TOMOKA FARMS ROAD LANDFILL

NORTH CELL, CLASS I – PHASE I AND PHASE II AREA 3 MINOR PERMIT MODIFICATION APPLICATION

Prepared for:

VOLUSIA COUNTY – SOLID WASTE DIVISION
1990 Tomoka Farms Road
Port Orange FL 32128

Prepared by:

HDR ENGINEERING, INC.
200 W Forsyth St, Suite 800
Jacksonville, FL 32202
Telephone: (904) 598-8900 Fax (904) 598-8988

Submitted to:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Central District Office
Waste Management Program
3319 Maguire Blvd, Suite 232
Orlando, Florida 32803-3767

May 2015

May 27, 2015

Elizabeth Kromhout, P.G.
FDEP Permitting and Compliance Assistance Program
2600 Blair Stone Road, MS 4565
Tallahassee, FL 32399

RE: FDEP Application for Minor Permit Modification
Class I Landfill - North Cell
FDEP Operations Permit No. 0078767-030-SO-01
Tomoka Farms Road Landfill

Dear Mr. Dilmore:

On behalf of the Volusia County Solid Waste Division (County), HDR Engineering, Inc. (HDR) is hereby submitting to Florida Department of Environmental Protection (FDEP) two (2) hardcopies and an electronic copy of the minor permit modification application for the North Cell Class I landfill at the Tomoka Farms Road Landfill. This minor permit modification application has been prepared to incorporate Phase II, Area 3 into the existing operations permit for the Tomoka Farms Road Landfill – North Cell, Class I landfill. The North Cell – Phase II, Area 3 (12.2 acres footprint) is currently being constructed in accordance with the construction permit SC64-0078767-022. This minor permit modification has been prepared in accordance to the requirements of Chapter 62-701 (900). The application fee of $250 for this minor permit modification application will be submitted via credit card using FDEP's Business Portal (https://www.fldepportal.com).

If you have any questions or require additional information, please contact me at (904)598-8900.

Sincerely,
HDR Engineering, Inc.

Mark Roberts, PE
Project Manager

Enclosures: Minor Permit Modification Application

cc: Cory D. Dilmore, FDEP
Leonard Marion, Director, Volusia County Solid Waste Division
Junos Reed, Solid Waste Engineer, Volusia County Solid Waste Division
Jennifer Stirk, Volusia County Solid Waste Division

hdrinc.com
200 W. Forsyth St. #800, Jacksonville, FL 32202-4321
T 904-598-8900 F 904-598-8988

Volusia County
FLORIDA

Volusia County
Solid Waste Division

Tomoka Farms Road Landfill
North Cell, Class I – Phase I and Phase II Area 3
Minor Permit Modification Application

Prepared for:
Volusia County – Solid Waste Division
1990 Tomoka Farms Road
Port Orange FL 32128

Submitted by:

HDR Engineering, Inc.
200 W. Forsyth Street, Ste. 800
Jacksonville, Florida 32202

May 2015

HDR Project No. 0100-255331

5/27/15

Mark Roberts, P.E.
Florida P.E. No.: 54187

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Florida Department of
Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

DEP Form #: 62-701.900(1), F.A.C.

Form Title: Application to Construct, Operate, Modify, or Close a Solid Waste Management Facility

Effective Date: August 12, 2012

Incorporated in Rule: 62-701.330(3), F.A.C.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

APPLICATION TO CONSTRUCT, OPERATE, MODIFY, OR CLOSE A SOLID WASTE MANAGEMENT FACILITY

APPLICATION INSTRUCTIONS AND FORMS

Northwest District
160 Governmental Center
Suite 308
Pensacola, FL 32502-5794
850-595-8300

Northeast District
7777 Baymeadows Way West
Suite 100
Jacksonville, FL 32256-7590
904-256-1700

Central District
3319 Maguire Boulevard
Suite 232
Orlando, FL 32803-3767
407-897-4100

Southwest District
13051 North Telecom Pkwy
Temple Terrace, FL 33637
813-632-7600

South District
2295 Victoria Ave, Suite 364
P.O. Box 2549
Fort Myers, FL 33901-3881
239-344-5600

Southeast District
400 North Congress Avenue
Suite 200
West Palm Beach, FL 33401
561-681-6600

INSTRUCTIONS TO APPLY FOR A SOLID WASTE MANAGEMENT FACILITY PERMIT

I. General

Solid Waste Management Facilities shall be permitted pursuant to Section 403.707, Florida Statutes (FS) and in accordance with Florida Administrative Code (FAC) Chapter 62-701. A minimum of four copies of the application shall be submitted to the appropriate Department office having jurisdiction over the facility. The appropriate fee in accordance with Rule 62-701.315, FAC, shall be submitted with the application by check made payable to the Department of Environmental Protection (DEP).

Complete appropriate sections for the type of facility for which application is made. Entries shall be typed or printed in ink. All blanks shall be filled in or marked "Not Applicable" or "No Substantial Change". Information provided in support of the application shall be marked "Submitted" and the location of this information in the application package indicated. The application shall include all information, drawings, and reports necessary to evaluate the facility. Information required to complete the application is listed on the attached pages of this form.

II. Application Parts Required for Construction and Operation Permits

A. Landfills and Ash Monofills - Submit Parts A through S
B. Asbestos Monofills - Submit Parts A, B, C, D, E, F, I, K, M, O through S
C. Industrial Solid Waste Disposal Facilities - Submit Parts A through S

NOTE: Portions of some Parts may not be applicable.

NOTE: For facilities that have been satisfactorily constructed in accordance with their construction permit, the information required for A, B and C type facilities does not have to be resubmitted for an operation permit if the information has not substantially changed during the construction period. The appropriate portion of the form should be marked "no substantial change".

III. Application Parts Required for Closure Permits

A. Landfills and Ash Monofills - Submit Parts A, B, L, N through S
B. Asbestos Monofills - Submit Parts A, B, M, O through S
C. Industrial Solid Waste Disposal Facilities - Submit Parts A, B, L through S

NOTE: Portions of some Parts may not be applicable.

IV. Permit Renewals

The above information shall be submitted at time of permit renewal in support of the new permit. However, facility information that was submitted to the Department to support the expiring permit, and which is still valid, does not need to be re-submitted for permit renewal. Portions of the application not re-submitted shall be marked "no substantial change" on the application form.

V. Application Codes

S	-	Submitted
LOCATION	-	Physical location of information in application
N/A	-	Not Applicable
N/C	-	No Substantial Change

VI. Listing of Application Parts

PART A: GENERAL INFORMATION

PART B: DISPOSAL FACILITY GENERAL INFORMATION

PART C: PROHIBITIONS

PART D: SOLID WASTE MANAGEMENT FACILITY PERMIT REQUIREMENTS, GENERAL

PART E: LANDFILL PERMIT REQUIREMENTS

PART F: GENERAL CRITERIA FOR LANDFILLS

PART G: LANDFILL CONSTRUCTION REQUIREMENTS

PART H: HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS

PART I: GEOTECHNICAL INVESTIGATION REQUIREMENTS

PART J: VERTICAL EXPANSION OF LANDFILLS

PART K: LANDFILL OPERATION REQUIREMENTS

PART L: WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS

PART M: SPECIAL WASTE HANDLING REQUIREMENTS

PART N: GAS MANAGEMENT SYSTEM REQUIREMENTS

PART O: LANDFILL CLOSURE REQUIREMENTS

PART P: OTHER CLOSURE PROCEDURES

PART Q: LONG-TERM CARE

PART R: FINANCIAL ASSURANCE

PART S: CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
APPLICATION FOR A PERMIT TO CONSTRUCT, OPERATE, MODIFY OR CLOSE A SOLID WASTE MANAGEMENT FACILITY

Please Type or Print

PART A. GENERAL INFORMATION

1. Type of disposal facility (check all that apply):
   - ☑ Class I Landfill
   - ☐ Class III Landfill
   - ☐ Industrial Solid Waste
   - ☐ Other (describe):
   - ☐ Ash Monofill
   - ☐ Asbestos Monofill

NOTE: Waste Processing Facilities should apply on Form 62-701.900(4), FAC;
Yard Trash Disposal Facilities should notify on Form 62-701.900(3), FAC;
Compost Facilities should apply on Form 62-709.901(1), FAC; and
C&D Disposal Facilities should apply on Form 62-701.900(6), FAC

2. Type of application:
   - ☐ Construction
   - ☑ Operation
   - ☐ Construction/Operation
   - ☐ Closure
   - ☐ Long-term Care Only

3. Classification of application:
   - ☐ New
   - ☐ Renewal
   - ☐ Substantial Modification
   - ☐ Intermediate Modification
   - ☑ Minor Modification

4. Facility name: Tomoka Farms Road Landfill - North Cell Class I Solid Waste Disposal Area

5. DEP ID number: 27540 County: Volusia

6. Facility location (main entrance):
   1990 Tomoka Farms Road, Port Orange, FL 32128

7. Location coordinates:
   Section: 9 Township: 16S Range: 32E
   Latitude: 29 ° 7 ‘ 50 “ Longitude: 81 ° 4 ‘ 54.49 “
   Datum: WGS84 Coordinate method: ArcGIS (World Imagery)
   Collected by: Karamjit Singh Company/Affiliation: HDR Engineering, Inc.

8. Applicant name (operating authority): Volusia County Solid Waste Division

Mailing address: 1990 Tomoka Farms Road, Port Orange FL 32128
Street or P.O. Box City State Zip

Contact person: Leonard Marion Telephone: (386) 947-2952

Title: Solid Waste Director

lmarion@volusia.org
E-Mail address (if available)

9. Authorized agent/Consultant: HDR Engineering, Inc.

Mailing address: 200 W. Forsyth Street, Ste. 800, Jacksonville, FL 32259
Street or P.O. Box City State Zip

Contact person: Mark Roberts, P.E. Telephone: (904) 598-8900

Title: Project Manager

Mark.Roberts@hdrinc.com
E-Mail address (if available)

10. Landowner (if different than applicant): Same

Mailing address: Same
Street or P.O. Box City State Zip

Contact person: Same Telephone: (____) _____

Same
E-Mail address (if available)

11. Cities, towns, and areas to be served:
Volusia and Flagler Counties

12. Population to be served:
Current: 611,460 Five-Year Projection: 654,310

13. Date site will be ready to be inspected for completion: December 2015 (for Phase II, Area 3)

14. Expected life of the facility: 9 years (including Phase II, Area 3)

15. Estimated costs:
Total Construction: $ 4.8 million (for Phase II, Area 3) Closing Costs: $ 11.2 million (including Ph. II, Area 3)

16. Anticipated construction starting and completion dates:
From: March, 2015 (for Phase II, Area 3) To: December, 2015 (for Phase II, Area 3)

17. Expected volume or weight of waste to be received:
890 yds^3/day _____ tons/day _____ gallons/day

PART B. DISPOSAL FACILITY GENERAL INFORMATION

1. Provide brief description of disposal facility design and operations planned under this application:

This application is for a minor permit modification to include Phase II, Area 3 into the existing Operation Permit for the Tomoka Farms Road Landfill – North Cell Class I (permit # 0078767-030-SO-01). The Phase II, Area 3 is currently under construction in accordance with the construction permit SC64-0078767-022 .

2. Facility site supervisor: Mr. Junos Reed, P.E.

Title: Solid Waste Engineer, Solid Waste Division Telephone: (386) 947-2952

jreed@volusia.org
E-Mail address (if available)

3. Disposal area: Total acres: 87.34 Used acres: 77.84 Available acres: 9.50

4. Weighing scales used: ☑ Yes ☐ No

5. Security to prevent unauthorized use: ☑ Yes ☐ No

6. Charge for waste received: _____ $/yds^3 34 $/ton

7. Surrounding land use, zoning:

☐ Residential	☐ Industrial
☑ Agricultural	☐ None
☐ Commercial	☐ Other (describe):

8. Types of waste received:

☑ Household	☑ C & D debris
☑ Commercial	☑ Shredded/cut tires
☐ Incinerator/WTE ash	☑ Yard trash
☑ Treated biomedical	☑ Septic tank
☑ Water treatment sludge	☑ Industrial
☐ Air treatment sludge	☑ Industrial sludge
☑ Agricultural	☑ Domestic sludge
☑ Asbestos	☐ Other (describe):

9. Salvaging permitted: ☐ Yes ☑ No

10. Attendant: ☑ Yes ☐ No Trained operator: ☑ Yes ☐ No

11. Trained spotters: ☑ Yes ☐ No Number of spotters used: 1

12. Site located in: ☑ Floodplain ☐ Wetlands ☐ Other (describe):
Uplands

13. Days of operation: 6 days/week, 310 days/year, closed Christmas Day, Thanksgiving & New Yr

14. Hours of operation: Monday through Saturday - 7:00 a.m. to 5:30 p.m.,

15. Days working face covered: Daily

16. Elevation of water table: 26 ft. Datum Used: NGVD 1929

17. Number of monitoring wells: 54

18. Number of surface monitoring points: 7

19. Gas controls used: ☑ Yes ☐ No Type controls: ☑ Active ☐ Passive

Gas flaring: ☑ Yes ☐ No Gas recovery: ☑ Yes ☐ No

20. Landfill unit liner type:

- ☐ Natural soils
- ☐ Single clay liner
- ☐ Single geomembrane
- ☐ Single composite
- ☐ Slurry wall
- ☐ Double geomembrane
- ☐ Geomembrane & composite
- ☑ Double composite
- ☐ None
- ☐ Other (describe):

21. Leachate collection method:

- ☑ Collection pipes
- ☑ Geonets
- ☐ Well points
- ☐ Perimeter ditch
- ☑ Other (describe):
- ☐ Double geomembrane
- ☐ Gravel layer
- ☐ Interceptor trench
- ☐ None

Sump/pump station-leachate collection for onsite treatment

22. Leachate storage method:

☐ Tanks
☑ Surface impoundments
☐ Other (describe):

23. Leachate treatment method:

☑ Oxidation
☐ Chemical treatment
☐ Secondary
☑ Settling
☐ Advanced
☐ None
☐ Other (describe):

24. Leachate disposal method:

☐ Recirculated
☐ Pumped to WWTP
☑ Transported to WWTP
☐ Discharged to surface water/wetland
☐ Injection well
☐ Percolation ponds
☑ Evaporation
☑ Spray irrigation
☐ Other (describe):

25. For leachate discharged to surface waters:

Name and Class of receiving water:

N/A

26. Storm Water:

Collected: ☑ Yes ☐ No

Type of treatment:

Wetland detention and natural treatment

Name and Class of receiving water:

Unnamed Class III headwaters of Tomoka River

27. Environmental Resources Permit (ERP) number or status:

ERP 64-020632-003 EM

PART C. PROHIBITIONS (62-701.300, FAC)

LOCATION		
S ☐ Section C N/A ☐ N/C ☑	1. Provide documentation that each of the siting criteria will be satisfied for the facility; (62-701.300(2), FAC)
S ☐ _____ N/A ☐ N/C ☑	2. If the facility qualifies for any of the exemptions contained in Rules 62-701.300(12) through (18), FAC, then document this qualification(s);
S ☐ _____ N/A ☐ N/C ☑	3. Provide documentation that the facility will be in compliance with the burning restrictions; (62-701.300(3), FAC)
S ☐ _____ N/A ☐ N/C ☑	4. Provide documentation that the facility will be in compliance with the hazardous waste restrictions; (62-701.300(4), FAC)
S ☐ _____ N/A ☐ N/C ☑	5. Provide documentation that the facility will be in compliance with the PCB disposal restrictions; (62-701.300(5), FAC)
S ☐ _____ N/A ☐ N/C ☑	6. Provide documentation that the facility will be in compliance with the biomedical waste restrictions; (62-701.300(6), FAC)
S ☐ _____ N/A ☐ N/C ☑	7. Provide documentation that the facility will be in compliance with the Class I surface water restrictions; (62-701.300(7), FAC)
S ☐ _____ N/A ☐ N/C ☑	8. Provide documentation that the facility will be in compliance with the special waste for landfills restrictions; (62-701.300(8), FAC)
S ☐ _____ N/A ☐ N/C ☑	9. Provide documentation that the facility will be in compliance with the liquid restrictions; (62-701.300(10), FAC)
S ☐ _____ N/A ☐ N/C ☑	10. Provide documentation that the facility will be in compliance with the used oil and oily waste restrictions; (62-701.300(11), FAC)

PART D. SOLID WASTE MANAGEMENT FACILITY PERMIT REQUIREMENTS, GENERAL (62-701.320, FAC)

LOCATION	
S ☑ Section D N/A ☐ N/C ☐	1. Four copies, at minimum, of the completed application form, all supporting data and reports; (62-701.320(5)(a), FAC)
S ☑ Section D N/A ☐ N/C ☐	2. Engineering and/or professional certification (signature, date, and seal) provided on the applications and all engineering plans, reports, and supporting information for the application; (62-701.320(6), FAC)
S ☑ Section D N/A ☐ N/C ☐	3. A letter of transmittal to the Department; (62-701.320(7)(a), FAC)

S ☑ Section D N/A ☐ N/C ☐ 4. A completed application form dated and signed by the applicant; (62-701.320(7)(b), FAC)

S ☑ Section D N/A ☐ N/C ☐ 5. Permit fee specified in Rule 62-701.315, FAC in check or money order, payable to the Department; (62-701.320(7)(c), FAC)

S ☐ _____ N/A ☐ N/C ☑ 6. An engineering report addressing the requirements of this rule and with the following format: a cover sheet, text printed on 8 ½ inch by 11 inch consecutively numbered pages, a table of contents or index, the body of the report and all appendices including an operation plan, contingency plan, illustrative charts and graphs, records or logs of tests and investigations, engineering calculations; (62-701.320(7)(d), FAC)

S ☐ _____ N/A ☐ N/C ☑ 7. Operation Plan and Closure Plan; (62-701.320(7)(e)1, FAC)

S ☐ _____ N/A ☐ N/C ☑ 8. Contingency Plan; (62-701.320(7)(e)2, FAC)

S ☐ _____ N/A ☐ N/C ☑ 9. Plans or drawings for the solid waste management facilities in appropriate format (including sheet size restrictions, cover sheet, legends, north arrow, horizontal and vertical scales, elevations referenced to NGVD 1929) showing: (62-701.320(7)(f), FAC)

S ☐ _____ N/A ☐ N/C ☑ a. A regional map or plan with the project location in relation to major roadways and population centers;

S ☐ _____ N/A ☐ N/C ☑ b. A vicinity map or aerial photograph no more than one year old showing the facility site and relevant surface features located within 1000 feet of the facility;

S ☐ _____ N/A ☐ N/C ☑ c. A site plan showing all property boundaries certified by a Florida Licensed Professional Surveyor and Mapper;

S ☐ _____ N/A ☐ N/C ☑ d. Other necessary details to support the engineering report, including referencing elevations to a consistent, nationally recognized datum, and identifying the method used for collecting latitude and longitude data;

S ☐ _____ N/A ☐ N/C ☑ 10. Documentation that the applicant either owns the property or has legal authority from the property owner to use the site; (62-701.320(7)(g), FAC)

S ☐ _____ N/A ☐ N/C ☑ 11. For facilities owned or operated by a county, provide a description of how, if any, the facilities covered in this application will contribute to the county's achievement of the waste reduction and recycling goals contained in Section 403.706, FS; (62-701.320(7)(h), FAC)

LOCATION **PART D CONTINUED**

S ☐ _____ N/A ☐ N/C ☑ 12. Provide a history and description of any enforcement actions taken by the Department against the applicant for violations of applicable statutes, rules, orders, or permit conditions relating to the operation of any solid waste management facility in the state; (62-701.320(7)(i), FAC)

S ☐ _____ N/A ☑ N/C ☐ 13. Proof of publication in a newspaper of general circulation of notice of application for a permit to construct or substantially modify a solid waste management facility; (62-701.320(8), FAC)

S ☐ _____ N/A ☐ N/C ☑ 14. Provide a description of how the requirements for airport safety will be achieved, including proof of required notices if applicable. If exempt, explain how the exemption applies; (62-701.320(13), FAC)

S ☐ _____ N/A ☐ N/C ☑ 15. Explain how the operator and spotter training requirements and special criteria will be satisfied for the facility; (62-701.320(15), FAC)

PART E. LANDFILL PERMIT REQUIREMENTS (62-701.330, FAC)

LOCATION

S ☐ Section E N/A ☐ N/C ☑ 1. Regional map or aerial photograph no more than five years old showing all airports that are located within five miles of the proposed landfill; (62-701.330(3)(a), FAC)

S ☐ _____ N/A ☐ N/C ☑ 2. Plot plan with a scale not greater than 200 feet to the inch showing: (62-701.330(3)(b), FAC)

S ☐ _____ N/A ☐ N/C ☑ a. Dimensions;

S ☐ _____ N/A ☐ N/C ☑ b. Locations of proposed and existing water quality monitoring wells;

S ☐ _____ N/A ☐ N/C ☑ c. Locations of soil borings;

S ☐ _____ N/A ☐ N/C ☑ d. Proposed plan of trenching or disposal areas;

S ☐ _____ N/A ☐ N/C ☑ e. Cross sections showing original elevations and proposed final contours which shall be included either on the plot plan or on separate sheets;

S ☐ _____ N/A ☐ N/C ☑ f. Any previously filled waste disposal areas;

S ☐ _____ N/A ☐ N/C ☑ g. Fencing or other measures to restrict access;

S ☐ _____ N/A ☐ N/C ☑ 3. Topographic maps with a scale not greater than 200 feet to the inch with five foot contour intervals showing: (62-701.330(3)(c), FAC)

S ☐ _____ N/A ☐ N/C ☑ a. Proposed fill areas;

S ☐ _____ N/A ☐ N/C ☑ b. Borrow areas;

S ☐ _____ N/A ☐ N/C ☑ c. Access roads;

S ☐ _____ N/A ☐ N/C ☑ d. Grades required for proper drainage;

S ☐ _____ N/A ☐ N/C ☑ e. Cross sections of lifts;

S ☐ _____ N/A ☐ N/C ☑ f. Special drainage devices if necessary;

S ☐ _____ N/A ☐ N/C ☑ g. Fencing;

S ☐ _____ N/A ☐ N/C ☑ h. Equipment facilities;

S ☐ _____ N/A ☐ N/C ☑ 4. A report on the landfill describing the following: (62-701.330(3)(d), FAC)

S ☐ _____ N/A ☐ N/C ☑ a. The current and projected population and area to be served by the proposed site;

S ☐ _____ N/A ☐ N/C ☑ b. The anticipated type, annual quantity, and source of solid waste expressed in tons;

S ☐ _____ N/A ☐ N/C ☑ c. Planned active life of the facility, the final design height of the facility, and the maximum height of the facility during its operation;

S ☐ _____ N/A ☐ N/C ☑ d. The source and type of cover material used for the landfill;

S ☐ _____ N/A ☐ N/C ☑ 5. Provide evidence that an approved laboratory shall conduct water quality monitoring for the facility in accordance with Chapter 62-160, FAC; (62-701.330(3)(g), FAC

S ☐ _____ N/A ☐ N/C ☑ 6. Provide a statement of how the applicant will demonstrate financial responsibility for the closing and long-term care of the landfill; (62-701.330(3)(h), FAC)

PART F. GENERAL CRITERIA FOR LANDFILLS (62-701.340, FAC)

LOCATION

S ☐ Section F N/A ☐ N/C ☑ 1. Describe (and show on a Federal Insurance Administration flood map, if available) how the landfill or solid waste disposal unit shall not be located in the 100 year floodplain where it will restrict the flow of the 100 year flood, reduce the temporary water storage capacity of the floodplain unless compensating storage is provided, or result in a washout of solid waste; (62-701.340(3)(b), FAC)

S ☐ _____ N/A ☐ N/C ☑ 2. Describe how the minimum horizontal separation between waste deposits in the landfill and the landfill property boundary shall be 100 feet, measured from the toe of the proposed final cover slope; (62-701.340(3)(c), FAC)

PART G. LANDFILL CONSTRUCTION REQUIREMENTS (62-701.400, FAC)

LOCATION

S ☐ Section G N/A ☑ N/C ☐ 1. Describe how the landfill shall be designed so the solid waste disposal units will be constructed and closed at planned intervals throughout the design period of the landfill, and shall be designed to achieve a minimum factor of safety of 1.5 using peak strength values to prevent failures of side slopes and deep-seated failures; (62-701.400(2), FAC)

S ☐ _____ N/A ☑ N/C ☐ 2. Landfill liner requirements; (62-701.400(3), FAC)

S ☐ _____ N/A ☑ N/C ☐ a. General construction requirements; (62-701.400(3)(a), FAC)

S ☐ _____ N/A ☑ N/C ☐ (1) Provide test information and documentation to ensure the liner will be constructed of materials that have appropriate physical, chemical, and mechanical properties to prevent failure;

S ☐ _____ N/A ☑ N/C ☐ (2) Document foundation is adequate to prevent liner failure;

S ☐ _____ N/A ☑ N/C ☐ (3) Constructed so bottom liner will not be adversely impacted by fluctuations of the ground water;

S ☐ _____ N/A ☑ N/C ☐ (4) Designed to resist hydrostatic uplift if bottom liner located below seasonal high ground water table;

S ☐ _____ N/A ☑ N/C ☐ (5) Installed to cover all surrounding earth which could come into contact with the waste or leachate;

S ☐ _____ N/A ☑ N/C ☐		b. Composite liners; (62-701.400(3)(b), FAC)
S ☐ _____ N/A ☑ N/C ☐	(1)	Upper geomembrane thickness and properties;
S ☐ _____ N/A ☑ N/C ☐	(2)	Design leachate head for primary leachate collection and removal system (LCRS) including leachate recirculation if appropriate;
S ☐ _____ N/A ☑ N/C ☐	(3)	Design thickness in accordance with Table A and number of lifts planned for lower soil component;
S ☐ _____ N/A ☑ N/C ☐		c. Double liners; (62-701.400(3)(c), FAC)
S ☐ _____ N/A ☑ N/C ☐	(1)	Upper and lower geomembrane thickness and properties;
S ☐ _____ N/A ☑ N/C ☐	(2)	Design leachate head for primary LCRS to limit the head to one foot above the liner;
S ☐ _____ N/A ☑ N/C ☐	(3)	Lower geomembrane sub-base design;
S ☐ _____ N/A ☑ N/C ☐	(4)	Leak detection and secondary leachate collection system minimum design criteria ($k \geq 10$ cm/sec, head on lower liner ≤ 1 inch, head not to exceed thickness of drainage layer);
S ☐ _____ N/A ☑ N/C ☐		d. Standards for geosynthetic components; (62-701.400(3)(d), FAC)
S ☐ _____ N/A ☑ N/C ☐	(1)	Factory and field seam test methods to ensure all geomembrane seams achieve the minimum specifications;
S ☐ _____ N/A ☑ N/C ☐	(2)	Geomembranes to be used shall pass a continuous spark test by the manufacturer;
S ☐ _____ N/A ☑ N/C ☐	(3)	Design of 24-inch-thick protective layer above upper geomembrane liner;
S ☐ _____ N/A ☑ N/C ☐	(4)	Describe operational plans to protect the liner and leachate collection system when placing the first layer of waste above a 24-inch-thick protective layer;
S ☐ _____ N/A ☑ N/C ☐	(5)	HDPE geomembranes, if used, meet the specifications in GRI GM13, and LLDPE geomembranes, if used, meet the specifications in GRI GM17;
S ☐ _____ N/A ☑ N/C ☐	(6)	PVC geomembranes, if used, meet the specifications in PGI 1104;

S ☐ _____ N/A ☑ N/C ☐	(7)	Interface shear strength testing results of the actual components which will be used in the liner system;
S ☐ _____ N/A ☑ N/C ☐	(8)	Transmissivity testing results of geonets if they are used in the liner system;
S ☐ _____ N/A ☑ N/C ☐	(9)	Hydraulic conductivity testing results of geosynthetic clay liners if they are used in the liner system;
S ☐ _____ N/A ☑ N/C ☐	e. Geosynthetic specification requirements; (62-701.400(3)(e), FAC)	
S ☐ _____ N/A ☑ N/C ☐	(1)	Definition and qualifications of the designer, manufacturer, installer, QA consultant and laboratory, and QA program;
S ☐ _____ N/A ☑ N/C ☐	(2)	Material specifications for geomembranes, geocomposites, geotextiles, geogrids, and geonets;
S ☐ _____ N/A ☑ N/C ☐	(3)	Manufacturing and fabrication specifications including geomembrane raw material and roll QA, fabrication personnel qualifications, seaming equipment and procedures, overlaps, trial seams, destructive and non-destructive seam testing, seam testing location, frequency, procedure, sample size, and geomembrane repairs;
S ☐ _____ N/A ☑ N/C ☐	(4)	Geomembrane installation specifications including earthwork, conformance testing, geomembrane placement, installation personnel qualifications, field seaming and testing, overlapping and repairs, materials in contact with geomembranes, and procedures for lining system acceptance;
S ☐ _____ N/A ☑ N/C ☐	(5)	Geotextile and geogrids specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil materials and any overlying materials;
S ☐ _____ N/A ☑ N/C ☐	(6)	Geonet and geocomposites specifications including handling and placement, conformance testing, stacking and joining, repair, and placement of soil materials and any overlying materials;
S ☐ _____ N/A ☑ N/C ☐	(7)	Geosynthetic clay liner specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil materials and any overlying materials;

LOCATION	PART G CONTINUED	
S ☐ _____ N/A ☑ N/C ☐	f. Standards for soil liner components; (62-701.400(3)(f), FAC)	
S ☐ _____ N/A ☑ N/C ☐	(1)	Description of construction procedures including over-excavation and backfilling to preclude structural inconsistencies and procedures for placing and compacting soil components in layers;
S ☐ _____ N/A ☑ N/C ☐	(2)	Demonstration of compatibility of the soil component with actual or simulated leachate in accordance with EPA Test Method 9100, or an equivalent test method;
S ☐ _____ N/A ☑ N/C ☐	(3)	Procedures for testing in situ soils to demonstrate they meet the specifications for soil liners;
S ☐ _____ N/A ☑ N/C ☐	(4)	Specifications for soil component of liner including at a minimum:
S ☐ _____ N/A ☑ N/C ☐	(a)	Allowable particle size distribution, and Atterberg limits including shrinkage limit;
S ☐ _____ N/A ☑ N/C ☐	(b)	Placement moisture and dry density criteria;
S ☐ _____ N/A ☑ N/C ☐	(c)	Maximum laboratory-determined saturated hydraulic conductivity using simulated leachate;
S ☐ _____ N/A ☑ N/C ☐	(d)	Minimum thickness of soil liner;
S ☐ _____ N/A ☑ N/C ☐	(e)	Lift thickness;
S ☐ _____ N/A ☑ N/C ☐	(f)	Surface preparation (scarification);
S ☐ _____ N/A ☑ N/C ☐	(g)	Type and percentage of clay mineral within the soil component;
S ☐ _____ N/A ☑ N/C ☐	(5)	Procedures for constructing and using a field test section to document the desired saturated hydraulic conductivity and thickness can be achieved in the field;
S ☐ _____ N/A ☑ N/C ☐	g. If a Class III landfill is to be constructed with a bottom liner system, provide a description of how the minimum requirements for the liner will be achieved;	

S ☐ _____ N/A ☑ N/C ☐ 3. Leachate collection and removal system (LCRS); (62-701.400(4), FAC)

S ☐ _____ N/A ☑ N/C ☐ a. The primary and secondary LCRS requirements; (62-701.400(4)(a), FAC)

S ☐ _____ N/A ☑ N/C ☐ (1) Constructed of materials chemically resistant to the waste and leachate;

S ☐ _____ N/A ☑ N/C ☐ (2) Have sufficient mechanical properties to prevent collapse under pressure;

S ☐ _____ N/A ☑ N/C ☐ (3) Have granular material or synthetic geotextile to prevent clogging;

S ☐ _____ N/A ☑ N/C ☐ (4) Have a method for testing and cleaning clogged pipes or contingent designs for reducing leachate around failed areas;

S ☐ _____ N/A ☑ N/C ☐ b. Other LCRS requirements; (62-701.400(4)(b) and (c), FAC

S ☐ _____ N/A ☑ N/C ☐ (1) Bottom 12 inches having hydraulic conductivity≥ 1 x 10 ^{3} cm/sec;

S ☐ _____ N/A ☑ N/C ☐ (2) Total thickness of 24 inches of material chemically resistant to the waste and leachate;

S ☐ _____ N/A ☑ N/C ☐ (3) Bottom slope design to accommodate for predicted settlement and still meet minimum slope requirements;

S ☐ _____ N/A ☑ N/C ☐ (4) Demonstration that synthetic drainage material, if used, is equivalent or better than granular material in chemical compatibility, flow under load, and protection of geomembranes liner;

S ☐ _____ N/A ☑ N/C ☐ 4. Leachate recirculation; (62-701.400(5), FAC)

S ☐ _____ N/A ☑ N/C ☐ a. Describe general procedures for recirculating leachate;

S ☐ _____ N/A ☑ N/C ☐ b. Describe procedures for controlling leachate runoff and minimizing mixing of leachate runoff with storm water;

S ☐ _____ N/A ☑ N/C ☐ c. Describe procedures for preventing perched water conditions and gas buildup;

S ☐ _____ N/A ☑ N/C ☐ d. Describe alternate methods for leachate management when it cannot be recirculated due to weather or runoff conditions, surface seeps, wind-blown spray, or elevated levels of leachate head on the liner;

S ☐ _____ N/A ☑ N/C ☐ e. Describe methods of gas management in accordance with Rule 62-701.530, FAC;

S ☐ _____ N/A ☑ N/C ☐ f. If leachate irrigation is proposed, describe treatment methods and standards for leachate treatment prior to irrigation over final cover, and provide documentation that irrigation does not contribute significantly to leachate generation;

S ☐ _____ N/A ☑ N/C ☐ 5. Leachate storage tanks and leachate surface impoundments; (62-701.400(6), FAC)

S ☐ _____ N/A ☑ N/C ☐ a. Surface impoundment requirements; (62-701.400(6)(b), FAC)

S ☐ _____ N/A ☑ N/C ☐ (1) Documentation that the design of the bottom liner will not be adversely impacted by fluctuations of the ground water;

S ☐ _____ N/A ☑ N/C ☐ (2) Designed in segments to allow for inspection and repair, as needed, without interruption of service;

S ☐ _____ N/A ☑ N/C ☐ (3) General design requirements;

S ☐ _____ N/A ☑ N/C ☐ (a) Double liner system consisting of an upper and lower 60-mil minimum thickness geomembrane;

S ☐ _____ N/A ☑ N/C ☐ (b) Leak detection and collection system with hydraulic conductivity ≥ 1 cm/sec;

S ☐ _____ N/A ☑ N/C ☐ (c) Lower geomembrane place on subbase ≥ 6 inches thick with $k \leq 1 \times 10^{-5}$ cm/sec or on an approved geosynthetic clay liner with $k \leq 1 \times 10^{-7}$ cm/sec;

S ☐ _____ N/A ☑ N/C ☐ (d) Design calculation to predict potential leakage through the upper liner;

S ☐ _____ N/A ☑ N/C ☐ (e) Daily inspection requirements, and notification and corrective action requirements if leakage rates exceed that predicted by design calculations;

S ☐ _____ N/A ☑ N/C ☐ (4) Description of procedures to prevent uplift, if applicable;

LOCATION	PART G CONTINUED	
S ☐ _____ N/A ☑ N/C ☐	(5)	Design calculations to demonstrate minimum two feet of freeboard will be maintained;
S ☐ _____ N/A ☑ N/C ☐	(6)	Procedures for controlling vectors and off-site odors;
S ☐ _____ N/A ☑ N/C ☐	b. Above-ground leachate storage tanks; (62-701.400(6)(c), FAC)	
S ☐ _____ N/A ☑ N/C ☐	(1)	Describe tank materials of construction and ensure foundation is sufficient to support tank;
S ☐ _____ N/A ☑ N/C ☐	(2)	Describe procedures for cathodic protection for the tank, if needed;
S ☐ _____ N/A ☑ N/C ☐	(3)	Describe exterior painting and interior lining of the tank to protect it from the weather and the leachate stored;
S ☐ _____ N/A ☑ N/C ☐	(4)	Describe secondary containment design to ensure adequate capacity will be provided and compatibility of materials of construction;
S ☐ _____ N/A ☑ N/C ☐	(5)	Describe design to remove and dispose of stormwater from the secondary containment system;
S ☐ _____ N/A ☑ N/C ☐	(6)	Describe an overfill prevention system, such as level sensors, gauges, alarms, and shutoff controls to prevent overfilling;
S ☐ _____ N/A ☑ N/C ☐	(7)	Inspections, corrective action, and reporting requirements;
S ☐ _____ N/A ☑ N/C ☐	(a)	Weekly inspection of overfill prevention system;
S ☐ _____ N/A ☑ N/C ☐	(b)	Weekly inspection of exposed tank exteriors;
S ☐ _____ N/A ☑ N/C ☐	(c)	Inspection of tank interiors when tank is drained, or at least every three years;
S ☐ _____ N/A ☑ N/C ☐	(d)	Procedures for immediate corrective action if failures detected;
S ☐ _____ N/A ☑ N/C ☐	(e)	Inspection reports available for Department review;
S ☐ _____ N/A ☑ N/C ☐	c. Underground leachate storage tanks; (62-701.400(6)(d), FAC)	

S ☐ _____ N/A ☑ N/C ☐ (1) Describe materials of construction;

S ☐ _____ N/A ☑ N/C ☐ (2) A double-walled tank design system to be used with the following requirements:

S ☐ _____ N/A ☑ N/C ☐ (a) Interstitial space monitoring at least weekly;

S ☐ _____ N/A ☑ N/C ☐ (b) Corrosion protection provided for primary tank interior and external surface of outer shell;

S ☐ _____ N/A ☑ N/C ☐ (c) Interior tank coatings compatible with stored leachate;

S ☐ _____ N/A ☑ N/C ☐ (d) Cathodic protection inspected weekly and repaired as needed;

S ☐ _____ N/A ☑ N/C ☐ (3) Describe an overfill prevention system, such as level sensors, gauges, alarms, and shutoff controls to prevent overfilling, and provide for weekly inspections;

S ☐ _____ N/A ☑ N/C ☐ (4) Inspection reports available for Department review;

S ☐ _____ N/A ☑ N/C ☐ d. Schedule provided for routine maintenance of LCRS; (62-701.400(6)(e), FAC)

S ☐ _____ N/A ☑ N/C ☐ 6. Liner systems construction quality assurance (CQA); (62-701.400(7), FAC)

S ☐ _____ N/A ☑ N/C ☐ a. Provide CQA Plan including:

S ☐ _____ N/A ☑ N/C ☐ (1) Specifications and construction requirements for liner system;

S ☐ _____ N/A ☑ N/C ☐ (2) Detailed description of quality control testing procedures and frequencies;

S ☐ _____ N/A ☑ N/C ☐ (3) Identification of supervising professional engineer;

S ☐ _____ N/A ☑ N/C ☐ (4) Identify responsibility and authority of all appropriate organizations and key personnel involved in the construction project;

S ☐ _____ N/A ☑ N/C ☐ (5) State qualifications of CQA professional engineer and support personnel;

S ☐ _____ N/A ☑ N/C ☐ (6) Description of CQA reporting forms and documents;

S ☐ _____ N/A ☑ N/C ☐ b. An independent laboratory experienced in the testing of geosynthetics to perform required testing;

S ☐ _____ N/A ☑ N/C ☐ 7. Soil liner CQA; (62-701.400(8), FAC)

S ☐ _____ N/A ☑ N/C ☐ a. Documentation that an adequate borrow source has been located with test results, or description of the field exploration and laboratory testing program to define a suitable borrow source;

S ☐ _____ N/A ☑ N/C ☐ b. Description of field test section construction and test methods to be implemented prior to liner installation;

S ☐ _____ N/A ☑ N/C ☐ c. Description of field test methods, including rejection criteria and corrective measures to insure proper liner installation;

S ☐ _____ N/A ☑ N/C ☐ 8. For surface water management systems at aboveground disposal units, provide documentation showing the design of any features intended to convey stormwater to a permitted or exempted treatment system; (62-701.400(9), FAC)

S ☐ _____ N/A ☑ N/C ☐ 9. Gas control systems; (62-701.400(10), FAC)

S ☐ _____ N/A ☑ N/C ☐ a. Provide documentation that if the landfill is receiving degradable wastes, it will have a gas control system complying with the requirements of Rule 62-701.530, FAC;

S ☐ _____ N/A ☑ N/C ☐ 10. For landfills designed in ground water, provide documentation that the landfill will provide a degree of protection equivalent to landfills designed with bottom liners not in contact with ground water; (62-701.400(11), FAC)

PART H. HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS (62-701.410(1), FAC)

LOCATION

S ☐ Section H N/A ☐ N/C ☑ 1. Submit a hydrogeological investigation and site report including at least the following information:

S ☐ _____ N/A ☐ N/C ☑ a. Regional and site specific geology and hydrology;

S ☐ _____ N/A ☐ N/C ☑ b. Direction and rate of ground water and surface water flow including seasonal variations;

S ☐ _____ N/A ☐ N/C ☑ c. Background quality of ground water and surface water;

S ☐ _____ N/A ☐ N/C ☑ d. Any on-site hydraulic connections between aquifers;

S ☐ _____ N/A ☐ N/C ☑ e. Site stratigraphy and aquifer characteristics for confining layers, semi-confining layers, and all aquifers below the landfill site that may be affected by the landfill;

S ☐ _____ N/A ☐ N/C ☑ f. Description of topography, soil types, and surface water drainage systems;

S ☐ _____ N/A ☐ N/C ☑ g. Inventory of all public and private water wells within a one mile radius of the landfill including, where available, well top of casing and bottom elevations, name of owner, age and usage of each well, stratigraphic unit screened, well construction technique, and static water level;

S ☐ _____ N/A ☐ N/C ☑ h. Identify and locate any existing contaminated areas on the site;

S ☐ _____ N/A ☐ N/C ☑ i. Include a map showing the locations of all potable wells within 500 feet of the waste storage and disposal areas;

S ☐ _____ N/A ☐ N/C ☑ 2. Report signed, sealed, and dated by P.E. and/or P.G.;

PART I. GEOTECHNICAL INVESTIGATION REQUIREMENTS (62-701.410(2), FAC)

LOCATION

S ☐ Section I N/A ☐ N/C ☑ 1. Submit a geotechnical site investigation report defining the engineering properties of the site including at least the following:

S ☐ _____ N/A ☐ N/C ☑ a. Description of subsurface conditions including soil stratigraphy and ground water table conditions;

S ☐ _____ N/A ☐ N/C ☑ b. Investigate for the presence of muck, previously filled areas, soft ground, lineaments, and sink holes;

S ☐ _____ N/A ☐ N/C ☑ c. Estimates of average and maximum high water table across the site;

S ☐ _____ N/A ☐ N/C ☑ d. Foundation analysis including:

S ☐ _____ N/A ☐ N/C ☑ (1) Foundation bearing capacity analysis;

S ☐ _____ N/A ☐ N/C ☑	(2) Total and differential subgrade settlement analysis;
S ☐ _____ N/A ☐ N/C ☑	(3) Slope stability analysis;
S ☐ _____ N/A ☐ N/C ☑	e. Description of methods used in the investigation, and includes soil boring logs, laboratory results, analytical calculations, cross sections, interpretations, and conclusions;
S ☐ _____ N/A ☐ N/C ☑	f. An evaluation of fault areas, seismic impact zones, and unstable areas as described in 40 CFR 258.13, 40 CFR 258.14, and 40 CFR 258.15;
S ☐ _____ N/A ☐ N/C ☑	2. Report signed, sealed, and dated by P.E. and/or P.G.;

PART J. VERTICAL EXPANSION OF LANDFILLS (62-701.430, FAC)

LOCATION	
S ☐ Section J N/A ☑ N/C ☐	1. Describe how the vertical expansion shall not cause or contribute to leachate leakage from the existing landfill, shall not cause objectionable odors, or adversely affect the closure design of the existing landfill;
S ☐ _____ N/A ☑ N/C ☐	2. Describe how the vertical expansion over unlined landfills will meet the requirements of Rule 62-701.400, FAC with the exceptions of Rule 62-701.430(1)(c), FAC;
S ☐ _____ N/A ☑ N/C ☐	3. Provide foundation and settlement analysis for the vertical expansion;
S ☐ _____ N/A ☑ N/C ☐	4. Provide total settlement calculations demonstrating that the final elevations of the lining system, gravity drainage, and no other component of the design will be adversely affected;
S ☐ _____ N/A ☑ N/C ☐	5. Minimum stability factor of safety of 1.5 for the lining system component interface stability and for deep stability;
S ☐ _____ N/A ☑ N/C ☐	6. Provide documentation to show the surface water management system will not be adversely affected by the vertical expansion;
S ☐ _____ N/A ☑ N/C ☐	7. Provide gas control designs to prevent accumulation of gas under the new liner for the vertical expansion;

PART K. LANDFILL OPERATION REQUIREMENTS (62-701.500, FAC)

	LOCATION		
S ☐	Section K	N/A ☐ N/C ☑	1. Provide documentation that the landfill will have at least one trained operator during operation and at least one trained spotter at each working face; (62-701.500(1), FAC)
S ☐		N/A ☐ N/C ☑	2. Provide a landfill operation plan including procedures for: (62-701.500(2), FAC)
S ☐		N/A ☐ N/C ☑	a. Designating responsible operating and maintenance personnel;
S ☐		N/A ☐ N/C ☑	b. Emergency preparedness and response, as required in subsection 62-701.320(16), FAC;
S ☐		N/A ☐ N/C ☑	c. Controlling types of waste received at the landfill;
S ☐		N/A ☐ N/C ☑	d. Weighing incoming waste;
S ☐		N/A ☐ N/C ☑	e. Vehicle traffic control and unloading;
S ☐		N/A ☐ N/C ☑	f. Method and sequence of filling waste;
S ☐		N/A ☐ N/C ☑	g. Waste compaction and application of cover;
S ☐		N/A ☐ N/C ☑	h. Operations of gas, leachate, and stormwater controls;
S ☐		N/A ☐ N/C ☑	i. Water quality monitoring;
S ☐		N/A ☐ N/C ☑	j. Maintaining and cleaning the leachate collection system;
S ☐		N/A ☐ N/C ☑	3. Provide a description of the landfill operation record to be used at the landfill, details as to location of where various operational records will be kept (i.e. DEP permit, engineering drawings, water quality records, etc.); (62-701.500(3), FAC)
S ☐		N/A ☐ N/C ☑	4. Describe the waste records that will be compiled monthly and provided to the Department annually; (62-701.500(4), FAC)
S ☐		N/A ☐ N/C ☑	5. Describe methods of access control; (62-701.500(5), FAC)
S ☐		N/A ☐ N/C ☑	6. Describe load checking program to be implemented at the landfill to discourage disposal of unauthorized waste at the landfill; (62-701.500(6), FAC)

LOCATION **PART K CONTINUED**

S ☐ _____ N/A ☐ N/C ☑	7. Describe procedures for spreading and compacting waste at the landfill that include: (62-701.500(7), FAC)
S ☐ _____ N/A ☐ N/C ☑	a. Waste layer thickness and compaction frequencies;
S ☐ _____ N/A ☐ N/C ☑	b. Special considerations for first layer of waste placed above the liner and leachate collection system;
S ☐ _____ N/A ☐ N/C ☑	c. Slopes of cell working face and side grades above land surface, and planned lift depths during operation;
S ☐ _____ N/A ☐ N/C ☑	d. Maximum width of working face;
S ☐ _____ N/A ☐ N/C ☑	e. Description of type of initial cover to be used at the facility that controls:
S ☐ _____ N/A ☐ N/C ☑	(1) Vector breeding/animal attraction;
S ☐ _____ N/A ☐ N/C ☑	(2) Fires;
S ☐ _____ N/A ☐ N/C ☑	(3) Odors;
S ☐ _____ N/A ☐ N/C ☑	(4) Blowing litter;
S ☐ _____ N/A ☐ N/C ☑	(5) Moisture infiltration;
S ☐ _____ N/A ☐ N/C ☑	f. Procedures for applying initial cover, including minimum cover frequencies;
S ☐ _____ N/A ☐ N/C ☑	g. Procedures for applying intermediate cover;
S ☐ _____ N/A ☐ N/C ☑	h. Time frames for applying final cover;
S ☐ _____ N/A ☐ N/C ☑	i. Procedures for controlling scavenging and salvaging;
S ☐ _____ N/A ☐ N/C ☑	j. Description of litter policing methods;
S ☐ _____ N/A ☐ N/C ☑	k. Erosion control procedures;

LOCATION **PART K CONTINUED**

S ☐ _____ N/A ☑ N/C ☐ 8. Describe operational procedures for leachate management including: (62-701.500(8), FAC)

S ☐ _____ N/A ☑ N/C ☐ a. Leachate level monitoring;

S ☐ _____ N/A ☑ N/C ☐ b. Operation and maintenance of leachate collection and removal system, and treatment as required;

S ☐ _____ N/A ☑ N/C ☐ c. Procedures for managing leachate if it becomes regulated as a hazardous waste;

S ☐ _____ N/A ☑ N/C ☐ d. Identification of treatment or disposal facilities that may be used for off-site discharge and treatment of leachate;

S ☐ _____ N/A ☑ N/C ☐ e. Contingency plan for managing leachate during emergencies or equipment problems;

S ☐ _____ N/A ☑ N/C ☐ f. Procedures for recording quantities of leachate generated in gal/day and including this in the operating record;

S ☐ _____ N/A ☑ N/C ☐ g. Procedures for comparing precipitation experienced at the landfill with leachate generation rates and including this information in the operating record;

S ☐ _____ N/A ☑ N/C ☐ h. Procedures for water pressure cleaning or video inspecting leachate collection systems;

S ☐ _____ N/A ☐ N/C ☑ 9. Describe how the landfill receiving degradable wastes shall implement a gas management system meeting the requirements of Rule 62-701.530, FAC; (62-701.500(9), FAC)

S ☐ _____ N/A ☐ N/C ☑ 10. Describe procedures for operating and maintaining the landfill stormwater management system to comply with the requirements of Rule 62-701.400(9), FAC; (62-701.500(10), FAC)

S ☐ _____ N/A ☐ N/C ☑ 11. Equipment and operation feature requirements; (62-701.500(11), FAC)

S ☐ _____ N/A ☐ N/C ☑ a. Sufficient equipment for excavating, spreading, compacting, and covering waste;

S ☐ _____ N/A ☐ N/C ☑ b. Reserve equipment or arrangements to obtain additional equipment within 24 hours of breakdown;

S ☐ _____ N/A ☐ N/C ☑ c. Communications equipment;

LOCATION **PART K CONTINUED**

S ☐ _____ N/A ☐ N/C ☑ d. Dust control methods;

S ☐ _____ N/A ☐ N/C ☑ e. Fire protection capabilities and procedures for notifying local fire department authorities in emergencies;

S ☐ _____ N/A ☐ N/C ☑ f. Litter control devices;

S ☐ _____ N/A ☐ N/C ☑ g. Signs indicating operating authority, traffic flow, hours of operation, and disposal restrictions;

S ☐ _____ N/A ☐ N/C ☑ 12. Provide a description of all-weather access road, inside perimeter road, and other on-site roads necessary for access at the landfill; (62-701.500(12), FAC)

S ☐ _____ N/A ☐ N/C ☑ 13. Additional record keeping and reporting requirements; (62-701.500(13), FAC)

S ☐ _____ N/A ☐ N/C ☑ a. Records used for developing permit applications and supplemental information maintained for the design period of the landfill;

S ☐ _____ N/A ☐ N/C ☑ b. Monitoring information, calibration and maintenance records, and copies of reports required by permit maintained for at least 10 years;

S ☐ _____ N/A ☐ N/C ☑ c. Maintain annual estimates of the remaining life of constructed landfills, and of other permitted areas not yet constructed, and submit this estimate annually to the Department;

S ☐ _____ N/A ☐ N/C ☑ d. Procedures for archiving and retrieving records which are more than five years old;

PART L. WATER QUALITY MONITORING REQUIREMENTS (62-701.510, FAC)

LOCATION

S ☐ Section L N/A ☐ N/C ☑ 1. A water quality monitoring plan shall be submitted describing the proposed ground water and surface water monitoring systems, and shall meet at least the following requirements:

S ☐ _____ N/A ☐ N/C ☑ a. Based on the information obtained in the hydrogeological investigation and signed, dated, and sealed by the P.G. or P.E. who prepared it; (62-701.510(2)(a), FAC)

LOCATION		
S ☐ _____ N/A ☐ N/C ☑		b. All sampling and analysis performed in accordance with Chapter 62-160, FAC; (62-701.510(2)(b), FAC)
S ☐ _____ N/A ☐ N/C ☑		c. Ground water monitoring requirements; (62-701.510(3), FAC)
S ☐ _____ N/A ☐ N/C ☑	(1)	Detection wells located downgradient from and within 50 feet of disposal units;
S ☐ _____ N/A ☐ N/C ☑	(2)	Downgradient compliance wells as required;
S ☐ _____ N/A ☐ N/C ☑	(3)	Background wells screened in all aquifers below the landfill that may be affected by the landfill;
S ☐ _____ N/A ☐ N/C ☑	(4)	Location information for each monitoring well;
S ☐ _____ N/A ☐ N/C ☑	(5)	Well spacing no greater than 500 feet apart for downgradient wells and no greater than 1500 feet apart for upgradient wells, unless site specific conditions justify alternate well spacings;
S ☐ _____ N/A ☐ N/C ☑	(6)	Properly selected well screen locations;
S ☐ _____ N/A ☐ N/C ☑	(7)	Monitoring wells constructed to provide representative ground water samples;
S ☐ _____ N/A ☐ N/C ☑	(8)	Procedures for properly abandoning monitoring wells;
S ☐ _____ N/A ☐ N/C ☑	(9)	Detailed description of detection sensors, if proposed;
S ☐ _____ N/A ☐ N/C ☑		d. Surface water monitoring requirements; (62-701.510(4), FAC)
S ☐ _____ N/A ☐ N/C ☑	(1)	Location of and justification for all proposed surface water monitoring points;
S ☐ _____ N/A ☐ N/C ☑	(2)	Each monitoring location to be marked and its position determined by a registered Florida land surveyor;
S ☐ _____ N/A ☐ N/C ☑		e. Initial and routine sampling frequency and requirements; (62-701.510(5), FAC)
S ☐ _____ N/A ☐ N/C ☑	(1)	Initial background ground water and surface water sampling and analysis requirements;

S ☐ _____ N/A ☐ N/C ☑	(2)	Routine monitoring well sampling and analysis requirements;
S ☐ _____ N/A ☐ N/C ☑	(3)	Routine surface water sampling and analysis requirements;
S ☐ _____ N/A ☐ N/C ☑	f. Describe procedures for implementing evaluation monitoring, prevention measures, and corrective action as required; (62-701.510(6), FAC)	
S ☐ _____ N/A ☐ N/C ☑	g. Water quality monitoring report requirements; (62-701.510(8), FAC)	
S ☐ _____ N/A ☐ N/C ☑	(1)	Semi-annual report requirements; (see paragraphs 62-701.510(5)(c) and (d), FAC for sampling frequencies)
S ☐ _____ N/A ☐ N/C ☑	(2)	Documentation that the water quality data shall be provided to the Department in an electronic format consistent with requirements for importing into Department databases, unless an alternate form of submittal is specified in the permit;
S ☐ _____ N/A ☐ N/C ☑	(3)	Two and one-half year report requirements, or every five years if in long-term care, signed dated, and sealed by P.G. or P.E.;

PART M. SPECIAL WASTE HANDLING REQUIREMENTS (62-701.520, FAC)

LOCATION

S ☐ Section M N/A ☑ N/C ☐	1. Describe procedures for managing motor vehicles; (62-701.520(1), FAC)
S ☐ _____ N/A ☑ N/C ☐	2. Describe procedures for landfilling shredded waste; (62-701.520(2), FAC)
S ☐ _____ N/A ☑ N/C ☐	3. Describe procedures for asbestos waste disposal; (62-701.520(3), FAC)
S ☐ _____ N/A ☑ N/C ☐	4. Describe procedures for disposal or management of contaminated soil; (62-701.520(4), FAC)
S ☐ _____ N/A ☑ N/C ☐	5. Describe procedures for disposal of biological wastes; (62-701.520(5), FAC)

PART N. GAS MANAGEMENT SYSTEM REQUIREMENTS (62-701.530, FAC)

	LOCATION		
S ☐	Section N	N/A ☐ N/C ☑	1. Provide documentation for a gas management system that will: (62-701.530(1), FAC)
S ☐		N/A ☐ N/C ☑	a. Be designed to prevent concentrations of combustible gases from exceeding 25% the LEL in structures and 100% the LEL at the property boundary;
S ☐		N/A ☐ N/C ☑	b. Be designed for site specific conditions;
S ☐		N/A ☐ N/C ☑	c. Be designed to reduce gas pressure in the interior of the landfill;
S ☐		N/A ☐ N/C ☑	d. Be designed to not interfere with the liner, leachate control system, or final cover;
S ☐		N/A ☐ N/C ☑	2. Provide documentation that will describe locations, construction details, and procedures for monitoring gas at ambient monitoring points and with soil monitoring probes; (62-701.530(2), FAC)
S ☐		N/A ☐ N/C ☑	3. Provide documentation describing how the gas remediation plan and odor remediation plan will be implemented; (62-701.530(3), FAC)
S ☐		N/A ☐ N/C ☑	4. Landfill gas recovery facilities; (62-701.530(5), FAC)
S ☐		N/A ☐ N/C ☑	a. Provide information required in Rules 62-701.320(7) and 62-701.330(3), FAC;
S ☐		N/A ☐ N/C ☑	b. Provide information required in Rule 62-701.600(4), FAC, where relevant and practical;
S ☐		N/A ☐ N/C ☑	c. Provide estimates of current and expected gas generation rates and description of condensate disposal methods;
S ☐		N/A ☐ N/C ☑	d. Provide description of procedures for condensate sampling, analyzing, and data reporting;
S ☐		N/A ☐ N/C ☑	e. Provide closure plan describing methods to control gas after recovery facility ceases operation, and any other requirements contained in Rule 62-701.400(10), FAC;

PART O. LANDFILL FINAL CLOSURE REQUIREMENTS (62-701.600, FAC)

	LOCATION		
S ☐	Section O	N/A ☐ N/C ☑	1. Closure permit requirements; (62-701.600(2), FAC)
S ☐		N/A ☐ N/C ☑	a. Application submitted to the Department at least 90 days prior to final receipt of wastes;
S ☐		N/A ☐ N/C ☑	b. Closure plan shall include the following:
S ☐		N/A ☐ N/C ☑	(1) Closure design plan;
S ☐		N/A ☐ N/C ☑	(2) Closure operation plan;
S ☐		N/A ☐ N/C ☑	(3) Plan for long-term care;
S ☐		N/A ☐ N/C ☑	(4) A demonstration that proof of financial assurance for long-term care will be provided;
S ☐		N/A ☐ N/C ☑	2. Closure design plan including the following requirements: (62-701.600(3), FAC)
S ☐		N/A ☐ N/C ☑	a. Plan sheet showing phases of site closing;
S ☐		N/A ☐ N/C ☑	b. Drawings showing existing topography and proposed final grades;
S ☐		N/A ☐ N/C ☑	c. Provisions to close units when they reach approved design dimensions;
S ☐		N/A ☐ N/C ☑	d. Final elevations before settlement;
S ☐		N/A ☐ N/C ☑	e. Side slope design including benches, terraces, down slope drainage ways, energy dissipaters, and description of expected precipitation effects;
S ☐		N/A ☐ N/C ☑	f. Final cover installation plans including:
S ☐		N/A ☐ N/C ☑	(1) CQA plan for installing and testing final cover;
S ☐		N/A ☐ N/C ☑	(2) Schedule for installing final cover after final receipt of waste;
S ☐		N/A ☐ N/C ☑	(3) Description of drought resistant species to be used in the vegetative cover;

S ☐ _____ N/A ☐ N/C ☑	(4) Top gradient design to maximize runoff and minimize erosion;
S ☐ _____ N/A ☐ N/C ☑	(5) Provisions for cover material to be used for final cover maintenance;
S ☐ _____ N/A ☐ N/C ☑	g. Final cover design requirements;
S ☐ _____ N/A ☐ N/C ☑	(1) Protective soil layer design;
S ☐ _____ N/A ☐ N/C ☑	(2) Barrier soil layer design;
S ☐ _____ N/A ☐ N/C ☑	(3) Erosion control vegetation;
S ☐ _____ N/A ☐ N/C ☑	(4) Geomembrane barrier layer design;
S ☐ _____ N/A ☐ N/C ☑	(5) Geosynthetic clay liner design, if used;
S ☐ _____ N/A ☐ N/C ☑	(6) Stability analysis of the cover system and the disposed waste;
S ☐ _____ N/A ☐ N/C ☑	h. Proposed method of stormwater control;
S ☐ _____ N/A ☐ N/C ☑	i. Proposed method of access control;
S ☐ _____ N/A ☐ N/C ☑	j. Description of the proposed or existing gas management system which complies with Rule 62-701.530, FAC;
S ☐ _____ N/A ☐ N/C ☑	3. Closure operation plan shall include: (62-701.600(4), FAC)
S ☐ _____ N/A ☐ N/C ☑	a. Detailed description of actions which will be taken to close the landfill;
S ☐ _____ N/A ☐ N/C ☑	b. Time schedule for completion of closing and long-term care;
S ☐ _____ N/A ☐ N/C ☑	c. Describe proposed method for demonstrating financial assurance for long-term care;
S ☐ _____ N/A ☐ N/C ☑	d. Operation of the water quality monitoring plan required in Rule 62-701.510, FAC;
S ☐ _____ N/A ☐ N/C ☑	e. Development and implementation of gas management system required in Rule 62-701.530, FAC;

S ☐ _____	N/A ☐ N/C ☑	4. Certification of closure construction completion including: (62-701.600(6), FAC)
S ☐ _____	N/A ☐ N/C ☑	a. Survey monuments; (62-701.600(6)(a), FAC)
S ☐ _____	N/A ☐ N/C ☑	b. Final survey report; (62-701.600(6)(b), FAC)
S ☐ _____	N/A ☐ N/C ☑	5. Declaration to the public; (62-701.600(7), FAC)
S ☐ _____	N/A ☐ N/C ☑	6. Official date of closing; (62-701.600(8), FAC)
S ☐ _____	N/A ☐ N/C ☑	7. Justification for and detailed description of procedures to be followed for temporary closure of the landfill, if desired; (62-701.600(9), FAC)

PART P. OTHER CLOSURE PROCEDURES (62-701.610, FAC)

LOCATION		
S ☐ Section P	N/A ☑ N/C ☐	1. Describe how the requirements for use of closed solid waste disposal areas will be achieved; (62-701.610(1), FAC)
S ☐ _____	N/A ☑ N/C ☐	2. Describe how the requirements for relocation of wastes will be achieved; (62-701.610(2), FAC)

PART Q. LONG-TERM CARE (62-701.620, FAC)

LOCATION		
S ☐ Section Q	N/A ☐ N/C ☑	1. Maintaining the gas collection and monitoring system; (62-701.620(5), FAC)
S ☐ _____	N/A ☐ N/C ☑	2. Stabilization report requirements; (62-701.620(6), FAC)
S ☐ _____	N/A ☐ N/C ☑	3. Right of access; (62-701.620(7), FAC)
S ☐ _____	N/A ☐ N/C ☑	4. Requirements for replacement of monitoring devices; (62-701.620(8), FAC)
S ☐ _____	N/A ☐ N/C ☑	5. Completion of long-term care signed and sealed by professional engineer; (62-701.620(9), FAC)

PART R. FINANCIAL ASSURANCE (62-701.630, FAC)

LOCATION		
S ☑ Section R.1 N/A ☐ N/C ☐	1. Provide cost estimates for closing, long-term care, and corrective action costs estimated by a P.E. for a third party performing the work, on a per unit basis, with the source of estimates indicated; (62-701.630(3) & (7), FAC)
S ☑ Section R.2 N/A ☐ N/C ☐	2. Describe procedures for providing annual cost adjustments to the Department based on inflation and changes in the closing, long-term care, and corrective action plans; (62-701.630(4) & (8), FAC)
S ☑ Section R.3 N/A ☐ N/C ☐	3. Describe funding mechanisms for providing proof of financial assurance and include appropriate financial assurance forms. (62-701.630(5), (6), & (9), FAC)

PART S. CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

1. Applicant:

The undersigned applicant or authorized representative of Volusia County Solid Waste Division is aware that statements made in this form and attached information are an application for a minor modification to the permit from the Florida Department of Environmental Protection, and certifies that the information in this application is true, correct, and complete to the best of his/her knowledge and belief. Further, the undersigned agrees to comply with the provisions of Chapter 403, Florida Statutes, and all rules and regulations of the Department. It is understood that the Permit is not transferable, and the Department will be notified prior to the sale or legal transfer of the permitted facility.

Signature of Applicant or Agent

Leonard Marion, Solid Waste Director
Name and Title (please type)

lmarion@volusia.org
E-Mail Address (if available)

1990 Tomoka Farms Road
Mailing Address

Port Orange, FL 32128
City, State, Zip Code

(386) 947-2952
Telephone Number

Date: 5/26/15

Attach letter of authorization if agent is not a government official, owner, or corporate officer.

2. Professional Engineer registered in Florida (or Public Officer if authorized under Sections 403.707 and 403.7075, Florida Statutes):

This is to certify that the engineering features of this solid waste management facility have been designed/examined by me and found to conform to engineering principles applicable to such facilities. In my professional judgment, this facility, when properly maintained and operated, will comply with all applicable statutes of the State of Florida and rules of the Department. It is agreed that the undersigned will provide the applicant with a set of instructions of proper maintenance and operation of the facility.

Signature

Mark Roberts, Project Manager
Name and Title (please type)

54187
Florida Registration Number (please affix seal)

200 W. Forsyth Street, Ste. 800
Mailing Address

Jacksonville, FL, 32202
City, State, Zip Code

Mark.Roberts@hdrinc.com
E-Mail Address (if available)

(904) 598-8900
Telephone Number

Date: 5/27/15

SECTION A

GENERAL INFORMATION

The information required for Part A of this minor permit modification application is included on the application form. The following documents are incorporated by reference into this minor permit modification application:

1. Operation Permit Modification & Construction Permit Application for East Cell Expansion, Tomoka Farms Road Landfill, dated April 3, 2002.

2. FDEP Application for Renewal of Construction Permit, Tomoka Farms Road Landfill, North Cell – Phase II, Class I, dated June 12, 2007.

3. Application for Renewal of Operations Permit North Cell Class I Landfill, Tomoka Farms Road Landfill, dated June 25, 2007.

4. Tomoka Farms Road Landfill, North Cell Class I Closure, Intermediate Modification Permit Application, prepared by HDR Engineering, Inc. and dated August 25, 2010.

5. Application for Renewal of Closure Permit, Tomoka Farms Road Landfill, North Cell, dated December 2011.

6. Application for Renewal of Construction Permit, Tomoka Farms Road Landfill, North Cell – Phase II, Class I, dated August 2012.

7. FDEP Approved Operations Plan dated April 2014, prepared by Neel-Schaffer, Inc.

8. FDEP Application for Renewal of Operations Permit Class III Landfill, Tomoka Farms Road Landfill, dated June 30, 2014.

SECTION B

DISPOSAL FACILITY GENERAL INFORMATION

Volusia County currently operates the North Cell – Phase I, Class I at the Tomoka Farms Road Landfill (TFRL) under FDEP permit number 0078767-030-SO-01. The TFRL is a 3,400 acre waste management facility located at 1990 Tomoka Farms Road, Port Orange, Florida, 2 miles south of US 92. The TFRL has accepted waste since 1969 and is owned and operated by Volusia County and includes a closed Class I landfill (South Cell), an active Class I landfill (North Cell), and an active Class III landfill.

The active North Cell Class I landfill (excluding Phase II) is approximately 65.64 acres in size and is permitted to be filled to an elevation of 192 feet. The legal description of the property on which the Class I landfill is located is Section 9, Township 16 South, and Range 32 East. The TFRL services Flagler and Volusia Counties and only the wastes allowed by the operation permit are disposed of within the TFRL Class I landfill. These include residential, commercial, industrial, and agricultural wastes.

The North Cell – Phase II, Area 3 (12.2 acres footprint) is currently being constructed in accordance with the construction permit SC64-0078767-022. A figure showing footprint of Phase II, Area 3 is provided as Figure 1 under Appendix B. This minor permit modification application has been prepared to incorporate Phase II, Area 3 into the existing operations permit for the Tomoka Farms Road Landfill – North Cell. This minor permit modification has been prepared in according to the requirements of Chapter 62-701 (900).

SECTION C

PROHIBITIONS

Volusia County does not seek any exemptions to the prohibitions of 62-701.300. The Tomoka Farms Road Landfill Facility currently has permit approvals from local, state and federal regulatory agencies. Volusia County does not permit burning on the site without written permission from the Division of forestry and other regulatory agencies. The County has an extensive screening program and uses trained spotters and operators at the working face to examine the waste for prohibited materials. No "special wastes", tires, white goods, yard trash, batteries, oils, friable asbestos etc. is received at the Class I landfill. Containers containing liquids or larger than household size, if located in the waste, are separated, examined and removed from the disposal area.

Please note that requirements of this section remain same as addressed in the Operation Permit Modification (dated April 3, 2002) and Operations Permit Renewal Application for North Cell (dated June 25, 2007). This minor permit modification application does not propose any changes to “Prohibitions” requirements and therefore this section is marked as “no substantial change” on the FDEP Form 62-701.900(1).

SECTION D

GENERAL PERMIT REQUIREMENTS

Four (4) copies of the completed application form and supporting data along with transmittal letter and minor permit modification application fee ($250) have been submitted herewith. Moreover, appropriate professional certifications are provided on all applicable submittals herewith.

The other requirements of this section remain the same as addressed in the Operation Permit Modification (dated April 3, 2002), Operations Permit Renewal Application for North Cell (dated June 25, 2007) and Operation Permit Renewal for Class III Landfill (dated June 30, 2014). This minor permit modification application does not propose any changes to these requirements and therefore Sections D.6 onwards are marked as “no substantial change” on the FDEP Form 62-701.900(1).

SECTION E

LANDFILL PERMIT REQUIREMENTS

Please refer to the 2007 Class I Operations Permit Renewal Application and 2014 Class III Operations Permit Renewal Application, both referenced in Part A. This minor permit modification does not propose any changes to requirements of this Section; therefore, this section is marked as “no substantial change” on the FDEP Form 62-701.900(1).

SECTION F

GENERAL CRITERIA FOR LANDFILLS

Please refer to the 2007 Class I Operations Permit Renewal Application and 2014 Class III Operations Permit Renewal Application, both referenced in Part A. This minor permit modification does not propose any changes to requirements of this Section; therefore, this section is marked as “no substantial change” on the FDEP Form 62-701.900(1).

SECTION G

LANDFILL CONSTRUCTION REQUIREMENTS

The requirements of this section were addressed in 2007 and 2012 Construction Permit Renewal Application, both referenced in Part A. This minor permit modification does not propose any changes to requirements of this Section. Moreover, this minor permit modification is intended to include Phase II, Area 3 into Class I Operations Permit for the facility and does not propose any construction. Therefore, this section is marked as “not applicable” on the FDEP Form 62-701.900(1).

SECTION H

HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS

The requirements of this section were addressed in the Operation Permit Modification (dated April 3, 2002), Operations Permit Renewal Application for North Cell (dated June 25, 2007) and Operation Permit Renewal for Class III Landfill (dated June 30, 2014), all three referenced in Part A. This minor permit modification does not propose any changes to requirements of this Section; therefore, this section is marked as "no substantial change" on the FDEP Form 62-701.900(1).

SECTION I

GEOTECHNICAL INVESTIGATION REQUIREMENTS

The requirements of this section were addressed in the Operation Permit Modification (dated April 3, 2002), Operations Permit Renewal Application for North Cell (dated June 25, 2007) and Operation Permit Renewal for Class III Landfill (dated June 30, 2014), all three referenced in Part A. This minor permit modification does not propose any changes to requirements of this Section; therefore, this section is marked as "no substantial change" on the FDEP Form 62-701.900(1).

SECTION J

VERTICAL EXPANSION REQUIREMENTS

Part J of the permit application does not apply to this minor permit modification application and is designated as “Not Applicable” on the application form.

SECTION K

LANDFILL OPERATION REQUIREMENTS

The requirements of this section were addressed in the Operations Permit Renewal Application for North Cell (dated June 25, 2007) and Operation Permit Renewal for Class III Landfill (dated June 30, 2014), both referenced in Part A. This minor permit modification does not propose any changes to requirements of this Section; therefore, this section is marked as "no substantial change" on the FDEP Form 62-701.900(1). FDEP approved Operations Plan (dated April 2014) for the facility is included as Appendix A of this minor permit modification application for reference purposes only.

SECTION L

WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS

The requirements of this section were addressed in the Operations Permit Renewal Application for North Cell (dated June 25, 2007) and Operation Permit Renewal for Class III Landfill (dated June 30, 2014), both referenced in Part A. This minor permit modification does not propose any changes to requirements of this Section; therefore, this section is marked as "no substantial change" on the FDEP Form 62-701.900(1).

SECTION M

SPECIAL WASTE HANDLING REQUIREMENTS

Part M of the permit application does not apply to this minor permit modification application and is marked as “Not Applicable” on FDEP Form 62-701.900(1).

SECTION N

GAS MANAGEMENT SYSTEM REQUIREMENTS

The requirements of this section were addressed in the Operations Permit Renewal Application for North Cell (dated June 25, 2007) and Operation Permit Renewal for Class III Landfill (dated June 30, 2014), both referenced in Part A. This minor permit modification does not propose any changes to requirements of this Section; therefore, this section is marked as "no substantial change" on the FDEP Form 62-701.900(1).

SECTION O

LANDFILL FINAL CLOSURE REQUIREMENTS

The requirements of this section were addressed in the 2007 Intermediate Permit Modification and 2011 Closure Permit Renewal Application, both referenced in Part A. This minor permit modification does not propose any changes to requirements of this Section; therefore, this section is marked as “no substantial change” on the FDEP Form 62-701.900(1).

SECTION P

OTHER CLOSURE PROCEDURES

Part P of the permit application does not apply to this minor permit modification application and is marked as “Not Applicable” on FDEP Form 62-701.900(1).

SECTION Q

LONG TERM CARE REQUIREMENTS

The requirements of this section were addressed in the 2007 Intermediate Permit Modification and 2011 Closure Permit Renewal Application, both referenced in Part A. This minor permit modification does not propose any changes to requirements of this Section; therefore, this section is marked as “no substantial change” on the FDEP Form 62-701.900(1).

SECTION R

FINANCIAL RESPONSIBILITY REQUIREMENTS

R.1 ESTIMATED COSTS

Financial Assurance Cost Estimate (FACE) report detailing cost estimates of closure and long-term care costs is provided in the Appendix B. Cost estimates are provided on FDEP Form 62-701.900(28). Please note that the Phase 2, Area 4 expansion area has not yet been constructed and therefore, this area is not included in the closure and long-term care cost estimates.

R.2 ANNUAL COST ADJUSTMENTS

Volusia County will provide the FDEP with annual cost adjustments of the closure and long-term care, in accordance with Rule 62-701.630(4), FAC. The County will either use the FDEP issued inflation factor or recalculate the estimates in the event of changes to the closure or long term care plan.

R.3 FUNDING MECHANISMS

The County has established an escrow account to provide funding for closure and long-term care.

Attachment A

FDEP Approved Operations Plan
(dated April 2014)

OPERATION PLAN
TOMOKA FARMS ROAD LANDFILL
VOLUSIA COUNTY, FLORIDA

Prepared for:

Volusia County Solid Waste Division
3151 East New York Avenue
DeLand, Florida 32724

Updated April 2014

Prepared by:

Neel-Schaffer, Inc.
2301 Lucien Way, Suite 300
Maitland, Florida 32751

TABLE OF CONTENTS

SECTION 1
EXECUTIVE SUMMARY

The purpose of this document is to provide a consolidated manual of operating procedures for the Tomoka Farms Road Landfill Class I and Class III disposal cells. This document is intended to fulfill the requirement for an Operation Plan as listed in F.A.C. 62-701.500(2). This operations plan supersedes previous operations plans submitted to FDEP for this facility.

This plan has been prepared in accordance with Florida Rule 62-701, Florida Administrative Code (F.A.C.). Part L of FDEP's permit application form for solid waste management facilities (Part L) includes requirements for an operations plan. All information identified in Part L is provided herein, or in referenced documents. This operations plan is organized in accordance with Part L. In addition, Table 1-1 cross-references this document with the requirements of Part L.

Except where specific procedures are required by F.A.C. 62-701, this plan is intended to represent the best management practices and working goals of the Tomoka Farms Road Landfill.

Table 1-1
Cross Reference of FDEP Permit Application
(Part L Requirements)

PART L- LANDFILL OPERATION REQUIREMENTS (RULE 62-701.500, F.A.C.)	Corresponding Section of Operation Plan
1. Provide documentation that landfill will have at least one trained operator during operation and at least one trained spotter at each working face; (62-701.500(1), F.A.C.)	Section 2.1.1
2. Provide a landfill operation plan including procedures for: (62-701.500(2), F.A.C.)	
a. Designating responsible operating and maintenance personnel;	Section 2.2
b. Contingency operations for emergencies;	Section 2.3
c. Controlling types of waste received at the landfill;	Section 2.4
d. Weighing incoming waste;	Section 2.5
e. Vehicle traffic control and unloading;	Section 2.6
f. Method and sequence of filling waste;	Section 2.7
g. Waste compaction and application of cover;	Section 2.8
h. Operations of gas, leachate, and stormwater controls;	Section 2.9
i. Water quality monitoring;	Section 2.10
j. Maintaining and cleaning the leachate collection system.	Section 2.11
3. Provide a description of the landfill operation record to be used at the landfill; details as to location of	Section 3

	where various operational records will be kept (i.e. FDEP permit, engineering drawings, water quality records, etc.); (62-701.500(3), F.A.C.)	
4.	Describe the waste records that will be compiled monthly and provided to the Department quarterly; (62-701.500(4), F.A.C.)	Section 4
5.	Describe methods of access control; (62-701.500(5), F.A.C.)	Section 5
6.	Describe load checking program to be implemented at the landfill to discourage disposal of unauthorized wastes at the landfill; (62-701.500(6), F.A.C.)	Section 6
7.	Describe procedures for spreading and compacting waste at the landfill that include: (62-701.500(7), F.A.C.)	
	a. Waste layer thickness and compaction;	Section 7.1
	b. Special considerations for first layer of waste placed above liner and leachate collection system;	Section 7.2
	c. Slopes of cell working face and side grades above land surface, planned lift depths during operation;	Section 7.3
	d. Maximum width of working face;	Section 7.4
	e. Description of type of initial cover to be used at the facility that controls:	
	(1) Disease vector breeding/animal attraction	Section 7.5
	(2) Fires	Section 7.5
	(3) Odors	Section 7.5
	(4) Blowing litter	Section 7.5
	(5) Moisture infiltration	Section 7.5
	f. Procedures for applying initial cover including minimum cover frequencies;	Section 7.5
	g. Procedures for applying intermediate cover;	Section 7.6
	h. Time frames for applying final cover;	Section 7.7
	i. Procedures for controlling scavenging and salvaging;	Section 7.8
	j. Description of litter policing methods;	Section 7.9
	k. Erosion control procedures.	Section 7.10

8. Describe operational procedures for leachate management including: (62-701.500(8), F.A.C.)	
a. Leachate level monitoring, sampling, analysis and data results submitted to the Department;	Section 8.1
b. Operation and maintenance of leachate collection and removal system, and treatment as required;	Section 8.2
c. Procedures for managing leachate if it becomes regulated as a hazardous waste;	Section 8.3
d. Agreements for off-site discharge and treatment of leachate;	Section 8.4
e. Provisions for on-site leachate treatment;	Section 8.5
f. Contingency plan for managing leachate during emergencies or equipment problems;	Section 8.6
g. Procedures for recording quantities of leachate generated in gal/day and including this in the operating record;	Section 8.7
h. Procedures for comparing precipitation experienced at the landfill with leachate generation rates and including this information in the operating record;	Section 8.8
i. Procedures for water pressure cleaning or video inspection of leachate collection systems.	Section 8.9
j. Controlling Leachate Seeps	Section 8.10
9. Describe how the landfill receiving degradable wastes shall implement a gas management system meeting the requirements of rule 62-701.530, F.A.C.; (62-701.500(9), F.A.C.)	Section 9
10. Describe procedures for operating and maintaining the landfill stormwater management system to comply with the requirements of Rule 62-710.400(9); (62-701.500(10), F.A.C.)	Section 10
11. Equipment and operation feature requirements; (62-701.500(11), F.A.C.)	
a. Sufficient equipment for excavating, spreading, compacting and covering waste;	Section 11.1
b. Reserve equipment or arrangements to obtain additional equipment within 24 hours of breakdown;	Section 11.2
c. Communications equipment;	Section 11.3

d. Dust control methods;	Section 11.4
e. Fire protection capabilities and procedures for notifying local fire department authorities in emergencies;	Section 11.5
f. litter control devices;	Section 11.6
g. Signs indicating operating authority, traffic flow, hours of operation, disposal restrictions.	Section 11.7
12. Roads; (62-701.500(12), F.A.C.)	
a. Provide a description of all-weather access road;	Section 12.1
b. Provide a description of inside perimeter road and other roads necessary for access which shall be provided at the landfill.	Section 12.2
13. Additional record keeping and reporting requirements: (62-701.500(13), F.A.C.)	
a. Records used for developing permit applications and supplemental information maintained for the design period of the landfill;	Section 13.1
b. Monitoring information, calibration and maintenance records, copies of reports required by permit maintained for at least 10 years;	Section 13.2
c. Maintain annual estimates of remaining life of constructed landfills and or other permitted areas not yet constructed and submit this estimate annually to the Department;	Section 13.3
d. Procedures for archiving and retrieving records which are more than five years old.	Section 13.4
14. Closed cell inspections	Section 14

1.1 CURRENT OPERATING CONDITIONS

The Tomoka Farms Road Landfill is owned and operated by the Volusia County Solid Waste Division and is located approximately three miles south of US 92 on Tomoka Farms Road in Section 9, Township 16 South, Range 32 East. The landfill is open for waste acceptance Monday through Saturday from 7:00 a.m. until 5:30 p.m. Vehicles access the Tomoka Farms Road Landfill via Tomoka Farms Road. With proposed expansions the landfill is expected to be able to provide disposal of Class I and Class III materials until approximately 2020. A site plan of the Tomoka Farms Road landfill is included as Figure 1-1.

Waste hauling vehicles arriving at the Tomoka Farms Road Landfill travel west along the entrance road to the scale house where loads are weighed. The scale house attendant directs vehicles to the Class I or Class III active areas, or to the Special Waste area where the wastes are unloaded. Any unacceptable waste identified prior to acceptance by the landfill will remain the responsibility of the waste hauler. The various disposal areas will be clearly identified by signs at the locations within the landfill. The landfill does not operate a separated active face for the general public (private vehicles).

Class I waste is directed to the Class I working face where it is spread over the working face area of the landfill, placed in two-foot layers, compacted by a compactor, and covered at the end of the working day. Initial cover is applied at the end of each workday. A 12-inch thick intermediate cover, in addition to the initial cover, is placed on areas where no additional waste will be placed within 180 days. This intermediate cover may be removed before placing additional waste. The final cover system is installed as areas reach the final permitted elevation.

Class III waste is directed to the Class III working face where it is spread in two to five-foot lifts. Class III waste is covered with an initial cover weekly. A 12-inch thick intermediate cover, in addition to the initial cover, is placed on areas where no additional waste will be placed within 180 days. This intermediate cover may be removed before placing additional waste. The final cover system is installed as areas reach the final permitted elevation.

Leachate generated from the Class I landfill is conveyed to the landfill's leachate system. Leachate management at the Tomoka Farms Road Landfill is accomplished by the onsite leachate treatment facility Treated effluent will be delivered to a dedicated spray field, or used for dust control and/ irrigation.

Stormwater run-off is directed away from open areas on the active face of the landfill by means of ditches and swales around the landfill. The swales outside the disposal area divert stormwater into the perimeter ditches that are located outside the lined berms and, therefore, isolated from the leachate and solid waste. Within the landfill disposal area, stormwater run-off that has not contacted waste or mixed with leachate is conveyed to the stormwater management system. Stormwater run-off which contacts waste or mixes with leachate is treated as leachate.

SECTION 2
LANDFILL OPERATIONS AND MAINTENANCE
(RULE 62-701.500(2), F.A.C.)

2.1 TRAINING AND CERTIFICATION OF OPERATORS AND SPOTTERS (RULE 62-701.500(1), F.A.C.)

2.1.1 TRAINING PROGRAM

Volusia County Solid Waste Division trains employees who are landfill operators and spotters by requiring them to attend a pre-paid training course conducted by the University of Florida TREEO Center who are certified by the State of Florida to be a qualified third party continuing education institution.

Operators at the Tomoka Farms Road Landfill participate in at least twenty-four (24) hours of initial training. Every three (3) years landfill operators participate in continuing education courses totaling sixteen (16) hours. Operator training will consist of courses conducted by the University of Florida TREEO Center. In accordance with Rule 62-701.500(1), F.A.C., at least one trained operator will be on duty at the Tomoka Farms Road landfill whenever waste is received at the facility. The Operators who attend the continuing education courses at the TREEO or other approved providers receive a Certificate of Completion.

At least one trained spotter will be present at each working face whenever waste is being processed for disposal. Spotters participate in eight (8) hours of initial training that include spotting at Construction and Demolition Sites, Landfills, and transfer Stations and/or Waste Screening and Identification for Landfill Operators and Spotters conducted by the University of Florida TREEO Center. Every three (3) years, spotters participate in continuing education courses totaling four hours. The spotters who attend the training courses at TREEO or other approved providers receive a Certificate of Completion.

The County uses equipment operators/spotters, trained in accordance with F.A.C. 62-701.320(15), to perform spotter duties at the active disposal area to visually screen incoming waste.

2.1.2 TRAINING ADMINISTRATION

The County's Training Coordinator has been designated as the person in charge of administrating the training program to ensure the operators and spotters are registered for the training courses and obtaining their certifications and renewals prior to expiration.

It is acknowledged that all training courses for the County Operators and Spotters, whether public or in-house, shall be approved by the Department in accordance with Section 403.716, F.S., and that a third party must administer any examination required by this sub-section for an in-house operator-training program.

It is acknowledged that any other in-house operator-training program must be administered by a trained operator, and that the Training Plan, along with records documenting how the Training Plan is being implemented, shall be kept at the Facility at all times and be made available for inspection by Department staff.

2.1.3 CERTIFIED OPERATORS AND SPOTTERS

The Solid Waste Division maintains a list of current landfill personnel and their training and certification for landfill operations and spotters. The list is continuously updated by the Training Coordinator. Please refer to the current Training/Certification list in Appendix B of this Operations and Contingency Plan.

2.2 DESIGNATION OF PERSONS RESPONSIBLE FOR OPERATION AND MAINTENANCE (RULE 62-701.500(2) (A), F.A.C.)

The persons directly responsible for major components of the landfill follow:

Component	Responsible Party
Overall County Solid Waste Operations Responsibility	Solid Waste Division Director
Landfill Operations and Maintenance	Operations Manager
Permitting Requirements	Environmental Specialist (ESIII)
Water Quality and Leachate Testing	Environmental Specialist (ESIII)

The Operations Manager has overall responsibility for the operation and maintenance of the solid waste receiving, processing, and disposal activities at the landfill. The landfill Operations Manager is responsible for the day-to-day implementation of the operations plan and, along with the Solid Waste Division Director, responsible for environmentally safe operations in accordance with the state and federal regulations. The Environmental Specialist III is responsible for compliance with permit conditions and reporting requirements.

2.3 CONTINGENCY OPERATIONS FOR EMERGENCIES (RULE 62-701.500(2) (B), F.A.C.)

Emergencies that result in disruption of normal operations at the Tomoka Farms Road Landfill for more than 24 hours and that would result in the landfill being unable to comply with its permit must be reported to FDEP-Central District Office at (407) 897-4100. The contingency plan for the facility addresses the following four potential emergencies:

- Equipment failure
- Unusual operating conditions resulting from poor weather conditions
- Accidents
- Fire
- Unavailable landfill capacity

2.3.1 EMERGENCY ASSISTANCE

Emergency telephone numbers are listed below. This table will be updated as needed and an up-to-date version will be posted at the landfill operations office.

Table 2-1
EMERGENCY TELEPHONE NUMBERS

Organization	Phone Number
Tomoka Farms Road Landfill On-site Phone:	(386) 947-2952
Primary Emergency Response:	911
Fire Department (County):	(386) 254-4657
Hospital: Halifax Medical Center 303 N. Clyde Morris Blvd. Daytona Beach, FL 32174	(386) 254-4000 (switchboard) (386) 254-4100 (emergency line)
Ambulance: EVAC Ambulance Service	(386) 252-4911
EQ Florida Inc.	(813) 623-5302
Sheriff:	(386) 248-1777
Solid Waste Operations Manager: Cell: Junos Reed Home: Office:	(386) 527-6333 (386)736-2885 (386) 947-2952
Environmental Specialist: Cell: Home: Jennifer Stirk Office:	(386) 527-6336 (386) 960-6670 (386) 947-2952
Solid Waste Services Director: Cell: Leonard Marion Home: Office:	(386) 527-6332 (386) 624-7959 (386) 943-7889
Florida Department of Environmental Protection Main Reception: Solid Waste Section:	 (407) 897-4100 (407) 897-4300
Poison Control Assistance	(800) 222-1222
State Warning Point	(800) 320-0519

2.3.2 EQUIPMENT FAILURE

In the event of equipment failure at the Tomoka Farms Road Landfill, sufficient backup equipment is available at the landfill site for equipment breakdowns and downtime associated with normal routine equipment maintenance. In the case of major equipment failure, the following procedures will be followed:

- Arrangements with other County departments and/or contractors will be made to furnish equipment on a short-term basis.
- Applicable site operations will cease until equipment capacity is restored.
- Contact rental equipment dealers to furnish equipment on short-term notice.

In the event of equipment failure, the Landfill Supervisor will be notified. Within 24 hours of notification of the Landfill Supervisor, the equipment will be replaced with back-up capability if necessary, or repaired and placed back in operating condition.

Equipment that could require the use of backup or rental equipment for continued, normal operation of the Tomoka Farms Road Landfill may include:

- Landfill Compactor
- Dozer
- Off-Road Dump Truck
- Back-hoe
- Water Truck

All equipment maintenance will either be performed by Volusia County or will be contracted by Volusia County to a maintenance contractor.

2.3.3 POOR WEATHER CONDITIONS

Unusual operating conditions could result from excessive rainfall and electrical storms. The type and volume of materials to be disposed of after a hurricane or excessive storms differ from normal landfill operations. During extremely high wind conditions or electrical storms, disposal operations will be temporarily suspended to protect the workers. Disposal operations will be suspended immediately before and during a hurricane or tornado.

During rainy weather, access to the working face along on-site roads must be maintained. It may be necessary to grade out ruts more frequently than during normal operations, or it may be necessary to apply additional material to the on-site access roads to counteract the effects of rain.

2.3.4 NATURAL DISASTERS

In the event of a natural disaster, such as a hurricane, the Tomoka Farms Road Landfill will continue normal operations extreme weather limits safe operations. Normal operations will resume after threatening weather conditions subside.

2.3.5 PROCEDURES PRIOR TO STORM

Prior to the arrival of a severe storm or hurricane, operations at the Tomoka Farms Road Landfill will continue for as long as the Division Director or Operations Supervisor determines that operations can be safely conducted. Beginning 24 – 48 hours prior to the storms arrival, the following will occur:

- Materials and debris that could pose an airborne hazard will be moved to an inside location or secured to the ground.
- Leachate holding ponds, tankage within the leachate treatment facility and the gas system will be inspected to ensure that adequate storage capacity is available. If necessary, leachate will be transported for off-site disposal or recirculated into the active Class I cell to provide adequate capacity.
- A stockpile of soil for use as initial cover will be established in case of sudden shut down.

2.3.6 LANDFILL SHUT-DOWN PROCEDURES

The following steps will be taken once it is determined that safe landfill operations can no longer continue:

- Notify on-site personnel and Solid Waste Division employees.
- Scale house attendants will begin notifying haulers as soon as the decision has been made to shut-down the landfill.
- Apply initial soil cover to active face. Alternate daily covers such as tarps or other materials that could be damaged or removed by high winds should not be used.
- Ensure that all personnel have exited the landfill prior to closing, and secure the facility.

2.3.7 PROCEDURES DURING SEVERE STORMS OR HURRICANES

If it has been determined that operations cannot safety continue due to a severe storm or hurricane, the Tomoka Farms Road Landfill will be closed and unattended. No operations will take place during the storm.

2.3.8 LANDFILL START-UP PROCEDURES

Following a severe storm or hurricane, the landfill will re-open when the Division Director determines that safe operations can resume. Prior to resuming operations, the following will occur:

- Inspect the landfill for unsafe conditions and remediate as necessary.
- Inspect leachate and gas systems for damage.
- Ensure safe, adequate access to the working face(s).
- If electrical power service is interrupted, utilize generators or other sources of back-up power, as needed, for normal operations.
- If scales are not operational, the volume of incoming waste will be estimated and repairs to the scale system will be initiated.

2.3.9 MANAGEMENT OF EXCESS LEACHATE

Severe storms or hurricanes are likely to result in leachate generation rates above those observed during normal weather conditions. Following a severe storm or hurricane, the leachate levels in the storage ponds (and tankage within the leachate treatment system, will be observed to ensure that the ponds do not overflow. Onsite leachate storage is the first option for managing excessive leachate generation. However, in the unlikely event that leachate must be transported off-site for disposal and no disposal facility is available due to the storm, temporary storage tanks may be used until disposal capacity is available.

2.3.10 ACCIDENTS

The following emergency or equipment procedures will be followed for the various types of accidents that may occur at the facility.

2.3.11 VEHICULAR ACCIDENTS

- Determine if personal injury has occurred. If so, contact the Landfill Supervisor.
- Determine if the vehicle(s) can be safely moved under its own power. If so, move the vehicle(s) out of the way of normal traffic flow.
- If the vehicle(s) cannot move under its own power and is interrupting traffic flow, push the vehicle(s) out of the way with site equipment or reroute traffic if serious injuries are involved.
- Notify landfill and personnel officials of the details of the accident.
- Arrange to have disabled vehicles towed from the site to maintain operations.
- Report incident to the County Risk Management Officer and other appropriate personnel.

2.3.12 PERSONAL INJURY

- Determine the nature and extent of the injuries.
- If qualified, administer emergency first aid techniques.
- Call for outside emergency assistance if necessary.
- Report incident to the Landfill Supervisor and personnel officials.
- If injuries require non-emergency medical attention, arrange to transport victim(s) to a place of professional medical care (e.g., hospital emergency room, doctor's office, and clinic) by conventional means in accordance with County Safety Procedures.
- Report incident to the County Risk Management Officer and other appropriate personnel.

2.3.13 FIRE

Waste loads that arrive at the landfill on fire will not be deposited at the working face. They will be deposited away from the working face on an area that has previously been covered with daily soil cover. The load will then be extinguished prior to being moved to the working face.

Small fires on the landfill working face will be extinguished with fire extinguishers when possible without endangering human health. If a fire at the landfill working face cannot be extinguished by fire extinguishers or the water wagon, on-site equipment will be used to spread soil over the fire thus decreasing oxygen supply to the fire.

If necessary, a temporary waste unloading area may be located as far away from the fire as possible but still within the limits of the lined disposal area where daily soil cover has previously been placed. Solid waste entering the facility will be placed in the temporary area until the fire is extinguished.

When a landfill fire is observed, the Site Supervisor will be notified immediately and shall determine if the fire can be extinguished using on-site equipment and materials or if the local

fire department must be contacted for assistance. If on-site equipment and materials are not sufficient to extinguish the fire, the local fire department will be contacted by calling 911.

The first consideration when dealing with a fire is human safety. If the Site Supervisor determines that a fire cannot be safely controlled while awaiting assistance, the immediate area will be evacuated. Depending on weather and other conditions, areas where the fire may potentially spread may also be evacuated.

For any fire at the landfill, a written report will be submitted to the FDEP Central District Office within five (5) days of the fire explaining the cause of the fire, remedial actions taken, and measures taken to prevent recurrence. If the fire is of such size and/or intensity that smoke can be seen from outside the landfill, the County will make every effort to notify the Department, by phone or e-mail, within 24 hours of the fire.

2.3.14 UNAVAILABLE LANDFILL CAPACITY

It is unlikely, based on the permitted capacity of the Class I and Class III landfills, that disposal capacity would become unavailable. However, if disposal capacity is temporarily unavailable, waste will not be accepted into the landfill for disposal. Signs will be posted notifying waste haulers that the landfill is closed, identifying alternate disposal facilities, and listing a projected reopening date.

2.4 CONTROL/INSPECTION OF INCOMING WASTE (RULE 62-701.500(2) (C), F.A.C.)

All solid waste arriving at the landfill is routed through the scalehouse. Scalehouse attendants screen visible loads for unacceptable materials including regulated hazardous waste, and regulated medical waste. Scalehouse attendants at the Tomoka Farms Road Landfill typically receive spotter training in accordance with F.A.C. 62-701.320. (15)(c). From the scalehouse, vehicles are directed to either the Class I disposal, the Class III disposal area, or to the Special Waste area. The various areas will be clearly identified by signs within the landfill. If prohibited wastes are discovered, the spotter will direct the vehicle back to the scale house. If the unacceptable waste has not yet been unloaded, the person responsible for shipping the waste will be notified. If the waste has been deposited, the area of the waste load should be blocked from public access until the generator or hauler of the waste cleans up the waste. If the generator or hauler of the waste cannot be identified or is unable to remove the waste, Volusia County will be responsible for cleanup, transportation, and disposal of the waste at an appropriate waste management facility.

CCA TREATED WOOD MANAGEMENT PLAN

The Tomoka Farms Road Landfill does not accept CCA treated wood for disposal in the Class III landfill. However, if, during the inspection process, CCA treated wood is found the working face of the Class III landfill, the spotter will separate it into piles and haul it to the Class I landfill working face for disposal weekly on a first-in, first-out basis.

2.5 WEIGHING OF INCOMING WASTES (RULE 62-701.500(2) (D), F.A.C.)

Weighing of incoming wastes will be performed at the scalehouse. Each customer receives a receipt showing the type of refuse, amount, and fee. These receipts are utilized for financial

accountability and to complete the necessary daily, weekly, monthly, and annual activities/materials reports required by the Florida Department of Environmental Protection (FDEP) and Volusia County.

2.6 VEHICLE TRAFFIC CONTROL AND UNLOADING (RULE 62-701.500(2)(E), F.A.C.)

All waste hauling vehicles entering the landfill must proceed to the scalehouse. Vehicles are directed to the appropriate unloading areas by the scale house attendant and assisted by signage around the landfill. The attendant will direct the vehicle to the point of unloading area compatible with the waste. Additional traffic directions will be provided, when needed, by equipment operators or spotters.

2.7 METHOD AND SEQUENCING OF FILLING WASTES (RULE 62-701.500(2)(F), F.A.C.)

The Tomoka Farms Road Landfill will be operated using the area fill method. Waste delivered to landfill will be directed to the working face area of either the Class I or Class III landfill for unloading.

Class I waste will be spread in layers approximately 2-feet in thickness and compacted. Following this method, waste will be placed in 10-foot lifts across the site. Initial cover is applied at the end of each workday. Sequencing diagrams for the Class I landfill are included as Figure 2-1, 2-2, and 2-3.

Class III waste will be spread in layers approximately 2- to 5-feet thick and compacted. Following this method, waste will be placed in 20-foot lifts across the site. An initial cover is applied weekly. The Class III landfill will be systematically filled to the elevations shown in the final grading plan.

2.8 WASTE COMPACTION AND APPLICATION OF COVER (RULE 62-701.50(2)(G), F.A.C.)

2.8.1 METHOD OF FILLING WASTES/COMPACTION

The procedure for filling and compacting of the initial waste lifts over areas of exposed liner in the Class I landfill will be as follows:

- To protect the integrity of the leachate collection system and liner, driving vehicles directly over the liner will be prohibited.
- The liner will be covered with a minimum of two (2) feet of protective soil at least one week prior to the placement of waste.
- The protective soil layer is carefully placed on the liner using a low ground pressure tracked dozer approximately 1 week prior to the placement of waste. The equipment operator is directed by a spotter to ensure that the soil is placed correctly and that the equipment does not come in contact with the liner. The 2-foot minimum in-place thickness of the protective soil layer is verified by the landfill operator.

- The landfill spotter directs equipment away from the side slope liner during normal operations.
- The initial lift of waste will be 4 feet thick and selected for material that will not cause damage to the liner. The initial lift of waste will be spread with equipment that will preserve the integrity of the liner system.

The procedures for filling and compacting solid waste will be as follows:

- Waste will be placed in accordance with the FDEP- approved Fill Sequence Plan.
- Waste will be placed against the working face of the previous day's waste, so that the first row will act as a means of access and a berm to guide the placement of waste material for the remaining rows.
- Class I waste will be spread and completed in 2-foot lifts and compacted to approximately 1 foot in thickness by a minimum of five passes using a landfill compactor.
- Class III waste will be spread and completed in 2 to 5-foot lifts and compacted by a minimum of five passes using a landfill compactor or dozer.

2.8.2 INITIAL AND INTERMEDIATE COVER

Cover material will be utilized to minimize vector breeding, animal attraction, and fire potential, as well as to prevent blowing litter and control odors. Initial cover will be composed of a 50/50 mixture by volume of mulch and soil from the on-site stockpile, or mulch and soil amended with glass cullet not exceeding 10% glass cullet by volume, or synthetic materials such as tarps and geomembrane. Initial cover will be compacted to a minimum thickness of 6 inches or equivalent. The intermediate cover will comprise of local soil which will be placed and compacted to a minimum thickness of 12 inches.

2.8.3 FINAL COVER

The final cover system for the Class I landfill will be designed in accordance with Rule 62-701.600(5), F.A.C. The final cover will be placed on the intermediate cover as phases of the facility are closed. The conceptual final cover system for landfill closure, from top to bottom includes the following:

- 6-inch layer of topsoil material with surface vegetation
- 18-inch soil layer
- Composite drainage net layer (geosynthetic filter fabric with drainage net)
- 40-mil textured geomembrane

2.9 OPERATION OF GAS, LEACHATE, AND STORMWATER CONTROLS (RULE 62-701.500(2) (H), F.A.C.)

2.9.1 LANDFILL GAS CONTROLS

An active gas collection system is being installed in the Class I cell. Passive gas vents will be installed as part of final closure for the Class III cell. If it becomes apparent prior to or at the

time of closure that passive vents are not adequate to control odors or migration of landfill gas from the landfill, an active landfill gas control system will be installed. The operations plan will be updated as necessary to provide for operation and maintenance of the landfill gas controls.

2.9.2 LEACHATE CONTROLS

Leachate is collected by a leachate collection and transfer system. The leachate is conveyed by gravity to leachate sumps located as shown in the Tomoka Farms Road Landfill Construction Plans. Collected leachate is currently pumped from the leachate sumps in the landfill to the north leachate impoundment (pond) or to the leachate treatment facility.

The second (south) leachate storage pond is normally used for the storage of leachate treatment plant effluent, should the effluent quantities temporarily exceed the capacity of the spray fields, in conjunction with requirements for dust control and irrigation. The south leachate storage pond can be used to provide additional raw leachate storage capacity, should the quantities of leachate delivered by the leachate collection system temporarily exceed north pond storage capacity and treatment plant capacity. Please refer to Chapter 4 of the Preliminary Design Report (PDR), provided with the minor permit modification application for the leachate treatment facility submitted to FDEP in August, 2008, for a process flow diagram that details the future management of leachate flows. Additional information is also provided in Section 8.0 of this operations plan.

During normal operations, the collected leachate is pumped to the north pond for temporary storage. When the treatment plant control system determines that the treatment plant needs a batch of leachate, telemetry instructs leachate pumps at the impoundment (pond) to pump leachate from the north pond to the plant for treatment.

Leachate generation will be minimized by operating a single working face and keeping the working face as small as possible. The County's goal is to operate a working face no larger than approximately 150' by 200' under normal operating conditions. Daily and/or intermediate cover will be placed on slopes to promote stormwater runoff. The mixing of stormwater with leachate will be minimized by grading the daily and/or intermediate cover away from the working face and by using soil berms to direct stormwater runoff away. Swales and conveyance ditches will also be used to collect and transport stormwater to stormwater management facilities.

2.9.3 STORMWATER CONTROLS

Operation of the existing stormwater system is discussed in Section 10.0 of this operations plan. The stormwater system will be managed as required by Rule 62-701.500(10), F.A.C., to meet applicable standards for Rule 62-302, F.A.C., and Rule 62-330, F.A.C. The system shall minimize stormwater from entering waste filled areas and avoid the mixing of stormwater with leachate. All stormwater conveyances shall be inspected at least weekly to verify adequate performance. Conveyances not performing adequately will be repaired within three (3) working days. Documentation of all inspections and repairs will be kept on file at the landfill office.

2.10 WATER QUALITY MONITORING (RULE 62-701.500(2) (I), F.A.C.)

Groundwater, surface water, and leachate monitoring will be conducted as described in the Tomoka Farms Road Landfill Groundwater and Leachate Monitoring Plan, which is kept in the landfill office.

2.11 MAINTAINING AND CLEANING THE LEACHATE COLLECTION SYSTEM (RULE 62-701.500(2) (J), F.A.C.)

The leachate system at the landfill consists of collection, pumping, storage, and disposal facilities. A sequencing batch reactor (SBR) was placed in service in 2010 to provide on-site leachate treatment. Maintenance of the leachate pumping facilities is performed as specified in the manufacturer's manuals kept on file in the landfill office. Inspection and cleaning of the leachate collection system will be performed every 5 years.

SECTION 3
OPERATING RECORDS
(RULE 62-701.500(3), F.A.C.)

Volusia County will maintain a separate operating record for the Class I and Class III landfills. The operating record will consist of all records, reports, analytical results, and all notifications as required by Rule 62-701, F.A.C. These records are considered an integral part of the operations plan and will be kept at or near the facility. The operating records will be available for inspection at reasonable times upon request by FDEP personnel.

The Volusia County Solid Waste Division Director will be responsible for the storage and filing of all operational records. The minimum records to be kept as part of the official operating record include the following:

- Current permits and applications
- Monthly waste disposal records (volume, weight, or truckloads)
- Random load checking records
- Leachate quantities
- On-site rain gauge data
- Monthly leachate operating reports (FDEP monthly facility report)
- Leachate Treatment Facility Operations Reports (once the facility has been placed in service)
- Annual estimates of remaining capacity (permitted disposal) in cubic yards
- Regulatory agency inspection reports
- Groundwater, surface water, and leachate sampling plan, including well construction information, sampling locations, and water quality sampling results
- All official notifications to or from FDEP regarding the facility
- Training verifications/certifications
- Landfill operations plan, including all supplementary material incorporated by reference
- Gas monitoring records

SECTION 4
WASTE RECORDS
(RULE 62-701.500(4), F.A.C.)

Each month, a report of the amount of waste received, in tons, will be compiled. This report will include best estimates of the amounts of the following waste types based on type of hauler and tip fee rates:

- Household waste;
- Commercial waste;
- Ash residue;
- Incinerator by-pass waste;
- Construction and demolition debris;
- Treated biomedical waste;
- Agricultural waste;
- Industrial waste;
- Yard trash;
- Sewage sludge;
- Industrial sludge;
- Water/air treatment sludges;
- Waste tires; and
- Class III waste.

Reports are compiled monthly and submitted on an annual basis to:

FDEP-Central District Office
Solid Waste Section
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

SECTION 5
ACCESS CONTROL
(RULE 62-701.500(5), F.A.C.)

The entire Volusia County Landfill facility is fenced, and access is gate-controlled at all times. Figure 1-1 is a site plan of the entire landfill and illustrates the landfill access control facilities. The landfill may be operated for up to 24 hours per day, seven days per week.

SECTION 6
WASTE MONITORING
(RULE 62-701.500(6), F.A.C.)

6.1 WASTE INSPECTION (RULE 62-701.500(6) (A), F.A.C.)

Volusia County has implemented a load checking program to detect and discourage attempts to dispose of unauthorized wastes at the landfill. This program includes at least three (3) random checks by landfill personnel each week and inspection of suspicious loads, which are vehicles that have previously been determined to have delivered unauthorized waste, or loads that have unusual physical characteristics.

If any regulated hazardous wastes are identified during load checking, the following is a summary of the load inspection program.

1. Scalehouse personnel will direct at least three (3) vehicles per week of Class I waste and at least three (3) vehicles per week of Class III waste to a separate disposal area.
2. The driver of the vehicle will be asked the source of the waste by the inspector. The load will be completely discharged and spread uniformly by a front end loader so that all waste is visible.
3. The inspector will proceed to inspect the load for unauthorized waste. These shall include, but are not limited to the following:
    - Restricted materials.
    - Regulated hazardous waste.
    - Biomedical waste.
    - Used oil filters motor oil
    - Compressed gas cylinders.
    - PCB wastes.
    - Household hazardous waste.
    - Batteries containing heavy metals
    - Fats and Greases
    - Fluorescent lamps and ballasts
    - Liquid wastes
    - Pesticides
    - Tires
    - White goods
4. If unacceptable items or prohibited items are discovered, the vehicle operator shall be informed immediately. Landfill Facility staff must determine the safest manner to remove or mitigate the prohibited or unacceptable waste and remove it if possible. The unauthorized waste will be segregated and, if possible, returned to the hauler for proper disposal.
5. Removed items shall be taken by the delivery driver for alternate proper disposal. All incidents of unacceptable or prohibited wastes shall be documented. If discovered,

any tires, automotive batteries, oil, paints, cleaners or special wastes such as white goods should be set aside in designated areas and removed as soon as possible.

6. If any regulated hazardous waste or biomedical waste is observed, the Landfill Operations Manager will segregate the waste; notify FDEP, persons responsible for shipping the waste, and the generator of the waste. The waste shall be removed from the facility and disposed of properly.
7. Landfill personnel or haulers will relocate all special wastes such as tires and appliances to the proper disposal areas. Automotive batteries, oil, paints, cleaners or special wastes should be set aside in designated areas and removed as soon as possible but no longer than the end of the operating day. Waste oil, solvents, paints, and automotive batteries should be taken to the onsite HHW area for temporary storage. Any tires should be taken to the used tires storage roll off bin.
8. Copies of all completed inspection reports will be maintained for the life of the landfill.
9. Vehicles that have previously been determined to have delivered unauthorized waste will be considered suspicious and may be subjected to inspection at any time and in the same manner as the random inspections.
10. Spotters are positioned on the equipment rather than on the ground. When non-conforming waste is observed, the spotter contacts a day laborer via walkie-talkie for its removal. Should a day laborer not be available, the spotter contacts the Landfill Operations Manager or a supervisor via walkie-talkie to arrange for removal of the non-conforming material.

6.2 HAZARDOUS WASTES AND HANDLING PROCEDURES (RULE 62-701.500(6) (B), F.A.C.)

No regulated hazardous wastes will be accepted at the landfill for disposal. If unauthorized material is transported to the facility, the appropriate supervisory personnel will be notified immediately and appropriate actions taken to remove any unauthorized materials or wastes from the facility. Special wastes that are discovered will be removed from the landfill and placed in the appropriate processing area.

6.3 RECORDING INSPECTION RESULTS (RULE 62-701.500(6) (C), F.A.C.)

Results of the load checking inspections described in Section 6.1 of this document will be recorded in writing and retained at the landfill. This information will include date and time of inspection, name of hauling firm, name of driver of the vehicle, vehicle license plate number, source of waste as stated by the driver, and observations made by landfill personnel during the inspection. The inspector will sign the written record. A sample form used to document the inspection results is provided in Appendix A.

SECTION 7
WASTE HANDLING REQUIREMENTS
(RULE 62-701.500(7), F.A.C.)

The following description represents waste handling requirements as required by Rule 62-701.500(7), F.A.C. Volusia County will meet or exceed the requirements at all times to minimize the potential adverse impacts to employees or public health or safety.

7.1 WASTE THICKNESS AND COMPACTION FREQUENCIES (RULE 62-701.500(7) (A), F.A.C.)

Class I waste material will be spread in layers of approximately two feet in thickness and compacted to approximately one foot in thickness, or as thin as practical, by a landfill compactor before the next layer is applied.

Class III waste material will be spread in layers of approximately 2 to 5-foot in thickness and compacted as thin as practical by a landfill compactor or dozer before the next layer is applied.

7.2 FIRST LAYER OF WASTE (RULE 62-701.500(7) (B), F.A.C.)

The first lift of Class I waste placed above the liner and leachate collection system will be a minimum of four feet in compacted thickness. Waste loads in this first lift will be screened for any large, rigid objects or other materials that would damage the liner or leachate collection system.

7.3 SLOPES OF WORKING FACE (RULE 62-701.500(7) (C), F.A.C.)

The working face and side grades above land surface will be sloped at a maximum of 3 feet horizontal to 1 foot vertical rise. The lift depth will typically be a maximum of 10 feet. Lift depths may be deeper than 10 feet depending on specific operations, daily waste volumes, width of the working face, and good safety practices.

7.4 WIDTH OF WORKING FACE (RULE 62-701.500(7) (D), F.A.C.)

The working face will be wide enough to safely accommodate vehicles, unloading materials, and compacting equipment. Since the waste requires daily cover, the width of the working face will be minimized. The County's goal is to operate a working face no larger than approximately 150' by 200' under normal operating conditions.

7.5 INITIAL/DAILY COVER (RULE 62-701.500(7) (E), F.A.C.)

Initial cover to address disease vectors/animal attraction, fires, odors, blowing litter, and moisture infiltration will be placed over the Class I waste at the end of each working day. Initial cover will consist of six inches of compacted soils, mulch, residual screen material, synthetic material such as tarps and geomembranes, or other materials as approved by the FDEP, in conformance with the requirements of F.A.C. Chapter 62-701.500(7)(E).

Initial cover will be placed over the Class III waste weekly. Initial cover will consist of six inches of compacted soils or other materials as approved by the FDEP.

7.6 INTERMEDIATE COVER (RULE 62-701.500(7) (F), F.A.C.)

If additional solid waste will not be deposited in a location within 180 days of initial cover placement, a 12-inch intermediate cover will be placed within 7 days of initial cover placement.

7.7 FINAL COVER (RULE 62-701.500(7) (G), F.A.C.)

The landfill will receive final cover as portions of the facility are closed. A description of the final cover can be found in Section 2, page 2-11 of this plan.

7.8 SCAVENGING AND SALVAGING CONTROL (RULE 62-701.500(7)(H), F.A.C.)

Scavenging is strictly prohibited at the working face of the landfill. Salvageable materials such as metals, as identified by landfill personnel, will be unloaded at designated locations away from the working face for proper placement by landfill personnel at the end of each working day.

7.9 LITTER POLICING METHODS (RULE 62-701.500(7) (I), F.A.C.)

Initial cover will provide the main litter control. Perimeter fencing will provide a barrier to blowing litter. In addition, portable litter fences will be located adjacent to the working face to prevent litter from being blown away from the working area. Temporary fencing is also mobile and easily relocated around the facility as needed. Litter outside the working area of the landfill will be picked up within 24 hours of the cessation of the event. Litter policing will include the removal of litter from the perimeter ditch.

7.10 EROSION CONTROL (RULE 62-701.500(7) (J), F.A.C.)

Soil cover erosion control measures will be integrated into landfill operations to collect and transport stormwater without exposing solid waste and leachate. These measures are identified and discussed as follows:

- Intermediate soil cover configured to collect and transport stormwater
- 4”-5” of mulch soil cover and/or sod to prevent erosion
- Regular inspection of intermediate soil cover
- Benches and lined ditches to transport concentrated volumes of stormwater runoff.

7.10.1 INTERMEDIATE SOIL COVER

Temporary berms to direct stormwater away from solid waste placement and compaction activities will surround the active areas of the landfill. Inactive areas will be covered with intermediate soil cover with a minimum thickness of 1 foot. The intermediate soil cover will be sloped to promote run-off and decrease infiltration of stormwater. Stormwater runoff will be controlled by using benches placed every 40 feet in vertical height.

Intermediately covered areas subject to erosion will be seeded with grass appropriate to the

season as needed to control erosion. Yard waste, mulch, or sod may also be used to help control erosion.

7.10.2 DOWN DRAINS

Stormwater collected in the benches will be directed to the stormwater system located at the toe of the slope using downpipes, downchutes, or other conveyances.

7.10.3 INSPECTIONS

The intermediate soil cover will be regularly inspected for erosion damage. Repairs to any damage that is discovered will be initiated within 3 days to contain solid waste and leachate; and anything that cannot be repaired within 7 days will be reported to FDEP.

SECTION 8
LEACHATE MANAGEMENT
(RULE 62-701.500(8), F.A.C.)

Leachate in the Class I landfill is collected in the leachate drainage layer that slopes to collection sumps equipped with leachate pumps. Clean outs are provided to allow access for inspection and cleaning. Leachate from the pump stations is pumped directly to the treatment facility unless conditions warrant temporary storage in the designated leachate storage pond.

Leachate is pumped from the pump stations to the treatment plant or designated leachate storage pond via force mains that run around the north and west sides of the landfill.

8.1 MONITORING, SAMPLING, AND ANALYSIS OF LEACHATE (RULE 62-701.500(8) (A), F.A.C.)

Annual leachate testing, analysis and results reporting are no longer required under Chapter 62-701.500. Leachate sampling and analysis is performed by the leachate treatment plant vendor/ operator to meet requirements of the Industrial Waste Permit that regulates the operation of the treatment plant. Sampling results are used optimize the treatment plant process.

The leachate pump side-slope risers and leachate collection pipe clean out side-slope risers on the North Cell provide a mechanism for Solid Waste Division personnel to observe leachate levels through physical measurements.

8.2 OPERATION AND MAINTENANCE OF LEACHATE COLLECTION SYSTEM (RULE 62-701 .500(8) (B), F.A.C.)

The Landfill Operations Manager will be responsible for maintenance of the leachate systems, including the piping, pump stations and piping to the leachate storage ponds. The Landfill Operations Manager also oversees the operation of the leachate treatment facility and related components. The equipment manufacturers have provided operation and maintenance manuals for each of the system components. Maintenance of each component will be performed in accordance with manufacturer specifications. Maintenance documentation may also include a video of the cleaning procedures. Operation and maintenance manuals include the following:

- Description of unit and component parts, including normal operating characteristics and limiting conditions.
- Operating procedures.
- Maintenance and overhaul procedures.
- Installation instructions.
- Original manufacturer's parts list, illustrations, and detailed assembly drawings.
- Spare parts ordering instructions.
- Manufacturer's printed operating and maintenance instructions.

Flow will be monitored from the leachate pumps. Facility personnel will record leachate flows. This will allow determination of leachate production as a function of rainfall and provide information to assess the efficiency of leachate and stormwater management practices. Leachate generation/flow records will be kept at the facility as part of the official operation record.

Leachate pump station maintenance will include reading meters and making sure each pump is operational. Pumping rates and electrical draw will be confirmed semiannually. If these tests indicate significantly reduced performance, the pumps will be pulled for inspection and repair. A replacement pump will be installed while the repairs are being made.

If leachate flow volume is noticeably decreased, the leachate collection system will be inspected. Possible reasons for low or no flow are header collapse or header blockage. If pipe blockage is identified, the header pipe will be power jetted to remove sediment buildup. Power jetting or rodding will be done from either or both ends of the header.

8.3 LEACHATE HANDLING (IF REGULATED AS HAZARDOUS WASTE) (RULE 62-701 .500(8) (B), F.A.C.)

The Landfill Operations Manager is responsible for the operation of the leachate collection and removal system and for maintaining the system as designed for the life of the facility. Leachate will be collected and pumped to the on-site storage and spray evaporation ponds, and disposed of by spray evaporation or by trucking to one of several wastewater treatment plants. Once the leachate treatment facility is placed in service, leachate shall be treated on site, with effluent sent to a dedicated spray field or used for dust control and/or side slope irrigation.

8.4 OFF-SITE TREATMENT (RULE 62-701.500(8) (C), F.A.C.)

The onsite treatment plant has been in service since 2010. The north leachate storage pond is used to provide supplemental storage of raw leachate that is collected from the landfill, but temporarily exceeds the capacity of the leachate treatment plant. The south pond is dedicated to the storage of excess treated effluent, when the generation of effluent exceeds the capacity of both spray fields and the need for dust control and irrigation. When other onsite storage is full, the south impoundment can be used for emergency leachate storage.

Leachate that, due to precipitation volumes, cannot be managed through the treatment plant or stored in the impoundments will be transported off-site by county contractor to an Industrial Wastewater Facility for treatment. The Tomoka Farms Road Landfill will transport leachate for off-site disposal when less than one-foot of freeboard is available in the leachate storage pond.

8.5 ON-SITE TREATMENT (RULE 62-701.500(8) (D), F.A.C.)

Currently, leachate treatment is performed at the Tomoka Farms Road Landfill. A Sequence Batch Reactor (SBR) provides leachate treatment. The design of the SBR is based on actual leachate quality data obtained from the TFRL, and includes provisions for plant modification as necessary to respond to changing leachate quality or quantity in future years, in accordance with Rule 62-701.500(8) (d), F.A.C.

8.6 CONTINGENCY PLAN FOR MANAGING LEACHATE (RULE 62-701.500(8)(E), F.A.C.)

Temporary pumps and emergency power generators are locally available in the event of pump failure or power interruption. Alternate wastewater treatment plants are available for leachate disposal. Therefore, complete interruption of off-site disposal capability is not anticipated.

The SBR has been placed in service, Excess raw leachate will be pumped to the north storage pond should the level within the tanks exceed design levels. If the north pond is full, the south pond normally used for treated effluent storage can be pumped down, and then used for raw leachate storage. This procedure is intended to maintain sufficient storage capacity in the event of a heavy rainfall event. Leachate will be transported off-site for disposal, when less than one foot of freeboard is available in the leachate storage ponds.

Limited leachate recirculation onto open areas of the lined North Cell is allowed under extreme circumstances when the leachate treatment plant might not be able to hydraulically or biologically/chemically treat the leachate. Leachate recirculation is done by tanker truck (using a water truck), with spraying limited to the bermed working face area. Leachate application is performed on low wind days, upwind of the open area. The water truck is thoroughly rinsed inside. Tank rinse water is sprayed onto the active face.

Leachate can be stored in the south storage pond under the most extreme circumstances (major treatment plant disruption and/or offsite transport and treatment not available and/or inability to spray onto active working face due to a long period of inclement weather). Prior to pumping any leachate to the south pond, the County will notify FDEP of the need to use the south pond for leachate storage.

In order to use the south pond for leachate storage, this impoundment will be drawn down to minimum levels by pump controls that indirectly pump effluent to the spray field. Valving allows the stored effluent to be pumped to the chlorine contact and effluent holding tank for re-chlorination and pumped to either the truck fill or to the spray irrigation field pumps. This is and will remain a manual operation.

If leachate storage is to occur in the south pond, the plug valve on the effluent storage discharge line located on the Chlorine Contact Tank will be manually closed. Leachate will be manually pumped from the north pond over the berm between the ponds to the south leachate pond to fill its volume.

Under normal conditions, leachate is sent from the north pond to the treatment plant. When volume becomes available in the north pond, the south pond stored leachate would be pumped across the berm to the north pond, and withdrawn from the north pond and treated using normal operating procedures (routed to the equalization tank and the aeration tanks for normal treatment).

After the south pond has been emptied of leachate as much as practical, any remaining leachate and leachate-impacted sediment in the south pond would be carefully removed by suction, loaded, transported and placed in the North Cell landfill. The HDPE pond liner in the south pond would have to be pressure washed and cleaned with the wash water pumped over the berm to the north pond or to a water truck vehicle for transport to and evaporation over the lined open portion of North Cell Areas 1-2., and Areas 3&4 when constructed.

The south pond would then be filled with effluent and monitored for leaks. The initial load of effluent would be tested to assure that the concentrations of leachate constituents were not higher than the plant effluent concentrations. If south pond constituent concentrations were higher than treatment plant effluent, south pond water would be pumped over the berm to the north pond and processed through the treatment plant. Once the effluent in the south pond met acceptable limits for spray irrigation, effluent could then be sent to the chlorine contact tank and pumped to the spray irrigation site.

8.7 RECORDING LEACHATE QUANTITIES (RULE 62-701.500(8) (F), F.A.C.)

Quantities of leachate collected and removed for treatment and/or disposal are recorded and those records are maintained at the landfill. These quantities will be recorded in gallons per day.

8.8 RECORDING PRECIPITATION (RULE 62-701.500(8) (G), F.A.C.)

A rain gauge has been installed and is operated and maintained by Volusia County personnel to record precipitation at the disposal facility. Precipitation records will be maintained in the facility's operating record and will be compared with leachate generation rates.

8.9 INSPECTION AND CLEANING (RULE 62-101.500(8) (H), F.A.C.)

The leachate collection system for future cells will either be pressure cleaned or inspected by video recording after construction but prior to the initial placement of waste. Thereafter, existing leachate collection systems at the Tomoka Farms Road Landfill will be pressure cleaned or inspected by video as required by FDEP permit. Results of the cleanings and inspections are kept on file in the landfill office.

8.10 CONTROLLING LEACHATE SEEPS

In the event a leachate seep occurs at the landfill, Volusia County Personnel will take immediate action. The following guidelines will be followed:

- Assess the area impacted by the seep. Determine the extent of the impacted area, the origin of the seep and its potential to travel outside of waste limits.
- If the seep is slowly percolating and does not have potential to travel outside the limits of waste then the following corrective actions will be taken:
    - Excavate the seep origin and at least five feet down gradient to a minimum of 3 feet below the existing surface.
    - Fill the bottom of the excavated area with 2 feet of gravel or similar pervious material and top foot with uncontaminated soil.
    - Leachate shall not cross waste limits or edge of liner at any time nor shall it mix with stormwater runoff.
    - Inform FDEP about the seep location, extent, and corrective actions taken to control the seep.
    - This information will be recorded and kept on-site. Continue to monitor seep

location for signs of repeated outbreaks.

- If seep is seeping quickly then the following corrective actions will be taken:
  - Contain the seep within the waste limits by appropriately implementing one or a combination of the actions below:
    (a) Construct a temporary 4-foot high containment berm down gradient of the seep and within the waste limits. The temporary berm will have a maximum sideslope of 2:1 and provide a swale with a bottom width of 3 feet to allow for percolation into waste.
    (b) Construct a 2-foot deep by 2-foot wide French drain or similar structure down gradient of the seep and within the limits of waste to allow leachate to re-enter waste. The length of the structure shall be determined by the impacted area.
    (c) Excavate a pit in waste limits such that the seep is collected in the excavated pit. Pimp the collected leachate on into the landfill through a nearby cleanout.
  - Inform FDEP about the seep location, extent, and corrective actions taken to control the seep.
  - Develop and implement a long-term solution addressing the control of the seep after discussing potential solutions with FDEP.
  - This information will be recorded and kept on-site. Continue to monitor seep location for signs of repeated outbreaks.

SECTION 9
LANDFILL GAS MONITORING
(RULE 62-701 500(9), F.A.C.)

This Landfill Gas Monitoring Plan for the Tomoka Farms Road Landfill has been prepared in accordance with the provision of Rule 62-701.530, F.A.C. This plan includes measures of comprehensive monitoring of landfill gas (LFG) from the landfill.

9.1 LANDFILL GAS MONITORING PROBES

Seven locations around the active and closed landfill cells are monitored for the presence of LFG. These monitoring probes are located around the perimeter of the working area of the landfill. Each probe is monitored for the presence of combustible gas on a quarterly basis and the results are submitted to FDEP.

9.2 GAS PROBE MONITORING

The probes are monitored for concentrations of combustible gas using an instrument calibrated to methane and capable of measuring methane in percent by volume. Combustible gas concentrations will be converted to a percent of the lower explosive limit (LEL). Five percent methane by volume is equal to 100 percent LEL. The gas instrument is calibrated with calibration gas each day before monitoring is performed.

Any problems encountered during monitoring, observations, or other pertinent information that could impact the interpretation of the data are recorded. For example, if a probe is full of groundwater or suspected of being so, the comments should be noted for the monitoring round. A map depicting the locations of gas probes is provided at the end of this Section.

9.3 GAS MONITORING IN STRUCTURES

The following gas monitoring will be performed in structures at the facility:

- The insides of enclosed buildings within 500 feet of disposal areas are monitored for methane on a quarterly basis along with the perimeter probes. Monitoring is done with portable test equipment. The sampling hose of the instrument is held above the floor and inserted into any conduit spaces or cracks that could act as conduits for LFG to enter into the structure. All monitoring is reported to the FDEP.
- Currently, LFG Sampling is performed for the maintenance building, scalehouse, and the TFRLF administration building, The following structures will be added beginning in 2013:
  - GEL Recycling Center east of the North Cell,
  - the household hazardous waste facility east of the North Cell,
  - the sludge processing facility west of the South Cell, and
  - The Leachate Treatment Facility at the southwest corner of the North Cell.

- Quarterly readings at these locations are ambient air readings and do not require the installation of in-ground LFG probes.

- All monitoring points are sampled quarterly, and the results reported to the Department.

9.4 REPORTING

Landfill gas monitoring is reported quarterly to FDEP-Central District office at:

FDEP-Central District Office
Solid Waste Section
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

Any odor complaints due to landfill gas at or beyond the property boundary are recorded and maintained on site. If methane gas is measured above 25 percent LEL in the structures, Volusia County will take all necessary steps to ensure protection of human health. All exceedance will be included in the quarterly reports to FDEP. The report will also include a description of the nature and extent of the exceedance and measures implemented in response to the exceedance.

SECTION 10
STORMWATER MANAGEMENT SYSTEM AND MAINTENANCE
(RULE 62-701.500(10), F.A.C.)

The Stormwater Management System will be operated and maintained as necessary to meet the requirements of Rule 62-701.400(9), F.A.C.

10.1 STORMWATER BEST MANAGEMENT PRACTICES

The landfill will use the following stormwater best management practices (BMPs):

- Sideswales
- Grass
- Sod
- Downdrains
- Benches
- Dry retention stormwater ponds
- Pumps to transport stormwater
- Ditches

10.2 STORMWATER MAINTENANCE PROCEDURES

The stormwater management system operation and maintenance will include the following:

- All stormwater conveyance systems will be inspected periodically or after major storm events.
- Any damaged systems will be repaired.
- Accumulated sediment will be removed as necessary.
- All stormwater pumps will be serviced as specified by the pump manufacturer.

SECTION 11
EQUIPMENT AND OPERATION FEATURES
(RULE 62-701.500(11), F.A.C.)

11.1 EQUIPMENT (RULE 62-701.500(11) (A), F.A.C.)

Volusia County owns a diverse mix of equipment to spread, compact, and cover the waste in the landfill. This equipment may include:

- Landfill Compactor
- Dozer
- Off-Road Dump Truck
- Back-hoe
- Water Truck

While the actual equipment at the landfill may vary, sufficient equipment will be maintained at the site to ensure proper operation of the landfill.

Normal equipment maintenance will be performed on site. Major maintenance item repairs (e.g., engine, transmissions, and auxiliary drives) will be handled either at the maintenance facilities or at off-site service facilities.

11.2 BACKUP EQUIPMENT (RULE 62-701.500(11) (B), F.A.C.)

There is sufficient equipment available to Volusia County to maintain normal operations during equipment breakdown or during emergency operating conditions. Arrangements will be made with suppliers to obtain reserve equipment within 24 hours of equipment breakdown if sufficient equipment is not available to properly operate the landfill.

11.3 COMMUNICATION EQUIPMENT (RULE 62-701.500(11) (C), F.A.C.)

Landfill employees will be able to communicate by two-way radios, and telephones are located at the office and scale house.

11.4 DUST CONTROL (RULE 62-701.500(11) (D), F.A.C.)

Control of dust will be maintained by wetting roads as necessary.

11.5 FIRE PROTECTION AND FIRE FIGHTING CAPABILITIES (RULE 62-701.500(11) (E), F.A.C.)

The initial cover aids in fire prevention at the landfill. The main method of fire extinguishing is to apply soil to the burning waste. Ample soil is stockpiled on-site if needed for fire extinguishing purposes.

All key equipment and vehicles at the landfill will be equipped with fire extinguishers, and all personnel will be trained in their use. All extinguishers will be inspected regularly and repaired or replaced as needed. Emergency services are notified telephonically using 911.

11.6 LITTER CONTROL PROGRAM (RULE 62-701.500(11) (F), F.A.C.)

Initial cover will provide the main litter control. Perimeter fencing will provide a barrier to blowing litter. In addition, portable litter fences will be located adjacent to the working face to prevent litter from being blown. Temporary fencing is also mobile and easily relocated around the facility as needed. Litter outside the working area of the landfill will be picked up as soon as possible. Litter policing will include the removal of litter from the perimeter ditch.

11.7 SIGNS (RULE 62-701.500 (11) (G), F.A.C.)

Appropriate signs will be utilized and maintained to ensure maximum safety, efficiency, and general information. Signage will include, at a minimum, facility name and operating authority, traffic flow, hours of operation, disposal rates, and restrictions or conditions of disposal.

SECTION 12
ROADS
(RULE 62-701.500(12), F.A.C.)

12.1 ALL-WEATHER ROADS (RULE 62-701.500(12) (A), F.A.C.)

All-weather roads, passable and safe under normal operating conditions, will be maintained to prevent dust, rutting, or loss of traction. Where possible, select source separated Class III materials such as roofing and concrete will be reused as road base materials.

12.2 PERIMETER AND OTHER ON-SITE ROADS (RULE 62-701.500(12) (B), F.A.C.)

Some perimeter roads and internal roads are paved. Other on-site roads are constructed of limerock and/or stabilized soils. Limerock roads are scraped and smoothed with a road grader or dozer as necessary. When needed, roadways are wetted to control dust and to ensure high visibility. On-site roads are maintained to allow access to monitoring devices and stormwater controls, for landfill inspections, and fire-fighting.

SECTION 13
RECORDKEEPING
(RULE 62-701.500(13), F.A.C.)

13.1 PERMIT APPLICATION DOCUMENTATION (RULE 62 -701 .500(13) (A), F.A.C.)

Records of all information used to develop or support the permit applications and any supplemental information submitted to comply with Rule 62-701, F.A.C., pertaining to construction of the facility will be kept throughout the life of the facility. Records pertaining to the operation of the landfill will be kept for the life of the facility.

13.2 MONITORING INFORMATION (RULE 62-701.500(13) (B), F.A.C.)

Records of all monitoring information, including calibration and maintenance records and copies of all reports required by permit, will be retained for at least 10 years. Background water quality records will be kept for the life of the facility.

13.3 REMAINING LIFE AND CAPACITY ESTIMATE (RULE 62-701.500(13) (C), F.A.C.)

The County prepares an annual estimate of the remaining life and capacity (in cubic yards) of the existing constructed landfill and the remaining capacity and site life of other permitted areas not yet constructed. The annual estimate is based on scale house records and aerial photomapping of solid waste disposal units. The estimate is reported annually to the FDEP as part of the annual update to the closure and long-term care cost estimates.

13.4 ARCHIVED RECORDS (RULE 62-701.500(13) (D), F.A.C.)

The landfill may archive records that are more than five years old, if necessary. Archived records will be available for inspection within seven days of the receipt of the request.

SECTION 14
CLOSED CELL INSPECTIONS

Closed cells at the Tomoka Farms Road Landfill are inspected quarterly, at a minimum. These inspections will typically be performed during the landfill gas surface emissions monitoring. Inspections will include observations for cap integrity, differential settlement, ponding, erosion, and condition of the vegetation. Corrective actions will be initiated within three working days.

Appendix A

Sample Load Checking Inspection Forms

TOMOKA FARMS ROAD LANFILL FACILITY
LOAD INSPECTION REPORT

DATE: _____

TIME: _____

NAME OF HAULING COMPANY: _____

NAME OF DRIVER: _____

VEHICLE LICENSE PLATE NUMBER: _____

SOURCE OF THE WASTE: (GENERAL LOCATION) _____

OBSERVATIONS MADE BY THE INSPECTOR:

GARDEN:

[ ] HERBICIDES [ ] FERTILIZER [ ] PESTICIDES [ ] POOL CHEMICALS

HOUSEHOLD:

[ ] DRAIN CLEANERS [ ] CHLORINE [ ] FURNITURE POLISH

[ ] SPOT REMOVER [ ] WINDOW CLEANERS, ETC. [ ] HOUSEHOLD GARBAGE ONLY

AUTO:

[ ] MOTOR OIL [ ] BRAKE FLUID [ ] TRANSMISSION FLUID

[ ] ANTI FREEZE [ ] CAR BATTERIES [ ] CAR TIRES

PAINT:

[ ] ENAMEL OIL BASE [ ] LATEX WATER BASE [ ] THINNERS (OTHERS)

MEDICAL WASTE:

[ ] NEEDLES [ ] MEDICAL SUPPLIES

INSPECTOR'S COMMENTS:

_____

_____

_____

_____

INSPECTOR'S SIGNATURE

_____

Attachment B

FACE Report

Financial Assurance Responsibility
Closure and Long-term Care Cost Estimates
Tomoka Farms Road Landfill North Cell
(Excluding Phase II Area 4)
Volusia County, Florida
April 2015

Closure and long-term care cost estimates for the Tomoka Farms Road Landfill North Cell are re-calculated according to 62-701.630(3)(a), FAC to include costs for Phase II Area 3, permitted expansion area. Note that the Phase II Area 4 is still excluded from the Financial Assurance. The basis for cost estimates is the closure design and regulations contained in Chapter 62-701 of the Florida Administrative Code (FAC). The updated FDEP Form 62-701.900(28) is provided in this report as Attachment 1.

Note that the current Financial Assurance Cost Estimate (FACE) methodology inflates unit costs used in the North Cell closure and Long Term Care (LTC) recalculations included in *2013 Financial Assurance Responsibility Report* (dated August 2013). FDEP inflation factor was used to adjust the unit cost to 2014 dollars. Detailed breakup of FDEP Form 62-701.900(28) line items and associated unit costs is provided as Attachment 2.

CLOSURE COSTS

Monitoring Wells (Item 1)

Monitoring wells were installed during the construction of Phase I of the North Cell and therefore and not included as part of the closure construction estimate.

Slope and Fill (Item 2)

As a part of on-going landfill operations a 12-inch bedding layer will be installed over compacted waste once the intermediate cover grades are achieved. The associated cost of placing this layer is not included in this cost estimate.

Cover Material (Item 3)

The proposed final cover consists of a 40-mil textured LLDPE, double sided geocomposite, and 18" layer of cover soil. The geosynthetic quantities have been adjusted by 4% to account for seams, destructive testing, wastage, anchoring, toe of slope run-out, and booting. The cover soil has been increased by 5% to account for soil bulking and other losses. A slope factor of 1.054 has been accounted in the side slope area for 3:1 side-slope.

Waste Footprint = 77.85 AC
(*Refer to Attachment 3, Figures 1 and 2 for geometry and final grading plan of waste footprint*)

Total Surface Area = Side Slope Area + Top Flat Area
Side Slope Area = 3,168,835 ft^2 (obtained from AutoCAD and adjusted with 1.054 factor)
Top Flat Area = 384,661 ft^2 (obtained from AutoCAD)
Total Surface Area = 3,553,496 ft^2 = 81.58 AC

(a) Cover Soil:
Volume of Cover Soil in 18" layer= (3,553,496 ft^2 × 1.5 ft × 1.05/ 27) = 207,287 CY

(b) Synthetics:
Area of Geosynthetics = (3,553,496 ft^2 × 1.04 / 9) = 410,626 yd^2

Top Soil Cover (Item 4)

The top soil cover consists of 6" layer over the entire closure area. Top soil has been increased by 5% to account for soil bulking and other losses.

Volume of Cover Soil in 6" layer= (3,553,496 ft^2 × 0.5 ft × 1.05/ 27) = 69,096 CY

Vegetation (Item 5)

Sod will be installed on a side slopes for the entire closure area. The top surface closure area will be vegetated by Hydroseeding.

Quantity of sod required = 3,168,835 ft^2 = 352,093SY

Area of Hydroseeding required = 384,661 ft^2 = 8.83 AC

Stormwater Control System (Item 6)

No separate earthwork, grading and ditches are considered as part of North Cell closure as it will be covered in items 2 through 4. Also, the installation of the perimeter ditch and berm installation are part of the landfill's on-going operations and therefore, not included in this updated cost estimate. Quantities are based on conceptual closure plans provided in the *Intermediate Permit Modification to Closure Permit Application*, dated August 2010. Quantities associated with Phase II, Area 3 expansion are added to the stormwater quantities provided in previous FACE Reports for the North Cell, Phase I landfill.

- Piping:
  Total length of downdrain pipe = 8,124 LF

- Control Structures:
  Number of control structures, i.e., Baffled Endwall FDOT No. 261= 15

- Inlets:
  Number of inlets = 51

- Erosion and Sediment (E&S) Control:
  Assume $2,000 per AC for E&S Control.

  Note that the total cost of inlets ($282,824.07) and E&S Control ($158,035.50) is added as a lump sum cost in "*Other Costs"* on the FDEP Form 62-701.900(28).

Passive Gas Control (Item 7)

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

Active Gas Extraction Control (Item 8)

Active gas extraction control will be part of the North Cell closure. The quantities associated with the active gas extraction system required for the North Cell closure were identified in the FDEP approved cost estimates included as part of the *2013 Financial Assurance Responsibility Report* (dated August 2013). The current estimate accounts for previous gas control quantities and additional gas control quantities associated with Phase II, Area 3. A detailed breakdown of gas extraction and control system quantities is provided in Attachment 2. Note that total cost of gas extraction and control system identified in Attachment 2, line items 8(a) to 8(q), is added as a lump sum cost in "*Other Costs"* on the FDEP Form 62-701.900(28).

Security System (Item 9)

Perimeter fencing, gates and signs already exists at the facility. A $2,000 lump sum is allocated for additional signs as part of the closure costs.

Closure Permit, Contracts, CQA and Certification (Items 10 & 11)

Professional engineering services will be needed during three phases of the closure process: permitting, construction and certification. The fee for certification of closure includes a professional engineer's time spent at the landfill reviewing test data and submitting the certification report to the FDEP.

Contingency (Item 12)

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

Site Specific Costs (Item 13)

The mobilization fee has been estimated to be 5% of Items 1 through 11.

LONG-TERM CARE COSTS

Total long-term care area = 77.85 AC

Ground Water Monitoring (Item 1)

Per previous correspondence with FDEP, the long-term care costs for groundwater monitoring at the facility are included wholly in the long-term care financial assurance for the South Cell.

Surface Water Monitoring (Item 2)

There are seven surface water monitoring locations associated with the North Cell, and all the locations are monitored on a semi-annual basis. Unit cost identified in North Cell closure and Long Term Care (LTC) recalculations included in 2013 Financial Assurance Responsibility Report (dated August 2013) was inflated to 2014 dollars using FDEP approved inflation factor.

Gas Monitoring (Item 3)

There are 8 gas monitoring probes as well as surface monitoring for the North Cell long-term care and all the locations are monitored on a quarterly basis. Unit cost identified in North Cell closure and Long Term Care (LTC) recalculations included in 2013 Financial Assurance Responsibility Report (dated August 2013) was inflated to 2014 dollars using FDEP approved inflation factor.

Leachate Monitoring (Item 4)

Per Chapter 62-701 of the Florida Administrative Code (FAC), annual leachate monitoring is no longer required and therefore, no included as part of this long-term care cost estimates.

Leachate Collection & Treatment System (Item 5)

Maintenance:

As indicated in Attachment 2 annual maintenance costs have been increased to accommodate additional jet cleaning associated with Phase II, Area 3. Note that previously allocated pipe repairs allocation is sufficient for North Cell. Unit costs were inflated to 2014 dollars using FDEP approved inflation factor.

Impoundments and Aeration Systems: It is assumed that 30 SY of liner repairs will be required every year @ $9.14 per SY.

Offsite Disposal: The cost is based on average annual generation of 1,186,000 gallons of leachate and $30.45 per 1,000 gallons of total disposal cost for leachate. Leachate generation is adjusted based on footprint increase and unit cost is inflated to 2014 dollars using FDEP approved inflation factor.

Groundwater Monitoring Well Maintenance (Item 6)

Assume a lump sum amount of $500 per year for well maintenance and replacement.

Gas System Maintenance (Item 7)

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 two days per month (20 hours @ $65 per hour, $500 misc expenses, and 15% profit and contingency fee) to monitor the collection wells, perform well field adjustments and document readings.

Landscaping (Item 8)

It is anticipated the landfill cap will need landscaping/mowing four times a year.

Erosion Control and Cover Maintenance (Item 9)

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 944 CY was calculated using the Universal 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 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: 944 CY * 27 CF/CY * 150% machinery disturbance / (0.5 FT average depth) = 76,464 SF = 8,495 SY
- Liner Repair: 944 CY * 27 CF/CY * 25% / 0.5 FT = 12,744 SF = 1,416 SY
- Soil: 944 CY

It was assumed that 25% of the disturbed area will require liner repairs. Replacement soil will include cover soil and top soil. As the unit price of installed top soil is higher, the unit cost of replacement soil was assumed similar to that of top soil.

Stormwater Maintenance (Item 10)

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

Security System Maintenance (Item 11)

A lump sum amount of $500 is assumed as cost associated with fence repairs and other security management.

Utilities (Item 12)

Estimated power requirement for site equipment = $150/month = $1,800/year

Leachate Collection/Treatment Systems Operation (Item 13)

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

Administrative Costs (Item 14)

Professional engineering services expected during the long-term care period include semiannual water quality monitoring, water quality technical reports, ten-year long-term care permit renewal applications, stabilization reports and other miscellaneous reporting requirements. Time was added for inspections of the stormwater and landfill cap systems.

Attachment 1
FDEP Form 62-701.900(28)

Print Form Reset Form

Florida Department of Environmental Protection

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

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, Class I WACS ID: 27540

Permit Application or Consent Order No.: SF64-0078767-028 Expiration Date: 03/19/2017

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 - Excluding Area 4	77.85	June 1999	16 years	9 years	NA	NA

Total disposal unit acreage included in this estimate: Closure: 77.85 Long-Term Care: 77.85

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

II. TYPE OF FINANCIAL ASSURANCE DOCUMENT (Check type)

☐ Letter of Credit* ☐ Insurance Certificate ☒ Escrow Account

☐ Performance Bond* ☐ Financial Test ☐ Form 29 (FA Deferral)

☐ Guarantee Bond* ☐ 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 Pky.
Temple 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

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 ajustment 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 Deflatory 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:
_____	×	_____	=	_____

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:
_____	×	_____	=	_____

Number of Years of Long Term Care Remaining: × _____

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	

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~~ Cover Soil	CY	207,287	$11.42	$2,367,217.54
Synthetics - 40 mil	SY	410,626	$4.36	$1,790,329.36
Synthetics - GCL	SY			
Synthetics - Geonet	SY			
Synthetics - Other (explain)	SY	410,626	$5.31	$2,180,424.06
Double Sided Geocomposite			Subtotal Cover Material:	$6,337,970.96
4. Top Soil Cover:				
Off-Site Material	CY	69,096	$12.69	$876,828.24
Delivery	CY			
Spread	CY			
			Subtotal Top Soil Cover:	$876,828.24
5. Vegetative Layer				
Sodding	SY	352,093	$2.28	$802,772.04
Hydroseeding	AC	8.83	$2,537.50	$22,406.13
Fertilizer	AC			
Mulch	AC			
Other (explain)				
			Subtotal Vegetative Layer:	$825,178.17
6. Stormwater Control System:				
Earthwork	CY			
Grading	SY			
Piping	LF	8,124	$21.41	$173,934.84
Ditches	LF			
Berms	LF			
Control Structures	EA	15	$1,948.02	$29,220.30
Other (explain)	LS	1	$440,859.57	$440,859.57
See Attachment 2, Items 6(c) & 6(d)			Subtotal Stormwater Control System:	$644,014.71

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	$454,825.02	$454,825.02
See Attachment 2, Items 8(a) to 8(q)			Subtotal Active Gas Extraction Control:	$454,825.02
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					
	Contract Management		Quality Assurance		
P.E. Supervisor	160	$130.0(	80	$130.0(	$31,200.00
On-Site Engineer	300	$100.0(	180	$100.0(	$48,000.00
Office Engineer	200	$100.0(	144	$100.0(	$34,400.00
On-Site Technician			2,992	$65.00	$194,480.00
Other (explain)			1	$50,00(	$50,000.00
Lump Sump Amount					

Description	Unit	Number of Units	Cost / Unit	Total Cost
Quality Assurance Testing	LS	1	$75,000.00	$75,000.00
			Subtotal Professional Services:	$433,080.00

	Subtotal of 1-11 Above:	$9,743,897.10
12. Contingency 10 % of Subtotal of 1-11 Above		$974,389.71
	Subtotal Contingency:	$974,389.71
	Estimated Closing Cost Subtotal:	$10,718,286.80

Description	**Total Cost**
13. Site Specific Costs	
Mobilization	$487,194.85
Waste Tire Facility	
Materials Recovery Facility	
Special Wastes	
Leachate Management System Modification	
Other (explain)	
Subtotal Site Specific Costs:	$487,194.85

TOTAL ESTIMATED CLOSING COSTS ($): $11,205,481.65

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	$432.76	$6,058.64
Annually	1			
			Subtotal Surface Water Monitoring:	$6,058.64
3. Gas Monitoring [62-701.400(10)]				
Monthly	12			
Quarterly	4	1	$2,066.03	$8,264.12
Semi-Annually	2			
Annually	1			
			Subtotal Gas Monitoring:	$8,264.12
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				
Maintenance				
Collection Pipes	LF			
Sumps, Traps	EA			
Lift Stations	EA			
Cleaning	LS	1	$2,319.28	$2,319.28
Tanks	EA			

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
5. (continued)				
Impoundments				
Liner Repair	SY	30	$9.14	$274.20
Sludge Removal	CY			
Aeration Systems				
Floating Aerators	EA			
Spray Aerators	EA			
Disposal				
Off-site (Includes transportation and disposal)	1000 gallon	1,186	$30.45	$36,113.70
			Subtotal Leachate Collection / Treatment Systems Maintenance:	$38,707.18
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	81.58	$299.34	$24,420.16
Fertilizer	AC			
			Subtotal Landscape Maintenance:	$24,420.16
9. Erosion Control and Cover Maintenance				
Sodding	SY	8,495	$2.28	$19,368.60
Regrading	AC			
Liner Repair	SY	1,416	$8.70	$12,319.20
Clay	CY	944	$12.69	$11,979.36
			Subtotal Erosion Control and Cover Maintenance:	$43,667.16
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

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:	$182,017.26
15. Contingency	10	% of Subtotal of 1-14 Above		$18,201.73
			Subtotal Contingency:	$18,201.73

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
16. Site Specific Costs				
			Subtotal Site Specific Costs:	
			ANNUAL LONG-TERM CARE COST ($ / YEAR):	$200,218.98
			Number of Years of Long-Term Care:	30
			TOTAL LONG-TERM CARE COST ($):	$6,006,569.49

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

Mark G. Roberts, Project Manager
Name and Title (please type)

5/27/15
Date

54187
Florida Registration Number
(please affix seal)

200 W. Forsyth St., Ste. 800
Mailing Address

Jacksonville, FL 32202-4321
City, State, Zip Code

Mark.Roberts@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

Attachment 2
Detailed Breakup of Line Items

Tomoka Farms Road Landfill - North Cell Class I Financial Assurance Closure Cost Estimates (Excluding Phase II Area 4)

Line Item No.	Description	Original Quantity[1]	Revised Quantity[1]	Unit	2013 Unit Cost	2014 Inflated Unit Cost	Total Cost in 2014 Dollars	Line Item Subtotal
1	Proposed Monitoring Wells	0	0	EA	$ -	$ -	$ -	$ -
2	Slope and Fill	0	0	CY	$ -	$ -	$ -	$ -
3(a)	Cover Material - Off-site Cover Soil	175,086	207,287	CY	$ 11.25	$ 11.42	$ 2,367,217.54	
3(b)	Cover Material - Synthetics 40 mil	346,837	410,626	SY	$ 4.30	$ 4.36	$ 1,790,329.36	$ 6,337,970.96
3(c)	Cover Material - Double Sided Geocomposite	346,837	410,626	SY	$ 5.23	$ 5.31	$ 2,180,424.06	
4	Top Soil Cover - Off-site Soil	58,362	69,096	CY	$ 12.50	$ 12.69	$ 876,828.24	$ 876,828.24
5(a)	Vegetative Layer - SOD	307,333	352,093	SY	$ 2.25	$ 2.28	$ 802,772.04	$ 825,178.17
5(b)	Vegetative Layer - HYDROSEED	5.41	8.83	AC	$ 2,500.00	$ 2,537.50	$ 22,406.13	
6(a)	Stormwater - PIPING	6,778	8,124	LF	$ 21.09	$ 21.41	$ 173,934.84	
6(b)	Stormwater - CONTROL STRUCTURES	12	15	EA	$ 1,919.23	$ 1,948.02	$ 29,220.30	$ 644,014.71
6(c)	Stormwater - INLETS	42	51	EA	$ 5,463.62	$ 5,545.57	$ 282,824.07	
6(d)	Stormwater - E&S CONTROL	65.65	77.85	AC	$ 2,000.00	$ 2,030.00	$ 158,035.50	
7	Passive Gas Control	0	0	LS	$ -	$ -	$ -	$ -
8(a)	Active GCCS - Mobilization/Demobilization	1	1	LS	$ 12,863.02	$ 13,055.96	$ 13,055.96	
8(b)	Active GCCS - Wellhead Assembly	17	23	EA	$ 518.67	$ 526.45	$ 12,108.35	
8(c)	Active GCCS - Drilling of 36" borehole and completion of Vertical Well (0'-274')	274	274	LF	$ 135.89	$ 137.93	$ 37,792.82	
8(d)	Active GCCS - Drilling of 36" borehole and completion of Vertical Well (275'-549')	275	275	LF	$ 96.47	$ 97.92	$ 26,928.00	
8(e)	Active GCCS - Drilling of 36" Borehole and Completion of Vertical Well (550' - 999')	450	450	LF	$ 81.43	$ 82.65	$ 37,192.50	
8(f)	Active GCCS - Drilling of 36" Borehole and Completion of Vertical Well (1,000'+)	878	1,574	LF	$ 78.84	$ 80.02	$ 125,951.48	
8(g)	Active GCCS - Benching	14	20	EA	$ 414.94	$ 421.16	$ 8,423.20	
8(h)	Active GCCS - 18" HDPE SDR 17 Header Pipe (0'-499)	318	318	LF	$ 53.94	$ 54.75	$ 17,410.50	
8(i)	Active GCCS - 16" HDPE SDR 17 Header Pipe (0'-499')	349	349	LF	$ 51.87	$ 52.65	$ 18,374.85	$ 454,825.02
8(j)	Active GCCS - 6" HDPE SDR 11 Lateral Pipe (0'-499')	499	499	LF	$ 20.75	$ 21.06	$ 10,508.94	
8(k)	Active GCCS - 6" HDPE SDR 11 Lateral Pipe (500'-1,499')	1,000	1,000	LF	$ 18.67	$ 18.95	$ 18,950.00	
8(l)	Active GCCS - 6" HDPE SDR 11 Lateral Pipe (1,500'+)	1,177	2,889	LF	$ 17.63	$ 17.90	$ 51,713.10	
8(m)	Active GCCS - 4" HDPE SDR 11 Lateral Pipe (0'-499')	499	499	LF	$ 15.56	$ 15.79	$ 7,879.21	
8(n)	Active GCCS - 4" HDPE SDR 11 Lateral Pipe (500'-1,499')	1,000	1,000	LF	$ 14.52	$ 14.74	$ 14,740.00	
8(o)	Active GCCS - 4" HDPE SDR 11 Lateral Pipe (1,500'+)	584	584	LF	$ 13.49	$ 13.69	$ 7,994.96	
8(p)	Active GCCS - Header/Condensate Access Point	3	5	EA	$ 2,385.88	$ 2,421.67	$ 12,108.35	
8(q)	Active GCCS - Condensate Sump	2	2	EA	$ 16,597.44	$ 16,846.40	$ 33,692.80	
9	Security System - See Note 2	1	1	LS	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00
10	Engineering - See Note 2	1	1	LS	$ 170,000.00	$ 170,000.00	$ 170,000.00	$ 170,000.00
11	Professional Services - See Note 3	1	1	LS	$ 408,080.00	$ 433,080.00	$ 433,080.00	$ 433,080.00
12	Contingency (conservatively assumed 10% of Subtotal of items 1 to 11)	-		-	-	-	$ 974,389.71	$ 974,389.71
13	Site Specific Costs - Mobilization (assumed 5% of Subtotal of items 1 to 11)	-		-	-	-	$ 487,194.85	$ 487,194.85

Notes:

1. Original Quantities include North Cell excluding Phase II Areas 3 and 4. Revised quantities incorporates Phase II Area 3; therefore Revised Quantities include North Cell excluding Phase II Area 4.

2. Addition of Phase II, Area 3 will not impact Security System and Engineering Costs. The dollar amounts calculated/assumed in 2013 still are conservative cost estimates per HDR experience. Therefore, these numbers are retained as it is in 2014 dollars.

3. Addition of Phase II, Area 3 will not impact Professional Services Cost. The dollar amounts calculated/assumed in 2013 still are conservative cost estimates per HDR experience. Therefore, these numbers are retained as it is in 2014 dollars. However, $25,000 are added to the CQA Services to accommodate additional testing required during Phase II, Area 3 Closure.

4. Inflation Factors obtained from the FDEP website: http://www.dep.state.fl.us/waste/categories/swfr/pages/CostEstimates.htm.

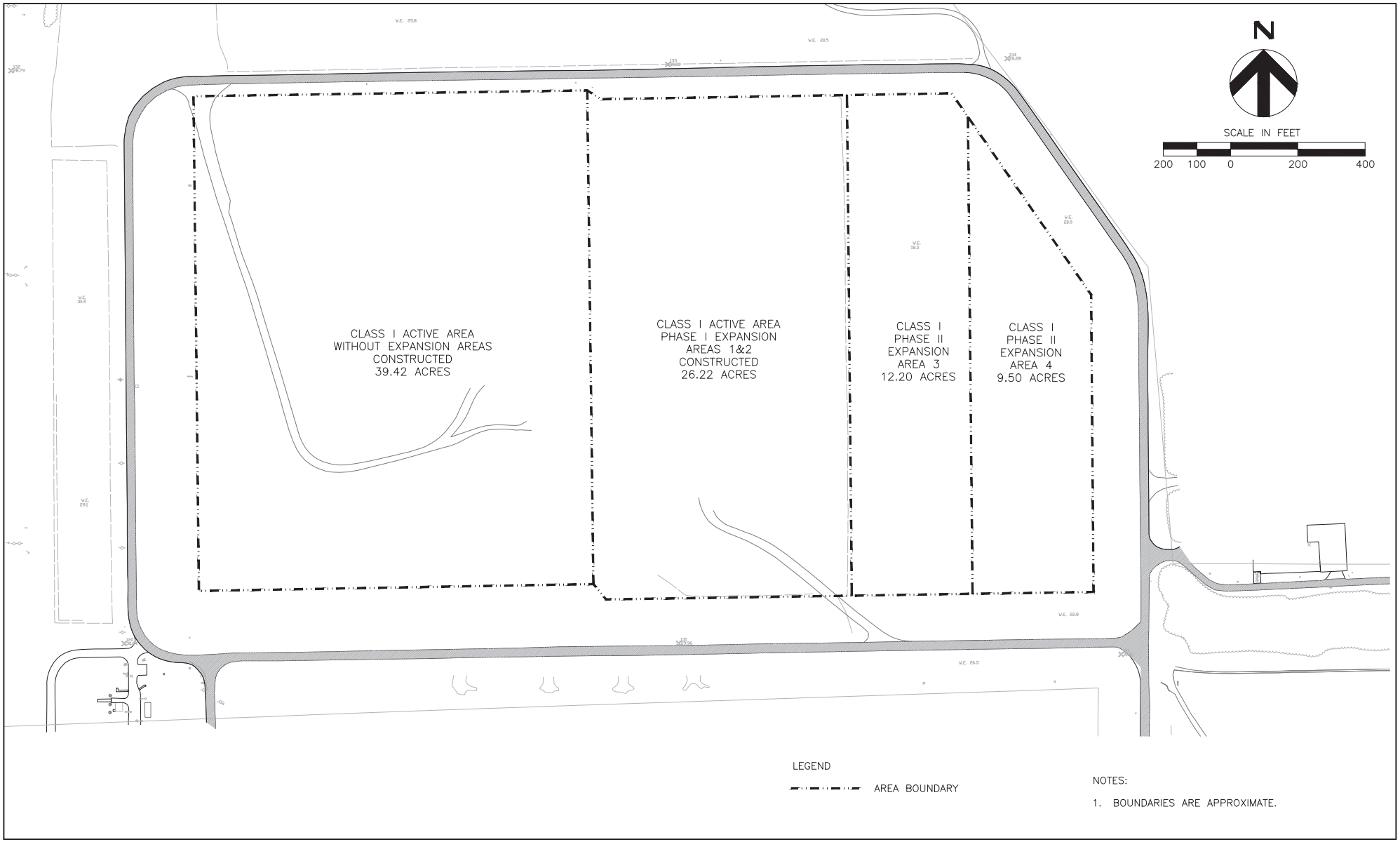
Tomoka Farms Road Landfill - North Cell Class I Financial Assurance LTC Cost Estimates (Excluding Phase II Area 4)

Line Item No.	Description	Original Quantity[1]	Revised Quantity[1]	Unit	2013 Unit Cost	2014 Inflated Unit Cost	Total Cost in 2014 Dollars	Line Item Subtotal
1	Groundwater Monitoring	0	0	LS	$ -	$ -	$ -	$ -
2	Surface Water Monitoring	1	1	LS	$ 5,969.04	$ 6,058.58	$ 6,058.58	$ 6,058.58
3	Gas Monitoring	1	1	LS	$ 8,142.00	$ 8,264.13	$ 8,264.13	$ 8,264.13
4	Leachate Monitoring	0	0	LS	$ -	$ -	$ -	$ -
5(a)	Leachate Collection System - Maintenance (Pipe Repairs)	1	1	LS	$ 500.00	$ 507.50	$ 507.50	$ 38,707.18
5(b)	Leachate Collection System - Maintenance (Jet Cleaning)	1	1.19	LS	$ 1,500.00	$ 1,522.50	$ 1,811.78	
5(c)	Leachate Collection System - Impoundments (Liner Repair)	20	30	SY	$ 9.00	$ 9.14	$ 274.20	
5(d)	Leachate Collection System - Leachate Disposal	1,000	1186	MMGal	$ 30.00	$ 30.45	$ 36,113.70	
6	Groundwater Monitoring Well Maintenance (See Note 2)	1	1	LS	$ 500.00	$ 500.00	$ 500.00	$ 500.00
7	Gas System Maintenance (See Note 2)	1	1	LS	$ 33,140.00	$ 33,140.00	$ 33,140.00	$ 33,140.00
8	Landscape Maintenance - Mowing	65.65	81.58	AC	$ 294.92	$ 299.34	$ 24,420.16	$ 24,420.16
9(a)	Erosion Control and Cover Maintenance - Sodding	7,164	8,495	SY	$ 2.25	$ 2.28	$ 19,368.60	$ 43,667.16
9(b)	Erosion Control and Cover Maintenance - Liner Repair	1,194	1,416	SY	$ 8.57	$ 8.70	$ 12,319.20	
9(c)	Erosion Control and Cover Maintenance - Clay	796	944	CY	$ 12.50	$ 12.69	$ 11,979.36	
10	Storm Water Management System Maintenance (See Note 2)	1	1	LS	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00
11	Security System Maintenance (See Note 2)	1	1	LS	$ 500.00	$ 500.00	$ 500.00	$ 500.00
12	Utilities (See Note 2)	1	1	LS	$ 1,800.00	$ 1,800.00	$ 1,800.00	$ 1,800.00
13	Leachate System Operations (See Note 2)	1	1	LS	$ 6,760.00	$ 6,760.00	$ 6,760.00	$ 6,760.00
14	Administrative (See Note 2)	1	1	LS	$ 13,200.00	$ 13,200.00	$ 13,200.00	$ 13,200.00
15	Contingency (conservatively assumed 10% of Subtotal of items 1 to 14)	-	-	-	-	-	$ 18,201.73	$ 18,201.73
16	Site Specific Costs	1	1	LS	$ -	$ -	$ -	$ -

Notes:

1. Original Quantities include North Cell excluding Phase II Areas 3 and 4. Revised quantities incorporates Phase II Area 3; therefore Revised Quantities include North Cell excluding Phase II Area 4.
2. Addition of Phase II, Area 3 will not impact the cost associated with these items. The dollar amounts calculated/assumed in 2013 still are conservative cost estimates per HDR experience. Therefore, these numbers are retained as it is in 2014 dollars.

Attachment 3
Report Figures
(*Waste Footprint Geometry and Final Grading*)

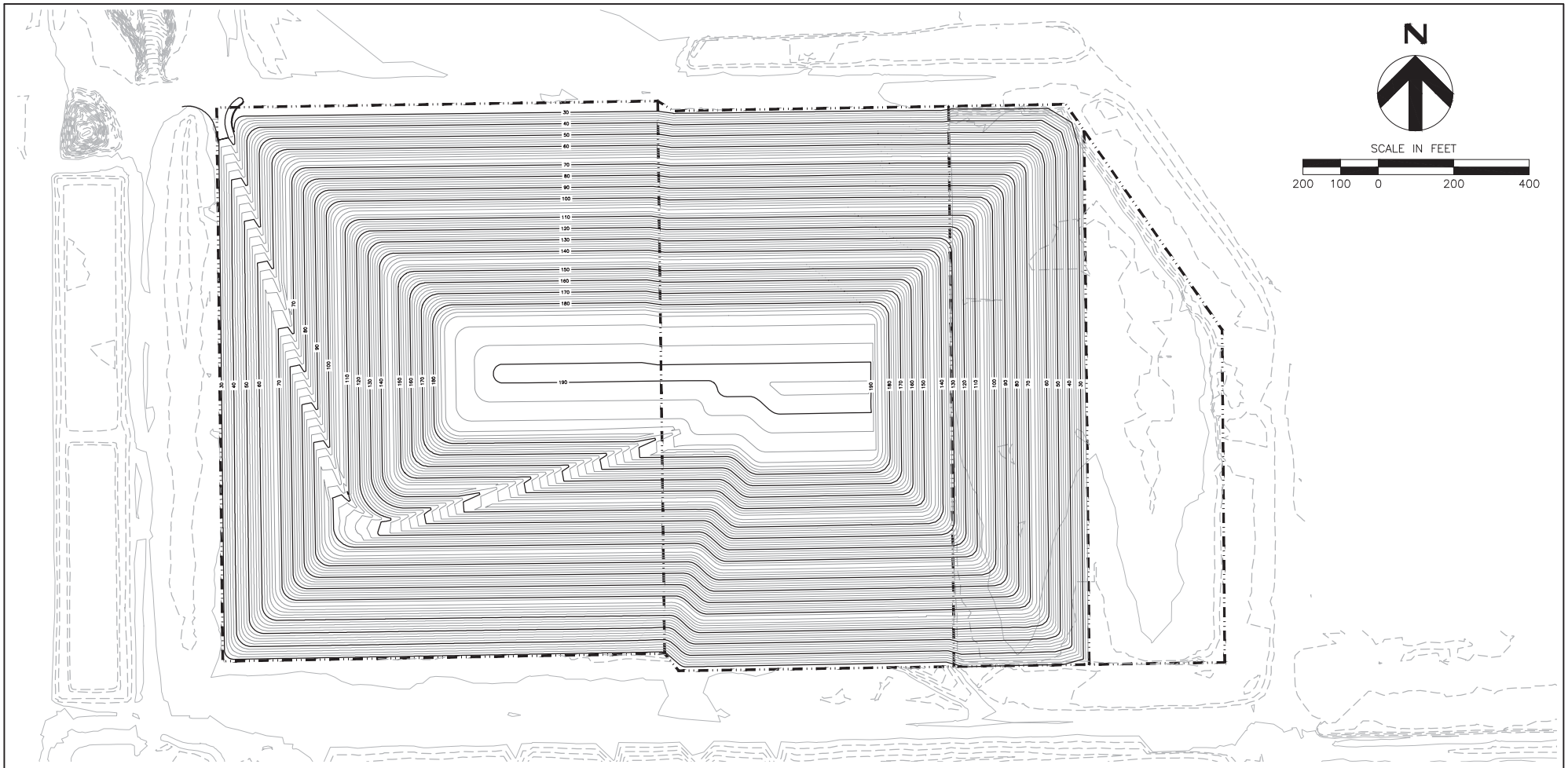


CLASS I NORTH CELL
ACTIVE AND EXPANSION AREAS

VOLUSIA COUNTY, FL

DATE
04/15

FIGURE
FIGURE 1



NOTES:

1. FINAL GRADES SHOWN REPRESENT MAXIMUM ALLOWABLE ELEVATIONS.
2. BOUNDARIES ARE APPROXIMATE.

FINAL GRADING PLAN
WITHOUT PHASE II AREA 4 EXPANSION
CLASS I NORTH CELL

VOLUSIA COUNTY, FL

DATE
04/15

FIGURE
FIGURE 2

Attachment 4
USLE Calculation

Volusia County- Tomoka Farms Road Landfill
April 2015

Soil Erosion using the Universal Soil Loss Equation (USLE)

The Universal Soil Loss Equation A (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	77.85	acres	North Cell Landfill area
acreage	114	acres	South Cell Landfill area

e of Soil Loss

	C	A (tons/AC/year)	tons/ year	CF/ year	CY/ year
North Cell	0.042	15.55	1,211	25,486	944
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.

AH537/12/78

PREDICTING RAINFALL EROSION LOSSES

A GUIDE TO CONSERVATION PLANNING

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

$$A = R K L S C P \qquad (1)$$

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.

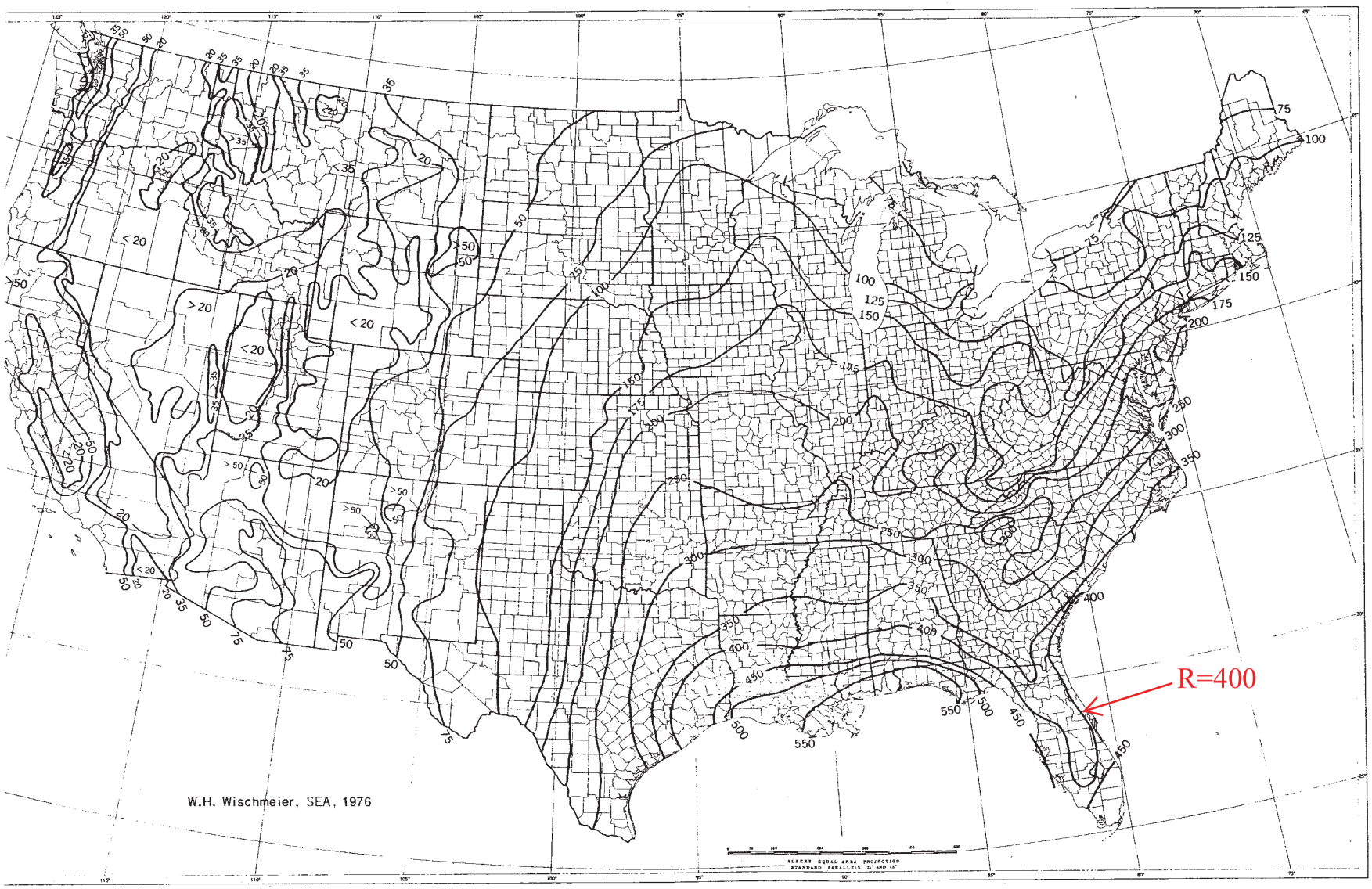


FIGURE 1.—Average annual values of the rainfall erosion index.

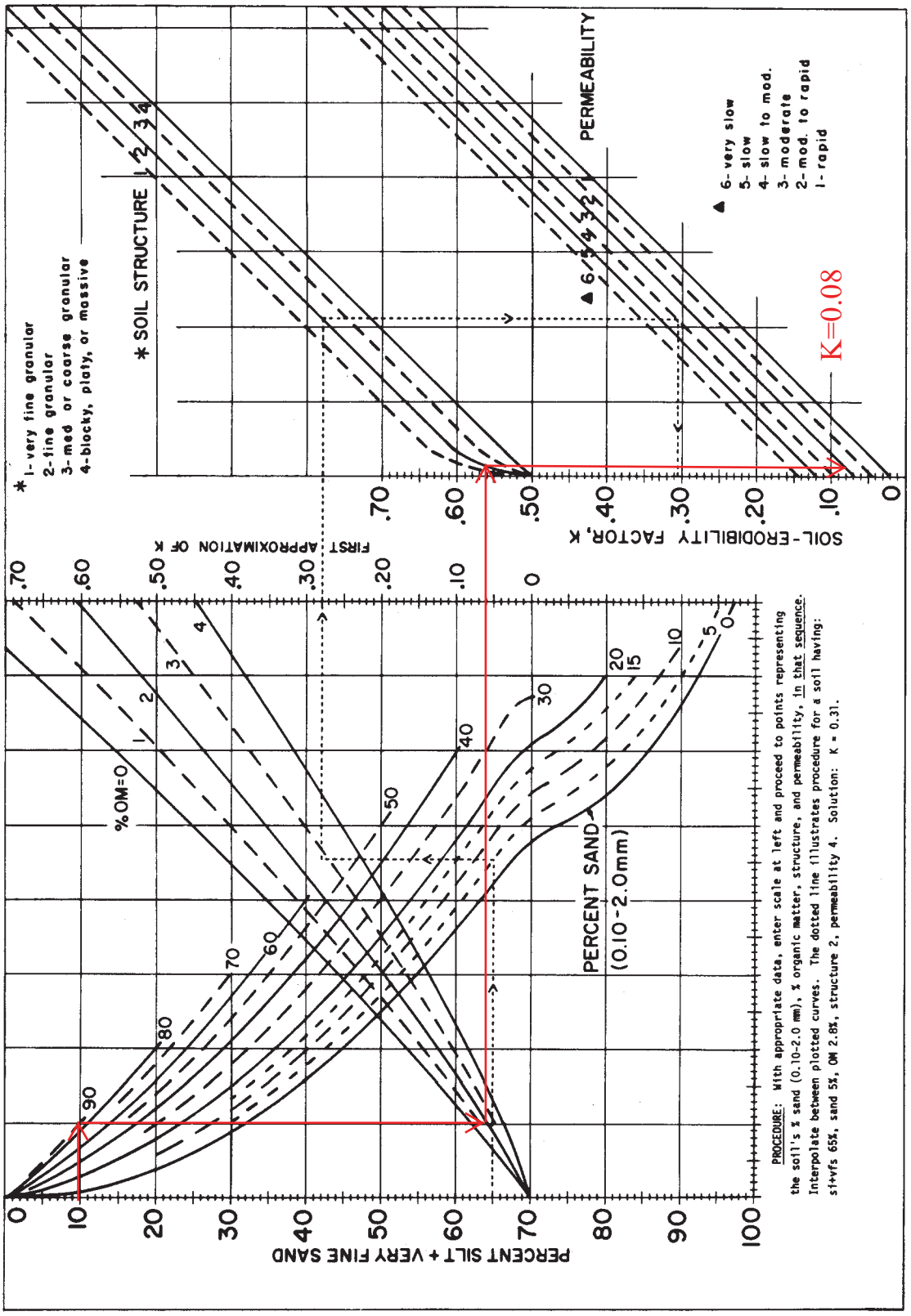


FIGURE 3.—The soil-erodibility nomograph. Where the silt fraction does not exceed 70 percent, the equation is $100\ K = 2.1\ M^{1.14}\ (10^{-4})\ (12 - a) + 3.25\ (b - 2) + 2.5\ (c - 3)$ where M = (percent si + vfs) (100 − percent c), a = percent organic matter, b = structure code, and c = profile permeability 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 steepness*[1]

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	3.53	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

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 extended 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 land*[1]

Vegetative canopy			Cover that contacts the soil surface					
			Percent ground cover					
Type and height[2]	Percent cover[3]	Type[4]	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.

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

[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.

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 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 breakovers 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.