 * 1.01 = \$6,383.44										
33 41 13.60 Sewage/Drainage										
SEWAGE/DRAINAGE COLLECTION										
Not including excavation or backfill										
0050	Box culvert, cast in place, 6' x 6'									
0060	8' x 8'									
0070	12' x 12'									
0100	Box culvert, precast, base price, 8'									
0150	6' x 7'		125	.384		445	13.90	12.35	471.25	525
0200	8' x 3'		133	.361		405	13.05	11.60	429.65	480
0250	8' x 8'		100	.480		545	17.35	15.45	577.80	645
0300	10' x 3'		110	.436		600	15.80	14.05	629.85	700
0350	10' x 8'		80	.600		680	21.50	19.30	720.80	805

Florida Department of Transportation

Item Average Unit Cost

From 2010/01/01 to 2010/12/31

Contract Type: ('CC') STATEWIDE

Displaying: VALID ITEMS WITH HITS

From: 0102 2 1 To: 0999999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0334 1 22	16	\$78.28	\$7,481,678.26	95,580.470	TN	N	SUPERPAVE ASPH CONC, TRAF B, PG76-22
0334 1 23	29	\$81.66	\$13,599,764.83	166,535.440	TN	N	SUPERPAVE ASPH CONC, TRAF C, PG76-22
0334 1 24	16	\$81.32	\$23,553,807.43	289,629.800	TN	N	SUPERPAVE ASPH CONC, TRAF D, PG76-22
0334 1 25	5	\$81.28	\$16,247,131.08	199,880.640	TN	N	SUPERPAVE ASPH CONC, TRAF E, PG76-22
0337 7 5	22	\$100.62	\$8,188,682.01	81,385.680	TN	N	ASPH CONC FC, INC BIT/RUBBER, FC-5
0337 7 22	24	\$100.39	\$20,583,665.34	205,035.780	TN	N	ASPH CONC FC, INC BIT, FC-5, PG76-22
0337 7 30	11	\$95.24	\$2,202,893.79	23,130.700	TN	N	ASPH CONC FC, TRAFFIC B, FC-9.5, RUBBER
0337 7 31	6	\$74.84	\$1,278,882.91	17,087.800	TN	N	ASPH CONC FC, TRAFFIC B, FC-12.5, RUBBER
0337 7 32	26	\$98.96	\$8,685,303.90	87,765.980	TN	N	ASPH CONC FC, TRAFFIC C, FC-9.5, RUBBER
0337 7 33	36	\$85.74	\$14,930,237.86	174,142.680	TN	N	ASPH CONC FC, TRAFFIC C, FC-12.5, RUBBER
0337 7 35	1	\$86.85	\$728,882.55	8,392.430	TN	N	ASPH CONC FC, TRAFFIC D, FC-12.5, RUBBER
0337 7 40	7	\$81.92	\$2,533,903.62	30,930.100	TN	N	ASPH CONC FC, TRAFFIC B, FC-9.5, PG 76-22
0337 7 41	6	\$78.89	\$3,120,052.39	39,547.900	TN	N	ASPH CONC FC, TRAFFIC B, FC-12.5, PG 76-22
0337 7 42	9	\$84.16	\$1,900,877.54	22,586.100	TN	N	ASPH CONC FC, TRAFFIC C, FC-9.5, PG 76-22
0337 7 43	28	\$83.57	\$17,279,294.88	206,760.800	TN	N	ASPH CONC FC, TRAFFIC C, FC-12.5, PG 76-22
0337 7 45	8	\$90.00	\$2,035,955.35	22,622.130	TN	N	ASPH CONC FC, TRAFFIC D, FC-12.5, PG 76-22
0339 1	91	\$143.23	\$2,035,745.47	14,213.400	TN	N	MISCELLANEOUS ASPHALT PAVEMENT
0341 70	5	\$3.61	\$1,104,016.90	305,929.000	SY	N	ASPHALT RUBBER MEMBRANE INTERLAYER
0350 1 1	1	\$42.56	\$1,361.92	32.000	SY	N	PLAIN CEMENT CONC PAVT, 6"
0350 1 3	1	\$89.00	\$21,493.50	241.500	SY	N	PLAIN CEMENT CONC PAVT, 8"
0350 1 4	2	\$47.74	\$878,011.60	18,389.900	SY	N	PLAIN CEMENT CONC PAVT, 9"
0350 2 3	1	\$90.00	\$7,849.80	87.220	SY	N	CEMENT CONC PAVT REINFORCED, 8"
0350 72	12	\$1.41	\$1,320,773.42	937,798.400	LF	N	CLEANING & RESEALING JOINTS - CONC PVMT
0350 78	6	\$2.30	\$65,425.05	28,424.100	LF	N	CLEANING & SEALING RAN CRACKS CONC PVMT
0352 70	6	\$2.39	\$1,862,613.33	780,264.000	SY	N	GRINDING CONCRETE PAVT
0353 70	7	\$392.93	\$6,152,085.94	15,657.100	CY	N	CONC PAVT SLAB REPLACEMENT
0400 0 11	16	\$412.37	\$614,548.20	1,490.300	CY	N	CONC CLASS NS, GRAVITY WALL
0400 0 13	2	\$553.69	\$1,162.75	2.100	CY	N	CONC CLASS NS, STEPS
0400 1 1	2	\$491.32	\$8,917.50	18.150	CY	N	CONC CLASS I, CULVERTS
0400 1 2	37	\$836.37	\$963,283.04	1,151.740	CY	N	CONC CLASS I, ENDWALLS
0400 1 11	14	\$423.54	\$397,367.49	938.200	CY	N	CONC CLASS I, RETAINING WALLS
0400 1 25	1	\$400.00	\$5,800.00	14.500	CY	N	CONC CLASS I, MASS SUBSTRUCTURE
0400 2 1	5	\$770.52	\$306,975.48	398.400	CY	N	CONC CLASS II, CULVERTS
0400 2 2	1	\$639.43	\$8,440.48	13.200	CY	N	CONC CLASS II, ENDWALLS
0400 2 4	16	\$651.40	\$5,694,988.20	8,742.700	CY	N	CONC CLASS II, SUPERSTRUCTURE

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Tomoka Farms Road Landfill - North Cell Class I
Financial Assurance Closure Cost Estimates
Landfill Gas Collection System

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST				TOTAL COST
				Shaw Environmental	Comanco	SCS Field Services	Average	
1	Mobilization/Demobilization	1	LS	\$ 12,400.00	\$ 5,500.00	\$ 15,000.00	\$ 10,966.67	\$ 10,966.67
2	Wellhead Assembly	20	EA	\$ 500.00	\$ 700.00	\$ 620.00	\$ 606.67	\$ 12,133.33
3	Drilling of 36" Borehole and Completion of Vertical Well (0' - 274')	274	LF	\$ 131.00	\$ 185.00	\$ 140.00	\$ 152.00	\$ 41,648.00
4	Drilling of 36" Borehole and Completion of Vertical Well (275' - 549')	275	LF	\$ 93.00	\$ 135.00	\$ 120.00	\$ 116.00	\$ 31,900.00
5	Drilling of 36" Borehole and Completion of Vertical Well (550' - 999')	450	LF	\$ 78.50	\$ 120.00	\$ 100.00	\$ 99.50	\$ 44,775.00
6	Drilling of 36" Borehole and Completion of Vertical Well (1,000'+)	1153	LF	\$ 76.00	\$ 100.00	\$ 98.00	\$ 91.33	\$ 105,307.33
7	Benching	17	EA	\$ 400.00	\$ 250.00	\$ 350.00	\$ 333.33	\$ 5,666.67
8	18" HDPE SDR 17 Header Pipe (0' - 499')	499	LF	\$ 52.00	\$ 80.00	\$ 66.00	\$ 66.00	\$ 32,934.00
9	18" HDPE SDR 17 Header Pipe (500' - 1,499')	1000	LF	\$ 48.00	\$ 78.00	\$ 65.00	\$ 63.67	\$ 63,666.67
10	18" HDPE SDR 17 Header Pipe (1,500'+)	430	LF	\$ 47.00	\$ 76.00	\$ 64.00	\$ 62.33	\$ 26,803.33
11	16" HDPE SDR 17 Header Pipe (0' - 499')	499	LF	\$ 50.00	\$ 72.00	\$ 61.00	\$ 61.00	\$ 30,439.00
12	16" HDPE SDR 17 Header Pipe (500' - 1,499')	446	LF	\$ 43.00	\$ 70.00	\$ 60.00	\$ 57.67	\$ 25,719.33
13	6" HDPE SDR 11 Lateral Pipe (0' - 499')	499	LF	\$ 20.00	\$ 17.00	\$ 26.00	\$ 21.00	\$ 10,479.00
14	6" HDPE SDR 11 Lateral Pipe (500' - 1,499')	1000	LF	\$ 18.00	\$ 15.00	\$ 25.00	\$ 19.33	\$ 19,333.33
15	6" HDPE SDR 11 Lateral Pipe (1,500'+)	1177	LF	\$ 17.00	\$ 14.00	\$ 24.00	\$ 18.33	\$ 21,578.33
16	4" HDPE SDR 11 Lateral Pipe (0' - 499')	499	LF	\$ 15.00	\$ 21.00	\$ 29.00	\$ 21.67	\$ 10,811.67
17	4" HDPE SDR 11 Lateral Pipe (500' - 1,499')	1000	LF	\$ 14.00	\$ 20.00	\$ 25.00	\$ 19.67	\$ 19,666.67
18	4" HDPE SDR 11 Lateral Pipe (1,500'+)	983	LF	\$ 13.00	\$ 19.00	\$ 24.00	\$ 18.67	\$ 18,349.33
19	Header/Condensate Access Point	10	EA	\$ 2,300.00	\$ 5,000.00	\$ 3,700.00	\$ 3,666.67	\$ 36,666.67
20	Condensate Sump	7	EA	\$ 16,000.00	\$ 28,000.00	\$ 29,400.00	\$ 24,466.67	\$ 171,266.67
21	18" Header Isolation Valve Box Assembly	1	EA	\$ 19,500.00	\$ 30,000.00	\$ 25,400.00	\$ 24,966.67	\$ 24,966.67
22	16" Header Isolation Valve Box Assembly	1	EA	\$ 18,000.00	\$ 28,000.00	\$ 21,900.00	\$ 22,633.33	\$ 22,633.33
23	Pipe Boot	20	EA	\$ -	\$ 500.00	\$ 600.00	\$ 366.67	\$ 7,333.33
TOTAL = \$ 795,044.33								
Notes: 1. Unit prices are based on the bids received from Shaw Environmental, Comanco, and SCS Field Services for "Landfill Gas Collection System Installation" Project at Tomoka Farms Road Landfill (June 2011).								

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SOLID WASTE DIVISION			
Organics	Price Per Test	Metals	Price Per Test
Lindane	\$25.00	Aluminum	\$7.00
Endrin	\$25.00	Antimony	\$7.00
Methoxychlor	\$25.00	Arsenic	\$7.00
Toxaphene	\$25.00	Barium	\$7.00
2, 4-D	\$25.00	Beryllium	\$7.00
2, 4, 5-TP (silvex)	\$25.00	Cadmium	\$7.00
Ethylene Dibromide	\$25.00	Calcium	\$7.00
Vinyl Chloride	\$5.00	Chromium	\$7.00
1, 2-Dichloroethane	\$5.00	Copper	\$7.00
1, 1, 1-Trichloroethane	\$5.00	Cobalt	\$7.00
Trichloroethene	\$5.00	Iron	\$7.00
Tetrachloroethene	\$5.00	Lead	\$7.00
Benzene	\$5.00	Magnesium	\$7.00
Carbon Tetrachloride	\$5.00	Manganese	\$7.00
1,3-Dichlorobenzene	\$5.00	Mercury	\$17.50
Toluene	\$5.00	Nickel	\$7.00
Xylenes (total)	\$5.00	Potassium	\$7.00
1,2,4-Trichlorobenzene	\$5.00	Selenium	\$7.00
1,4-Dichlorobenzene	\$5.00	Silver	\$7.00
1,2-Dichlorobenzene	\$5.00	Sodium	\$7.00
Chlorobenzene	\$5.00	Thallium	\$7.00
1,1-Dichloroethylene	\$5.00	Tin	\$7.00
cis-1,2-Dichloroethylene	\$5.00	Vanadium	\$7.00
1,2-Dichloropropane	\$5.00	Zinc	\$7.00
Ethylbenzene	\$5.00	Toxicity Characteristic Leaching Procedure (TCLP)	\$75.00
Styrene	\$5.00	Arsenic	\$7.00
Trans-1,2-Dichloroethylene	\$5.00	Barium	\$7.00
Dichloromethane	\$5.00	Cadmium	\$7.00
1,1,2-Trichloroethane	\$5.00	Chromium	\$7.00
Trihalomethane	\$35.00	Lead	\$7.00
Chlorinated Phenols	\$150.00	Mercury	\$17.50
Purgable Halocarbons 601/8260	\$75.00	Selenium	\$7.00
Purgable Volatils	\$75.00	Silver	\$7.00
Purgable Aromatics 602/8260	\$40.00	TCPL Organics - Price includes extraction plus methods 8260,8270,8151,8081	\$625.00
Total Organic Halogens	\$120.00	Organic & Demands	Price Per Test
Total Recovery Hydrocarbon/FLPRO	\$65.00	Biochemical Oxygen Demand	\$20.00
Polynuclear Aromatic Hydrocarbs	\$90.00	Chemical Oxygen Demand	\$15.00
Organic Toxic Pollutants - VOC	\$75.00	Oil & Grease	\$45.00
Organic Toxic Pollutants - BNA	\$150.00	Phenols, Total	\$20.00
Organic Toxic Pollutants - Pesticides	\$125.00	Total Organic Carbon	\$15.00
Organic Toxic Pollutants - VOC	\$75.00	Total Inorganic Carbon	\$15.00

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Pages from Volusia County's Master Agreement

09-B-76KW

ATTACHMENT A
REVISION 1

<i>Nutrients</i>	<i>Price Per Test</i>	<i>Groups</i>	<i>Price Per Test</i>
Ammonia Nitrogen	\$15.00	Hazardous Waste Characterization	
Ammonium	\$15.00	Reactive Cyanide	\$50.00
Kjeldahl Nitrogen, Total	\$17.00	Reactive Sulfide	\$50.00
Nitrate Nitrogen	\$8.00	Metals	<i>Price Per Test</i>
Nitrite Nitrogen	\$8.00	RCRA Metals (8)	\$56.00
Nitrogen, Total	\$30.00	Priority Pollutant Metals (13)	\$85.00
Organic Nitrogen	\$32.00	TAL Metals	\$125.00
<i>Microbiological</i>	<i>Price Per Test</i>	<i>Semi-Volatile Organics</i>	<i>Price Per Test</i>
Fecal Coliform	15	PAH's by EPA 625 or 8270C	90
Total Coliform	15	Base/Neutrals by EPA 625 or 8270C, PP or TCL list	\$125.00
		Base/Neutrals and Acid Extractables by EPA 625 or 8270C, PP or TCL List	\$150.00
<i>Residue/Solids</i>	<i>Price Per Test</i>	BNA RCRA List with TCLP extraction (EPA 1311 & 8270C)	\$200.00
Total Dissolved Solids	\$10.00	STARS PAH's by EPA 8270C	\$90.00
Total Suspended Solids	\$10.00	PCB's by EPA 8082	\$70.00
Percent Solids	\$5.00	Pesticides by EPA 8081	\$100.00
<i>Field Test</i>	<i>Price Per Test</i>	Pesticides & PCB's by EPA 8081/8082	\$150.00
Total Well Depth	\$0.00	Herbicides-WATER by EPA 8151 or 515.1	\$135.00
Water Elevation	\$0.00	Herbicides-SOIL by EPA 8151	\$175.00
Temperature	\$0.00	Toxicity Characteristic Leaching Procedure (TCLP)	<i>Price Per Test</i>
Specific Conductance	\$0.00	TCLP Metals	\$66.50
Dissolved Oxygen	\$0.00	TCLP Volatile Organics	\$75.00
pH	\$0.00	TCLP Pesticides	\$100.00
Turbidity	\$0.00	TCLP Herbicides	135
<i>Miscellaneous</i>	<i>Price Per Test</i>	Full TCLP	675
Bicarbonates as HCO ₃	\$10.00	AHE Extraction	75
Calcium Hardness as CaCO ₃	\$7.00	SPL Extraction	50
Chloride	\$8.00	Volatile Organics	<i>Price Per Test</i>
Color	\$5.00	BTEX + MTBE by EPA 624 or 8260B	40
Cyanide	\$20.00	VOHs by EPA 624 or 8260B	75
Corrosivity	\$20.00	VOC's by EPA 624 or 8260B (chlorinated and aromatic compounds)	75
Flouride	\$8.00	VOC's by EPA 8021 (chlorinated and aromatic compounds)	90
Hydrogen Sulfide	\$20.00	VOC's by GC/MS EPA 624 or 8260B	75
Odor	\$5.00	NYSDEC STARS List VOC's by EPA 8260B	75
pH	\$5.00	Miscellaneous	<i>Price Per Test</i>
Sulfate	\$8.00	40 CFR Part 258 Appendix I	\$190.00
Total Alkalinity	\$10.00	40 CFR Part 258 Appendix II	\$750.00
Total Hardness as CaCO ₃	\$7.00	Primary Metals 62-550.310(1)(a)	\$94.50
Total Phosphorus	\$15.00	Primary VOC 62-550.310(2)(C)	\$75.00
Total Phosphate	\$15.00	Full Primary Drinking Water Scan 62-550.310	\$1,000.00
Chlorophyll A	\$35.00	Secondary Drinking Water Scan 62-550.320(1)	\$135.00
		Field Parameters	0
Hourly Rate for time in field during regular working hours (8:00 a.m. to 5:00 p.m. Monday through Friday)			40
Hourly Rate for time in field after regular working hours (nights, weekends and county recognized holidays)			75
		GRAND TOTAL	\$17,475.80

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Pages from Volusia County's Master Agreement

09-B-76KW

ATTACHMENT A
REVISION 1

Definitions			
BNA = Base, Neutral, Acid extractable organics			
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes			
CFR = Code of Federal Regulations			
MTBE = Methyl Tert-Butyl Ether			
PAHs = Polynuclear Aromatic Hydrocarbons			
PCBs = Polychlorinated Biphenyls			
RCRA = Resource Conservation and Recovery Act			
SPLP = Synthetic Precipitation Leaching Procedure			
TAL = Target Analyte List			
TCLP = Toxicity Characteristic Leaching Procedure			
TRPH = Total Recoverable Petroleum Hydrocarbons			
VOAs = Volatile Organic Aromatics			
VOCs = Volatile Organic Compounds			
VOHs = Volatile Organic Halogens			

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Pace Analytical Services, Inc.

8 East Tower Circle
Ormond Beach, FL 32174
386.672.5668
fax 386.673.4001



Pace Quote No.: 10-0241

Date: 7/14/10

To: Volusia County Solid Waste
1990 Tomoka Farms Rd.
Port Orange, FL 32128

Phone: 386-947-2952

Fax:

Attn: Jennifer Stirk

P.O. Number:

Email: jstirk@co.volusia.fl.us

Qualifiers: NA

Special Analytes: NA

Project Name: Additional Parameters

Shipping: NA

Start Date: as required

Shipping Charges: NA

Client generated from

Duration: as required

EDD: PacePort

Samples Per Day: NA

Primary Lab: Ormond Beach

Report Results: NA

Sampling Org.: Pace/client

Deliverable: Florida

Hourly Rate: NA

Surcharge: NA

Pace Contact:

Turnaround: 10 business days

Paul Jackson

TAT Surcharge: NA

813.731.1595

Paul.Jackson@pacelabs.com

Qty	Matrix	Test Description	Method	Unit Price	Total
NA	water	Ethane/Ethene	Microseeps SOP-AM20Gax	\$96.00	NA
NA	water	2-Butanone	8260	\$75.00	NA
NA	water	Mercury, Low-level (field QC samples are invoiced at the same unit price)	1631E	\$85.00	NA
NA	water	Solids, Total Volatile	160.4	\$20.00	NA
NA	water	Molybdenum (when run with >3 other 200.7/6010 analytes)	200.7/6010	\$7.00	NA
NA	water	Organophosphorus Pesticides	8141	\$145.00	NA
Estimated Project Total					NA

To: Volusia County Solid Waste
Attn: Jennifer Stirk

Pace Quote No.: 10-0241
Pace Contact: Paul R. Jackson

Notes:

Please write Pace quotation number on chain of custody.

Terms and conditions as follows unless superseded by existing MSA or contract.

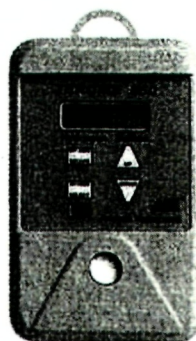
We appreciate the opportunity to be of service to you.

Please call Paul Jackson at 813.731.1595 for questions concerning this quotation.

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Arizona 631-X



Jerome 860



GEM 2000



GEM 500

Air Monitoring

NEW

Single/Specific Gas Monitors	Daily	Weekly	Monthly
Arizona 631-X Hydrogen Sulfide Analyzer Range: .003-50 ppm	\$190.00	\$580.00	\$1740.00

NEW

Jerome 860 H2S Monitor Range: 0-200 ppm high-range sensor; 0-50 ppm low-range sensor Spike Range: up to 1,000 ppm high range sensor; up to 500 ppm low-range sensor	\$50.00	\$150.00	\$450.00
--	---------	----------	----------

Gas Leak Detector, GOW-MAC 21-050 Helium, Argon, CO ₂ , Refrigerant and 40 % H ₂ / He Fuel Mix 60%	\$50.00	\$150.00	\$450.00
--	---------	----------	----------

TIP

Specify what toxic sensor you need and range! Cal gas sold separately.
Call for pricing!

Toxic Sensors available include: Hydrogen Sulfide, Carbon Monoxide, Sulfur Dioxide, Nitric Oxide, Nitrogen Dioxide, Chlorine, Hydrogen Cyanide, Ammonia, Phosphine, Chlorine dioxide, oxygen, combustible gas.

Landfill Monitors	Daily	Weekly	Monthly
RKI Eagle Gas Portable Monitor 0-100% LEL Hydrocarbons 0-100%LEL / 0-50,000ppm 0-40 % O ₂ by Vol 0 - 100% / 0-100 % by Vol CH ₄ (IR Sensor) 0-50 % CO ₂ by Vol (IR Sensor)	\$95.00	\$300.00	\$850.00
GEM 2000 Gas Analyzer & Extraction Monitor Range: 0-100 % CH ₄ by volume 0-60% CO ₂ by volume 0-25% O ₂ 0-10" WC differential pressure 0-100" WC static pressure	\$110.00	\$320.00	\$960.00
GEM 500 Gas Extraction Monitor Range: 0-100 % CH ₄ by volume, 0-100% CO ₂ by volume 10-104 degrees F 0-25% O ₂ 0-10" WC differential pressure 0-100" WC static pressure	\$100.00	\$300.00	\$900.00

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01 Operation and Maintenance of Exterior Improvements

1 90 - Operation and Maintenance of Planting

90.19 Mowing	Crew	Daily Output	Labor Hours	Unit	Material	2010 Bare Costs		Total	Total Incl O&P
						Labor	Equipment		
Riding mower, 36" - 44"	B-66	300	.027	M.S.F.		1.10	.73	1.83	2.45
48" - 58"	"	480	.017			.69	.46	1.15	1.53
Mowing with tractor & attachments									
3 gang reel, 7'	B-66	930	.009	M.S.F.		.36	.23	.59	.79
5 gang reel, 12'		1200	.007			.28	.18	.46	.61
Cutter or sickle-bar, 5', rough terrain		210	.038			1.57	1.04	2.61	3.50
Cutter or sickle-bar, 5', smooth terrain		340	.024			.97	.64	1.61	2.17
Drainage channel, 5' sickle bar		5	1.600	Mile		66	43.50	109.50	147
Lawnmower, rotary type, sharpen (all sizes)								26.50	41
Repair or replace part								38	58.50
Edge trimming with weed whacker								.05	.07
<div> <p>RS Means 2010- Mowing Cost:</p> <p>Mowing = \$1.53 per 1,000 SF = \$66.65 per AC</p> <p>City Factor = 0.976</p> <p>Inflation Factor = 1.01 (based on FDEP Web site)</p> <p>Total Mowing Cost = \$66.65 * 0.976 * 1.01 = \$65.70 per AC</p> </div>									
90.23 Pruning								3.15	4.86
PRUNING								3.78	5.85
1-1/2" caliper								5.30	8.15
2" caliper								8.85	13.60
2-1/2" caliper								25	39
3" caliper								24.50	61.50
4" caliper, by hand								44	68
Aerial lift equipment	B-85	20	2			70	46.50	116.50	158
6" caliper, by hand	2 Clab	7.50	2.133			70.50		70.50	109
Aerial lift equipment	B-85	12.50	3.200			112	74	186	254
12" caliper, by hand	2 Clab	6.50	2.462			81.50		81.50	126
Aerial lift equipment	B-85	10.80	3.704			130	85.50	215.50	294
18" caliper by hand	2 Clab	5.60	2.857			94.50		94.50	146
Aerial lift equipment	B-85	9.30	4.301			151	99.50	250.50	340
24" caliper, by hand	2 Clab	4.60	3.478			115		115	178
Aerial lift equipment	B-85	7.70	5.195			182	120	302	410
30" caliper, by hand	2 Clab	3.70	4.324			143		143	221
Aerial lift equipment	B-85	6.20	6.452			226	149	375	510
36" caliper, by hand	2 Clab	2.70	5.926			196		196	305
Aerial lift equipment	B-85	4.50	8.889			310	206	516	700
48" caliper, by hand	2 Clab	1.70	9.412			310		310	480
Aerial lift equipment	B-85	2.80	14.286			500	330	830	1,125
90.24 Shrub Pruning									
SHRUB PRUNING									
Prune, shrub bed	1 Clab	7	1.143	M.S.F.		38		38	58.50
Shrub under 3' height		190	.042	Ea.		1.39		1.39	2.15
4' height		90	.089			2.94		2.94	4.54
Over 6'		50	.160			5.30		5.30	8.15
Prune trees from ground		20	.400			13.25		13.25	20.50
High work		8	1			33		33	51
90.26 Watering									
WATERING									
Water lawn or planting bed with hose, 1" of water	1 Clab	16	.500	M.S.F.		16.55		16.55	25.50
50' soaker hoses, in place		82	.098			3.23		3.23	4.98
60' soaker hoses, in place		89	.090			2.98		2.98	4.59
Water trees or shrubs, under 1" caliper		32	.250	Ea.		8.30		8.30	12.75
1" - 3" caliper		17	.471			15.60		15.60	24
3" - 4" caliper		12	.667			22		22	34
Over 4" caliper		10	.800			26.50		26.50	41

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**Attachment R-4
USLE Calculation**

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Volusia County- Tomoka Farms Road Landfill
December 2011

Soil Erosion using the Universal Soil Loss Equation (USLE)

The Universal Soil Loss Equation $A \text{ (tons/AC/year)} = R * K * LS * C * P$

Name Value Reference *
Rainfall Factor

R = 400 Figure 1 of USDA "Predicting Rainfall Loss Handbook"

Soil Erodibility Factor

K = 0.08 Figure 3 of USDA "Predicting Rainfall Loss Handbook"; assuming 10% silt and very fine sand (.15 to .075 mm), 90% sand (0.1 to 2 mm), 2% organic matter, fine granular structure, and moderate permeability

Topographic Factor (North Cell)

LS = 11.57 Table 3 USDA "Predicting Rainfall Loss Handbook"; 150 ft slope, 33% slope

Topographic Factor (South Cell)

LS = 5.77 Table 3 USDA "Predicting Rainfall Loss Handbook"; 200 ft slope, 20% slope

Cover and Management Factor

C = 0.042 Assuming 60% of the ground is covered by vegetation.

Support Practice Factor

P = 1 support practice factor (ranges 0 to 1), assumed for slope with no farming

Assumptions:

density	95 lb/ft ³	dry density for silty sand
acreage	65.65 acres	North Cell Landfill area
acreage	114 acres	South Cell Landfill area

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le of Soil Loss

	C	A (tons/AC/year)	tons/ year	CF/ year	CY/ year
North Cell	0.042	15.55	1,021	21,492	796
South Cell	0.042	7.75	884	18,612	689

**reference* United States Department of Agriculture. "Predicting Rainfall Erosion Losses."
Agriculture Handbook No. 537, December 1978.

PREDICTING RAINFALL EROSION LOSSES

A GUIDE TO CONSERVATION PLANNING

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UNITED STATES
DEPARTMENT OF
AGRICULTURE

AGRICULTURE
HANDBOOK
NUMBER 537

PREPARED BY
SCIENCE AND
EDUCATION
ADMINISTRATION

site as the product of six major factors whose most likely values at a particular location can be expressed numerically. Erosion variables reflected by these factors vary considerably about their means from storm to storm, but effects of the random fluctuations tend to average out over extended periods. Because of the unpredictable short-time fluctuations in the levels of influential variables, however, present soil loss equations are substantially less accurate for prediction of specific events than for prediction of longtime averages.

The soil loss equation is

$$A = RKLSCP \quad (1)$$

where

A is the computed soil loss per unit area, expressed in the units selected for **K** and for the period selected for **R**. In practice, these are usually so selected that they compute **A** in tons per acre per year, but other units can be selected.

R, the rainfall and runoff factor, is the number of rainfall erosion index units, plus a factor for runoff from snowmelt or applied water where such runoff is significant.

K, the soil erodibility factor, is the soil loss rate per erosion index unit for a specified soil as measured on a unit plot, which is defined as a 72.6-ft length of uniform 9-percent slope continuously in clean-tilled fallow.

L, the slope-length factor, is the ratio of soil loss from the field slope length to that from a 72.6-ft length under identical conditions.

S, the slope-steepness factor, is the ratio of soil loss from the field slope gradient to that from a 9-percent slope under otherwise identical conditions.

C, the cover and management factor, is the ratio of soil loss from an area with specified cover and management to that from an identical area in tilled continuous fallow.

P, the support practice factor, is the ratio of soil loss with a support practice like contouring, stripcropping, or terracing to that with straight-row farming up and down the slope.

The soil loss equation and factor evaluation charts were initially developed in terms of the English units commonly used in the United States. The factor definitions are interdependent, and direct conversion of acres, tons, inches, and feet to metric units would not produce the kind of integers that would be desirable for an expression of the equation in that system. Therefore, only the English units are used in the initial presentation of the equation and factor evaluation materials, and their counterparts in metric units are given in the Appendix under **Conversion to Metric System**.

Numerical values for each of the six factors were derived from analyses of the assembled research data and from National Weather Service precipitation records. For most conditions in the United States, the approximate values of the factors for any particular site may be obtained from charts and tables in this handbook. Localities or countries where the rainfall characteristics, soil types, topographic features, or farm practices are substantially beyond the range of present U.S. data will find these charts and tables incomplete and perhaps inaccurate for their conditions. However, they will provide guidelines that can reduce the amount of local research needed to develop comparable charts and tables for their conditions.

The subsection on **Predicting Cropland Soil Losses**, page 40 illustrates how to select factor values from the tables and charts. Readers who have had no experience with the soil loss equation may wish to read that section first. After they have referred to the tables and figures and located the values used in the sample, they may move readily to the intervening detailed discussions of the equation's factors.

The soil loss prediction procedure is more valuable as a guide for selection of practices if the user has a general knowledge of the principles and factor interrelations on which the equation is based. Therefore, the significance of each factor is discussed before presenting the reference table or chart from which local values may be obtained. Limitations of the data available for evaluation of some of the factors are also pointed out.

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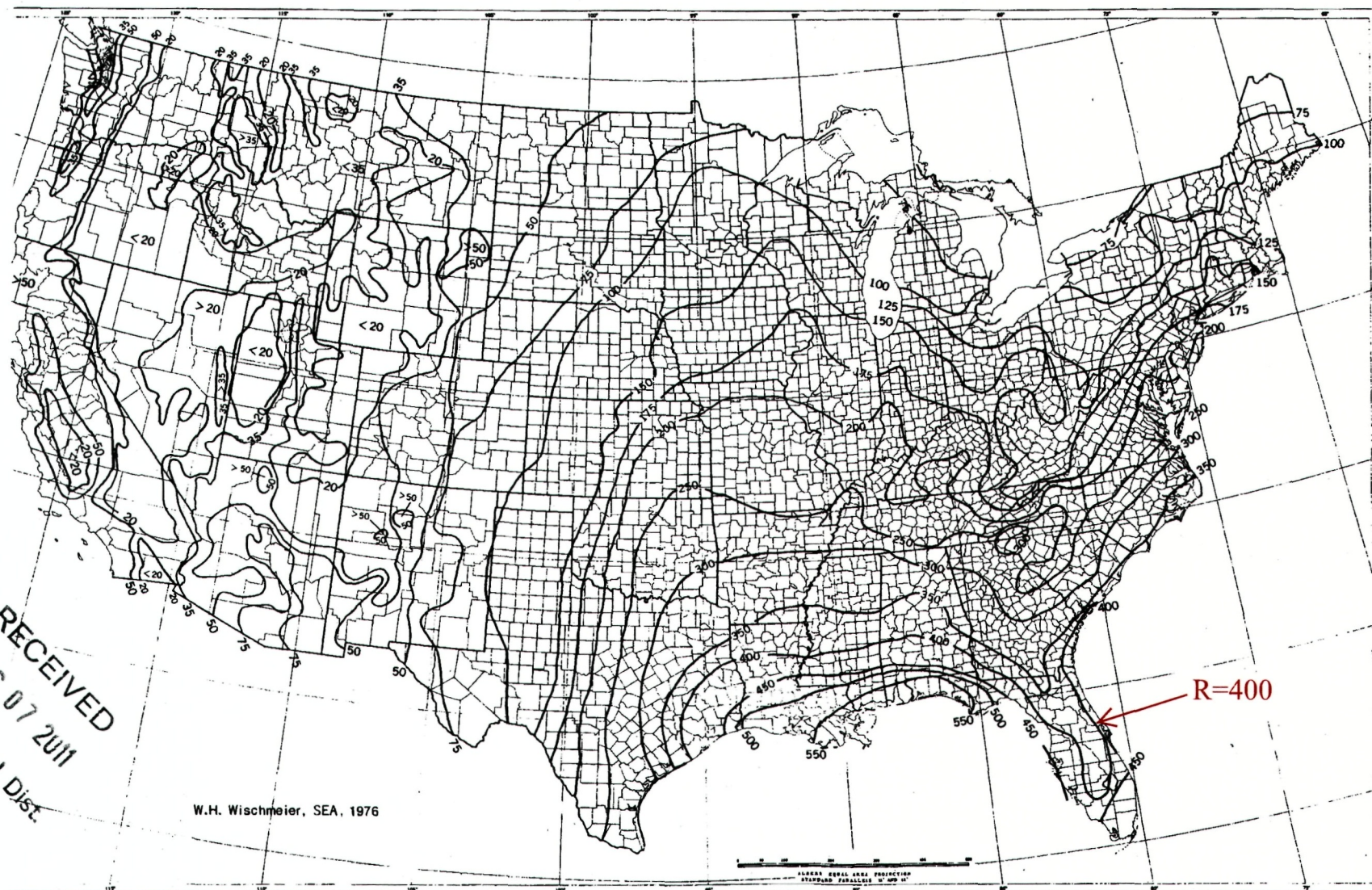


FIGURE 1.—Average annual values of the rainfall erosion index.

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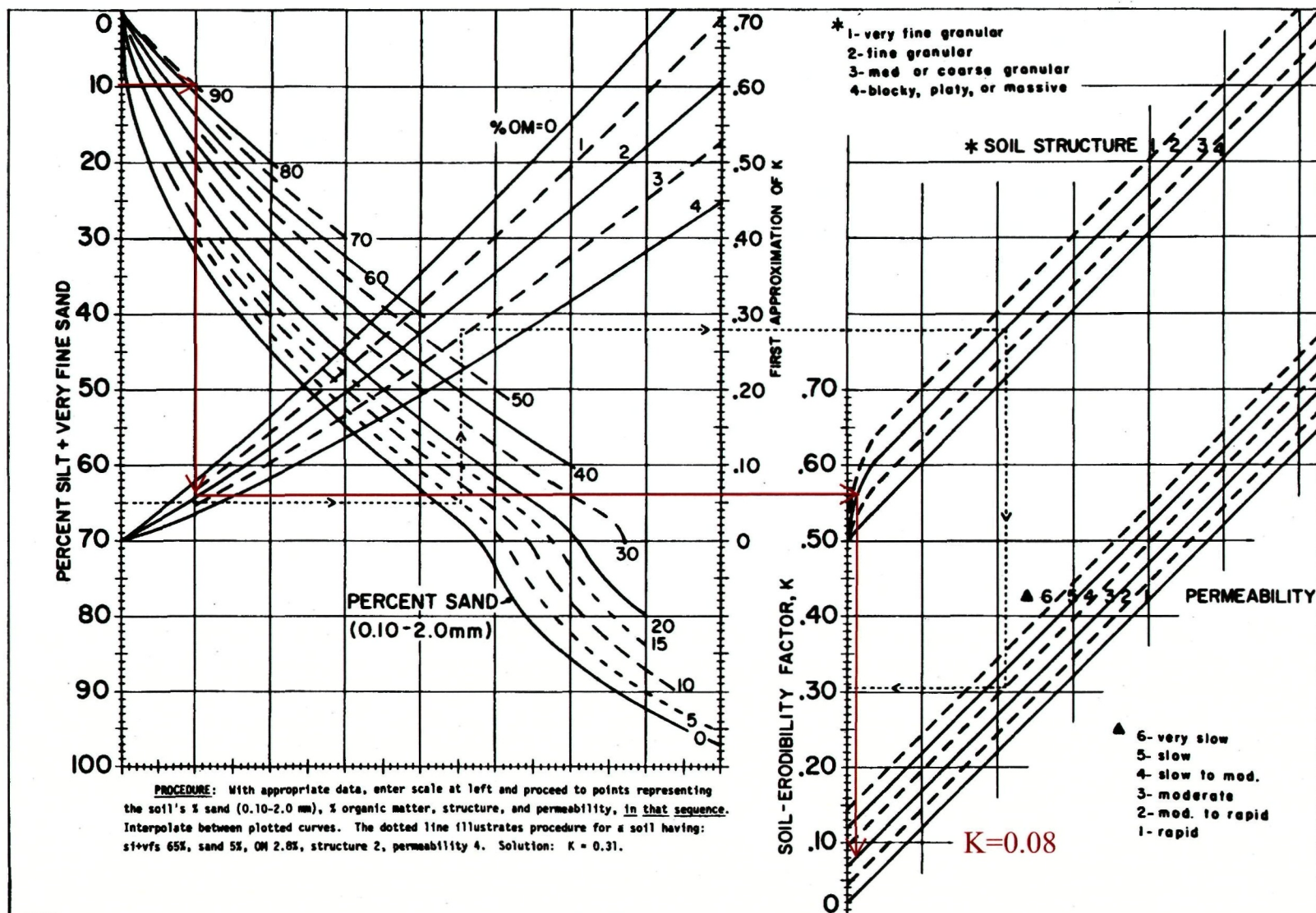


FIGURE 3.—The soil-erodibility nomograph. Where the silt fraction does not exceed 70 percent, the equation is $100 K = 2.1 M^{1.14} (10^{-4}) (12 - a) + 3.25 (b - 2) + 2.5 (c - 3)$ where $M = (\text{percent si} + \text{vfs}) (100 - \text{percent c})$, $a = \text{percent organic matter}$, $b = \text{structure code}$, and $c = \text{profile permeability class}$.

TOPOGRAPHIC FACTOR (LS)

Both the length and the steepness of the land slope substantially affect the rate of soil erosion by water. The two effects have been evaluated separately in research and are represented in the soil

loss equation by L and S , respectively. In field applications, however, considering the two as a single topographic factor, LS , is more convenient.

Slope-Effect Chart

LS is the expected ratio of soil loss per unit area from a field slope to that from a 72.6-ft length of uniform 9-percent slope under otherwise identical conditions. This ratio for specified combinations of field slope length and uniform gradient may be obtained directly from the slope-effect chart (fig. 4). Enter on the horizontal axis with the field slope length, move vertically to the appropriate percent-slope curve, and read LS on the scale at the left. For example, the LS factor for a 300-ft length of 10-percent slope is 2.4. Those who prefer a table may use table 3 and interpolate between listed values.

To compute soil loss from slopes that are appreciably convex, concave, or complex, the chart LS values need to be adjusted as indicated in the section **LS Values for Irregular Slopes**. Figure 4 and table 3 assume slopes that have essentially uniform gradient. The chart and table were derived by the equation

$$LS = (\lambda/72.6)^m (65.41 \sin^2 \theta + 4.56 \sin \theta + 0.065) \quad (4)$$

where λ = slope length in feet;

θ = angle of slope; and

m = 0.5 if the percent slope is 5 or more, 0.4 on slopes of 3.5 to 4.5 percent, 0.3 on slopes of 1 to 3 percent, and 0.2 on uniform gradients of less than 1 percent.

The basis for this equation is given in the subsection discussing the individual effects of slope length and steepness. However, the relationships expressed by the equation were derived from data obtained on cropland, under natural rainfall, on slopes ranging from 3 to 18 percent in steepness and about 30 to 300 ft in length. How far beyond these ranges in slope characteristics the relationships derived from the data continue to be accurate has not been determined by direct soil loss measurements.

The Palouse Region of the Northwest represents

TABLE 3.—Values of the topographic factor, LS , for specific combinations of slope length and steepness¹

Percent slope	Slope length (feet)											
	25	50	75	100	150	200	300	400	500	600	800	1,000
0.2	0.060	0.069	0.075	0.080	0.086	0.092	0.099	0.105	0.110	0.114	0.121	0.126
0.5	.073	.083	.090	.096	.104	.110	.119	.126	.132	.137	.145	.152
0.8	.086	.098	.107	.113	.123	.130	.141	.149	.156	.162	.171	.179
2	.133	.163	.185	.201	.227	.248	.280	.305	.326	.344	.376	.402
3	.190	.233	.264	.287	.325	.354	.400	.437	.466	.492	.536	.573
4	.230	.303	.357	.400	.471	.528	.621	.697	.762	.820	.920	1.01
5	.268	.379	.464	.536	.656	.758	.928	1.07	1.20	1.31	1.52	1.69
6	.336	.476	.583	.673	.824	.952	1.17	1.35	1.50	1.65	1.90	2.13
8	.496	.701	.859	.992	1.21	1.41	1.72	1.98	2.22	2.43	2.81	3.14
10	.685	.968	1.19	1.37	1.68	1.94	2.37	2.74	3.06	3.36	3.87	4.33
12	.903	1.28	1.56	1.80	2.21	2.55	3.13	3.61	4.04	4.42	5.11	5.71
14	1.15	1.62	1.99	2.30	2.81	3.25	3.98	4.59	5.13	5.62	6.49	7.26
16	1.42	2.01	2.46	2.84	3.48	4.01	4.92	5.68	6.35	6.95	8.03	8.98
18	1.72	2.43	2.97	3.43	4.21	3.86	5.95	6.87	7.68	8.41	9.71	10.9
20	2.04	2.88	3.52	4.08	5.00	5.77	7.07	8.16	9.12	10.0	11.5	12.9

¹ $LS = (\lambda/72.6)^m (65.41 \sin^2 \theta + 4.56 \sin \theta + 0.065)$ where λ = slope length in feet; m = 0.2 for gradients < 1 percent, 0.3 for 1 to 3 percent slopes, 0.4 for 3.5 to 4.5 percent slopes, 0.5 for 5 percent slopes and steeper; and θ = angle of slope. (For other combinations of length and gradient, interpolate between adjacent values or see fig. 4.)

LS

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tion and developmental areas can be obtained from table 5 if good judgment is exercised in comparing the surface conditions with those of agricultural conditions specified in lines of the table. Time intervals analogous to cropstage periods will be defined to begin and end with successive construction or management activities that appreciably change the surface conditions. The procedure is then similar to that described for cropland.

Establishing vegetation on the denuded areas as quickly as possible is highly important. A good sod has a *C* value of 0.01 or less (table 5-B), but such a low *C* value can be obtained quickly only by laying sod on the area, at a substantial cost. When grass or small grain is started from seed, the probable soil loss for the period while cover is developing can be computed by the procedure outlined for estimating cropstage-period soil losses. If the seeding is on topsoil, without a mulch, the soil loss ratios given in line 141 of table 5 are appropriate for cropstage *C* values. If the seeding is on a desurfaced area, where residual effects of prior vegetation are no longer significant, the ratios for periods SB, 1 and 2 are 1.0, 0.75 and 0.50, respectively, and line 141 applies for cropstage 3. When the seedbed is protected by a mulch, the pertinent mulch factor from the upper curve of figure 6 or table 9 is applicable until good canopy cover is attained. The combined effects of vegetative mulch and low-growing canopy are given in figure 7. When grass is established in small grain, it can usually be evaluated as established meadow about 2 mo after the grain is cut.

C Values for Pasture, Range, and Idle Land

Factor *C* for a specific combination of cover conditions on these types of land may be obtained from table 10 (57). The cover characteristics that must be appraised before consulting this table are defined in the table and its footnotes. Cropstage periods and EI monthly distribution data are generally not necessary where perennial vegetation has become established and there is no mechanical disturbance of the soil.

Available soil loss data from undisturbed land were not sufficient to derive table 10 by direct comparison of measured soil loss rates, as was done for development of table 5. However, analyses of the assembled erosion data showed that the research information on values of *C* can be ex-

tended to completely different situations by combining subfactors that evaluate three separate and distinct, but interrelated, zones of influence: (a) vegetative cover in direct contact with the soil surface, (b) canopy cover, and (c) residual and tillage effects.

Subfactors for various percentages of surface cover by mulch are given by the upper curve of

TABLE 10.—Factor *C* for permanent pasture, range, and idle land¹

Vegetative canopy Type and height ²	Percent cover ³	Type ⁴	Cover that contacts the soil surface Percent ground cover					
			0	20	40	60	80	95+
No appreciable canopy		G	0.45	0.20	0.10	0.042	0.013	0.003
		W	.45	.24	.15	.091	.043	.011
Tall weeds or short brush with average drop fall height of 20 in	25	G	.36	.17	.09	.038	.013	.003
		W	.36	.20	.13	.083	.041	.011
	50	G	.26	.13	.07	.035	.012	.003
		W	.26	.16	.11	.076	.039	.011
	75	G	.17	.10	.06	.032	.011	.003
		W	.17	.12	.09	.068	.038	.011
Appreciable brush or bushes, with average drop fall height of 6½ ft	25	G	.40	.18	.09	.040	.013	.003
		W	.40	.22	.14	.087	.042	.011
	50	G	.34	.16	.08	.038	.012	.003
		W	.34	.19	.13	.082	.041	.011
	75	G	.28	.14	.08	.036	.012	.003
		W	.28	.17	.12	.078	.040	.011
Trees, but no appreciable low brush. Average drop fall height of 13 ft	25	G	.42	.19	.10	.041	.013	.003
		W	.42	.23	.14	.089	.042	.011
	50	G	.39	.18	.09	.040	.013	.003
		W	.39	.21	.14	.087	.042	.011
	75	G	.36	.17	.09	.039	.012	.003
		W	.36	.20	.13	.084	.041	.011

¹ The listed *C* values assume that the vegetation and mulch are randomly distributed over the entire area.

² Canopy height is measured as the average fall height of water drops falling from the canopy to the ground. Canopy effect is inversely proportional to drop fall height and is negligible if fall height exceeds 33 ft.

³ Portion of total-area surface that would be hidden from view by canopy in a vertical projection (a bird's-eye view).

⁴ G: cover at surface is grass, grasslike plants, decaying compacted duff, or litter at least 2 in deep.

W: cover at surface is mostly broadleaf herbaceous plants (as weeds with little lateral-root network near the surface) or undecayed residues or both.

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TABLE 12.—Factor C for mechanically prepared woodland sites

Site preparation	Mulch cover ¹	Soil condition ² and weed cover ³							
		Excellent		Good		Fair		Poor	
		NC	WC	NC	WC	NC	WC	NC	WC
Percent									
Disked, raked, or bedded ⁴	None	0.52	0.20	0.72	0.27	0.85	0.32	0.94	0.36
	10	.33	.15	.46	.20	.54	.24	.60	.26
	20	.24	.12	.34	.17	.40	.20	.44	.22
	40	.17	.11	.23	.14	.27	.17	.30	.19
	60	.11	.08	.15	.11	.18	.14	.20	.15
	80	.05	.04	.07	.06	.09	.08	.10	.09
Burned ⁵	None	.25	.10	.26	.10	.31	.12	.45	.17
	10	.23	.10	.24	.10	.26	.11	.36	.16
	20	.19	.10	.19	.10	.21	.11	.27	.14
	40	.14	.09	.14	.09	.15	.09	.17	.11
	60	.08	.06	.09	.07	.10	.08	.11	.08
	80	.04	.04	.05	.04	.05	.04	.06	.05
Drum chopped ⁵	None	.16	.07	.17	.07	.20	.08	.29	.11
	10	.15	.07	.16	.07	.17	.08	.23	.10
	20	.12	.06	.12	.06	.14	.07	.18	.09
	40	.09	.06	.09	.06	.10	.06	.11	.07
	60	.06	.05	.06	.05	.07	.05	.07	.05
	80	.03	.03	.03	.03	.03	.03	.04	.04

meadow, the selected seedbed soil loss ratio is multiplied by a factor from table 5-D. If mulch is applied, a subfactor read from the upper curve

¹ Percentage of surface covered by residue in contact with the soil.

² Excellent soil condition—Highly stable soil aggregates in topsoil with fine tree roots and litter mixed in.

Good—Moderately stable soil aggregates in topsoil or highly stable aggregates in subsoil (topsoil removed during raking), only traces of litter mixed in.

Fair—Highly unstable soil aggregates in topsoil or moderately stable aggregates in subsoil, no litter mixed in.

Poor—No topsoil, highly erodible soil aggregates in subsoil, no litter mixed in.

³ NC—No live vegetation.

WC—75 percent cover of grass and weeds having an average drop fall height of 20 in. For intermediate percentages of cover, interpolate between columns.

⁴ Modify the listed C values as follows to account for effects of surface roughness and aging:

First year after treatment: multiply listed C values by 0.40 for rough surface (depressions >6 in); by 0.65 for moderately rough; and by 0.90 for smooth (depressions <2 in).

For 1 to 4 years after treatment: multiply listed factors by 0.7.

For 4+ to 8 years: use table 6.

More than 8 years: use table 7.

⁵ For first 3 years: use C values as listed.

For 3+ to 8 years after treatment: use table 6.

More than 8 years after treatment: use table 7.

of figure 6 is multiplied by the residual subfactor to obtain C. When canopy develops, a canopy subfactor from figure 5 is also included.

SUPPORT PRACTICE FACTOR (P)

In general, whenever sloping soil is to be cultivated and exposed to erosive rains, the protection offered by sod or close-growing crops in the system needs to be supported by practices that will slow the runoff water and thus reduce the amount of soil it can carry. The most important of these supporting cropland practices are contour tillage, stripcropping on the contour, and terrace systems. Stabilized waterways for the disposal of excess rainfall are a necessary part of each of these practices.

By definition, factor P in the USLE is the ratio of soil loss with a specific support practice to the corresponding loss with up-and-down-slope culture. Improved tillage practices, sod-based rotations, fertility treatments, and greater quantities of crop residues left on the field contribute materially to erosion control and frequently provide the major control in a farmer's field. However, these are considered conservation cropping and management practices, and the benefits derived from them are included in C.

Contouring

The practice of tillage and planting on the contour, in general, has been effective in reducing erosion. In limited field studies, the practice provided almost complete protection against erosion from storms of moderate to low intensity, but it provided little or no protection against the occasional severe storms that caused extensive break-

overs of the contoured rows. Contouring appears to be the most effective on slopes in the 3- to 8-percent range. As land slope decreases, it approaches equality with contour row slope, and the soil loss ratio approaches 1.0. As slope increases, contour row capacity decreases and the soil loss ratio again approaches 1.0.

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APPENDIX C

Financial Assurance Deferral Application Form

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Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

DEP Form # 62-701.900(29)

Form Title: Financial Assurance Deferral Application

Effective Date: January 6, 2010

Incorporated in Rule 62-701.630(2), F.A.C.

FINANCIAL ASSURANCE DEFERRAL APPLICATION

- In accordance with Rules 62-701.630(2)(c) and 62-701.730(11)(b), Florida Administrative Code (F.A.C.), a permittee may delay submitting proof of financial assurance for a solid waste disposal unit by submitting this form to the appropriate District Office with DEP Form 62-701.900(1) - Application For A Permit To Construct, Operate, Modify Or Close A Solid Waste Management Facility. A separate deferral form must be submitted for each disposal unit for which a deferral is sought.
- The permittee understands and acknowledges the following:
 - The solid waste disposal unit for which a deferral is being sought has never received solid waste for storage or disposal.
 - The permit to which this deferral applies does not authorize operation of the solid waste disposal unit, or the permit requires a specific separate approval by the Department prior to operation being authorized.
 - The permittee must identify the type of financial mechanism (e.g., surety bond, letter of credit, trust fund) it intends to use, and provide reasonable assurance during the permit application process that it is capable of obtaining and using the identified mechanism.
 - The permittee agrees to submit acceptable proof of financial assurance at least sixty (60) days prior to the planned date of initial acceptance of waste.
 - Under no circumstances shall the referenced solid waste disposal unit receive waste until the permittee has received written approval from the Department that financial assurance acceptable to the Department has been properly submitted and funded.
- The permittee understands that by deferring the submittal of proof of financial assurance for facility closure, there may be consequent delays in authorization to receive waste. The Department's acceptance of this deferral is no guarantee that subsequent financial assurance documentation submittal(s) will meet the requirements of Rule 62-701.630, F.A.C.

Facility Name: Tomoka Farms Road Landfill- North Cell County: Volusia

Disposal Unit: North Cell Phase II DEP I.D. No.: 27540
See #1. above WACS #, if issued

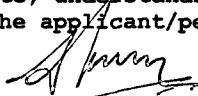
Intended Financial Mechanism: Escrow Account Permit App. No.: _____
See #2.c. above if issued

Applicant: Volusia County Solid Waste Division
Legal Entity as Listed on the Permit Application

Mailing address: 3151 East New York Avenue, DeLand, Florida 32724
Street or P.O. Box City, State and Zip Code

Acknowledgment

The undersigned applicant or authorized representative certifies that this application is true, correct and complete, understands the details of financial assurance deferral identified above and affirms that the applicant/permittee will comply with these terms.



Signature of Authorized Representative*

Kanishka Perera

Print or Type Name

P.E., Project Manager

Title

12/06/11

Date

(904) 598-8930

Telephone Number

Kanishka.Perera@hdrinc.com

E-mail

* - president of corporation, managing member of LLC, or equivalent for entity type

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Northwest District
160 Governmental Center
Pensacola, FL 32501-5794
850-595-8360

Northeast District
7825 Baymeadows Way, Ste. B200
Jacksonville, FL 32256-7590
904-807-3300

Central District
3319 Maguire Blvd., Ste. 232
Orlando, FL 32803-3767
407-894-7555

Southwest District
13051 N. Telecom Pkwy.
Tempe Terrace, FL 33637-0926
813-632-7600

South District
2295 Victoria Ave., Ste. 364
Fort Myers, FL 33901-3881
239-332-6975

Southeast District
400 North Congress Ave.
West Palm Beach, FL 33401
561-681-6600