

***FDEP Solid Waste Permit Renewal Application  
for the Operations of Class III Landfill  
Tomoka Farms Road Solid Waste  
Management Facility  
Volusia County Solid Waste Division***

***FINAL  
June 2014***



*Public Works Department  
Solid Waste Division  
County of Volusia, Florida*

***Prepared by:***



2301 Lucien Way, Suite 300  
Maitland, Florida 32751  
(407)647-6623 fax: (407)539-0575

Project No.: NS.12033.001



June 30, 2014

Mrs. El Kromhout, P.G.  
Permitting and Compliance Assistance Program  
Solid Waste Section  
Florida Department of Environmental Protection ("Department")  
2600 Blair Stone Road, MS 4565  
Tallahassee, Florida 32399

Subject: **FDEP Application for Renewal of Operations Permit**  
**Class III Landfill Operations Permit No. SO64-0078767-026**  
Tomoka Farms Road Solid Waste Management Facility  
Volusia County Solid Waste Division

Dear Mrs. Kromhout:

On behalf of the Volusia County Solid Waste Division, we are submitting one (1) signed and sealed paper copies of an FDEP Application and supporting documents to obtain a FDEP Solid Waste Facility Operations Permit. An additional copy is furnished to the FDEP-Central District. Each copy of the application includes a CD containing the complete application and supporting documents in electronic format.

We request a ten (10) year duration permit to continue filling of the approximate 88.06-acre Class III solid waste disposal area. No significant change from the 2009 Department-approved final grading plan, filling sequence, closure plan, stormwater management system or the passive LFG venting system is proposed by this operations permit renewal application.

In accordance with our May 1, 2014 pre-application meeting, we are providing copies of some of the plans from the 2009 operations permit renewal application for reference only. A Water Quality Technical Report (2011-2014) is prepared by others and will be submitted under separate cover.

Volusia County Check No. 690243 for the amount of \$4,000 for the first 5-year period is attached.

If you have any questions, please advise.

Sincerely,

**NEEL-SCHAFFER, INC.**

Ron S. Beladi, PE Vice-President  
Sr. Engineer Manager

Distribution to:

Mr. F. Thomas Lubozynski, P.E. Waste Program Administrator, FDEP Central District  
Mr. Leonard Marion, Director, Volusia County Solid Waste Division  
Mr. Junos Reed, P.E., TFRLF Operations Manager  
Ms. Jennifer Stirk, Environmental Specialist, Volusia County Solid Waste Division






CATEGORY	VENDOR	CHECK DATE	CHECK NO.
SW	92091600030	06/06/2014	00000000690243

PAYMENT DOCUMENT	REFERENCE DOCUMENT	INVOICE NBR	CHECK DESCRIPTION	ACCOUNT NUMBER	AMOUNT
GAX 760 D-118273		05232014	Class III operations permit renewal 5064-0078767-026	4507605000 3104	4,000.00
<div>RECEIVED JUN 6 2014 By _____</div>					

GRAND TOTAL \$4,000.00

STATE SALES TAX CERTIFICATION OF EXEMPTION NO. 85-8012622393C-9

  
Volusia County  
FLORIDA  
DeLand, Florida

Bank of America, N.A.  
Daytona Beach, Florida 32114

CHARGEABLE TO: ACCOUNTS PAYABLE ACCOUNT

ACCOUNTS PAYABLE ACCOUNT

Not Valid After 90 Days

Date	Number
06-06-2014	690243

AMOUNT \$4,000.00

Four Thousand And 00/100 Dollars

VENDOR NUMBER: 92091600030

FLORIDA DEPT OF ENVIRONMENTAL PROTECTION  
3319 MAGUIRE BLVD SUITE 232  
ORLANDO FL 32803-3767

*Charlene Weaver*

⑈690243⑈ ⑆063100277⑆ 005502718662⑈

⑈0000400000⑈



# Contents

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Section	Page
<b>Form 62-701.900(1) Checklist</b>	
<b>1.0 FAC 62-701 Permit Application Checklist .....</b>	<b>1-1</b>
1.1 Executive Summary .....	1-1
1.2 Existing Information and Reference Documentation.....	1-1
1.3 Facility Owner and Operator.....	1-2
1.4 Checklist (FDEP Form 17-701.900(1)).....	1-2
1.4.1 Part A - General Information and Part B - Disposal Facility General Information .....	1-3
1.4.2 Part C - Prohibitions (62-701.300, FAC) .....	1-3
1.4.3 Part D - Solid Waste Management Facility Permit Requirements, General (62-701.320, FAC) .....	1-3
1.4.4 Part E Landfill Permit Requirements (62-701.330, FAC) and Part F-General Criteria For Landfills (62-701.340, FAC) .....	1-3
1.4.5 Part G- Landfill Construction Requirements (62-701.400,FAC).....	1-3
1.4.6 Parts H - Hydrogeological Investigation Requirements (62-701.410(1), FAC).....	1-3
1.4.7 Parts I - Geotechnical Investigation Requirements (62-701.410(2), FAC).....	1-3
1.4.8 Part J - Vertical Expansion of Landfills (62-701.430, FAC).....	1-3
1.4.9 Part K - Landfill Operation Requirements (62-701.500, FAC) .....	1-4
1.4.10 Part L - Water Quality and Leachate Monitoring Requirements (62-701.510, FAC) .....	1-4
1.4.11 Part M - Special Waste Handling Requirements (62-701.520, FAC) ....	1-4
1.4.12 Part N Gas Management System Requirements (62-701.530, FAC) ....	1-4
1.4.13 Part O - Landfill Closure Requirements (62-701.600, FAC) .....	1-4
Part P- Other Closure Procedures (62-701.610, FAC)	
Part Q - Long-Term Care (62-701.620, FAC)	
1.4.14 Part R - Financial Assurance (62-701.630, FAC) .....	1-4
1.4.15 Part S - Certification by Applicant and Engineer or Public Officer .....	1-4
<b>2.0 Part C-Prohibitions ((62-701.300, FAC) .....</b>	<b>2-1</b>
<b>3.0 Part D- Solid Waste Management Facility Permit Requirements, General (62- 701.320, FAC) .....</b>	<b>3-1</b>
3.1 Permit Applications Copies (62-701.320(5)(a), FAC).....	3-1
3.2 Certification (62-701.320(6), FAC) .....	3-1



# Contents, Continued

---

Section	Page
3.3 Transmittal Letter (62-701.320(7)(a), FAC) .....	3-1
3.4 FDEP Form (62-701.320(7)(b), FAC).....	3-1
3.5 Permit Application Fee (62-701.320 (7)(c), FAC).....	3-1
3.6 Engineering Report (62-701.320(7)(d), FAC) .....	3-1
3.7 Operation and Closure Plan (62-701.320(7)(e)1, FAC) .....	3-1
3.8 Contingency Plan (62-701.320(7)(e)2, FAC) .....	3-2
3.9 Solid Waste Management Facilities Drawings (62-701.320(7)(f), FAC) .....	3-2
3.10 Proof of Property Ownership (62-701.320(7)(g), FAC).....	3-2
3.11 Recycling Goal Achievement (62-701.320(7)(h), FAC) .....	3-2
3.12 History of FDEP Enforcement Activities (62-701.320(7)(i), FAC).....	3-2
3.13 Proof of Publication of Landfill Permit Application .....	3-3
(62-702.320(8), FAC)	
3.14 Airport Safety Requirements (62-701.320(13), FAC) .....	3-3
3.15 Operator Training Requirements (62-701.320 (15),FAC) .....	3-3
 <b>4.0 Part E- Landfill Permit Requirements (62-701.330, FAC) and</b>	
<b>Part F - General Criteria for Landfills (62-701.340, FAC) .....</b>	<b>4-1</b>
4.1 Vicinity Map and Aerial Map (62-701.330(3)(a), FAC) .....	4-1
4.2 Plot Plan and Cross Sections (62-701.330 (3)(b), FAC) .....	4-1
4.3 Topographical Information and Survey (62-701.330(3)(c), FAC) .....	4-1
4.4 Report Describing the Landfill (62-701.330(3)(d), FAC) .....	4-4
4.5 Water Quality Laboratory Requirements (62-701.330(3)(g), FAC).....	4-4
4.6 Closure and Long-Term Care Financial Responsibility	
(62-701.330(3)(h), FAC) .....	4-4
4.7 100-Year Flood Plain (62-701.340,(3)(b) FAC).....	4-5
4.8 Edge of Waste (62-701.340,(3)(c) FAC) .....	4-5
 <b>5.0 Part G - Landfill Construction Requirements (62-701.400, FAC) .....</b>	<b>4-1</b>
 <b>6.0 Part H- Hydrogeological Requirements (62-701.420(1), FAC) FAC) .....</b>	<b>6-1</b>
 <b>7.0 Part I-Geotechnical Investigation Requirements(62-701.420(2), FAC).....</b>	<b>7-1</b>
 <b>8.0 Part J – Vertical Expansion of Landfills (62-701.430,FAC).....</b>	<b>8-1</b>



# Contents, Continued

---

Section	Page
<b>9.0 Part K - Landfill Operation Plan (62-701.500, FAC)</b> .....	<b>9-1</b>
9.1 Trained Operators (62-701.500(1), FAC) .....	9-1
9.2 Operations and Contingency Plan (62-701.500(2) through 62-701.500(7), FAC) .....	9-1
9.3 Class III Gas Management System Description (62-701.500(9), FAC) .....	9-1
9.4 Surface Water Management System (62-701.500(10), FAC) .....	9-2
9.5 Equipment and Operational Features (62-701.500(11), FAC) .....	9-2
9.6 Facility Access Roads (62-701.500(12), FAC) .....	9-2
9.7 Record Keeping and Reporting (62-701.500(13), FAC) .....	9-2
<b>10.0 Part L - Water Quality and Leachate Monitoring Requirements (62-701.510, FAC)</b> .....	<b>10-1</b>
10.1 Water Quality Monitoring Plan (62-701.510(1) FAC) .....	10-1
10.2 Sampling and Analysis (62-701.510(2)(b) FAC) .....	10-1
10.3 Groundwater Monitoring Requirements (62-701.510(3) FAC) .....	10-1
10.4 Surface Water Requirements (62-701.510(4) FAC) .....	10-1
10.5 Routine Sampling Frequency and Requirements (62-701.510(5) FAC) ....	10-1
10.6 Assessment Monitoring and Corrective Action (62-701.510(6) FAC) .....	10-2
10.7 Water Quality Report Requirements (62-701.510(8) FAC) .....	10-2
<b>11.0 Part M - Special Waste Handling Requirements (62-701.520, FAC)</b> .....	<b>11-1</b>
<b>12.0 Part N- Gas Management System Requirements(62-701.530, FAC)</b> .....	<b>12-1</b>
12.1 Landfill Gas Management System (62-701.530(1)) .....	12-1
12.2 Routine Gas Monitoring System (62-701.530(2) ) .....	12-1
12.3 Gas Remediation Plan (62-701.530(3) and Odor Remediation Plan (62-701.530(4) ) .....	12-1
12.4 Landfill Gas Recovery Facilities (62-701.530(5)) .....	12-1
<b>13.0 Part O- Landfill Closure Requirements (62-701.600, FAC)</b>	
<b>Part P- Other Closure Procedures (62-701.610, FAC) and</b>	
<b>Part Q- Long-Term Care (62-701.620, FAC)</b> .....	<b>13-1</b>
13.1 Closure Permit General Requirements (62-701.600(2), FAC) .....	13-1
13.2 Closure Design Plan Requirements (62-701.600(3), FAC) .....	13-1
13.3 Closure Operation Plan Requirements (62-701.600(4), FAC) .....	13-2
13.4 Part P Other Closure Procedures (62-701.610 ( ),FAC) .....	13-3
13.5 Part Q Long-Term Care Requirements (62-701.600 (9),FAC) .....	13-3



# Contents, Continued

---

Section	Page
14.0 Part R - Financial Assurance (62-701.630, FAC) .....	14-1

Part S-Certification See Final Page of Application Form (in front of Section 1.0)

## List of Attachments

- A Current FDEP North Cell Operations Permit and MPIS, 2009 Construction Permit
- B Vicinity Map, Aerial Site Map, Airport Location Map, Plot Plan, Cross Sections  
Water Quality Monitoring Wells, Gas Probes and Well Inventory Information
- C Operations and Contingency Plan, dated April 2014
- D Operations Permit Drawings 2009 and Fill Sequence Drawings 2009
- E 2014 Updated Closure and Long-Term Cost Estimates and 2013 FDEP Cost Estimate  
Approval Letter

## List of Tables

Table	Page
1-1 Permit Applications and Related Documents Referenced in Class III Operations Permit Renewal Application Facility .....	1-2
4-1 Historical and Projected Class III Wastes Volumes and Tonnages .....	4-3
6-1 Consumptive Uses On or Within One Mile of Tomoka Farms Road Landfill Facility .....	6-1



## SECTION 1.0

# Permit Application Checklist (62-701, FAC)

## 1.1 Executive Summary

Volusia County (the "County") is currently permitted by the Florida Department of Environmental Protection ("FDEP") to operate a Class III solid waste landfill at the Tomoka Farms Road Landfill Facility (TFRLF) in Port Orange, Florida. The Class III landfill covers approximately 88.06 acres and is located east of the closed South Cell disposal unit and southeast of the active North Cell Class I landfill. The Class III Landfill was permitted to be constructed on top of a pre-1985 closed mixed solid waste cell. The projected end life of the Class III landfill as permitted is estimated to be approximately the year 2034.

The County is submitting this application to renew the current operations permit. No changes in the existing permitted grading plan, filling sequence plan, passive landfill gas (LFG) plan, or the closure cover design are proposed under this application. Copies of select permit drawings included in this application are for ease of reference. The complete set of permit drawings were submitted signed and sealed to FDEP as part of the previous permit application and are on file with the Department. The permit plans submitted previously are not requested to be changed in this application. It is requested the new operations permit be issued for a ten (10) year period.

Partial copies of the current operations permit and MPIS, the permitting plans previously submitted and copy of the 2009 construction permit are included in Appendix A for ease of reference.

## 1.2 Existing Information and Reference Documentation

The source information referenced in this application for renewal of the Class III operations permit is contained in the Application for renewal of Operations Permit No. SO64-0078767-026 dated June 23, 2009, as well as subsequent responses to requests for information (RAI). Additional source information is provided in the June 30, 2008 Class III intermediate modification construction application and responses to RAI. The sources of information are listed below.

**Table 1-1**  
**Sources of Information and Related Documents Referenced**  
**Class III Landfill Operations Permit Renewal Application**

Reference Number	Description of Permitting Document or Related Document
1.	Application to Renew Existing Operations Permit, North Class I Cell, TFRLLF dated June 23, 2009, RAI response No. 1 , dated July 22, 2009; RAI response No. 2 , dated August 5, 2009 Permit No. SO64-0078767-026, current Permit expires October 9, 2014. Designated as "2009 Operations Permit"



2.	Application for Permit to Construct an Expansion to the TFRLF Class III Disposal Unit, Volusia County, dated June 30, 2008. Permit Number SC64-0078767-024. RAI Response No. 1 dated September 25, 2008 Permit SC64-0078767-024 issued 1/21/2009 Designated as "2008 Construction Permit"
3.	Class III Modification Construction Drawings, TFRLF, Sheets 1-9, dated April 2008, received and stamped July 28, 2008.
4.	Tomoka Farms Road Landfill Class III Cell Fill Sequence Plan, August 2009
5.	TFRLF Operations Plan, Volusia County, Florida, Revised April 2013 (Minor modification for glass cullet), Included as Attachment C of this application.
6.	TFRLF Technical Water Quality Monitoring Report dated April 6, 2012.
7.	TFRLF ERP No. ERP64-020632-002EM; permit covers entire site including Class III.
8.	Closure Cost Financial Assurance Responsibility Report Fiscal Year 2013, August 29, 2013, (contains Class III waste projections and Class III depletion analysis)
9.	NPDES General Permit FLRDSB933-003 for the TFRLF site

### 1.3 Facility Owner and Operator

The Facility is owned by the County of Volusia Board of County Council, and is operated by the County's Public Works Solid Waste Division.

The designated responsible person for the TFRLF is:

Mr. Leonard Marion, Director  
Volusia County Solid Waste Division  
Tomoka Farms Road Landfill Facility  
1990 Tomoka Farms Road  
Port Orange, Florida  
Phone (386) 947-2952  
E-mail: lmarion@volusia.org

The designated person responsible to manage day-to-day operations of TFRLF is:

Mr. Junos Reed, P.E., Engineer III  
Operations Manager  
Tomoka Farms Road Landfill Facility  
1990 Tomoka Farms Road  
Port Orange, Florida  
Phone (386) 947-2952  
E-mail: jreed@volusia.org



## **1.4 Checklist (FDEP Form 62-701.900(1))**

This application checklist located in front of this Section provides the location and disposition of information listed in the FDEP Solid Waste Management Facility Application Form No. 62-701.900(1). The format of the checklist follows the information sequence of the application form.

### **1.4.1 PARTS A & B - General Information and Disposal Facility General Information**

The required information for this section is included on the application form.

### **1.4.2 PART C - Prohibitions (62-701.300, FAC)**

Part C of the Permit Application Form does not change as the prohibitions to siting and operations have been previously met and no exemptions are sought. The Class III landfill is within the setback limit. Items for Part C have been noted as "No Change" on the form. See Section 2.0.

### **1.4.3 PART D - Solid Waste Management Facility Permit Requirements, General (62-701.320, FAC)**

Submittal information pertaining to the operations renewal application (application copies, certification, transmittal letter, permitting fees, engineering report, operational drawings, proof of publication and airport safety requirements is included in Section 3.0 of this document.

### **1.4.4 PARTS E & F - Landfill Permit Requirements and General Criteria for Landfills (62-701.330 & 340, FAC)**

The required information for Part E and Part F is included in Section 4.0 of this document. The drawings prepared with this application report include the vicinity map, aerial map, recent topographic survey, cross-sections and plot plan. Drawings and Maps are provided in Attachment B. An updated well inventory is also included in Attachment B.

### **1.4.5 PART G - Landfill Construction Requirements (62-701.400, FAC)**

Part G of the Permit Application Form does not apply and has been noted as "Not Applicable" on the form. Closure requirements are addressed in Section 12 and Section 13.

### **1.4.6 PART H - Hydrogeological Investigation Requirements (62-701.410(1), FAC)**

The information for Part H is already on file with the Department. There is no change in the previous hydrogeological investigation as a result of filling and operation of the Class III landfill. The application form has been marked "No Change".

Under a Department-approved contamination assessment, the area north and east of the Class III unit has been monitored over the past four years for contamination. The results of the contamination assessment were summarized in the April 6, 2012 Technical Water Quality Monitoring Report. A separate status update is being prepared by the County's consultant and is provided as Attachment XX to this application.

### **1.4.7 PART I – Geotechnical Investigation Requirements (62-701.410(2), FAC)**

The required information for this section has not changed from the analysis presented in the Application for Permit to Construct an Expansion to the Tomoka Farms Road Landfill Class III Disposal Unit (Reference 2). The application form has been marked "No Change". See Section 7.0.



#### **1.4.8 PART J - Vertical Expansion of Landfills (62-701.430, FAC)**

No vertical expansion is proposed in this application. The maximum elevation is established by the 2008 construction permit to be approximate elevation 165 feet NGVD. The application form has been marked "Not Applicable". See Section 8.0.

#### **1.4.9 PART K - Landfill Operation Requirements (62-701.500, FAC)**

Operational procedures for the Class III landfill unit are included in the April 2013 Operations Plan, previously submitted to the Department as part of the April 2014 minor modification of the North Cell operations permit. The Operations Plan and the embedded Contingency Operations Plan is provided in Attachment C. The required information for this section is included in Section 9.0 of this permit application. A reduced sized set of FDEP approved Operation Plans from the 2009 operations permit application is provided for reference in Appendix D. a reduced size copy of the permitted fill sequence drawings previously submitted to FDEP are also provided for reference in Appendix D.

#### **1.4.10 PART L - Water Quality and Leachate Monitoring Requirements (62-701.510, FAC)**

The required information for this section is included in Section 10.0 of this document.

#### **1.4.11 PART M - Special Waste Handling Requirements (62-701.520, FAC)**

The required information for this section is included in Section 11.0 of this document. No special wastes are landfilled into the Class III Landfill. The application form has been marked "Not Applicable".

#### **1.4.12 PART N - Gas Management System Requirements (62-701.530, FAC)**

The required information for this section is included in Section 12.0 of this document. A passive gas control system as presented in the 2009 operations permit application is proposed to be constructed at closure with no change. The application form has been marked "No Change". Landfill Gas Recovery is "Not Applicable" to the Class III unit.

#### **1.4.13 PART O, P, & Q - Landfill Closure Requirements, Other Closure Procedures, and Long Term Care (62-701.600, 610 & 620, FAC)**

The required information for this section is included in Section 13.0 of this document. The landfill closure cover requirements as presented in the 2009 operations permit application is proposed to be constructed at closure with no change. The application form has been marked "No Change". This application is for operations permit renewal only; landfill closure requirements, closure procedures and long-term care procedures are "Not Applicable." The County does not propose to permit closing of the Class III landfill under this operations permit renewal application.

#### **1.4.14 PART R - Financial Assurance (62-701.630, FAC)**

The required information for this section is included in Section 14.0 of this document. An updated detailed closure cost estimate, based on the permitted closure design is provided in Attachment E. Volusia County will provide annual financial responsibility cost estimates and financial assurance documentation as required.

#### **1.4.15 PART S - Certification by Applicant and Engineer or Public Officer**

The required information for this section has been included on the final page of the application form.



# 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  
850-695-8300

Northwest 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):

- |  |  |
|--|--|
| <input type="checkbox"/> Class I Landfill              | <input type="checkbox"/> Ash Monofill      |
| <input checked="" type="checkbox"/> Class III Landfill | <input type="checkbox"/> Asbestos Monofill |
| <input type="checkbox"/> Industrial Solid Waste        |  |
| <input type="checkbox"/> Other (describe):             |  |
- 
- 

**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:

- |   |  |
|---|--|
| <input type="checkbox"/> New                | <input type="checkbox"/> Substantial Modification  |
| <input checked="" type="checkbox"/> Renewal | <input type="checkbox"/> Intermediate Modification |
|   | <input type="checkbox"/> Minor Modification        |

4. Facility name: Tomoka Farms Road Landfill

5. DEP ID number: 27540 (Class III) County: Volusia

6. Facility location (main entrance):

1990 Tomoka Farms Road, Port Orange Florida, 32128

Located on C.R 415(Tomoka Farms Road) approximately 3 miles south of U.S.92

7. Location coordinates:

Section: 09 Township: 16S Range: 32E  
Latitude: 29 ° 07' 53" Longitude: 81 ° 05' 25.6" (center of Class III unit)  
Datum: NAD 83/90(E), NGVD29 Coordinate method: Google Maps

Collected by: John Less P.E

Company/Affiliation: Neel-Schaffer, Inc.

Applicant name (operating authority): Volusia County Public Works- Solid Waste Division

Mailing address: 1990 Tomoka Farms Road, Port Orange, Florida 32128

Street or P.O. Box

City

State

Zip

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

Title: Director of Solid Waste Division ,Volusia County lmarion@volusia.org

E-Mail Address (if available)

Please include: jreed@volusia.org and jstirk@volusia.org on all correspondence.

9. Authorized agent/Consultant: Neel-Schaffer, Inc.

Mailing address: 2301 Lucien Way, Suite 300, Maitland, Florida 32751

Street or P.O. Box City State Zip

Contact person: Ron S. Beladi, P.E. Telephone: (407) 647-6623

Title: Sr. Engineer Manager

Ron.Beladi@neel-schaffer.com

E-Mail Address (if available)

10. Landowner (if different than applicant: Same as applicant

Mailing address: Not applicable

Street or P.O. Box City State Zip

Contact person:  Telephone: ( )

Title:

E-Mail Address (if available)

11. Cities, towns, and areas to be served:

All Volusia County unincorporated and incorporated areas. Historically Volusia County has been accepting solid waste transported from Flagler County.

12. Population to be served:

Current: 503,200 (Year 2014)

Five-Year Projection: 530,500(Year,2020)EDR-Fla. &Volusia County Planning Dept.

13. Date site will be ready to be inspected for completion: N/A- No construction sought under this application

14. Expected life of the facility: 30 Years(2034)

15. Estimated costs:

Total construction: \$ N/A

Closing Costs: \$ 8.24 million (2014 updated Estimate)

16. Anticipated construction starting and completion dates:

From: N/A (final closure in Year 2044) To: 2045 (final phase closure)

17. Expected volume or weight of waste to be received: (Year 2020-Approx 115,000 tons, 310 days/yr)

yds<sup>3</sup>/day 370 tons/day  gallons/day



**PART B. DISPOSAL FACILITY GENERAL INFORMATION**

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

The purpose of this application is renewal of the current operations permit (Permit No. SO-64-0078767-026) for the Class III landfill unit at the Tomoka Farms Road Landfill. No construction activity is proposed in this application. No changes to the currently permitted final grading plan, passive LFG, secondary stormwater system, filling sequence and permitted final cover closure design is requested in this application.

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

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

jreed@volusia.org Also copy lmarion@volusia.org  
and jstirk@volusia.org

E-Mail Address (if available)

3. Disposal area Total acres: 88.0 Used acres: 88.0 Available acres: 0.00

4. Weighing scales used: ☒ Yes ☐ No

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

6. Charge for waste received: \_\_\_\_\_ \$/yd<sup>3</sup> Class III \$ 28.00 /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: One per working face

12. Site located in: ☐ Floodplain

☐ Wetlands

☒ Other (describe)

Class III landfill unit is located in uplands areas. Class III unit is at elevation 31 Ft NGVD, 3.0 feet above the seasonal high groundwater table.

13. Days of operation: Monday through Saturday, 310 days/year, closed three holidays/year
14. Hours of operation: 07:00 A.M to 5:30 PM
15. Days working face covered: Weekly
16. Elevation of water table: Approx. 26.0 ft. NGVD Datum Used: NGVD29
17. Number of monitoring wells: 54 wells in MPIS
18. Number of surface monitoring points: Seven locations listed in MPIS
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 Class III over old Cl. 1 ☐ Double geomembrane  
☐ Single clay liner ☐ Geomembrane & Composite  
☐ Single geomembrane ☐ Double composite  
☐ Single composite ☒ None  
☐ Slurry wall ☐ Other (describe):
21. Leachate collection method:  
☐ Collection pipes ☐ Double geomembrane  
☐ Geonets ☐ Gravel layer  
☐ Well points ☐ Interceptor trench  
☐ Perimeter ditch ☒ None  
☐ Other (describe):
22. Leachate storage method:  
☐ Tanks ☐ Surface impoundments  
☒ Other (describe): None
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):

Not Applicable

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25. For leachate discharged to surface waters: Not Applicable

Name and Class of receiving water:

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26. Storm Water:

Collected: ☐ Yes ☒ No (Pre-closure)

Type of treatment:

Under the current Environmental Resource permit, stormwater runoff is allowed to flow to perimeter swales and low points surrounding the landfill.

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Name and Class of receiving water:

Onsite wetlands to east of Class III disposal unit

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

ERP64-020632-002EM (in force)

**PART C. PROHIBITIONS (62-701.300, FAC)**

**LOCATION**

- |                                       |             |  |  |
|---------------------------------------|-------------|--|--|
| S <input checked="" type="checkbox"/> | Section 2.0 | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 1. Provide documentation that each of the siting criteria will be satisfied for the facility; (62-701.300(2), FAC)                               |
| S <input type="checkbox"/>            |             | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 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 <input type="checkbox"/>            |             | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 3. Provide documentation that the facility will be in compliance with the burning restrictions; (62-701.300(3), FAC)                             |
| S <input type="checkbox"/>            |             | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 4. Provide documentation that the facility will be in compliance with the hazardous waste restrictions; (62-701.300(4), FAC)                     |
| S <input type="checkbox"/>            |             | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 5. Provide documentation that the facility will be in compliance with the PCB disposal restrictions; (62-701.300(5), FAC)                        |
| S <input type="checkbox"/>            |             | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 6. Provide documentation that the facility will be in compliance with the biomedical waste restrictions; (62-701.300(6), FAC)                    |
| S <input type="checkbox"/>            |             | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 7. Provide documentation that the facility will be in compliance with the Class I surface water restrictions; (62-701.300(7), FAC)               |
| S <input type="checkbox"/>            |             | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 8. Provide documentation that the facility will be in compliance with the special waste for landfills restrictions; (62-701.300(8), FAC)         |
| S <input type="checkbox"/>            |             | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 9. Provide documentation that the facility will be in compliance with the liquid restrictions; (62-701.300(10), FAC)                             |
| S <input type="checkbox"/>            |             | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 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 <input checked="" type="checkbox"/> | Section 3.1 | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | 1. Four copies, at minimum, of the completed application form, all supporting data and reports; (62-701.320(5)(a), FAC)  |
| S <input checked="" type="checkbox"/> | Section 3.2 | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | 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 <input checked="" type="checkbox"/> | Section 3.3 | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | 3. A letter of transmittal to the Department; (62-701.320(7)(a), FAC)  |



LOCATIONPART D CONTINUED

- |                                       |  |  |   |
|---------------------------------------|--|--|---|
| S <input checked="" type="checkbox"/> | Section 3.4  | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 4. A completed application form dated and signed by the applicant; (62-701.320(7)(b), FAC)  |
| S <input checked="" type="checkbox"/> | Section 3.5  | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 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 <input checked="" type="checkbox"/> | Section 3.6  | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 6. An engineering report addressing the requirements of this rule and with the following format: a cover sheet, text printed on 8 1/2 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 <input checked="" type="checkbox"/> | Section 3.7, Section 9.0 & Attachment C            | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 7. Operation Plan and Closure Plan; (62-701.320(7)(e)1, FAC)  |
| S <input checked="" type="checkbox"/> | Section 3.8, Section 9.0 & Attachment C            | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 8. Contingency Plan; (62-701.320(7)(e)2, FAC)   |
| S <input checked="" type="checkbox"/> | Section 3.9 Attach B & Attach D                    | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 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 <input checked="" type="checkbox"/> | Attach B   | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | a. A regional map or plan with the project location in relation to major roadways and population centers;   |
| S <input checked="" type="checkbox"/> | Attach B   | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 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 <input type="checkbox"/>            |  | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | c. A site plan showing all property boundaries certified by a Florida Licensed Professional Surveyor and Mapper;  |
| S <input checked="" type="checkbox"/> | Engineering Report including Attachments and Plans | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 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 <input type="checkbox"/>            |  | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 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 <input type="checkbox"/>            | Section 3.11                                       | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 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)   |

LOCATIONPART D CONTINUEDS ☒ Section 3.12 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 ☐ Section 3.13 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 ☐ Section 3.14 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 ☒ Section 3.15 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)**LOCATIONS ☒ Section 4.1& Attach B 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 ☒ Section 4.2&Attach B 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 ☒ Section 4.2&Attac B N/A ☐ N/C ☐

a. Dimensions;

S ☒ Attach A and Attach B 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 ☒ Attach B N/A ☐ N/C ☐

d. Proposed plan of trenching or disposal areas;

S ☒ Section 4.2 & Attach B 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 ☒ Attach B N/A ☐ N/C ☐

f. Any previously filled waste disposal areas;

S ☒ Section 13.2.6 N/A ☐ N/C ☐

g. Fencing or other measures to restrict access;



LOCATIONPART E CONTINUEDS ☒ Sect. 4.3 & Attach B 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 ☒ Sect. 4.3 & Attach B N/A ☐ N/C ☐

a. Proposed fill areas;

S ☒ Sect. 4.3 & Attach B N/A ☐ N/C ☐

b. Borrow areas;

S ☒ Sect. 4.3 & Attach B N/A ☐ N/C ☐

c. Access roads;

S ☒ Sect. 4.3 & Attach B N/A ☐ N/C ☐

d. Grades required for proper drainage;

S ☒ Sect. 4.3 & Attach D N/A ☐ N/C ☐

e. Cross sections of lifts;

S ☒ Sect. 4.3 & Attach D N/A ☐ N/C ☐

f. Special drainage devices if necessary;

S ☐ \_\_\_\_\_ N/A ☐ N/C ☒

g. Fencing;

S ☒ Attach B N/A ☐ N/C ☒

h. Equipment facilities;

S ☒ Section 4.4 N/A ☐ N/C ☐

4. A report on the landfill describing the following: (62-701.330(3)(d), FAC)

S ☒ Section 4.4 N/A ☐ N/C ☐

a. The current and projected population and area to be served by the proposed site;

S ☒ Section 4.4 N/A ☐ N/C ☐

b. The anticipated type, annual quantity, and source of solid waste expressed in tons;

S ☒ Section 4.4 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 ☒ Section 4.4 N/A ☐ N/C ☐

d. The source and type of cover material used for the landfill;

S ☒ Section 4.5 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 ☒ Section 4.6 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 4.7 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 ☒ Section 4.8 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 5.1 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;



LOCATIONPART G CONTINUED

S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>

b. Composite liners; (62-701.400(3)(b), FAC)

- (1) Upper geomembrane thickness and properties;
- (2) Design leachate head for primary leachate collection and removal system (LCRS) including leachate recirculation if appropriate;
- (3) Design thickness in accordance with Table A and number of lifts planned for lower soil component;

c. Double liners; (62-701.400(3)(c), FAC)

- (1) Upper and lower geomembrane thickness and properties;
- (2) Design leachate head for primary LCRS to limit the head to one foot above the liner;
- (3) Lower geomembrane sub-base design;
- (4) Leak detection and secondary leachate collection system minimum design criteria ( $k \geq 10$  cm/sec, head on lower liner  $\leq 1$  inch, head not to exceed thickness of drainage layer);

d. Standards for geosynthetic components; (62-701.400(3)(d), FAC)

- (1) Factory and field seam test methods to ensure all geomembrane seams achieve the minimum specifications;
- (2) Geomembranes to be used shall pass a continuous spark test by the manufacturer;
- (3) Design of 24-inch-thick protective layer above upper geomembrane liner;
- (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;
- (5) HDPE geomembranes, if used, meet the specifications in GRI GM13, and LLDPE geomembranes, if used, meet the specifications in GRI GM17;
- (6) PVC geomembranes, if used, meet the specifications in PGI 1104;

LOCATIONPART G CONTINUEDS ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

- (7) Interface shear strength testing results of the actual components which will be used in the liner system;
- (8) Transmissivity testing results of geonets if they are used in the liner system;
- (9) Hydraulic conductivity testing results of geosynthetic clay liners if they are used in the liner system;

## e. Geosynthetic specification requirements; (62-701.400(3)(e), FAC)

- (1) Definition and qualifications of the designer, manufacturer, installer, QA consultant and laboratory, and QA program;
- (2) Material specifications for geomembranes, geocomposites, geotextiles, geogrids, and geonets;
- (3) Manufacturing and fabrication specifications including geomembrane raw material and roll QA, fabrication personnel qualifications, seaming equipment and procedures, overlaps, trial seams, destructive and nondestructive seam testing, seam testing location, frequency, procedure, sample size, and geomembrane repairs;
- (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;
- (5) Geotextile and geogrids specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil materials and any overlying materials;
- (6) Geonet and geocomposites specifications including handling and placement, conformance testing, stacking and joining, repair, and placement of soil materials and any overlying materials;
- (7) Geosynthetic clay liner specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil materials and any overlying materials;



LOCATIONPART G CONTINUEDS ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

f. Standards for soil liner components; (62-701.400(3)(f), FAC)

(1) Description of construction procedures including over- excavation and backfilling to preclude structural inconsistencies and procedures for placing and compacting soil components in layers;

(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;

(3) Procedures for testing in situ soils to demonstrate they meet the specifications for soil liners;

(4) Specifications for soil component of liner including at a minimum:

(a) Allowable particle size distribution, and Atterberg limits including shrinkage limit;

(b) Placement moisture and dry density criteria;

(c) Maximum laboratory-determined saturated hydraulic conductivity using simulated leachate;

(d) Minimum thickness of soil liner;

(e) Lift thickness;

(f) Surface preparation (scarification);

(g) Type and percentage of clay mineral within the soil component;

(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;

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;

LOCATIONPART G CONTINUEDS ☐ \_\_\_\_\_ 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  $\geq 1 \times 10^{-3}$  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;



LOCATIONPART G CONTINUEDS ☐ Section 8.2 N/A ☒ N/C ☐S ☐ Section 12.1 N/A ☐ N/C ☒S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐S ☐ \_\_\_\_\_ N/A ☒ N/C ☐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;

e. Describe methods of gas management in accordance with Rule 62-701.530, FAC;

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;

5. Leachate storage tanks and leachate surface impoundments; (62-701.400(6), FAC)

a. Surface impoundment requirements; (62-701 .400(6)(b), FAC)

(1) Documentation that the design of the bottom liner will not be adversely impacted by fluctuations of the ground water;

(2) Designed in segments to allow for inspection and repair, as needed, without interruption of service;

(3) General design requirements;

(a) Double liner system consisting of an upper and lower 60-mil minimum thickness geomembrane;

(b) Leak detection and collection system with hydraulic conductivity  $\geq 1$  cm/sec;

(c) Lower geomembrane place on subbase  $\geq 6$  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;

(d) Design calculation to predict potential leakage through the upper liner;

(e) Daily inspection requirements, and notification and corrective action requirements if leakage rates exceed that predicted by design calculations;

(4) Description of procedures to prevent uplift, if applicable;

LOCATIONPART G CONTINUED

S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

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S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

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S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

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S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

(5) Design calculations to demonstrate minimum two feet of freeboard will be maintained;

(6) Procedures for controlling vectors and off-site odors;

b. Above-ground leachate storage tanks; (62-701.400(6)(c), FAC)

(1) Describe tank materials of construction and ensure foundation is sufficient to support tank;

(2) Describe procedures for cathodic protection for the tank, if needed;

(3) Describe exterior painting and interior lining of the tank to protect it from the weather and the leachate stored;

(4) Describe secondary containment design to ensure adequate capacity will be provided and compatibility of materials of construction;

(5) Describe design to remove and dispose of stormwater from the secondary containment system;

(6) Describe an overfill prevention system, such as level sensors, gauges, alarms, and shutoff controls to prevent overfilling;

(7) Inspections, corrective action, and reporting requirements;

(a) Weekly inspection of overfill prevention system;

(b) Weekly inspection of exposed tank exteriors;

(c) Inspection of tank interiors when tank is drained, or at least every three years;

(d) Procedures for immediate corrective action if failures detected;

(e) Inspection reports available for Department review;

c. Underground leachate storage tanks; (62-701.400(6)(d), FAC)



LOCATIONPART G CONTINUED

S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
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S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
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S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>

- (1) Describe materials of construction;
- (2) A double-walled tank design system to be used with the following requirements:
- (a) Interstitial space monitoring at least weekly;
  - (b) Corrosion protection provided for primary tank interior and external surface of outer shell;
  - (c) Interior tank coatings compatible with stored leachate;
  - (d) Cathodic protection inspected weekly and repaired as needed;

- (3) Describe an overfill prevention system, such as level sensors, gauges, alarms, and shutoff controls to prevent overfilling, and provide for weekly inspections;

- (4) Inspection reports available for Department review;

d. Schedule provided for routine maintenance of LCRS; (62- 701.400(6)(e), FAC)

6. Liner systems construction quality assurance (CQA); (62- 701.400(7), FAC)

- a. Provide CQA Plan including:

- (1) Specifications and construction requirements for liner system;
- (2) Detailed description of quality control testing procedures and frequencies;
- (3) Identification of supervising professional engineer;
- (4) Identify responsibility and authority of all appropriate organizations and key personnel involved in the construction project;
- (5) State qualifications of CQA professional engineer and support personnel;

LOCATION

PART G CONTINUED

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 ☐ \_\_\_\_\_ 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;



**LOCATION****PART H CONTINUED**

- S ☐ \_\_\_\_\_ N/A ☐ N/C ☒
- S ☐ \_\_\_\_\_ N/A ☐ N/C ☒
- S ☐ \_\_\_\_\_ N/A ☐ N/C ☒
- S ☐ \_\_\_\_\_ N/A ☐ N/C ☒
- S ☒ Sect. 6.0 & Exhibit B N/A ☐ N/C ☐
- S ☒ Section 10.6 N/A ☐ N/C ☐
- S ☒ Section 6.0 & Exhibit B (Fig B-6) N/A ☐ N/C ☐
- S ☐ \_\_\_\_\_ N/A ☒ N/C ☐

- c. Background quality of ground water and surface water;
- d. Any on-site hydraulic connections between aquifers;
- 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;
- f. Description of topography, soil types, and surface water drainage systems;
- 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;
- h. Identify and locate any existing contaminated areas on the site;
- i. Include a map showing the locations of all potable wells within 500 feet of the waste storage and disposal areas;

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 7.0 N/A ☐ N/C ☐
- S ☐ \_\_\_\_\_ N/A ☐ N/C ☒
- S ☐ \_\_\_\_\_ N/A ☐ N/C ☒
- S ☐ \_\_\_\_\_ N/A ☐ N/C ☒
- S ☐ \_\_\_\_\_ N/A ☐ N/C ☒
- S ☐ \_\_\_\_\_ N/A ☐ N/C ☒

1. Submit a geotechnical site investigation report defining the engineering properties of the site including at least the following:

- a. Description of subsurface conditions including soil stratigraphy and ground water table conditions;
- b. Investigate for the presence of muck, previously filled areas, soft ground, lineaments, and sink holes;
- c. Estimates of average and maximum high water table across the site;
- d. Foundation analysis including:
- (1) Foundation bearing capacity analysis;

LOCATIONPART I CONTINUEDS ☐ \_\_\_\_\_ 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)**LOCATIONS ☐ Section 8.0 \_\_\_\_\_ 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 <input checked="" type="checkbox"/> | <u>Attach C Ops, Sect. 2.1.1&amp; Appl. Sect 9.1</u> | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 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 <input checked="" type="checkbox"/> | <u>Attachment C &amp; Appl. sect. 9.2</u>            | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 2. Provide a landfill operation plan including procedures for: (62-701.500(2), FAC)  |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 2.2</u>                        | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | a. Designating responsible operating and maintenance personnel;  |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 2.3</u>                        | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | b. Emergency preparedness and response, as required in subsection 62-701.320(16), FAC;   |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 2.4, and.6.0</u>               | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | c. Controlling types of waste received at the landfill;  |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 2.5</u>                        | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | d. Weighing incoming waste;  |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 2.6</u>                        | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | e. Vehicle traffic control and unloading;  |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 2.7 &amp; Appl. Sect 9.2</u>   | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | f. Method and sequence of filling waste;   |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 2.8</u>                        | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | g. Waste compaction and application of cover;  |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 2.9</u>                        | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | h. Operations of gas, leachate, and stormwater controls;   |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 2.10</u>                       | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | i. Water quality monitoring;   |
| S <input type="checkbox"/>            | <u>Attach C Ops Sect. 2.2</u>                        | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | j. Maintaining and cleaning the leachate collection system;  |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 3.0</u>                        | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 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 <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 4.0</u>                        | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 4. Describe the waste records that will be compiled monthly and provided to the Department annually; (62-701.500(4), FAC)  |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 5.0</u>                        | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 5. Describe methods of access control; (62-701.500(5), FAC)  |
| S <input checked="" type="checkbox"/> | <u>Attach C Ops Sect. 6.0</u>                        | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 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)   |

LOCATIONPART K CONTINUEDS ☒ Attach C Ops Sect. 7.0 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.1 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.2 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.3 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.4 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.5 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.5 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.5 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.5 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.5 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.5 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.5 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.6 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.7 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.8 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.9 N/A ☐ N/C ☐S ☒ Attach C Ops Sect. 7.10 N/A ☐ N/C ☐

7. Describe procedures for spreading and compacting waste at the landfill that include: (62-701.500(7), FAC)

a. Waste layer thickness and compaction frequencies;

b. Special considerations for first layer of waste placed above the liner and leachate collection system;

c. Slopes of cell working face and side grades above land surface, and planned lift depths during operation;

d. Maximum width of working face;

e. Description of type of initial cover to be used at the facility that controls:

(1) Vector breeding/animal attraction;

(2) Fires;

(3) Odors;

(4) Blowing litter;

(5) Moisture infiltration;

f. Procedures for applying initial cover, including minimum cover frequencies;

g. Procedures for applying intermediate cover;

h. Time frames for applying final cover;

i. Procedures for controlling scavenging and salvaging;

j. Description of litter policing methods;

k. Erosion control procedures;



LOCATIONPART K CONTINUED

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S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
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S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input checked="" type="checkbox"/>	<u>Attach C Ops Sect. 9.0 &amp; Appl. Sect 9.3</u>	N/A <input type="checkbox"/> N/C <input type="checkbox"/>
S <input checked="" type="checkbox"/>	<u>Attach C Ops Sect. 10.0&amp; Appl. Sect. 9.4</u>	N/A <input type="checkbox"/> N/C <input type="checkbox"/>
S <input checked="" type="checkbox"/>	<u>Attach C Ops Sect. 11 &amp; Appl. Sect 9.5</u>	N/A <input type="checkbox"/> N/C <input type="checkbox"/>
S <input checked="" type="checkbox"/>	<u>Attach C Ops Sect. 11.1</u>	N/A <input type="checkbox"/> N/C <input type="checkbox"/>
S <input checked="" type="checkbox"/>	<u>Attach C Ops Sect. 11.2</u>	N/A <input type="checkbox"/> N/C <input type="checkbox"/>
S <input checked="" type="checkbox"/>	<u>Attach C Ops Sect. 11.3</u>	N/A <input type="checkbox"/> N/C <input type="checkbox"/>

8. Describe operational procedures for leachate management including: (62- 701.500(8), FAC)

a. Leachate level monitoring;

b. Operation and maintenance of leachate collection and removal system, and treatment as required;

c. Procedures for managing leachate if it becomes regulated as a hazardous waste;

d. Identification of treatment or disposal facilities that may be used for off-site discharge and treatment of leachate;

e. Contingency plan for managing leachate during emergencies or equipment problems;

f. Procedures for recording quantities of leachate generated in gal/day and including this in the operating record;

g. Procedures for comparing precipitation experienced at the landfill with leachate generation rates and including this information in the operating record;

h. Procedures for water pressure cleaning or video inspecting leachate collection systems;

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)

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)

11. Equipment and operation feature requirements; (62-701.500(11), FAC)

a. Sufficient equipment for excavating, spreading, compacting, and covering waste;

b. Reserve equipment or arrangements to obtain additional equipment within 24 hours of breakdown;

c. Communications equipment;

**LOCATION****PART K CONTINUED**

- |                                       |   |   |   |
|---------------------------------------|---|---|---|
| S <input checked="" type="checkbox"/> | Attach C Ops Sect. 11.4                         | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | d. Dust control methods;  |
| S <input checked="" type="checkbox"/> | Attach C Ops Sect. 11.5                         | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | e. Fire protection capabilities and procedures for notifying local fire department authorities in emergencies;  |
| S <input checked="" type="checkbox"/> | Attach C Ops Sect. 11.6                         | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | f. Litter control devices;  |
| S <input checked="" type="checkbox"/> | Attach C Ops Sect. 11.7                         | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | g. Signs indicating operating authority, traffic flow, hours of operation, and disposal restrictions;   |
| S <input checked="" type="checkbox"/> | Attach C Ops Sect. 12.1 & 12.2 & Appl. Sect 9.6 | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | 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 <input checked="" type="checkbox"/> | Attach C Ops Sect. 13 & Appl. Sect 9.7          | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | 13. Additional record keeping and reporting requirements; (62-701.500(13), FAC)   |
| S <input checked="" type="checkbox"/> | Attach C Ops Sect. 13.1                         | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | a. Records used for developing permit applications and supplemental information maintained for the design period of the landfill;   |
| S <input checked="" type="checkbox"/> | Attach C Ops Sect. 13.2                         | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | b. Monitoring information, calibration and maintenance records, and copies of reports required by permit maintained for at least 10 years;  |
| S <input checked="" type="checkbox"/> | Attach C Ops Sect. 13.3                         | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | 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 <input checked="" type="checkbox"/> | Attach C Ops Sect. 13.4                         | N/A <input type="checkbox"/> N/C <input type="checkbox"/> | 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 <input checked="" type="checkbox"/> | Section 10.1 | N/A <input type="checkbox"/> N/C <input type="checkbox"/>            | 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 <input type="checkbox"/>            |              | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 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)                 |



LOCATIONPART L CONTINUED

S <input checked="" type="checkbox"/>	<u>Section 10.2</u>	N/A <input type="checkbox"/> N/C <input type="checkbox"/>
S <input checked="" type="checkbox"/>	<u>Section 10.3</u>	N/A <input type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/>
S <input checked="" type="checkbox"/>	<u>Section 10.4</u>	N/A <input type="checkbox"/> N/C <input type="checkbox"/>
S <input checked="" type="checkbox"/>	<u>Section 10.4</u>	N/A <input type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/>
S <input checked="" type="checkbox"/>	<u>Section 10.5</u>	N/A <input type="checkbox"/> N/C <input type="checkbox"/>
S <input type="checkbox"/>	_____	N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/>

b. All sampling and analysis performed in accordance with Chapter 62-160, FAC; (62-701.510(2)(b), FAC)

c. Ground water monitoring requirements; (62-701.510(3), FAC)

- (1) Detection wells located downgradient from and within 50 feet of disposal units;
- (2) Downgradient compliance wells as required;
- (3) Background wells screened in all aquifers below the landfill that may be affected by the landfill;
- (4) Location information for each monitoring well;
- (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;
- (6) Properly selected well screen locations;
- (7) Monitoring wells constructed to provide representative ground water samples;
- (8) Procedures for properly abandoning monitoring wells;
- (9) Detailed description of detection sensors, if proposed;

d. Surface water monitoring requirements; (62-701.510(4), FAC)

- (1) Location of and justification for all proposed surface water monitoring points;
- (2) Each monitoring location to be marked and its position determined by a registered Florida land surveyor;

e. Initial and routine sampling frequency and requirements; (62- 701.510(5), FAC)

- (1) Initial background ground water and surface water sampling and analysis requirements;

**LOCATION****PART L CONTINUED**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 ☒ Section 10.6 N/A ☐ N/C ☐

f. Describe procedures for implementing evaluation monitoring, prevention measures, and corrective action as required; (62- 701.510(6), FAC)

S ☒ Section 10.7 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 11.0,  
Section 2.0 and  
Attach. C 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 12.1 N/A ☐ N/C ☐

1. Provide documentation for a gas management system that will:  
(62- 701.530(1), FAC)

S ☐ Section 12.1 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 ☐ Section 12.1 N/A ☐ N/C ☒

b. Be designed for site specific conditions;

S ☐ Section 12.1 N/A ☐ N/C ☒

c. Be designed to reduce gas pressure in the interior of the landfill;

S ☐ Section 12.1 N/A ☐ N/C ☒

d. Be designed to not interfere with the liner, leachate control system, or final cover;

S ☐ Section 12.2 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 <input type="checkbox"/> | <u>Section 13.0</u>                         | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 1. Closure permit requirements; (62-701.600(2), FAC)   |
| S <input type="checkbox"/> | <u>Section 13.1</u>                         | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | a. Application submitted to the Department at least 90 days prior to final receipt of wastes;  |
| S <input type="checkbox"/> | <u>Section 13.0</u>                         | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | b. Closure plan shall include the following:   |
| S <input type="checkbox"/> | <u>Section 13.2</u>                         | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | (1) Closure design plan;   |
| S <input type="checkbox"/> | <u>Section 13.3</u>                         | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | (2) Closure operation plan;  |
| S <input type="checkbox"/> | <u>Section. 13.5</u>                        | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | (3) Plan for long-term care;   |
| S <input type="checkbox"/> | <u>Section 13.3.2&amp;<br/>Section 14.0</u> | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | (4) A demonstration that proof of financial assurance for long- term care will be provided;  |
| S <input type="checkbox"/> | <u>Section 13.2</u>                         | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | 2. Closure design plan including the following requirements: (62-701.600(3), FAC)  |
| S <input type="checkbox"/> | <u>Section 13.2.1</u>                       | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | a. Plan sheet showing phases of site closing;  |
| S <input type="checkbox"/> | <u>Attach B &amp; Attach D</u>              | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | b. Drawings showing existing topography and proposed final grades;   |
| S <input type="checkbox"/> | <u>Section 13.2.1</u>                       | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | c. Provisions to close units when they reach approved design dimensions;   |
| S <input type="checkbox"/> | <u>Attach B &amp; Attach D</u>              | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | d. Final elevations before settlement;   |
| S <input type="checkbox"/> | <u>Section 13.2.2 &amp;<br/>Attach. D</u>   | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | e. Side slope design including benches, terraces, down slope drainage ways, energy dissipaters, and description of expected precipitation effects; |
| S <input type="checkbox"/> | <u>Section 13.2.3</u>                       | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | f. Final cover installation plans including:   |
| S <input type="checkbox"/> | <u></u>                                     | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | (1) CQA plan for installing and testing final cover;   |
| S <input type="checkbox"/> | <u>Section 13.2.3</u>                       | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | (2) Schedule for installing final cover after final receipt of waste;  |
| S <input type="checkbox"/> | <u>Section 13.2.3</u>                       | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | (3) Description of drought resistant species to be used in the vegetative cover;   |



## LOCATION

**PART 0 CONTINUED**

S ☒ Section 13.2.3 & Attach.D N/A ☐ N/C ☒

(4) Top gradient design to maximize runoff and minimize erosion:

S ☐ Section 13.2.3 N/A ☐ N/C ☒

(5) Provisions for cover material to be used for final cover maintenance:

S ☐ Section 13.2.4 N/A ☐ N/C ☒

g. Final cover design requirements:

S ☐ Sect 13.2.4 & Attach D N/A ☐ N/C ☒

(1) Protective soil layer design;

S ☐ N/A ☐ N/C ☒

(2) Barrier soil layer design;

S ☐ Sect.13.2.3 N/A ☐ N/C ☒

(3) Erosion control vegetation;

S ☐ Sect 13.2.2 & Attach D N/A ☐ N/C ☒

(4) Geomembrane barrier layer design;

S ☐ N/A ☐ N/C ☒

(5) Geosynthetic clay liner design, if used:

S ☐ Section 13.2.4 N/A ☐ N/C ☒

6) Stability analysis of the cover system and the disposed waste;

S ☐ Sect. 13.2.5 & Attach D N/A ☐ N/C ☒

h. Proposed method of stormwater control;

S ☐ Section 13.2.6 N/A ☐ N/C ☒

i. Proposed method of access control;

S ☐ Section 12.1 N/A ☐ N/C ☒

j. Description of the proposed or existing gas management system which complies with Rule 62-701.530, FAC;

S ☐ Section 13.3 N/A ☐ N/C ☒

3. Closure operation plan shall include: (62-701.600(4), FAC)

S ☐ Section 13.3.1 N/A ☐ N/C ☒

a. Detailed description of actions which will be taken to close the landfill;

S ☐ Section 13.3.1 N/A ☐ N/C ☒

b. Time schedule for completion of closing and long-term care:

S ☐ Section 13.3.2 N/A ☐ N/C ☒

c. Describe proposed method for demonstrating financial assurance for long-term care;

**LOCATION****PART O CONTINUED**

- |                            |                |  |  |
|----------------------------|----------------|--|--|
| S <input type="checkbox"/> | Section 13.3.4 | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | d. Operation of the water quality monitoring plan required in Rule 62- 701.510, FAC;   |
| S <input type="checkbox"/> | Section 13.3.4 | N/A <input type="checkbox"/> N/C <input checked="" type="checkbox"/> | e. Development and implementation of gas management system required in Rule 62-701.530, FAC;   |
| S <input type="checkbox"/> | Section 13.3.5 | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | 4. Certification of closure construction completion including: (62-701.600(6), FAC)  |
| S <input type="checkbox"/> | Section 13.3.5 | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | a. Survey monuments; (62-701.600(6)(a), FAC)   |
| S <input type="checkbox"/> | Section 13.3.5 | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | b. Final survey report; (62-701.600(6)(b), FAC)  |
| S <input type="checkbox"/> | Section 13.3.6 | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | 5. Declaration to the public; (62-701.600(7), FAC)   |
| S <input type="checkbox"/> | Section 13.3.6 | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | 6. Official date of closing; (62-701.600(8), FAC)  |
| S <input type="checkbox"/> | Section 13.3.7 | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | 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 <input type="checkbox"/> | Section 13.4 | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | 1. Describe how the requirements for use of closed solid waste disposal areas will be achieved; (62-701.610(1), FAC) |
| S <input type="checkbox"/> | Section 13.4 | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | 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 <input type="checkbox"/> | Section. 13.5 | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | 1. Maintaining the gas collection and monitoring system; (62-701.620(5), FAC)                    |
| S <input type="checkbox"/> | Section 13.5  | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | 2. Stabilization report requirements; (62-701.620(6), FAC)                                       |
| S <input type="checkbox"/> | Section 13.5  | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | 3. Right of access; (62-701.620(7), FAC)   |
| S <input type="checkbox"/> | Section 13.5  | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | 4. Requirements for replacement of monitoring devices; (62-701.620(8), FAC)                      |
| S <input type="checkbox"/> | Section 13.5  | N/A <input checked="" type="checkbox"/> N/C <input type="checkbox"/> | 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 ☒ Sect 14.0.& Attach N/A ☐ N/C ☐  
E

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 4.6 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 4.6 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 Utilities Solid Waste Division is aware that statements made in this form and attached information are an application for a Long-term (10 yr) operations 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, Director of Solid Waste  
Division, Volusia County Florida**

\_\_\_\_\_  
Name and Title (please type)

**lmarion@volusia.org**

\_\_\_\_\_  
E-Mail Address (if available)

**TFRLF, 1990 Tomoka Farms Road**

\_\_\_\_\_  
Mailing Address

**Port Orange, Florida 32128**

\_\_\_\_\_  
City, State, Zip Code

**(386) 947-2952**

\_\_\_\_\_  
Telephone Number

Date: \_\_\_\_\_

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 of Applicant or Agent

**Ron S. Beladi, PE, Sr. Engineer Manager**

\_\_\_\_\_  
Name and Title (please type)

**2301 Lucien Way, Suite 300**

\_\_\_\_\_  
Mailing Address

**Maitland, Florida 32751**

\_\_\_\_\_  
City, State, Zip Code

**ron.beladi@neel-schaffer.com**

\_\_\_\_\_  
E-Mail Address (if available)

**41819**

\_\_\_\_\_  
Florida Registration Number (please affix seal)

**(407) 647-6623**

\_\_\_\_\_  
Telephone Number

Date: \_\_\_\_\_



## Part C Prohibitions (62-701.300, FAC)

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Class III waste is placed in the FDEP approved footprint on top of a pre-1985 closed mixed waste disposal area. This application for operations permit renewal does not expand the Class III landfill footprint. Siting prohibitions have been previously met and the application is marked "No Substantial Change." Foundation support was documented in the 2008 geotechnical report used for the Class III Expansion (Reference 2).

The County seeks no exemptions from the burning, hazardous wastes, PCB disposal, and biomedical waste and oily wastes prohibitions of 62-701.300 for the Class III Landfill. These items have been marked "No Substantial Change on the application form.

The County has obtained and will continue to maintain the required approvals from local, state and federal regulatory agencies related to all operations in the TFRLF. The 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.

"Special wastes "are accepted at the TFRLF in accordance with special waste protocol for each type of waste. Special wastes can include ash residue, sewage treatment sludge (residuals), industrial sludge and water/air treatment sludge. These "special wastes" are not disposed in the Class III landfill. No liquids are accepted at either Class I or Class III disposal areas. Asbestos waste is currently disposed of in the Class III landfill in accordance with 40 CFR Part 61.154.

Solid waste disposed of at the Class III Cell will not be placed within 200 feet of natural or artificial body of water, including FDEP jurisdictional wetlands. A portion of the pre-1985 disposal area is located closer than 200 feet from a water body (wetlands) and is subject to pre-May 2001 restrictions. The County continues to provide sideslope and drainage maintenance on portions of the former mixed waste area that was previously constructed within the 200 foot water body limit.

## **Part D - Solid Waste Management Facility Permit Requirements, General (62-701.320, FAC)**

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### **3.1 Permit Application Copies (62-701.320(5) (a), FAC)**

Two signed and sealed (2) copies of the completed permit application including all supporting documents and data are provided to the FDEP. Each copy of the application includes a computer disk (CD) containing the electronic files of the submittal in pdf. In addition, the application and supporting documents are submitted electronically and uploaded to the FDEP site

### **3.2 Certification (62-701.320(6), FAC)**

Appropriate professional certifications are provided on all applicable submittals herewith.

### **3.3 Transmittal Letter (62-701.320(7) (a), FAC)**

The application transmittal letter is included in the front of this permit renewal application document.

### **3.4 FDEP Form (62-701.320(7) (b), FAC)**

A completed FDEP application form (DEP form 62-701.900(1)) dated, signed, and sealed is included at the beginning of this report.

### **3.5 Permit Application Fee (62-701.320(7) (c), FAC)**

A check for \$4000.00 is submitted to FDEP with this document for the Class III Landfill operations permit renewal application fee. The fee is for the first five years of the 10-year duration permit. The fee is in accordance with the fee schedule in 62.4.050 ((j) (16)).

### **3.6 Engineering Report (62-701.320(7) (d), FAC)**

This permit application report is prepared in conformance with FAC 62-701.320(7) (d) required format, content, and appendices.

### **3.7 Operations Plan and Closure Plan (62-701.320(7) (e) 1, FAC)**

An updated operation plan dated April 2014 was submitted to the Department with the application for modification of the North Cell Class I Operations permit. A copy of the April 2014 Operation and Contingency Plan is provided in Attachment C as a reference.

The closure plan approved by FDEP as part of the 2009 operation permit renewal application (Reference 1) is not requested to be changed. Under existing operations permit Specific Condition No. 19, Volusia County is required to close the completed cell within 180 days after the final receipt of waste.



### **3.8 Contingency Plan (62-701.320(7) (e) 2, FAC)**

The contingency plan is an integral part of the Operations Plan provided in Attachment C of this application.

### **3.9 Solid Waste Management Facilities Drawings (62-701.320 (7) (f), FAC)**

Reduced size copies of the permit plans from the 2009 permit renewal are provided in Attachment D for ease of reference. The 2009 operation and closure drawings approved in the 2009 operations permit is not requested to be changed with this application. The approved drawings include the final grading plan, cross section profile, secondary stormwater system, and the passive LFG venting system with supporting details.

The following figures are updated as warranted and provided in Attachment B:

- a) Figure B-1 Airport Location Map
- b) Figure B-2 Aerial Vicinity Map
- c) Figure B-3 Aerial Site Map
- d) Figure B-4 Class III Cell Topography and Site Plan (June 2013)
- e) Figure B-5 Cross Sections of the existing Class III Landfill waste mound
- f) Figure B-6 Monitoring Well, Surface Water Monitoring and gas probe Locations

### **3.10 Proof of Property Ownership (62-701.320(7) (g), FAC)**

Volusia County currently owns approximately 3,500 acres of land in the eastern County designated as the TFRLF. This property has been designated by the County for solid waste management activities and includes buffer and preservation areas. Proof of property ownership for the landfill facility property was previously submitted to the Department. The application has been marked "No Substantial" Change. Boundary surveys for the facility were previously submitted with prior operations permit applications and are on file with the Department.

### **3.11 Recycling Goal Achievement (62-701.320 (7) (h), FAC)**

Volusia County has an active solid waste recycling program and promotes solid waste recycling within the County to continually improve the program. The recycling rate for Year 2012 is reported to be 43 percent. A recycling goal of 75 percent of the total waste stream by 2020 has been established by the State of Florida. The County continues to strive to remove more recyclable materials (metals, food wastes, plastics) from the Class I and Class III solid waste stream to continue increasing the rate of recycling. Normal source-separated recyclables (glass, paper, cardboard, metal, plastics) are currently collected from residents by recyclable collection vehicles, and delivered to a vendor-operated recycling center at the landfill. The County is contemplating a private vendor materials recycling operation on top of the Class III landfill in the future. The County will request a modification of the operations permit from FDEP prior to any changes in the operation of the Class III landfill.

### **3.12 History of FDEP Enforcement Activities (62-701.320 (7) (I), FAC)**

A history of enforcement actions taken by the Department since January 1, 2008 is listed below. Department enforcement activities since the prior operation permit renewal are:



A history of enforcement actions taken by the Department since January 1, 2008 is listed below. Department enforcement activities since the prior operation permit renewal are:

- February 2008 Air Consent Order for failure to timely install and operate the Landfill Gas Control System, and failure to identify the non-compliance status on the 2004, 2005 and 2006 Statement of Compliance. Addressed by Installation of North Cell Phase I LFG control system by August 2006. In-kind project proposed to settle administrative fines were the leachate storage and treatment improvements that resulted in an on-site Sequence Batch Reactor (SBR) Leachate treatment Plant and effluent spray field.
- Warning Letter-dated January 5, 2011 Potential Release of Leachate- A Department inspection in November indicated the potential release of up to 100,000 gallons of leachate may have occurred from the leachate impoundment to an adjacent swale. Issue was resolved with calculations using leachate pond levels, metered leachate quantities transmitted to the impoundments and testing of stormwater. Test results indicated very low levels of leachate constituents in stormwater system. Actual release volume was shown to be much lower than the potential leachate volume.
- Non- Compliance Letter- September 12, 2011 Leachate Seep on south slope of North Cell with seepage into stormwater. Resolved with construction of seep interceptor drain that is connected to the leachate collection system. Construction of interceptor drain completed in late 2011.

### **3.13 Proof of Publication of Landfill Permit Applications (62-702.320(8), FAC)**

The proof of publication in a newspaper of general circulation of notice of applications for a permit to operate a solid waste management facility will be provided to the Department upon receipt of notification from the Department to publish the Notice of Application.

### **3.14 Airport Safety Requirements (62-701.320 (12), FAC)**

The Class III Cell is located on the northeast portion of the Tomoka Farms Landfill Facility. The closest runway is the east-west runway at the Daytona Beach International Airport. The end of this runway is 10,500 feet from the northeast property line of the Tomoka Farms Landfill facility and 12,500 linear feet from the east edge of the Class III cell. The Spruce Creek private airport is approximately 10 miles to the southeast.

The proposed top elevation of 165 feet NGVD is unchanged from the previous application. The Class III landfill does not accept putrescible wastes. No lateral expansion or vertical expansion is proposed under this permit. No notification to government officials, FAA or airports is required. An Airport Location Map is provided in Attachment B.

### **3.15 Certified Operators (62-701.320 (13), FAC)**

The Tomoka Farms Road Landfill Facility is operated by certified operators who are trained as Manager of Landfill Operations or as spotters. A list of staff and their certifications from the Treco Center or other approved trainers is provided in Attachment C.



## **Part E & F-Landfill Permit Requirements and General Criteria for Landfill (62-701.330&340, FAC)**

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### **4.1 Vicinity Map and Aerial Map**

The vicinity map and aerial map are provided in Attachment B. The vicinity map is also used as the base for the airport map. The vicinity map is on a Year 2012 base. The wide- area aerial is from the FDOT database and is dated January 2012. Recent aerials of the landfill site do not extend to the limits of the 2012 aerial.

### **4.2 Plot Plan and Cross Sections (62-701.330(3) (b), FAC)**

The buildout plot plan and the buildout cross sections for the Class III disposal unit (July 2009) currently on file with the Department do not change for this application. The plot plan and cross-sections based on the June 2013 topographic survey are presented in Attachment B.

### **4.3 Topographic Information and Survey (62-701.330(3) (c), FAC)**

The topographic maps with a scale not greater than 200 feet per inch showing the proposed fill areas, access roads, and grades required for proper drainage were provided in the 2009 operation permit application Drawings. These drawings are provided in Attachment D in reduced size format for reference. An updated topographic survey, dated June 2013 is provided in Attachment B.

### **4.4 A Report Describing the Landfill (62-701.330 (3) (d), FAC)**

#### **4.4.1 Current and Projected Population of Area Served and Type and Quantity of Waste Projections**

The projections for the generation of Class III waste to be disposed at the Tomoka Farms Road Landfill Facility through the year 2043 are based on existing solid waste volume depletion information for the period of 2006 through 2013 and population projections available from the Office of Economic and Demographic Research (EDR-Florida) and the Volusia County Planning Department. Population projections used in the FY 2013 Financial Responsibility Cost Estimate Report, August 2013 are used for airspace utilization projections in this application. The 2014 population of the Volusia County Class III wasteshed is estimated to be 503,200 people. The population within the Class III wasteshed is projected to grow to 530,492 people in 2020.

The wasteshed is comprised of unincorporated areas within Volusia County and incorporated cities and towns within Volusia County. Class III waste consists of bulky items such as furniture and carpeting, construction and demolition debris (C&D) and land clearing wastes. Typical Class III solid waste is about 40 percent residential and 60 percent commercial in origin. Class III waste was accepted from the City of Deland in 2012 and 2013 after several years of diversion.

Waste tonnage projections for Class III waste are based on a medium population growth scenario used by EDR- Florida. Class III disposal quantity projections were based on the following assumptions:

- Class III solid waste disposal tonnage will increase in direct proportion to population (i.e., the per capita disposal rate will remain constant).
- The base quantity for future Class III solid waste disposal projections is the average annual Class III per capita volumetric disposal rate for FY 2007 through FY 2012.

The Class III solid waste disposal rate for the Tomoka Farms Landfill Facility decreased from 0.42 cubic yards per capita in operational year 2007 to 0.16 cubic yards of in-place cubic yards per capita in FY 2012. Note that there were no major storm events during these years and the economic slowdown of 2008 to 2011 is slowly recovering. The six year (2007-2012) average rate used to project future disposal quantities in this analysis was 0.0.253 cubic yards per capita.

Apparent waste density is used to convert from volume to tonnage. Apparent density refers to the quantity of waste placed in the landfill in tons, divided by the volume of landfill capacity consumed, not including the amount and volume of cover material. As waste decomposes, the landfill subsides, recovering landfill capacity and increasing apparent waste density as additional waste is placed in the recovered volume. A five year analysis of historic volume used compared to Class III tonnages disposed for years 2008 through 2012 results in an apparent density of approximately 1,680 pounds/CY in place. Note that the volume usage is 2013 has not been calculated in the financial responsibility report as this calculation is dependent on the April 2014 topographic mapping.

EDR population estimates are used for Years 2013 through 2040. Office of Economic and Demographic Research (EDR) is the source for Volusia County population estimates for 2012 through 2040. Population estimates for 2041 through 2043 are based upon the average annual population growth rate from 2013 through 2040. Table 4-1 presents historical Class III solid waste volume utilization for FY 2007 through FY 2012. The waste tonnage projections used for planning the buildout and filling of the Class III landfill are provided in Table 4-1. As is normal for any long-term projection, the further into the future the projection extends the higher the degree of uncertainty.

## 4.4.2 Anticipated Site Life based on Permitted Configuration

### Typical Cell Cross Sections

In accordance with previously submitted documents as part of the 2008 Fill Sequence Plan in the construction permit modification application, the cross sections for the Class III landfill are based on site geometry and the following criteria:

- Maximum cell side slope of 4:1
- Waste placed in 20 foot lifts
- Approximate 27 foot-wide drainage swales constructed every 20 vertical feet
- Apparent density based on annual survey data



Table 4-1

## Historical and Projected Class III Wastes Volumes and Tonnages

Operational Year	Service Area Population	Volume Used (C.Y.)	Estimated Volume Use (Projected C.Y.)	Actual or Projected Tonnage (Tons)
2007	508,014	212,703		---
2008	481,390	84,739		92,084
2009	422,841	51,831		66,893
2010	421,780	145,471		67,503
2011	410,167	122,020		62,132
2012	497,145	78,803		66,788
2013	499,562		126,389	106,167
2014	503,155		127,298	106,930
2015	507,749		128,460	107,906
2016	512,596		129,687	108,937
2017	517,337		130,886	109,944
2018	521,873		132,034	110,909
2019	526,237		133,138	111,836
2020	530,492		134,214	112,740
2021	534,681		135,274	113,630
2022	538,796		136,315	114,505
2023	542,819		137,333	115,360
2024	546,730		138,323	116,191
2025	550,509		139,279	116,994
2026	554,143		140,198	117,766
2027	557,630		141,080	118,507
2028	560,975		141,927	119,219
2029	564,179		142,737	119,899
2030	567,245		143,513	120,551
2031	570,179		144,255	121,174
2032	572,998		144,968	121,773
2033	575,720		145,657	122,352
2034	578,363		146,326	122,914
2035	580,946		146,979	123,462
2036	583,480		147,620	124,001
2037	585,946		148,244	124,525
2038	588,322		148,845	125,030
2039	590,586		149,418	125,511
2040	592,716		149,957	125,964
2041	596,451		150,902	126,758
2042	600,209		151,853	127,557
2043	603,991		47,034	39,509

Source: FY 2013 Financial Responsibility Cost Estimates, August 2013; Operational Year is October 1 through September 30<sup>th</sup> of the following year.

As presented in the 2013 Financial Responsibility Report, the remaining volume in the Class III landfill unit as of September 30, 2013 is estimated to be 4,133,759 cubic yards. Using the projected annual volumes presented in Table 4-1, the remaining airspace capacity is depleted in the year 2043. The filling timeline is updated on an annual basis.

#### **4.4.3 Cell Closure Phasing**

The Class III landfill unit does not have a bottom liner or leachate collection system. Volusia County is currently permitted to close the Class III landfill at the end of volume depletion or approximately Year 2044. No phased closure is currently planned or sought under this permit.

#### **4.4.4 Source and Type of Cover Material**

The County has numerous consumptive use permits for excavation of onsite (TRFLF) and offsite (property adjacent to the TRFLF Facility) borrow pits. Sand, silty sand, and clayey sand will be used as cover material.

The County will closely monitor the use and availability of cover material to insure that adequate material is always available. If at any time during the life of the Class III Landfill it appears that an adequate supply of material is not available onsite for cover and construction, future construction activities will be performed using off site soils.

### **4.5 Water Quality Laboratory Requirements (62-701.330 (3) (g), FAC)**

Surface and groundwater quality sampling and testing at the landfill are conducted by certified laboratories under continuing service contract with the Volusia County Public Works. The County has a current contract with Pace Laboratories, a FDEP-approved laboratory, to provide for sampling, testing and reporting water quality results. Note that all results are reviewed by the Volusia County Solid Waste Division prior to submittal.

### **4.6 Closure and Long-Term Care Financial Responsibility (62-701.340 (3) (h), FAC)**

The Volusia County Solid Waste System has used and plans to continue using the escrow account mechanism to demonstrate financial responsibility for closure and long-term care of the County-owned disposal facilities. The County maintains an escrow fund to pay for the closing cost of the cells. Long-term care costs are paid through a combination of escrow account withdrawals and annual operating funds. Annual financial responsibility updates are performed by an independent Engineer in accordance with FDEP requirements as established in Chapter 62-701.630. The remaining airspace is calculated and the annual contribution to the closure accounts to assure sufficient funding for closing is determined. The long term annual cost is also adjusted or recalculated based on post closure permit and maintenance requirements, using either inflation factors or third party vendor and material prices.

Volusia County provides annual financial assurance through a qualified landfill management escrow account that holds closing funds for the TFR Landfill disposal units and the Plymouth Landfill. A separate fund also holds annual maintenance funds on a year by year basis. An annual independent audit of the closure and long-term care funds is performed and the audit results are provided in a certification letter to the FDEP. The FY 2013 annual financial responsibility report was submitted to FDEP, and the Department has approved the cost estimate for closure and long term care of the Class III unit.



An updated closure and long-term care cost estimate has been prepared and provided with this application as Attachment E.

#### **4.7 100-Year Flood Plain (62-701.340(3) (b))**

There is "No Change" from previously submitted information. Please refer to the 2008 construction permit application.

#### **4.8 Edge of Waste (62-701.340(3) (c))**

A minimum of 100 feet horizontal separation is maintained between the property boundary and toe of final cover slope on all sides of the landfill. The edge of waste for the Class III unit (and the underlying Class I and C&D landfill) is greater than 800 feet from the property line on the northeast boundary of the facility, and more than 1000 feet from the County property line on the north, east, and south.

## **Part G-Landfill Construction Requirements (62-701.400, FAC)**

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### **5.1 Landfill Construction Requirements (62-701.400(2), F.A.C.)**

The application form is marked "Not Applicable." No new construction (base construction or closure construction) is proposed under this operations renewal application. No closure-related construction of the secondary stormwater management system is planned over the next ten years.



## SECTION 6.0

# Part H-Hydrogeological Investigation Requirements (62-701.410(1), FAC)

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Information regarding the regional and site-specific Hydrogeological investigations has been submitted to the FDEP and is on file with the Department. Most of the items in Part H have been designated as "No Substantial Change" on the application form.

### Updated Well Inventory

The well inventory within one mile of the TFRLF has been updated as of April 2014. The St. John's River Water Management District (SJRWMD) well permit data base was queried for the SJRWMD- permitted wells in Sections 3, 4, 5, 8, 10, 15, 16, and 17 of Township 16 South, Range 32 East. Forty-five (45) permitted wells were identified. All but ten of the permitted wells were located on the TFRLF. The SJRWMD well list for the one mile radius is provided at the end of Attachment B.

The SJRWMD Consumptive Use Permit Data Base (March 2014) was checked to locate permitted potable water and irrigation wells within one mile of the Tomoka Farms Road Landfill. The Consumptive Use Permits with permitted wells within one mile were verified and are listed below:

**Table 6-1**  
**Consumptive Use Wells On or Within One Mile of Tomoka Farms Road Landfill Facility**

CUP Permit No.	Activity Description	General Location	Well
4353	Fire Protection	North 0.8 miles	Well
8834	Municipal Public Water Supply, south west well field- <i>(3 wells in close proximity)</i>	West 0.9-1.0 miles	Wellfield permit for 21 wells comprising the north and southwest well fields. <i>(The west wellfield is outside the one mile radius area.)</i>
	TFRLF Administration Building (Volusia County Health Dept. Permit <i>(Potable Use)</i> )	Onsite North of Admin Building	Onsite Potable Well

Three (3) public water supply wells (southwest wellfield-Well Nos. 17170, 17171 and 17172) for the City of Daytona Beach grouped under CUP No. 8834 are located approximately one mile west of the western TFRLF boundary. No other community or non-community public water system wells were known to be located within one mile of the Tomoka Farms Road Landfill Facility boundary. Well logs are contained within the individual files at the SJRWMD for each consumptive use well or at the Volusia County Health Department.

The FDEP Potable Water system data base for Volusia County was reviewed in April 2014. The locations of potable water system facilities within one mile of the TFRLF facility boundary were mapped by address. No public potable water systems are located within 500 feet of the TFRLF Facility boundary. Note that there is a potable well onsite that serves the Operations Building. The City of Daytona Beach Utilities supplies potable water to the scalehouse, HHW, Recycling Facility, and the Fleet Maintenance Facility at the TFRLF.

SECTION 7.0

## **Part I - Geotechnical Investigation Requirements (62-701.410(2), FAC)**

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Information regarding geotechnical investigations and other requirements has been submitted to the FDEP and is on file with the Department. The proposed closure configuration was evaluated for the 2008 construction permit application (horizontal and vertical expansion) and approved by the Department in 2009. Geotechnical Information for the expansion of the footprint and an approximate 32 foot height increase is provided in the 2008 construction permit application (Reference 2). The application form has been marked "No Change."



SECTION 8.0

## **Part J - Vertical Expansion of Landfills (62-701.430, FAC)**

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No vertical expansion is proposed under this operations permit renewal application. Part J of the application form has been marked "Not Applicable." The maximum permitted elevation is requested to remain at elevation 165 feet NGVD.

## **Part K - Landfill Operations Requirements (62-701.500, FAC)**

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Operational requirements are described in the Tomoka Farms Road Landfill Operations Plan provided in Attachment C. Part K of the application form has been filled in with the location of the required information in the Operations Plan. The County continues to fill the Class III landfill according to the permitted fill sequence presented in the 2009 operations permit renewal. No change in filling sequence is proposed under this permit application.

### **9.1 Trained Operators (62-701.500 (1), FAC)**

At least one trained spotter will be located at each active working face. One trained operator is present onsite during operating hours. The training program is discussed in Attachment C. Current employee training certificates and training program is included in Attachment C.

### **9.2 Operations and Contingency Plan (62-701.500(2) through 62-701.500(7), FAC)**

#### **9.2.1 Operations and Contingency Plan**

The Operation and Contingency Plan was updated last in April 2014 and submitted to FDEP to include the use of glass cullet as a cover material in the Class III North Cell. Operational procedures for the Class III landfill are included throughout the Plan. The location of pertinent operational information in the Operations and Contingency Plan is noted on the application checklist. A copy of the approved Operation and Contingency Plan is included in Attachment C as a reference. This portion of the application is marked as "No Change".

#### **9.2.2 Fill Sequence Plan**

The fill sequence plan submitted to FDEP in 2009 as part of the prior operations permit application remains unchanged. The fill sequence drawings approved by FDEP are entitled "Tomoka Farms Road Landfill Class III Cell Fill Sequence Plan, August 2009". A partial copy of the 2009 drawings showing filling sequence is provided in Attachment D for reference only. The fill sequence enables the County to fill lifts in a methodical order corresponding to the terraces located at twenty-foot vertical intervals. The maximum fill height remains unchanged at 165 feet NGVD. This portion of the application is marked as "No Change".

### **9.3 Class III Cell Gas Management System Description (62-701.500(9))**

Any LFG which may be generated by the decomposition of waste in the Class III landfill has been dispersed through the waste and cover soils to the atmosphere. Gas monitoring during the past year under ambient conditions has not detected measurable methane concentrations from the Class III area.

The permitted passive LFG vent system for this landfill is proposed to remain the same. This portion of the application is marked as "No Change".

The details of Class III Cell passive gas system was presented in the 2009 drawings submitted with the operations permit application. Approximately 43 passive LFG vents were previously approved to be installed at final closure in a grid pattern at approximately 250 foot spacing.



#### **9.4 Surface Water Management System Description (62-701.500 (10), FAC)**

The previously submitted secondary stormwater management system is proposed to remain unchanged under this operations permit renewal application. The County will continue operating the landfill to maintain existing and planned landfill benches and perimeter swales. The secondary stormwater system is planned for construction at final closure. Interim stormwater runoff and controls will be installed on a case by case basis to control sideslope erosion.

#### **9.5 Equipment and Operation Feature Requirements (62-701.500(11), FAC)**

The County will continue to provide sufficient equipment for handling solid waste disposal, have arrangements for backup equipment when needed, and provide for dust control, fire protection, litter control and proper signage. Communication equipment will be used to enhance operations and for safety. Please refer to Operations and Contingency Plan in Attachment C, Section 11.

#### **9.6 All Weather Access Roads and Other Necessary Onsite Roads (62-701.500(12), FAC)**

All weather access roads and temporary access roads are described in Attachment C, Section 12.

#### **9.7 Recordkeeping Requirements (62-701.500(13), FAC)**

All required records will be maintained for compliance and inspection purposes. Please refer to Operations and Contingency Plan in Attachment C, Section 13.

## SECTION 10.0

# Part L - Water Quality and Leachate Monitoring Requirements (62-101.510, FAC)

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## 10.1 Water Quality Monitoring Plan (62-701.510(1), FAC)

Specific permit requirements and conditions regarding the water quality outlined in this section have been developed consistent with the existing operations permit and the current Monitoring Point Implementation Schedule (MPIS).

The most recent monitoring plan for the TFRLF was included with the North Cell Operations permit, dated May 22, 2013. A partial copy of the MPIS is provided in Attachment A. This plan covers the entire TFRLF site including the Class III landfill. The County will continue with the approved MPIS for the duration of the North Cell and Class III Landfill Operation permits and into the long-term care period. However, as discussed at the pre-application meeting with FDEP, the County may submit a proposal to FDEP to change the MPIS, when appropriate during the post closure period, to seek a reduction in sampling frequency or parameters for the TFRLF site.

## 10.2 Sampling and Analysis (62-701.510(2) (b), FAC)

Groundwater quality samples from monitoring wells and surface water monitoring points are currently collected and analyzed by Pace Analytical Services located in Volusia County. Pace Analytical Services has a Comprehensive Quality Assurance Plan approved and on file with the FDEP. The County will continue with the approved collection and analysis procedures for active filling period and post closure period.

## 10.3 Groundwater Monitoring Requirements (62-701.510(3), FAC)

Groundwater monitoring requirements have been developed consistent with the site MPIS issued as part of North Cell Operations Permit renewal.

## 10.4 Surface Water Monitoring Requirements (62-701.510(4), FAC)

Surface water monitoring requirements have been developed consistent with the MPIS. The County requests for SW-1 located in a FDOT borrow pond west of the North Cell Class I landfill be removed from surface water requirements. The request is due to the introduction of additional stormwater flows from Interstate 4 runoff collected on adjacent FDOT property.

## 10.5 Routine Sampling Frequency and Requirements (62-701.510(5), FAC)

The sampling requirements have been addressed in the MPIS. Please see Attachment A of this permit application report. Other further changes requested will be addressed separately by the County assessment monitoring consultant in support of this application and submitted under separate cover by other consultants.



## **10.6 Assessment Monitoring and Corrective Action (62-701.510(6), FAC)**

Assessment monitoring for benzene and ammonia–nitrogen just outside the class III area was requested by FDEP in 2009. The County continues to conduct a contamination assessment study north, south and east of the Class III disposal unit in accordance with Contamination Assessment Plan. Results of the contamination assessment were provided to the FDEP in the TFRLF 2013 Annual Groundwater Evaluation Technical Water Quality Monitoring Report dated April 6, 2012.

As discussed at the pre-application meeting with FDEP, a summary report on the progress and results of the contamination assessment study since April 2012 is prepared by the County assessment monitoring consultant in support of this application and is planned to be submitted under separate cover.

In addition, the County continues to conduct a contamination assessment and Limited Scope Remediation Action in the area of B5/B37 monitoring wells under the direction of the Waste Cleanup Program.

## **10.7 Water Quality Report Requirements (62-701.510(8), FAC)**

FDEP requires that total well depth measurements be made on all wells at the time of permit renewal. That information will be included in the contamination assessment study technical report and will be submitted to FDEP under separate cover.

Semi-annual and technical water quality reports will continue to be submitted in accordance with reporting requirements specified in the MPIS. The County will submit the water quality data to the Department in a format consistent with the requirements specified in 62-701.510(9), FAC.

SECTION 11.0

## **Part M - Special Waste Handling Requirements (62-701.520, FAC)**

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Information regarding the special waste handling program and other requirements of this section has been submitted to the FDEP and is on file with the Department. No special wastes are disposed in the Class III disposal unit. Special Waste handling procedures are presented in the TFRLF Operations Plan. The Application has been marked "Not Applicable."



## **Part N - Gas Management System Requirements (62-701.530, FAC)**

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### **12.1 Gas Management System Design (62-701.530(1), FAC)**

The current FDEP operation permit requires a passive LFG venting system for the Class III landfill. The County plans to continue with that requirement under the new operations permit. Installation of the passive LFG vents is proposed concurrent with final closure. The application form has been marked "No Change."

### **12.2 Gas Monitoring System and Procedures (62-701.530(2), FAC)**

Currently, LFG monitoring consists of quarterly monitoring of 8 gas probes, most located along the south edge of the landfill and ambient monitoring in structures. Gas probe locations are shown on the LFG monitoring plan in Attachment B. Gas probe Nos. 1-5 lie along the south edge of the Class III landfill near the main facility access road. Probe 1 is located at the SE corner of the Class III unit and Probe 5 is located near the equipment maintenance building near the SW corner of the Class III unit. Quarterly monitoring also occurs at the administration office, scalehouse, equipment maintenance building, leachate treatment plant, flare station, sludge treatment facility and the Recycling Center. Probe No. 6 was removed from the plan in 2003. The gas monitoring system and procedures for the TFRLF can be found in the TFRLF Operations Plan approved by FDEP as part of the 2014 North Cell Operations Permit modification.

### **12.3 Gas Remediation Plan (62-701.530(3), FAC) and Odor Remediation Plan (62-701.530(4))**

If the results of monitoring show that the combustible gas concentrations exceed the lower explosive limits, Volusia County Solid Waste Division will take the necessary steps to ensure that human health is protected and will notify the FDEP. A gas remediation plan will be submitted to the Department within seven days of the detection. There is "No Change" from the prior application.

The Volusia County Solid Waste Division has implemented a routine odor-monitoring program for the TFRLF to determine the timing and extent of off-site odors and will submit to the FDEP an odor remediation plan for the gas releases if one should become necessary. There is "No Change" from the prior application.

### **12.4 Gas Recovery Facilities (62-701.530(5), FAC)**

Gas recovery and utilization facilities for the Class III landfill are not proposed for the limited amount of landfill gas that is expected to be generated by waste decomposition at the Class III landfill. The application form has been marked "Not Applicable."

## **Part O, P, and Q - Landfill Final Closure Requirements, Closure Procedures, and Long-Term Care (62-701.600, 610 & 620, FAC)**

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### **13.1 Closure Schedule Requirements (62-701.600(2), FAC)**

A closure permit or alteration of the prior closure plan presented in the 2009 operations permit application is not requested under this operations permit renewal application. To date, no portion of the defined boundaries of the Class III landfill has been formally closed. The current operation permit allows closure after completion of filling. Most of the application items for Parts O.P and Q are marked "Not Applicable" or "No Change" for this operations permit renewal application.

Notice to the public for final closure of the Class III unit will be given 90 days before the facility is anticipated to cease waste acceptance. A closure permit application will be prepared and filed at or prior to public notice to cease waste acceptance. The closure plan will include the closure design plan, the closure operation plan, a plan for long-term care and a demonstration of proof of financial assurance for long-term care. Final closure construction will proceed according to the permitted closure plan. Following final closure construction, the closure will be certified by a Florida Professional Engineer and all required closure information will be sent to the FDEP for review and approval. The required survey, legal description, owner information and long-term maintenance entity will be recorded in the public records.

### **13.2 Closure Design Plan Requirements (62-701.600(3), FAC)**

The previously permitted closure design plan does not change for this operations permit renewal application. The permit application has been marked "No Change." The final receipt of waste for deposition into the Class III landfill is projected to be Year 2043.

#### **13.2.1 Closure Phasing**

The Class III landfill is proposed to be closed under one final construction project after the airspace is depleted. Closure phasing does not change from the current closure plan provided with the 2009 renewal application. The application form has been marked "No Change."

#### **13.2.2 Final Cover Closure System Layering for Sideslope and Top Slope**

The final closure design presented in the 2009 operations permit application and approved by the Department does not change. The application form has been marked "No Change."

#### **13.2.3 Final Cover Installation Plans**

A detailed final cover installation plan is not required for this operations permit renewal since closure construction is not requested. These items have been marked "No Change" on the permit application form. The final cover installation plan submitted for the 2008 construction permit included a CQA plan and specifications.



Final cover layers will be installed within the approved closure schedule established by a closure permit or a modification to the operations permit. Generally closure would start within six-months to one year following the cessation of waste acceptance. The closure construction is estimated to be about two years due to the Class III closure area. Drought-resistant Bahia sod or grass would be used for vegetation. The top (deck) gradient (as shown on the approved final closure plan) is five percent slope to the uppermost terrace.

Cover material for final closure maintenance would be imported from offsite borrow pits if there were no other ongoing waste filling activities on the TFRLF. If there was an active onsite borrow operation, the decision of onsite vs. offsite borrow would be based on overall cost of borrow, transport and placement.

### **13.2.4 Final Cover Design Requirements**

No change is proposed for cover system components as presented in the 2009 operations permit application. The permit application has been marked "No Change."

### **13.2.5 Secondary Stormwater Management System Design**

No changes in the approved secondary stormwater management system design are sought under this operations permit application. The application has been marked "No Change." Modeling and calculations for the stormwater collection, treatment and conveyance system were provided in the 2008 Construction Permit Application First Response to Request for Information.

### **13.2.6 Access Control**

The majority of the 3,500-acre facility perimeter of the TFRLF is fenced. There are multiple access gates that are consistently locked and checked. Access to the landfill from the south west and east is limited due to offsite and onsite ditches. The main access to the landfill is controlled through the entrance road that has a locking gate near Tomoka Farms Road. The main access road passes through the scalehouse facility, with side roads to the administration office building, Class I landfill, Class III Landfill and support facilities. Following closure of the entire facility, the entire perimeter of the landfill property will be fenced, and access controlled through locked gates.

### **13.2.7 Landfill Gas Management**

At this time, there are no plans for LFG collection and venting prior to final closure. A passive LFG vent system was previously approved in the operations permit renewal. No changes are proposed under this operations permit application. The permit application has been marked "No Change."

## **13.3 Closure Operation Plan (62-701.600(4), FAC)**

No closure activities are proposed under this operations permit application. A closure operation plan is not required. Items 3 through 7 of Part O of the application have been marked "Not Applicable."

The County will prepare detailed construction plans, specifications and CQA procedures for closing from the information provided in the 2008 Construction permit application, the 2009 operations permit application, this application and subsequent renewal submittals; solicit bids from general and specialty contractors, evaluate bids and award construction contracts. The selected Contractor will supply all materials labor and equipment to construct the closure improvements.

County and independent consultants will provide observation during construction; review Contractor work and coordinate CQA testing to assure materials and installation meet project requirements. After the closure construction, the County will prepare and submit for Department approval a completion of construction certification document, describing the project, any substantial deviations, construction documentation and certification. After the final closure, the County will prepare additional documentation for legal description and final survey. After Department approval of the certification, the County will publish a declaration to the public, request an official date of closing from FDEP and record the declaration, and site survey/ legal description in the public record. The long term care period will begin after the FDEP establishes an official date of closing. The long term care period for Class III landfill units is 30 years.

The County's Solid Waste Management System provides funding for annual LTC from a LTC escrow fund. These escrow funds are updated on an annual basis and reports are submitted to FDEP. The County files required financial responsibility reports and annual audit statement in conformance with 62.701.630 F.A.C. requirements.

#### **13.4 Part P-Other Closure Procedures (62-701.610, FAC)**

Part P is not applicable to operation permit renewal applications. No final use for the closed landfill unit other than passive green space has been determined. The application form has been marked "Not Applicable."

#### **13.5 Part Q-Long-Term Care Requirements (62-701.620, FAC)**

A Long-Term Care Plan is not required for operation permit renewals. The application form has been marked "Not Applicable."



## **Part R - Financial Responsibility Requirements (62-701.630, FAC)**

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Updated Financial Responsibility Cost estimates for closure and long-term care of the County-administered landfills are prepared each year by Consultants to the Solid Waste Division. A Financial Assurance report is prepared each year by the County's independent auditors.

The Financial Assurance & Financial Responsibility reports for FY 2013 have been submitted to FDEP under separate cover and approved. These reports include the closure and long-term care costs for the Class III landfill unit. A copy of the acceptance letter from FDEP is included in Appendix E of this report.

An updated detailed estimate of closure and long-term costs is required for operations permit renewals. A detailed estimate with updated unit costs has been prepared by others for this permit application and is submitted in Attachment E.

## **ATTACHMENT A**

- **Pre-Application Meeting Summary**
- **2009 Operations Permit (partial copy)**
- **2013 Monitoring Plan Implementation System  
(from North Cell Operations Permit Renewal)**
- **2009 Construction Permit (partial copy)**



## FINAL MEETING SUMMARY

Pre-Application Meeting with FDEP  
Class III Landfill Operation Permit Renewal  
Volusia County Tomoka Farms Road Solid Waste Management Facility

May 1, 2014, 10:30 a.m.  
FDEP Central District Office

Renewal of Operations Permit SO-64-0078767-026

### Attendees:

#### FDEP Central District

Tom Lubozynski      Gloria Depradine  
Kim Rush            Marjorie Hiedorn

#### FDEP Tallahassee

Richard Tedder      Mike Land  
El Kromhaut

#### For Consultant

Ron Beladi            John Less

#### For VCSWD

Leonard Marion      Jennifer Stirk

### Topics:

1. Introductions-All parties attending in Orlando and by teleconference (THL) were introduced. Meeting exhibits, copies of permit plans and meeting agenda were previously distributed.
2. Overview
  - a) Current Class III operations permit (SO-64-0078767-026) expires on October 9, 2014. Submittal date for renewal of the operations permit is on or before August 10, 2014.
  - b) Volusia County is preparing a permit application for renewal of the operations permit for the Class III landfill with no change. The purpose of the meeting is to review FDEP requirements for this renewal.
3. Solid Waste Facility Permit Renewal
  - a) Existing Class III landfill in TFRLF was previously permitted to be operated on top of a pre-1985 mixed waste (class I and C&D waste) mound.
  - b) Permit application submitted in 2009 and subsequent modification included details for the final grading plans, passive Landfill Gas (LFG), secondary stormwater system and operations sequence plans. Those plans are currently being followed by the County.
  - c) Renewal of the existing Class III operations permit without any change to the permitted final grading plans, using same final cover layer system, same stormwater management system and same LFG venting system as currently permitted.
  - d) The Updated operations plan, which covers all operations in TFRLF including the Class III landfill, will be part of this application. Application will reference the recently submitted April 2014 TFRLF Operations and Contingency Plan.

- e) No significant changes in fill sequence operations are anticipated. County to continue permitted fill sequence submitted in August 2009 and integrated into current permit application. Application will include a reduced copy of the operations sequence as a reference. A cross section of the most recent topo survey of the Class III landfill will be included in the application.
  - f) The current permit allows continuous operation of the landfill until final permitted grades are achieved before closing. This will be requested to remain unchanged. Volusia County intends to close the Class III landfill in one project.
  - g) No modification of the 2009 closure plan and details is sought under the operations permit renewal application. Permit application will include a reduced size copy of the 2009 Operations permit drawings for reference. The signed and sealed copies of those plans are on file with the Department. Neel-Schaffer will include a list of documents previously submitted to the Department related to this application or as referenced in the application
  - h) The aerial, aerial topography map and cross sections of existing fill contours as of April 2014 will be updated.
  - i) County requests a ten-year duration operations permit. The fee for each five- year period for operations permit renewal is \$4000.00. Options for payment are: to pay \$8000.00 with application submittal now or pay \$4000 now and \$4000 in Year 5.
  - j) Closure cost estimates will be updated for this application; a detailed cost estimate using component quantities and current unit pricing will be included in the application.
  - k) Discussion of future major modifications to the operations permit. The fee will be \$4000 for major modification and \$2000 for intermediate modification.
  - l) FDEP currently has the Operations Plan under review in conjunction with the minor modification request to use glass cullet as interior slope daily cover. Other modifications to the Operations Plan are also in process due to the addition of proposed operations for a planned Citizen's Convenience Center at TFR LF. FDEP suggested that we reference the April 2014 Operations and Contingency Plan and not include it the operations permit submittal.
4. Facility-wide water quality monitoring plan-Changes are sought in the Contamination Assessment/Monitoring around the Class III unit and in the MPIS. Current MPIS issued with North Cell Operations permit renewal.
- a) FDEP discussed recent decisions by the District regarding reduction in sampling for the Contamination Assessment Study. Subject to further internal Department review, the reductions are as follows:
    - (1) Keep south benzene detection wells
    - (2) Remove four of the five north detection wells, Keep Well B45-2
    - (3) Integrate these remaining wells into MPIS and sample semi-annually in May and November.
    - (4) If May 2014 and November 2014 C/A sampling results are favorable, end the contamination assessment and continue routine water quality monitoring per item (3).
  - b) County inquired about parameter reduction citing an example from Northeast District (if less than 50 percent of the exceedance or action levels for the past five years, then eliminate parameter). CD and Tallahassee said they would inquire about the criteria. FDEP



stated that there are only seven parameters that consistently have concentrations for the CA wells.

- c) FDEP requested updated Water Quality Report will be submitted with the permit renewal application. County acknowledged that it will be submitted with the application or under separate cover and referenced in the permit application.
- 5. Tentative Schedule for Permit Application- Neel-Schaffer will submit a "draft" in early July. Any review issues will be discussed by telephone conference. Final permit application is to be submitted thereafter most likely in late July.
- 6. County discussed a potential Class III recycling operation on top of the Class III landfill. A private vendor would operate using pulling out metal, concrete and other recyclable materials. Volusia County is in the process of RFP and negotiations. The County inquired if this would require a modification to a Class III operations permit or would this operation need to be permitted as a Materials Recovery Facility (MRF). FDEP stated that if there is dedicated stationary equipment, or a dedicated facility, it would need to be permitted as a MRF.
- 7. FOLLOW-UP NOTE: The number of copies to be submitted was not discussed. Recent submittals by Neel- Schaffer have had at least two signed and sealed hard copies, plus electronic files.
- 8. Agency Issues and Discussion
  - a) FDEP brought to light an issue related to the planned Citizen's Convenience Center (CCC). There are some concerns by local reviewers that potential leakage and debris from roll-off containers at CCC could lead to groundwater and surface water contamination. The Landfill is at the drainage divide of the Tomoka River and Spruce Creek (imperiled watersheds). FDEP suggested that the operational procedures for the CCC address these concerns but it may require more than "best management practices" to provide assurance, leading to the issuance of an ERP modification.
  - b) Changes in the CCC operations for the ERP modification will have to be integrated into Operations and Contingency Plan.



# Florida Department of Environmental Protection

Central District  
3319 Maguire Boulevard, Suite 232  
Orlando, Florida 32803-3767  
NOTICE OF PERMIT

Charlie Crist  
Governor

Jeff Kottkamp  
Lt. Governor

Michael W. Sole  
Secretary

By-Email  
[lmarton@co.volusia.fl.us](mailto:lmarton@co.volusia.fl.us)

In the matter of an  
Application for Permit  
By:  
Mr. Leonard Marion  
Volusia County Solid Waste Division  
3151 East State Road 44  
DeLand, FL 32724

OCD-SW-09-0378

Volusia County – SW WACS # 27540  
Tomoka Farms Road Landfill, Class III  
DEP File No. SO64-0078767-026

Dear Mr. Marion:

Enclosed is Permit Number SO64-0078767-026 to operate the Tomoka Farms Road Landfill, Class III, issued under Section(s) 403.061(14) and 403.707, of the Florida Statutes.

Any party to this order (permit) has the right to seek judicial review of the permit under section 120.68 of the Florida Statutes, by the filing of a Notice of Appeal under rule 9.110 of the Florida Rules of Appellate Procedure, with the Clerk of the Department of Environmental Protection, Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000 and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this notice is filed with the Clerk of the Department.

Executed in Orlando, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION

Vivian F. Garfein  
Director, Central District  
3319 Maguire Boulevard, Suite 232  
Orlando, FL 32803  
407/894-7555

Date: December 10, 2009



## FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, F. S., with the designated Department Clerk, receipt of which is hereby acknowledged.

*E. Williams*

Dec. 10, 2009

\_\_\_\_\_  
Clerk

\_\_\_\_\_  
Date

## CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were sent before the close of business on December 10, 2009 to the listed persons.

*E. Williams*

\_\_\_\_\_  
Clerk

VFG/gc/ew

### Enclosures

1. Permit No. SO64-0078767-026
2. Appendix A – List of Documents Incorporated into Permit
3. Appendix B – Time Sensitive Specific Conditions
4. Exhibit I – Monitoring Plan Implementation Schedule (MPIS)

### Copies furnished to:

Richard Tedder, P.E. – DEP – Tallahassee

Fred Wick – DEP – Tallahassee

Frank Hornbrook – DEP – Tallahassee

Lee A. Powell, P.E. – SCS Engineers [lpowell@scsengineers.com](mailto:lpowell@scsengineers.com)

Tom Carey – Volusia County Environmental Management [tcarey@co.volusia.fl.us](mailto:tcarey@co.volusia.fl.us)

Chet Purves – Volusia County Solid Waste Department [cpurves@co.volusia.fl.us](mailto:cpurves@co.volusia.fl.us)

Jennifer R. Stirk - Volusia County Solid Waste Department [jstirk@co.volusia.fl.us](mailto:jstirk@co.volusia.fl.us)



# Florida Department of Environmental Protection

Central District  
3319 Maguire Boulevard, Suite 232  
Orlando, Florida 32803-3767

Charlie Crist  
Governor

Jeff Kottkamp  
Lt. Governor

Michael W. Sole  
Secretary

## Permit Issued to:

Tomoka Farms Road Landfill – Volusia County  
Located at 1990 Tomoka Farms Road  
Daytona Beach, Florida, Volusia County  
Telephone No. (386) 943-7889  
Facility ID No.: WACS ID # 27540

Authorized Representative: Mr. Leonard Marion  
Title: Director of Solid Waste  
3151 East State Road 44  
DeLand, FL 32724

**Solid Waste Operating Permit, Class III – Operation Permit Renewal**  
**Tomoka Farms Road Landfill – Daytona Beach**  
**Permit No.: SO64-0078767-026**

Permit Issued: 12/10/2009  
Permit Renewal Application Due Date: 08/10/2014  
Permit Expires: 10/09/2014

## Permitting Authority

Florida Department of Environmental Protection  
Central District Office  
3319 Maguire Boulevard, Suite 232  
Orlando, FL 32803  
Telephone No. (407) 893-3328  
Fax No. (407) 893-3124





# Florida Department of Environmental Protection

Central District  
3319 Maguire Boulevard, Suite 232  
Orlando, Florida 32803-3767

Charlie Crist  
Governor

Jeff Kottkamp  
Lt. Governor

Michael W. Sole  
Secretary

Volusia County Solid Waste Division  
3151 East State Road 44  
DeLand, FL 32724

Attention: Mr. Leonard Marion

WACS Facility: 27540  
Permit Number: SO64-0078767-026  
Expiration Date: 10/09/2014  
County: Volusia  
Section 10, Township 16 South, Range 32 East  
Latitude: 29° 07'53"; Longitude: 81° 05'31"  
Project: Tomoka Farms Road Landfill, Class III

This permit is issued under the provisions of Chapter(s) 403, Florida Statutes, and Florida Administrative Code Rule(s) 62-4, 62-701 and 62-711. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

- To operate the Tomoka Farms Road Landfill, Class III. The Class III landfill is owned and operated by Volusia County and is located within the County's Tomoka Farms Road Landfill property.
- The facility is developed over a portion of the property that was previously used as a landfill for disposal of Class I and construction and demolition debris (C&D) since 1988. The landfill will accept Class III waste in accordance with Rule 62-701.200(14), F.A.C.
- The disposal area is approximately 89.9 acres within a property boundary of approximately 3,487 acres. Approximately 21 acres has been used for Class III waste disposal.
- This permit to renew the existing Class III operation permit includes the operation of the 6.66-acre lateral expansion and 32.2 foot vertical expansion permitted under Permit No. SC64-0078767-024 issued on January 21, 2009 as a modification to Permit No. SO64-0078767-019 which expired on August 25, 2009.
- The landfill will serve Volusia and Flagler counties.
- The Class III landfill is designed without a bottom liner, gas control system and leachate collection system because of the nature of the waste accepted.
- The project incorporates a ground water and surface water monitoring plan.

LOCATION: The landfill is located at 1990 Tomoka Farms Road, south of Interstate 4, west of Interstate 95, and southwest of Daytona Beach, in Volusia County, Florida.

## GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes (F.S.). The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup and auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:
  - (a) Have access to and copy any records that must be kept under conditions of this permit;
  - (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
  - (c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.
8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:



- (a) A description of and cause of noncompliance; and
- (b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Section 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
11. This permit is transferable only upon Department approval in accordance with Rule 62-4.120 and 62-730.300, Florida Administrative Code (F.A.C.), as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. The permittee shall comply with the following:
  - (a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
  - (b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring information) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
  - (c) Records of monitoring information shall include:
    1. the date, exact place, and time of sampling or measurements;
    2. the person responsible for performing the sampling or measurements;
    3. the dates analyses were performed;
    4. the person responsible for performing the analyses;
    5. the analytical techniques or methods used;
    6. the results of such analyses.
14. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

PERMITTEE:  
Volusia County Solid Waste Division

Attention: Mr. Leonard Marion

WACS Facility: 27540  
Permit Number: SO64-0078767-026  
Expiration Date: 10/09/2014

SPECIFIC CONDITIONS:

1. Plans and Specifications: Drawings, plans, documents and specifications submitted by the permittee, not attached hereto, but on file at the Central District office, are made a part of this permit. The documents are listed in Appendix A.
2. Document Requirements: A copy of the permit, with a complete copy of the permit application and engineering drawings shall be kept on file at the landfill for inspection and review upon request.
3. Other Permits: This permit does not relieve the permittee from complying with any other appropriate stormwater, ERP, Title V, NSPS, or other permit requirements.
4. Signs: Signs indicating the name of the operating authority, traffic flow, hours of operation, charges for disposal and the types of wastes accepted shall be placed at all entrances to the site, Rule 62-701.500(5) and 62-701.500(11)(g), F.A.C.
5. Site Access: Access to the site shall be restricted by an effective barrier designed to prevent unauthorized entry and dumping, Rule 62-701.500(5), F.A.C.
6. Litter, Dust & Fire Protection: The landfill shall have litter control devices, dust controls, fire protection and fire-fighting facilities, Rule 62-701.500(11)(d), (e) and (f), F.A.C. Litter is to be picked up and litter control devices are to be cleaned with the litter placed in the active cell.
7. Safety Devices: Safety devices shall be provided on equipment to shield and protect the operators from potential hazards during operation.
8. Equipment Breakdown: In the event of equipment malfunction, destruction, breakdown or other problems resulting in the permittee being temporarily unable to comply with any of the conditions of this permit, the permittee shall immediately notify the Department. The notification shall address the cause of the problem, corrective action, and what steps are being taken to prevent a recurrence, as required by Rule 62-4.130, F.A.C.
9. Effluent Discharge: There shall be no discharge of liquid effluents or contaminated runoff to surface or ground water, without prior approval from this Department.
10. Surface Water Management: All surface water runoff from the site shall be collected and treated to meet the requirements of Chapters 373 and 403, Florida Statutes (F.S.) prior to discharge off-site. The surface water management system shall prevent surface water flow into waste filled areas.
11. Zone of Discharge (ZOD): The zone of discharge is a combined ZOD for the Class I and Class III cells. The ZOD for the facility shall be a three dimensional volume, defined in the vertical plane as extending from the top of the ground to the base of the most surficial aquifer and defined in the horizontal plane as extending 100 feet from the edge of the solid waste deposit or to the property boundary, whichever is less. Class G-II water quality standards must be met at the boundary of the zone of discharge in accordance with Rule 62-520.465, F.A.C.



PERMITTEE:  
Volusia County Solid Waste Division

WACS Facility: 27540  
Permit Number: SO64-0078767-026  
Expiration Date: 10/09/2014

Attention: Mr. Leonard Marion

**SPECIFIC CONDITIONS:**

12. Monitoring Plan Implementation Schedule: The Monitoring Plan Implementation Schedule (MPIS) attached as Exhibit I, is made a part of this permit. The MPIS for the Tomoka Farms Road Landfill, includes the monitoring requirements for both the Class I and Class III landfills. The MPIS or its attachments may be revised or updated at any time. The revises/updated documents will be issued with a new date and effective for the next sampling event.

13. Water Quality Reporting: Required water quality monitoring reports, and all ground water analytical results shall be submitted electronically. Water quality monitoring reports shall be submitted in Adobe pdf format. The water quality data Electronic Data Deliverable (EDD) shall be provided to the Department in an electronic format consistent with requirements for importing the data into the Department's databases. Water quality monitoring reports shall be signed and sealed by a Florida registered professional geologist or professional engineer with experience in hydrogeological investigations and shall include the following:

1. Cover letter;
2. Summary of exceedances and sampling issues (if any, for example, variation from SOP field criteria);
3. Conclusions and recommendations
4. Ground water contour maps;
5. Chain of custody forms;
6. Water levels, water elevation table;
7. Ground Water Monitoring Report Certification, using the appropriate Department form;
8. Appropriate sampling information on Form FD 9000-24 (DEP-SOP-001/01); and,
9. Laboratory and Field EDDs and error logs, as applicable.

(NOTE: You no longer have to complete or submit the DEP Form 62-522.900(2), Parameter Monitoring Report.)

All submittals in response to this specific condition shall be sent to both:

Florida Department of Environmental Protection  
Central District Solid Waste Program  
3319 Maguire Boulevard, Suite 232  
Orlando, Florida 32803

and:

Florida Department of Environmental Protection  
Solid Waste Section  
2600 Blair Stone Road, MS 4565  
Tallahassee, Florida, 32399-2400

14. Contamination Assessment: The contamination assessment under way on the south side of the landfill shall continue under the guidance of the FDEP Central District's Waste Cleanup Program.

15. Solid Waste Burning: Burning of solid waste is prohibited except in accordance with Rule 62-701.300(3), F.A.C. Any fires at the landfill must be reported to the Department in accordance with the Operation Plan. Also, within 5 days, a letter explaining the cause, remedial action and measures taken to prevent a recurrence, must be sent to the Department.

PERMITTEE:  
Volusia County Solid Waste Division  
Attention: Mr. Leonard Marion

WACS Facility: 27540  
Permit Number: SO64-0078767-026  
Expiration Date: 10/09/2014

SPECIFIC CONDITIONS:

16. Separation of Class III From Class I and C&D Waste: In areas with previously disposed Class I and C&D waste, a minimum of 12 inches of cover soil shall be placed prior to the disposal of Class III waste. The depth of the soil cover over the buried waste shall be measured at a minimum of three locations per acre to confirm that a minimum thickness of 12 inches is maintained.
17. Waste Compaction and Working Face: Solid waste shall be spread in layers and compacted at least weekly using suitable heavy equipment, Rule 62-701.500(7)(a), F.A.C. All compacted solid waste shall be formed into cells, with the working face and the side grades above land surface maintained at a slope no greater than three (3) feet horizontal to one (1) foot vertical rise, Rule 62-701.500(7)(c), F.A.C. The working face of a cell shall be only wide enough to efficiently accommodate vehicles discharging waste, and to minimize the exposed area and the use of unnecessary cover material, Rule 62-701.500(7)(d), F.A.C.
18. Initial Cover and Intermediate Cover: Initial cover shall be applied at least once every week, Rule 62-701.500(7)(e)2, F.A.C. An intermediate cover of one (1) foot of compacted earth in addition to the six (6) inch initial cover shall be applied within seven (7) days of cell completion if additional solid waste will not be deposited within 180 days of cell completion. All or part of the intermediate cover may be removed prior to placing additional waste or installing final cover, Rule 62-701.500(7)(f), F.A.C.
19. Final Cover: Final cover and seeding for planting of vegetative cover shall be placed over each completed cell within 180 days after the final waste deposit. The final cover design shall be consistent with the requirements of Rule 62-701.600(5)(g), F.A.C. The proposed final cover, from bottom to top, consists of 12 inches of soil cover, a 40-mil, Linear Low Density Polyethylene (LLDPE) geomembrane, 18 inches of soil, six inches of soil capable of supporting vegetative growth, and a rolled sod vegetative cover. The final cover for the landfill includes a biplanar geocomposite drainage layer immediately above the geomembrane.
20. Side Slope Design: The Class III cell is designed with side slopes of four horizontal to one vertical, with 20-foot wide terraces after every 20 feet of vertical rise. Surface runoff is collected on the terraces and directed to the toe of slope through downpipes.
21. Final Cover Installation: A Construction Quality Assurance (CQA) Plan for installation of the final cover is provided as Attachment H-1 in Reference No. 6 – Appendix A.
22. Erosion Control: Terraces along the sideslope after every 20 feet of vertical rise shall assist in preventing erosion to the side slopes. Side slopes and covered areas shall be maintained to minimize erosion and facilitate stormwater management. To control topsoil erosion, grass cover shall be established and maintained on side slopes, and final covered areas. If the erosion cannot be corrected within seven days of occurrence, the permittee shall notify the Department and propose a correction schedule.



PERMITTEE:  
Volusia County Solid Waste Division  
  
Attention: Mr. Leonard Marion

WACS Facility: 27540  
Permit Number: SO64-0078767-026  
Expiration Date: 10/09/2014

SPECIFIC CONDITIONS:

23. Final Cover Surface Gradient: The top gradient of the final cover surface shall take into consideration the effects of expected subsidence caused by settling and decomposition of the fill materials, to minimize ponding and erosion.
24. Reserve Equipment: The landfill shall have sufficient reserve equipment available to continue operations, or shall have the ability to obtain additional equipment, within 24 hours of equipment breakdown, Rule 62-701.500(11)(b), F.A.C.
25. Routine Maintenance: Cracks or eroded sections in the surface of any filled and covered area shall be properly repaired, and a regular maintenance program shall be followed to eliminate pockets or depressions that may develop as refuse settles. The slopes and drainage structures shall be inspected at least monthly and after major storm events for evidence of settling, erosion, washout, and siltation.
26. Control of Nuisance Conditions: The permittee shall be responsible for the control of odors and fugitive particulates arising from this operation. Such controls shall prevent the creation of nuisance conditions that may arise from adverse odors and fugitive particulates, and their effect on adjacent or nearby properties and users. The permittee shall immediately investigate any complaints received from the general public and, where warranted, take corrective actions to abate the adverse odor or nuisance condition. The permittee must prepare a written report on each complaint describing the action taken to resolve the complaint, and submit the report to the Department within 10 days of receiving the complaint. If the complaint has not been resolved by that time, the permittee must prepare and submit an additional report no later than 10 days from the date of resolution.
27. Gas and Odor Control: Gas and odor control at the site shall be accomplished through the exclusion of putrescible wastes, segregation of stormwater, compaction, application of cover, waste screening, and controlling the distribution of gypsum wallboard in the fill. If gas concentrations cause objectionable odors beyond the landfill property boundary, the permittee shall implement a routine odor-monitoring program to determine the timing and extent of off-site odors and shall submit to the Department an odor remediation plan for the gas releases, Rule 62-701.530(3)(b), F.A.C.
28. Gas Management System: The permittee shall comply with the gas monitoring requirements of Rule 62-701.530(2), F.A.C. Monitoring of methane gas at the property boundary and within structures on the property shall be performed quarterly to determine the effectiveness of the gas migration controls. The gas monitoring results shall be reported as percent of the lower explosive limit (LEL), calibrated to methane, and shall be submitted to the Department within 30 days of receipt of data. If the gas monitoring results show that combustible gas concentrations exceed 25% of the LEL in structures and 100% of the LEL at the property boundary, the permittee shall implement a Gas Remediation Plan as required in Rule 62-701.530(3)(a), F.A.C. The gas monitoring results shall be submitted to the Department quarterly by the 20<sup>th</sup> day of January, April, July and October.

PERMITTEE:

Volusia County Solid Waste Division

Attention: Mr. Leonard Marion

WACS Facility: 27540

Permit Number: SO64-0078767-026

Expiration Date: 10/09/2014

SPECIFIC CONDITIONS:

29. Asbestos Disposal: Asbestos waste is disposed of in the Class III cell in accordance with 40 CFR Part 61.154. Friable asbestos is wetted and enclosed in a double plastic bag. The waste must be accompanied by a manifest providing the name and contact information of the generator and shipper and the quantity of waste. The County must receive 24 hours advance notice of the shipment. Landfill personnel will bury the bagged asbestos waste in a separate pit at the Class III cell.
30. Improper Operations: When the Department, after investigation, has good reason (such as complaints, questionable maintenance of equipment, improper operations, etc.) to believe that any applicable standard contained in Chapter 62-701, F.A.C. or in this permit is being violated, it may require the permittee to identify the nature of the problem and to report to the Department in writing, on the results of the investigation and corrective action taken to prevent its recurrence.
31. Operation Plan: An operation plan that meets the requirements of Rule 62-701.500(2), F.A.C. shall be kept at the landfill. The operators and spotters shall be trained and knowledgeable about the plan.
32. Operator Training Compliance: The Tomoka Farms Road Landfill, Class III, shall comply with Rule 62-701.320(15), F.A.C., Operator Training.
33. Hazardous Wastes: Any incidental hazardous wastes received in connection with operation of this Class III landfill must be disposed of in accordance with Rule 62-730, F.A.C.
34. Waste Tires: Waste tires shall be received, stored and processed in accordance with the Waste Tire Rule, Chapter 62-711, F.A.C.
35. Unacceptable Waste: Garbage, white goods, waste oil, hazardous wastes, infectious waste, residential waste and any other prohibited materials inadvertently received at the Class III landfill shall be immediately removed from the waste stream for proper disposal.
36. Allowable Waste: The Class III facility shall only process wastes that are acceptable for disposal at a Department permitted Class III landfill, Rule 62-701.200(14), F.A.C.
37. Delineation of Limits of Waste: The limits of waste within the permitted footprint of the disposal area shall be delineated with permanent monuments or markers. The location of monuments or markers shall be established by a Professional Surveyor and Mapper, licensed in Florida. The monuments or markers shall be of sufficient number to clearly define the limits of waste disposal, and shall be visible and easily identifiable to operation personnel and regulatory inspectors.
38. Waste Report: A waste report shall be submitted to the Department quarterly, by the 20<sup>th</sup> day of January, April, July and October. Waste reports shall include the quantity of each of the following:

Household waste  
Agricultural waste  
Commercial waste  
Incinerator by-pass waste  
Construction and demolition debris  
Industrial sludge  
Treated biomedical waste

Yard Trash  
Industrial Waste  
Ash Residue  
Sewage Sludge  
Waste/Air Treatment Sludges  
Waste Tires



PERMITTEE:  
Volusia County Solid Waste Division  
  
Attention: Mr. Leonard Marion

WACS Facility: 27540  
Permit Number: SO64-0078767-026  
Expiration Date: 10/09/2014

**SPECIFIC CONDITIONS:**

All submittals in response to this specific condition shall be submitted to: Solid Waste Section, Department of Environmental Protection, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, with a copy to: Department of Environmental Protection, Central District, Solid Waste Section, 3319 Maguire Boulevard, Suite 232, Orlando, Florida 32803-3767.


39. Record Keeping: The permittee shall comply with the record keeping requirements for a Class III landfill, Rule 62-701.500(13), F.A.C.
40. Permit Deviations: The Department shall be notified and approval shall be obtained prior to executing any substantial changes or revisions to the operation authorized by this permit.
41. Operation Permit Renewal: An operation permit renewal must be submitted at least 60 days prior to the expiration date of this permit, Rule 62-4.090, F.A.C.
42. Closure Permit Requirements: At least 90 days prior to the date when wastes will no longer be accepted at the landfill, the owner or operator shall submit a closure permit application to the Department, Rule 62-701.600(3), F.A.C.
43. Final Elevation: The final (maximum) elevation of the Tomoka Farms Road Landfill, Class III, shall not exceed 165.2 feet NGVD as shown on Sheet 4 of 8 of the Project Drawings. (Reference No. 1 – Appendix A).
44. Solid Waste Disposal Rate: The average Class III solid waste disposal rate for this source is 700 tons per day as stated in the application. Actual operating rates may vary depending upon business conditions.
45. Financial Assurance Requirements: The permittee shall maintain compliance with the financial assurance requirements of Rule 62-701.630, F.A.C. by submitting all required updated supporting documentation in accordance with Rule 62-701.630, F.A.C. and 40 CFR Part 264, Subpart H as adopted by reference in Rule 62-701.630, F.A.C. All submittals in response to this specific condition shall be submitted to the Financial Coordinator, Solid Waste Section, Department of Environmental Protection, 2600 Blair Stone Road, MS-4565, Tallahassee, Florida 32399-2400 with a copy to the Department of Environmental Protection, Central District, Solid Waste Section, 3319 Maguire Boulevard, Suite 232, Orlando, Florida 32803-3767.
46. Annual Cost Estimates and Financial Instrument Adjustments: The permittee shall, in addition to annually adjusting the closure and long-term care cost estimates, adjust the financial assurance mechanism to reflect an increase in cost estimates. Cost estimate adjustments shall be in accordance with Rule 62-701.630(4), F.A.C. Instrument adjustments shall be in accordance with Rule 62-701.630, F.A.C. and 40 CFR Part 264, Subpart H as adopted by reference in Rule 62-701.630, F.A.C. Documentation of financial mechanism increases shall be submitted to: Financial Coordinator, Solid Waste Section, Department of Environmental Protection, 2600 Blair Stone Road, MS-4565, Tallahassee, Florida 32399-2400. All estimate update submittals shall be sent to: Department of Environmental Protection, Central District, Solid Waste Section, 3319 Maguire Boulevard, Suite 232, Orlando, Florida 32803-3767.

PERMITTEE:  
Volusia County Solid Waste Division  
Attention: Mr. Leonard Marion  
SPECIFIC CONDITIONS:

WACS Facility: 27540  
Permit Number: SO64-0078767-026  
Expiration Date: 10/09/2014

ISSUED: December 10, 2009

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION



\_\_\_\_\_  
Vivian F. Garfein  
Director, Central District  
3319 Maguire Boulevard, Suite 232  
Orlando, Florida 32803

#### FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.



Dec. 10, 2009

\_\_\_\_\_  
Clerk

\_\_\_\_\_  
Date

#### CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were sent before the close of business on December 10, 2009 to the listed persons.



\_\_\_\_\_  
Clerk

#### Enclosures:

1. Appendix A: List of Documents Incorporated into Permit
2. Appendix B: Time Sensitive Specific Conditions
3. Exhibit I: Monitoring Plan Implementation Schedule (MPIS).



Appendix A  
List of Documents Incorporated into Permit

1. Application To Renew Operation Permit, Tomoka Farms Road Landfill, Class III Disposal Cell, Volusia County, Florida, Prepared by SCS Engineers, Daytona Beach, Florida 32118, dated June 23, 2009. Received and stamped June 26, 2009.
2. Request for Additional Information from Central District – DEP, dated July 22, 2009.
3. Request for Additional Information response from SCS Engineers dated August 5, 2009. Received and stamped August 11, 2009, Central District – DEP.
4. Permit Application Completion Letter from Central District – DEP dated August 20, 2009.
5. Application for a Permit to Construct an Expansion to the Tomoka Farms Road Landfill, Class III Disposal Cell, Volusia County, Florida, Prepared by SCS Engineers, Daytona Beach, Florida 32118, dated June 30, 2008. Received and stamped July 14, 2008, DEP – Central District.
6. Tomoka Farms Road Landfill, Class III Landfill Modification Construction Drawings, Sheets 1 of 9 by SCS Engineers, dated April 2008. Received and stamped July 28, 2008, DEP – Central District.

### Appendix 3

#### TOMOKA FARMS ROAD LANDFILL

WACS\_FACILITY: 27540

#### MONITORING PLAN IMPLEMENTATION SCHEDULE (MPIS)

5/22/2013

#### GENERAL

1. This water quality monitoring plan (called the Monitoring Plan Implementation Schedule) is for the entire TFRL solid waste management facility. This MPIS is effective when the permit **0078767-030-SO-01** is issued. It replaces all previous MPIS issued for the Tomoka Farms Road Landfill solid waste management facility, WACS #27540. [62-701.510(1)(b)&(c), 62-520.600(5),(F.A.C.)]
2. The field testing, sample collection and preservation and laboratory testing, including quality control procedures, shall be in accordance with Chapter 62-160 (F.A.C.) Approved methods as published by the Department or as published in Standard Methods, ASTM, or EPA Methods shall be used. [62-701.510(2)(b), F.A.C.]
3. The organization collecting samples at this site must use the Field and Laboratory Standard Operating Procedures (DEP-SOP-001/01) referenced in Chapter 62-160, F.A.C. Sampling personnel must have a copy of the SOP for purging and sampling in the field when sampling and must be knowledgeable of its contents, procedures, and forms. The laboratory designated to conduct the chemical analyses must be certified by the Florida Department of Health Environmental Laboratory Certification Program (DoH ELCP). This Certification must be for the test method and analyte(s) that are reported. [62-160.210(1), 62-160.300(1), F.A.C.]

**NOTE:** DEP-SOP-001/01 can be accessed at: <http://www.dep.state.fl.us/water/sas/sop/sops.htm>

4. If, at any time, analyses detect parameters which are significantly above background water quality, or which are at levels above the Department's water quality standards or criteria specified in Chapter 62-520, F.A.C., in the detection wells or at the edge of the Zone of Discharge, the Permittee, to confirm the data, shall resample the wells within thirty (30) days of receipt of the sampling data. Should the permittee choose not to resample, the Department will consider the water quality analysis as representative of current ground water conditions at the facility. The permittee must notify the Department within 14 days of receipt of the sampling data whether the original data will be accepted as representative of current ground water conditions or whether resampling will be accomplished to confirm the data.

If the resampling event detects parameters which are significantly above background water quality, or which are at levels above the Department's water quality standards or criteria specified in Chapter 62-520, F.A.C., the Permittee shall notify the Department in writing within 14 days of receipt of the sampling data. Confirmed data must be submitted to the Department within 60 days from completion of lab analyses. Use "CONF" (for confirmation data) in the report type column. [62-701.510(6)(a), F.A.C.]

Upon notification by the Department, the permittee shall initiate evaluation monitoring in accordance with Rule 62-701.510(6) F.A.C. [62-701.510(6)(a), F.A.C.]



## GROUND WATER QUALITY MONITORING

5. The fifty-four (54) ground water monitoring wells designated for water quality testing and water level measurements are listed on **Attachment A** and are shown on **Attachment B. . B 62-701.510(3)(d)2 & 3, F.A.C.**]
6. Any initial sample collected from a ground water monitoring well shall be analyzed for the following Initial Sample Ground Water Monitoring Parameters. **[62-701.510(5)(b)2, F.A.C.]**

Initial Ground Water Monitoring Parameters	
Field Parameters	Laboratory Parameters
1. Static water level in wells before purging	1. Ammonia – N, Total
2. Dissolved oxygen	2. Chlorides
3. pH	3. Iron
4. Specific conductivity	4. Nitrate
5. Temperature	5. Sodium
6. Turbidity	6. Total dissolved solids (TDS)
7. Colors and sheens (by observation)	7. Those parameters listed in 40 CFR Part 258, Appendix II

- \* Mercury not on list because it is included in Appendix II
- \* Appendix I is not listed because it is a subset of Appendix II

7. Semi-annual samples shall be collected in **May and November**. The samples shall be analyzed for the following Ground Water Monitoring Parameters. **[62-701.510(5)(c) & (7)(a), F.A.C.]**

Semi-Annual Ground Water Monitoring Parameters	
Field Parameters	Laboratory Parameters
1. Static water level in wells before purging	1. Ammonia – N, Total
2. Specified conductivity	2. Chlorides
3. pH	3. Iron
4. Dissolved oxygen	4. Mercury
5. Turbidity	5. Nitrate
6. Temperature	6. Sodium
7. Colors sheens (by observation)	7. Total dissolved solids (TDS)
	8. Those parameters listed in 40 CFR Part 258 Appendix I

8. Unless otherwise approved by the Department, wells with high turbidities must be remediated or reinstalled to reduce the turbidity value to less than 20 NTU prior to sample collection. Should any ground water sample exhibit dissolved oxygen concentrations greater than 20% of oxygen saturation at the field measured temperature, the sampled well must be repurged then resampled as soon as an acceptable dissolved oxygen value has been attained unless it can be demonstrated that in situ ground water contains higher levels of dissolved oxygen. All water quality analyses will be performed on unfiltered samples unless approved by the Department.
9. Please confer with your consultant and analytical laboratory prior to sampling to ensure the analytical method is capable of achieving detection limits at or below the Groundwater Cleanup Target Levels (GCTLs) in Table I, Chapter 62-777, F.A.C. except those listed in Table C of the "FDEP Guidance for the Selection of Analytical Methods and for the Evaluation of Practical Quantitation Limits dated 10/12/2004". GCTLs that are not water quality standards are used as screening tools and interim guidelines for ground water minimum criteria until standards are promulgated.

### SURFACE WATER MONITORING

10. The seven (7) surface water sites included in this monitoring plan are SW-1, SW-2, SW-3, SW-4, SW-5, SW-11 and SW-12. They are listed on **Attachment A** and shown on **Attachment B**. [62-701.510(4)(c), F.A.C.]
11. Initial samples from any new surface water monitoring sites shall be collected within 30 days of Department's approval of the sampling location. The samples shall be analyzed for the following Initial Surface Water Monitoring Parameters [62-701.510(5)(b)3, F.A.C.]

Initial Surface Water Monitoring Parameters	
Field Parameters	Laboratory Parameters
1. Surface water level	1. Unionized ammonia as N
2. Dissolved oxygen	2. Total hardness as CaCO <sub>3</sub>
3. pH	3. Biochemical oxygen demand (BOD <sub>5</sub> )
4. Specific conductivity	4. Iron
5. Temperature	5. Mercury
6. Turbidity	6. Nitrate
7. Colors and sheens (by observation)	7. Total dissolved solids (TDS)
	8. Total organic carbon (TOC)
	9. Fecal coliform
	10. Total phosphates as P
	11. Chlorophyll A
	12. Total nitrogen
	13. Chemical oxygen demand (COD)
	14. Total suspended solids (TSS)
	15. Those parameters listed in 40 CFR Part 258 Appendix I

12. Semi-annual samples from the seven (7) surface water monitoring sites shall be collected in **May and November**. The samples shall be analyzed for the following Surface Water Monitoring Parameters. [62-701.510(5)(d) & (7)(b), F.A.C.]

Semi-Annual Surface Water Monitoring Parameters	
Field Parameters	Laboratory Parameters
1. Surface Water Elevation	1. Unionized ammonia as N
2. Dissolved oxygen	2. Total hardness as CaCO <sub>3</sub>
3. pH	3. Biochemical oxygen demand (BOD <sub>5</sub> )
4. Specific conductivity	4. Iron
5. Temperature	5. Mercury
6. Turbidity	6. Nitrate
7. Colors and sheens (by observation)	7. Total Dissolved Solids (TDS)
	8. Total Organic Carbon (TOC)
	9. Fecal coliform
	10. Total phosphorus (as mg/L P)
	11. Chlorophyll A
	12. Total nitrogen
	13. Chemical Oxygen Demand (COD)
	14. Total Suspended Solids (TSS)
	15. Those parameters listed in 40 CFR Part 258 Appendix I

13. Please confer with your consultant and analytical laboratory prior to sampling to ensure the analytical method is capable of achieving detection limits at or below the Freshwater Surface



Water Criteria in Table I, Chapter 62-777, F.A.C. except those listed in Table C of the "FDEP Guidance for the Selection of Analytical Methods and for the Evaluation of Practical Quantitation Limits dated 10/12/2004". Freshwater Surface Water Criteria that are not water quality standards are used as screening tools and interim guidelines for ground water minimum criteria until standards are promulgated.

### **MONITORING WELL REQUIREMENTS**

14. If a monitoring well or piezometer becomes damaged or inoperable, the Permittee shall notify the Department in writing within seven (7) days. The written report shall describe what problem has occurred and the remedial measures that have been taken to prevent a recurrence. The Department can require the replacement of inoperable monitoring wells or piezometers. [62-4.070(3), F.A.C.]
15. New or replacement monitoring well design or placement must be approved by the Department. Either:
  - a. Proposed well construction details based on site-specific borings must be submitted with all supporting data (grain size distribution analyses, in-situ hydraulic conductivity testing, depth to water, etc.) for the Department's approval prior to well installation. or
  - b. The Department approves in advance of installation that the anticipated lithology and the proposed well construction is similar to close wells in the MPIS and that the final determination of this information (grain size distribution analyses, in-situ hydraulic conductivity testing, depth to water, etc.) can be evaluated by an engineer or geologist at the time of well installation and submitted with the well completion information. (This condition is satisfied for the 17 new wells specified in this MPIS.)
16. Use of hollow stem auger equipment is recommended. Other drilling methods must be approved by the Department prior to well installation. [62-520.600(3), F.A.C.]
17. All wells and piezometers shall be clearly and permanently labeled and the well site maintained so that the well is visible at all times. Unless otherwise authorized in a Department permit, new monitoring wells, and existing monitoring wells at the time of permit renewal, shall have protective bollards or other devices installed around them if they are located in areas of high traffic flow to prevent damage from passing vehicles. [62-701.510(3)(d)5, F.A.C.]
18. An abandonment plan for abandoning any well that is unsuitable for ground water monitoring or for any piezometer must be approved by the Department prior to abandonment. [62-701.510(3)(d)6, F.A.C.]

### **REPORTING REQUIREMENTS**

#### **FIELD ACTIVITIES**

19. The Department must be notified in writing, hard copy or e-mail, at least fourteen (14) days prior to the installation and/or sampling of any monitoring well(s). [62-701.510(8)(a), F.A.C.]

#### **MONITORING WELL COMPLETION**

20. One (1) paper copy and one (1) electronic copy (Adobe pdf format) of **Attachment C Monitoring Well Completion Report** (as modified by the Central District) and required Attachments (for example, construction diagram and lithologic log), must be submitted to the

Department within thirty (30) days after installation of any new or replacement monitoring well(s). In addition, as-built well construction diagrams and soil boring logs that cover the entire depth of the monitoring well(s) must be submitted to the Department.

**NOTE:** The top of casing elevation of each well, to an accuracy of 0.01 feet, and the latitude and longitude of each well in degrees, minutes and seconds, to two (2) decimal places, with an accuracy of 15 feet, must be determined and certified by a Florida Licensed Surveyor and Mapper and provided on the form. [62-701.510(3)(d)1 & 62-532.410, F.A.C.]

### **SURVEYING**

21. One (1) paper copy and one (1) electronic copy (Adobe pdf format) of a drawing must be submitted within thirty (30) days following monitoring well installation showing the location of all monitoring sites (active, abandoned, and Evaluation Monitoring), piezometers, water bodies and waste filled areas. The location of features on the drawing must be horizontally and vertically located by standard surveying techniques. The drawing shall include all monitoring well locations, each monitoring well name and identification (WACS) number, the top of casing, pad elevation, permanent benchmark(s) and/or corner monument marker(s) referenced to NGVD 1929 with an accuracy of 0.01 feet. The latitude and longitude of each well in degrees, minutes and seconds, to two (2) decimal places, with an accuracy of 15 feet, must be determined and provided on the drawing. The survey shall be conducted and certified by a Florida Licensed Surveyor and Mapper. [62-701.510(1)(c)&(3)(d)1, F.A.C.]
22. If a monitoring well is being replaced or new wells are being added to an existing ground water monitoring plan, only the new wells need to be surveyed as long as all other monitoring wells in the MPIS have been surveyed and certified by a Florida Licensed Surveyor and Mapper and there is no reason to believe that the elevations have changed. The location and elevation determinations and the certification must be provided with the Monitoring Well Completion Form for the new well,

### **DEPTH MEASUREMENTS**

23. A total depth measurement must be made on each well at time of permit renewal. This information must be provided as part of permit renewal application. This measurement is to be reported as total apparent depth below ground surface and should be compared to the original total depth of the well.

### **INITIAL AND SEMI-ANNUAL SAMPLING**

24. Required monitoring reports must be submitted to the Department within sixty (60) days from completion of laboratory analyses. Requirement for submitting the report is outlined in **Attachment D (ADaPT Electronic Reporting Requirement)**. [Rule 62-701.510(8), F.A.C.]

### **WATER ELEVATIONS**

25. Water levels in all monitoring wells, whether sampled or not, all piezometers and all surface water sites must be measured to the nearest 0.01 foot. The depth to water shall be converted to feet NGVD and this elevation shall be reported semi-annually.
26. Surface water elevations at sampling locations must be measured to the nearest 0.01 foot on the same day as ground water levels in the wells and piezometers and reported semiannually.



27. All water level measurements must be made within a one-day period.
28. These measurements should be reported in a table that includes well or surface water point name, date water level measured, measuring point elevation referenced to NGVD 1929, depth to water and calculated water level elevation referenced to NGVD 1929. The ground water and surface water elevations shall be reported in the ADaPT data for the upload into WACS. [62-701.510(8)(a)8, F.A.C.]

#### **GROUND WATER CONTOUR MAPS**

29. Ground water elevation contour maps for each monitored aquifer zone must be submitted semi-annually to the Department. Ground water elevation contour map(s) should include monitoring well and piezometer locations, ground water elevation at each monitoring well or piezometer location referenced to NGVD 1929, a bar scale, north arrow, ground water contour interval, date of measurement and ground water flow direction. The map(s) must incorporate adjacent and on-site surface water elevations where appropriate. These maps shall be signed and sealed pursuant to Florida Statutes (F.S.) Chapters 471 and 492 which require that documents requiring the practice of professional engineering or professional geology, as described in Chapter 471 or 492, F.S., be signed and sealed by the professional(s) who prepared or approved them. This certification must be made by a licensed professional who is able to demonstrate competence in this subject area. [62-701.510(8)(a)9, F.A.C.]

#### **MPIS Technical Report (formerly Biennial Report)**

- a Tabular displays of any data which shows that a monitoring parameter has been detected, and graphical displays of any leachate key indicator parameters detected (such as pH, specific conductance, TDS, TOC, sulfate, chloride, sodium and iron), including hydrographs for all monitor wells;
- b Trend analyses of any monitoring parameters consistently detected;
- c Comparisons among shallow, middle, and deep zone wells;
- d Comparisons between background water quality and the water quality in detection and compliance wells;
- e Correlations between related parameters such as total dissolved solids and specific conductance;
- f Discussion of erratic and/or poorly correlated data;
- g An interpretation of the ground water contour maps, including an evaluation of ground water flow rates; and
- h An evaluation of the adequacy of the water quality monitoring frequency and sampling locations based upon site conditions.

30. One (1) electronic copy (Adobe pdf format) of the MPIS Technical Report shall be submitted to the Department:

Report	Sampling Periods Covered	Number Of Semi-annual Sampling Events in Report	MPIS Technical Report Due
1	May 2012 thru May 2014	5	At the time of Application for Renewal of the Class III Permit 0078767-026-SO-01 8/10/2014
2	Sept 2014 Thru May 2017	6	September 30, 2017
3	Sept 2017 Thru May 2020	6	September 30, 2020
4	Sept 2020 Thru May 2023	6	September 30, 2023
5	Sept 2023 Thru May 2026	6	September 30, 2026
6	Sept 2026 Thru May 2029	6	September 30, 2029
7 Renewal Report	Sept 2029 Thru May 2033	7	At the time of Application for Renewal of the Class I Permit 0078767-030-SO-01 3/13/2033

#### Requirements for Electronic Reporting of Water Quality Data

31. Required water quality monitoring reports and all ground water, and surface water analytical results shall be submitted as described in Attachment D (**ADaPT electronic reporting requirement**). Required monitoring reports must be submitted to the Department within sixty (60) days from completion of laboratory analyses. (62-160.240 and 62-160.340, F.A.C.)
32. Monitoring Plan Implementation Schedule--Tracking versions for current permit period:

Date	Type	Notation
11/3/2009	Update	<ul style="list-style-type: none"> <li>Added ADaPT electronic reporting requirement language.</li> <li>Changed Biennial Report to MPIS Technical Report per pending Chapter 62-701 F.A.C revision.</li> <li>Added reporting of water level in leachate basins.</li> </ul>
3/12/2012	Permit Renewal	<ul style="list-style-type: none"> <li>Current ADaPT electronic reporting requirement language.</li> <li>Changed Biennial Report to MPIS Technical Report per Chapter 62-701 F.A.C revision.</li> </ul>
5/22/2013	Permit Renewal Class I	<ul style="list-style-type: none"> <li>Updated per Chapter 62-701 F.A.C revision 8/12/2012</li> <li>Removed Leachate Sampling per rule revision.</li> <li>Include EM wells on Att B Monitoring Locations Map</li> <li>Include Att G Evaluation Monitoring Plan Status</li> </ul>



Tomoka Farms Road Landfill  
Volusia County

**List of Attachments**

**Attachment A** – Monitoring Well, Surface Water Sampling Point Lists

**Attachment B** – Monitoring Locations Map

**Attachment C** – Monitoring Well Completion Report Form

**Attachment D** – ADaPT Electronic Reporting Requirements

**Attachment E** – Ground Water Monitoring Report Certification Form

**Attachment F** – Water Sampling Log

**Attachment G** – Evaluation Monitoring Status

**ATTACHMENT A**  
**TOMOKA FARMS ROAD LANDFILL**  
**WACS\_FACILITY: 27540**  
**MONITORING SITES**

	Monitoring Site Number	WACS Well	Well Type	Zone/ Screen	GW/SW Class	WACS Report Type
<b>Ground Water</b>						
1.	B1-B	15636	CO	ZONE 4*	G-II	SEMGW
2.	B-2	15402	BG	ZONE 4	G-II	SEMGW
3.	B-5	15403	CO	ZONE 4*	G-II	SEMGW
4.	B8	15642	IM**	ZONE 6*	G-II	SEMGW
5.	B8-2	15790	IM**	ZONE 4	G-II	SEMGW
6.	B11	15679	BG	ZONE 1-2	G-II	SEMGW
7.	B-32	15791	BG	ZONE 4	G-II	SEMGW
8.	B33-1	15792	BG	ZONE 4	G-II	SEMGW
9.	B33-2	15793	CO	ZONE 1-2	G-II	SEMGW
10.	B34-1	15794	BG	ZONE 4	G-II	SEMGW
11.	B34-2	15795	BG	ZONE 1-2	G-II	SEMGW
12.	B35-1	15796	BG	ZONE 4	G-II	SEMGW
13.	B35-2	15797	BG	ZONE 1-2	G-II	SEMGW
14.	B36	15798	BG	ZONE 4	G-II	SEMGW
15.	B37-1	15799	CO	ZONE 4	G-II	SEMGW
16.	B37-2	15800	CO	ZONE 1-2	G-II	SEMGW
17.	B38-1	15801	CO	ZONE 4	G-II	SEMGW
18.	B38-2	15802	CO	ZONE 1-2	G-II	SEMGW
19.	B-39	15803	CO	ZONE 1-2	G-II	SEMGW
20.	B40-1	15804	CO	ZONE 4	G-II	SEMGW
21.	B40-2	15805	CO	ZONE 1-2	G-II	SEMGW
22.	B41-1	15806	CO	ZONE 4	G-II	SEMGW
23.	B41-2	15807	CO	ZONE 1-2	G-II	SEMGW
24.	B42-1	15808	CO	ZONE 4	G-II	SEMGW
25.	B42-2	15809	CO	ZONE 1-2	G-II	SEMGW
26.	B43-1	15810	CO	ZONE 3-4	G-II	SEMGW
27.	B43-2	15811	CO	ZONE 1-2	G-II	SEMGW
28.	B44	15812	CO	ZONE 1-2	G-II	SEMGW
29.	B45-1	15813	CO	ZONE 4	G-II	SEMGW
30.	B45-2	15814	CO	ZONE 1-2	G-II	SEMGW
31.	B59-1R	15817	CO	ZONE 4	G-II	SEMGW
32.	B59-2R	15818	CO	ZONE 1-2	G-II	SEMGW
33.	B60	15819	CO	ZONE 4	G-II	SEMGW
34.	B61R	15820	DE	ZONE 1-2	G-II	SEMGW
35.	B62-1R	15821	DE	ZONE 4	G-II	SEMGW
36.	B62-2R	15822	DE	ZONE 1-2	G-II	SEMGW
37.	B63-1	15823	CO	ZONE 4	G-II	SEMGW
38.	B63-2	15824	CO	ZONE 1-2	G-II	SEMGW
39.	B64	15825	CO	ZONE 1-2	G-II	SEMGW
40.	B65	15826	CO	ZONE 1-2	G-II	SEMGW



**ATTACHMENT A**  
**TOMOKA FARMS ROAD LANDFILL**  
**WACS\_FACILITY: 27540**  
**MONITORING SITES**

41.	B66	15827	DE	ZONE 1-2	G-II	SEMGW
42.	B68	15829	CO	ZONE 4	G-II	SEMGW
43.	B70-1	19800	CO	ZONE 4	G-II	SEMGW
44.	B70-2	19801	DE	ZONE 1-2	G-II	SEMGW
45.	B71	19802	CO	ZONE 1-2	G-II	SEMGW
46.	B72	19803	CO	ZONE 1-2	G-II	SEMGW
47.	B73-1	19804	CO	ZONE 4	G-II	SEMGW
48.	B73-2	19805	CO	ZONE 1-2	G-II	SEMGW
49.	B74	19806	CO	ZONE 1-2	G-II	SEMGW
50.	B75	19807	CO	ZONE 1-2	G-II	SEMGW
51.	FA-1B	15639	BG	FLORIDAN	G-II	SEMGW
52.	FA-2C	15836	CO	FLORIDAN	G-II	SEMGW
53.	F-MB	22777	CO	FLORIDAN	G-II	SEMGW
54.	MO5-B	15635	CO	ZONE 4*	G-II	SEMGW
<b>Surface Water</b>						
1.	SW-1	15830	CO	BACKGROUND	SW-IIIIF	SEMSW
2.	SW-2	15831	CO	OUTFALL OF EXTERNAL DITCH	SW-IIIIF	SEMSW
3.	SW-3	15832	CO	OUTFALL FROM LANDFILL	SW-IIIIF	SEMSW
4.	SW-4	15833	CO	OUTFALL OF RETENTION POND	SW-IIIIF	SEMSW
5.	SW-5	15638	CO	OUTFALL OF INTERNAL DITCH	SW-IIIIF	SEMSW
6.	SW-11	19798	CO	STORMWATER MANAGEMENT DITCH	SW-IIIIF	SEMSW
7.	SW-12	19799	CO	SE CORNER OF BORROW AREA	SW-IIIIF	SEMSW

\* As designated in the 2001 Biennial Report Table 1 foot notes per Dr. Gornberg.

**Well Type Codes:**

(BG) Background      (DE) Detection      (IM) Intermediate      (CO) Compliance

**ATTACHMENT A**  
**TOMOKA FARMS ROAD LANDFILL**  
**WACS\_FACILITY: 27540**  
**MONITORING SITES**

**Evaluation Monitoring (EM) Wells**

EM Wells Not in the MPIS	EM Wells Sampled for Benzene	EM Wells Also Sampled for Ammonia
EM Wells in MPIS		
1	B41-1	B41-1
2	B43-1	B43-1
3	B45-1	
4	B45-2	
EM Wells Not Currently in MPIS		
5	B76-1	
6	B76-6	
7	B79-6	B79-6
8	B77	
9	B79-1	B79-1
10	B81-4	
11	B82-1	
12	B83	
13	B85	B85
14	B86	







# Florida Department of Environmental Protection

Central District  
3319 Maguire Boulevard, Suite 232  
Orlando, Florida 32803-3767  
NOTICE OF PERMIT

Charlie Crist  
Governor

Jeff Kottkamp  
Lt. Governor

Michael W. Sole  
Secretary

By E-Mail  
[Imarion@co.volusia.fl.us](mailto:Imarion@co.volusia.fl.us)

In the matter of an  
Application for Permit  
By:  
Mr. Leonard Marion  
Volusia County Solid Waste Department  
3151 East State Road 44  
DeLand, FL 32724

OCD-SW-09-0014

Volusia County – SW  
Tomoka Farms Road Landfill, Class III  
Landfill Expansion – Major Modification  
Modification of Permit No. SO64-0078767-019  
Permit Application No. SC64-0078767-024

Dear Mr. Marion:

Enclosed is Permit Number SC64-0078767-024 (Modification of Permit No. SO64-0078767-019), to construct a 6.66-acre lateral expansion and a 32.2 foot vertical expansion to the existing Class III cell, issued under Section(s) 403.061(14) and 403.707, of the Florida Statutes.

Any party to this order (permit) has the right to seek judicial review of the permit under section 120.68 of the Florida Statutes, by the filing of a Notice of Appeal under rule 9.110 of the Florida Rules of Appellate Procedure, with the Clerk of the Department of Environmental Protection, Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000 and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this notice is filed with the Clerk of the Department.

Executed in Orlando, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION

F. Thomas Lubozynski for

Vivian F. Garfein  
Director, Central District  
3319 Maguire Boulevard, Suite 232  
Orlando, FL 32803  
407/894-7555

Date: January 21, 2009



## FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, F. S., with the designated Department Clerk, receipt of which is hereby acknowledged.




Jan. 21, 2009

\_\_\_\_\_  
Clerk

\_\_\_\_\_  
Date

## CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were sent before the close of business on January 21, 2009 to the listed persons.



\_\_\_\_\_  
Clerk

VFG/gc/ew

### Enclosures

1. Permit No. SC64-0078767-024
2. Appendix A – List of Documents Incorporated into Permit
3. Appendix B – Time Sensitive Specific Conditions
4. Monitoring Plan Implementation Schedule (MPIS)

### Copies furnished to:

Richard Tedder, P.E. – DEP – Tallahassee

Fred Wick – DEP – Tallahassee

Frank Hornbrook – DEP – Tallahassee

Lee A. Powell, P.E. – SCS Engineers [lpowell@scsengineers.com](mailto:lpowell@scsengineers.com)

Jennifer Stirk – Volusia County Solid Waste Division [jstirk@co.volusia.fl.us](mailto:jstirk@co.volusia.fl.us)

Stephen Kintner – Volusia County Environmental Management [skintner@co.volusia.fl.us](mailto:skintner@co.volusia.fl.us)



# Florida Department of Environmental Protection

Central District  
3319 Maguire Boulevard, Suite 232  
Orlando, Florida 32803-3767

## NOTICE OF PERMIT

Charlie Crist  
Governor

Jeff Kottkamp  
Lt. Governor

Michael W. Sole  
Secretary

By E-Mail  
[Imarion@co.volusia.fl.us](mailto:Imarion@co.volusia.fl.us)

In the matter of an  
Application for Permit  
By:

Mr. Leonard Marion  
Volusia County Solid Waste Department  
3151 East State Road 44  
DeLand, FL 32724

OCD-SW-09-0014

Volusia County – SW  
Tomoka Farms Road Landfill, Class III  
Landfill Expansion – Major Modification  
Modification of Permit No. SO64-0078767-019  
Permit Application No. SC64-0078767-024

Dear Mr. Marion:

In response to the permit modification application submitted July 14, 2008, the Department is granting your request for a major modification to the operation permit for the Tomoka Farms Road Landfill, Class III, to include the construction of a 6.66-acre lateral expansion and 32.2 foot vertical expansion to the existing Class III cell at the County's Tomoka Farms Road Landfill for the disposal of Class III waste. The proposed expansion will increase the footprint of the Class III cell by approximately 6.66 acres bringing the total Class III cell footprint from 81.4 acres to 88.06 acres.

Permit No. SO64-0078767-019 is modified, Specific Conditions No. 12, 23, 31, and 35 are revised, and Specific Condition Nos. 39 to 46 are added to Permit No. SO64-0078767-019.

**12. Monitoring Plan Implementation Schedule:** The Monitoring Plan Implementation Schedule for the Tomoka Farms Road Landfill, Class I, includes the monitoring requirements for the Class III landfill. Semiannual monitoring shall be completed during the months of May and November, unless prior arrangements are made with the Department to alter this schedule. (The current MPIS is dated 4/17/2008.)

**23. Gas Monitoring:** The permittee shall comply with gas monitoring requirements, in accordance with Rule 62-701.530(2), F.A.C., to monitor quarterly all waste filled areas for the presence of landfill gas. If large amounts of methane gas are detected or odors are found to be a nuisance, a gas control system shall be designed and installed, in accordance with Rule 62-701.530, F.A.C. Gas monitoring reports shall be submitted to the Department within 30 days of receipt of the data.

**31. Operations Report:** An operations report shall be submitted to the Department on a quarterly basis, in accordance with Rule 62-701.500(4)(b), F.A.C. The reports shall be submitted no later than the 20<sup>th</sup> of January, April, July, and October. Reports shall include the following:

- a) types of solid waste received, and
- b) quantities of solid waste received.



All submittals in response to this specific condition shall be submitted to: Solid Waste Section, Department of Environmental Protection, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, with a copy to: Department of Environmental Protection, Central District, Solid Waste Section, 3319 Maguire Boulevard, Suite 232, Orlando, Florida 32803-3767.

35. Final Elevation (Revised): The final (maximum) elevation of the Tomoka Farms Road Landfill, Class III, shall not exceed 165.20 feet NGVD.

39. Separation of Class III from Class I waste: In the area of the proposed Class III cell expansion where Class III material will be placed over previously buried Class I waste, the County shall leave a minimum of 12 inches of existing soil cover over the Class I waste. The depth of the soil cover over buried waste shall be measured at a minimum of three locations per acre to confirm that a minimum thickness of 12 inches is maintained.

40. Construction Permit Renewal: The construction shall reasonably conform to the plans and supporting documents submitted as part of the application. If construction cannot be completed before the expiration of the permit, the permittee must notify the Department, in writing, at least 60 days prior to the expiration of the construction permit and request a renewal of the construction permit.

41. Certification: After all significant initial construction has been completed, and prior to acceptance of any solid waste, the Engineer of Record shall complete a Certificate of Construction Completion, DEP Form 62-701.900(2), then contact the Department to arrange for Department representatives to inspect the facility in the company of the permittee, the engineer and the proposed on-site facility operator.

42. Operation Permit: To obtain a permit to operate, Specific Conditions Nos. 41, 42 and 44 must be satisfied and an Application For A Permit To Operate A Solid Waste Management Facility, DEP Form # 62-701.900(1) with supporting documents and a fee of \$4,000.00 need to be submitted to the Department.

43. Substantial Changes or Revisions: The Department shall be notified and approval obtained prior to executing any substantial changes or revisions to the construction authorized by this permit.

44. Financial Responsibility: The permittee shall maintain financial assurance in accordance with the requirements of Rule 62-701.630, F.A.C. Proof that the financial mechanisms are established and funded for the expansion in accordance with Rule 62-701.630, F.A.C., and 40 CFR Part 264 Subpart H as adopted by reference in Rule 62-701.630, F.A.C. shall be submitted to the Department sixty (60) days prior to the acceptance of any solid waste at the facility. All submittals in response to this specific condition shall be sent to: Department of Environmental Protection, Financial Coordinator, Solid Waste Section, MS-4565, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, and a copy of the approval letter submitted to: Department of Environmental Protection, Central District, Solid Waste Section, 3319 Maguire Boulevard, Suite 232, Orlando, Florida 32803-3767.

45. Annual Cost Estimates and Financial Instrument Adjustments: The permittee shall, in addition to annually adjusting the closure and long-term care cost estimates, adjust the financial assurance mechanism to reflect an increase in cost estimates. Cost estimate adjustments shall be in accordance with Rule 62-701.630(4), F.A.C. Instrument adjustments shall be in accordance with Rule 62-701.630, F.A.C. and 40 CFR Part 264, Subpart H as adopted by reference in Rule 62-701.630, F.A.C. Documentation of financial mechanism increases shall be submitted to: Financial Coordinator, Solid Waste Section, Department of Environmental Protection, 2600 Blair Stone Road, MS-4565, Tallahassee, Florida 32399-2400. All estimate update submittals shall be sent to: Department of Environmental Protection, Central District, Solid Waste Section, 3319 Maguire Boulevard, Suite 232, Orlando, Florida 32803-3767.

46. Solid Waste Disposal: The Class III expansion area shall not receive any solid waste until an operating permit for the expansion area has been received.

The information submitted on file at the Central District office is made a part of this permit. The documents are listed in Appendix A.

All other conditions of the subject permit remain unchanged.

This letter must be attached to Permit No. SO64-0078767-019 and becomes part of that permit. The new permit number is SC64-0078767-024.

Sincerely,



F. Thomas Lubozynski for

Vivian F. Garfein  
Director, Central District  
407-894-7555

Date: January 21, 2009

#### FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, F. S. with the designated Department Clerk, receipt of which is hereby acknowledged.



Jan. 21, 2009

Clerk

Date

#### CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT MODIFICATION and all copies were sent before the close of business on January 21, 2009 to the listed persons.



Clerk

VFG/sj/ew

#### Enclosures:

1. Permit No. SC64-0078767-024
2. Appendix A – List of Documents Incorporated into Permit
3. Appendix B – Time Sensitive Specific Conditions
4. Monitoring Plan Implementation Schedule (MPIS)

#### Copies furnished to:

Richard Tedder, P.E. – DEP – Tallahassee  
Fred Wick – DEP – Tallahassee  
Frank Hornbrook - DEP – Tallahassee  
Lee A. Powell, P.E. – SCS Engineers [lpowell@scsengineers.com](mailto:lpowell@scsengineers.com)  
Jennifer Stirk – Volusia County Solid Waste Department [jstirk@co.volusia.fl.us](mailto:jstirk@co.volusia.fl.us)  
Stephen Kintner – Volusia County Environmental Management [skintner@co.volusia.fl.us](mailto:skintner@co.volusia.fl.us)



## Appendix A

1. Application for a Permit to Construct An Expansion to the Tomoka Farms Road Landfill, Class III Disposal Cell, Volusia County, Florida, Prepared by: SCS Engineers, Daytona Beach, Florida, dated June 30, 2008. Received and stamped July 14, 2008, DEP – Central District.
2. Tomoka Farms Road Landfill, Class III Landfill Modification Construction Drawings, Sheets 1 of 9 to 9 of 9, by SCS Engineers dated April 2008. Received and stamped July 28, 2008, DEP – Central District.
3. Proof of Publication of Notice of Application from Volusia County Solid Waste Division, Daytona Beach, Florida dated August 1, 2008. Received and stamped August 4, 2008, DEP – Central District.
4. First Request for Additional Information from DEP – Central District dated August 26, 2008.
5. Response to First Request for Additional Information from SCS Engineers, Daytona Beach, Florida dated September 26, 2008. Received and stamped September 25, 2008, DEP – Central District.
6. Application For Construction And Operation Permit – Tomoka Farms Road Landfill, Class III Disposal Facility, Volusia County, Florida, Submitted by: SCS Engineers, Ormond Beach, Florida, dated April 2, 1999. Received and stamped September 25, 2008, DEP – Central District. (Received as response to First Request for Additional Information from DEP – Central District dated August 26, 2008).
7. Proposed Landfill Gas Monitoring Program – Tomoka Farms Road Landfill from SCS Engineers, Daytona Beach, Florida dated May 22, 2001. Received and stamped May 29, 2001, DEP – Central District.
8. Tomoka Landfill: Hydrogeologic Summary And Groundwater Monitoring Plan, Prepared by: David N. Gomberg, Cape Coral, Florida dated May 1992. Received and stamped May 27, 1992 – Central Florida District.
9. Letter – Permit Application Complete from DEP – Central District dated October 17, 2008.

**Appendix B (Revised 12/18/08)**  
**Time Sensitive Specific Conditions**  
**Modification of Permit No. SO64-0078767-019**  
**DEP Permit Application No. SC64-0078767-024**

Specific Condition	Requirement	Action	Due date
8	Equipment Breakdown	Notify the Department of equipment breakdown, malfunction, etc.	Immediately upon discovery
9	Effluent Discharge	Prior to any discharge of liquid effluents/contaminated runoff to surface water or groundwater	Seek Approval of the Department
12	Monitoring Plan Implementation Schedule (MPIS) dated 4/17/08, Paragraph 1	Implementation	Within 90 days from the date of permit issuance
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 4	Notify the Department if an exceedance is confirmed, or if the permittee chooses not to resample following an exceedance	Within 14 days of this finding
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 7	Collect and analyze samples from the 54 groundwater monitoring wells	Semi-annually (May and November)
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 8	Measure and report ground water levels in all wells, whether sampled or not	Semi-annually unless required more frequently by permit condition
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 8	Measure and report ground water levels in all wells, whether sampled or not	Measure and record within one day period
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 10	Collect and analyze samples from the seven (07) surface water monitoring sites (SW-1, SW-2, SW-3, SW-4, SW-5, , SW-11, and SW-12)	Semi-annually (May and November)



**Appendix B (Revised 12/18/08)**  
**Time Sensitive Specific Conditions**  
**Modification of Permit No. SO64-0078767-019**  
**DEP Permit Application No. SC64-0078767-024**

Specific Condition	Requirement	Action	Due date
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 11	Measure and report surface water elevations at sampling locations	Semi-annually unless required more frequently by permit condition
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 11	Measure and report surface water levels	On the same day as ground water levels in the wells. Measure and Record within one day period
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 13	Collect, analyze, and report samples from the leachate monitoring site (L-1)	Sample annually (November). Submit and discuss all leachate sampling data in the routine semi-annual sampling report.
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 13	Notify the Department in writing If the annual analysis indicates that a contaminant listed in 40 CFR Part 261.24 exceeds the regulatory level listed therein.	Within 14 days of receipt of the analytical data.
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 13	Monthly collect and analyze samples from the leachate monitoring site (L-1) if the annual analysis indicated that a contaminant listed in 40 CFR Part 261.24 exceeds the regulatory level therein	Initiate within 60 days of receipt of the analytical data for the parameters in exceedance and for field parameters
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 15	Notify the Department in writing if a monitoring well becomes damaged or inoperable	Within 7 days of discovery
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 16	Submit proposed well construction design for new or replacement monitoring well design or placement	Prior to well installation

**Appendix B (Revised 12/18/08)**  
**Time Sensitive Specific Conditions**  
**Modification of Permit No. SO64-0078767-019**  
**DEP Permit Application No. SC64-0078767-024**

Specific Condition	Requirement	Action	Due date
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 18	Submit an abandonment plan for abandoning any well that is unsuitable for ground water monitoring	Prior to abandonment
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 19	Notify the Department prior to the installation and/or sampling of any monitoring well(s)	At least fourteen (14) days prior to installation and/or sampling
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 20	Submit Monitoring Well Completion Report including the built well construction diagrams, and soil boring logs that cover the entire depth of the monitoring wells	Within 30 days after installation of new or replacement wells
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 21	Submit a drawing showing the location of all monitoring wells (active and abandoned), water bodies and waste filled areas	Within thirty (30) days following monitoring well installation
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 22	Measure the total depth on all wells	At time of permit renewal
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 23	Submit Monitoring Reports	Within sixty (60) days of completion of laboratory analyses
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 24	Water levels in all monitoring wells, whether sampled or not, all piezometers and all surface water sites must be measured to the nearest 0.01 foot and must be made within a one-day period.	Semi-annually (May and November) during water sampling events



**Appendix B (Revised 12/18/08)**  
**Time Sensitive Specific Conditions**  
**Modification of Permit No. SO64-0078767-019**  
**DEP Permit Application No. SC64-0078767-024**

Specific Condition	Requirement	Action	Due date
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 25	Submit a ground water elevation contour map for each monitored aquifer zone	Semi-annually; submit with semi-annual water sampling event report
12	Monitoring Plan Implementation Schedule (MPIS), Paragraph 26	Submit a Biennial Technical Report	Every two years; the first report is due 30 days after the submittal of the monitoring data for the fourth ground water sampling event; subsequent reports are due 30 days after the submittal of the fourth sampling event following the previous biennial report
14	Solid Waste Burning	Report to the Department fires at the facility	In accordance with the operation plan.
14	Solid Waste Burning	Submit a letter explaining the cause, remedial action, and measures to prevent recurrence of a fire incident	Within five (5) days of fire incident.
15	Separation of Class III from C&D Waste	In areas of previously disposed C&D waste, provide minimum of 12-inches of cover soil prior to disposal of Class III waste	Seek Department approval for any variance.
17	Initial Cover and Intermediate Cover	Apply initial cover on the working face	Provide 6-inches of initial cover at least once a week.

**Appendix B (Revised 12/18/08)**  
**Time Sensitive Specific Conditions**  
**Modification of Permit No. SO64-0078767-019**  
**DEP Permit Application No. SC64-0078767-024**

Specific Condition	Requirement	Action	Due date
17	Initial Cover and Intermediate Cover	Apply intermediate cover	Within seven (7) days of cell completion if final cover or additional lift is not to be applied within 180 days of cell completion
18	Final Cover	Apply final cover (12-inches of soil cover, a geosynthetic clay liner, 18-inches of soil, 6 inches of soil capable of supporting vegetative growth)	Within 180 days after final receipt of waste
22	Control of Nuisance Conditions	Prepare and submit a written report on each warranted complaint describing the action to resolve the complaint	Within 10 days of receiving the complaint
22	Control of Nuisance Conditions	Submit an additional report if complaint has not been resolved within 10 days	No later than 10 days from the date of resolution
23	Gas Monitoring	Comply with requirements of Rule 62-701.530(2). Submit Gas Monitoring Reports	Quarterly; Within 30 days of receipt of the data.
31	Waste Reports	In accordance with Rule 62-701.500(4)(a) submit waste reports	Quarterly; The reports shall be submitted no later than the 20 <sup>th</sup> of January, April, July, and October.
32	Permit Deviations	Notify the Department of any substantial changes or revisions to the operation	Prior to executing any substantial changes or revisions to the operation
33	Operation Permit Renewal (Permit expires on 08/25/2009)	Submit an operation permit renewal application	At least 60 days prior to the expiration date of this permit (before 06/27/2009)



**Appendix B (Revised 12/18/08)**  
**Time Sensitive Specific Conditions**  
**Modification of Permit No. SO64-0078767-019**  
**DEP Permit Application No. SC64-0078767-024**

Specific Condition	Requirement	Action	Due date
34	Closure Permit Requirements	Submit a closure permit application	At least 90 days prior to the date when wastes will no longer be accepted at the landfill
35	Final Elevation	Not to exceed 165.20 feet NGVD.	Seek Department approval for any variance.
39	Separation of Class III from Class I Waste	Where Class III material will be placed on top of Class I material, minimum of 12 inches of soil cover must be applied prior to placing Class III waste	Seek Department approval for any variance
40	Construction Permit Renewal	If construction cannot be completed before the expiration of the permit	Notify the Department 60 days prior to expiration date and request renewal of construction permit
41	Certification	Submit Certificate of Construction Completion using DEP Form 62-701.900(2) and arrange Department Representative Inspection of the facility	Prior to accepting solid waste
42	Operation Permit	<ol style="list-style-type: none"> <li>1) Specific Condition Nos. 41, 42, and 44 must be satisfied</li> <li>2) Submit Application for operating permit using DEP Form # 62-701.900(1) and \$4,000 fees</li> </ol>	Prior to accepting solid waste
43	Substantial Changes or Revisions	Notify the Department in writing and obtain approval	Prior to substantial changes or revisions to construction authorized by this permit.

**Appendix B (Revised 12/18/08)**  
**Time Sensitive Specific Conditions**  
**Modification of Permit No. SO64-0078767-019**  
**DEP Permit Application No. SC64-0078767-024**

Specific Condition	Requirement	Action	Due date
44	Financial Responsibility	Submit proof of financial assurance issued in favor of the State of Florida in the amount of the approved closing cost estimate for the facility	60 days prior to acceptance of any solid waste in the Class III expansion areas at the facility.
45	Annual Cost Estimates and Financial Instrument Adjustments	Adjust annually the closure and long-term care cost estimates, and the financial assurance mechanism to reflect increase in cost estimates	Submit between January 1 and March 1 of each year; if using an escrow account submit between July 1 and September 1 of each year
46	Solid Waste Disposal	Must obtain an Operation permit	Prior to accepting any solid waste in the Class III expansion area.



## Appendix A

1. Application for a Permit to Construct An Expansion to the Tomoka Farms Road Landfill, Class III Disposal Cell, Volusia County, Florida, Prepared by: SCS Engineers, Daytona Beach, Florida, dated June 30, 2008. Received and stamped July 14, 2008, DEP – Central District.
2. Tomoka Farms Road Landfill, Class III Landfill Modification Construction Drawings, Sheets 1 of 9 to 9 of 9, by SCS Engineers dated April 2008. Received and stamped July 28, 2008, DEP – Central District.
3. Proof of Publication of Notice of Application from Volusia County Solid Waste Division, Daytona Beach, Florida dated August 1, 2008. Received and stamped August 4, 2008, DEP – Central District.
4. First Request for Additional Information from DEP – Central District dated August 26, 2008.
5. Response to First Request for Additional Information from SCS Engineers, Daytona Beach, Florida dated September 26, 2008. Received and stamped September 25, 2008, DEP – Central District.
6. Application For Construction And Operation Permit – Tomoka Farms Road Landfill, Class III Disposal Facility, Volusia County, Florida, Submitted by: SCS Engineers, Ormond Beach, Florida, dated April 2, 1999. Received and stamped September 25, 2008, DEP – Central District. (Received as response to First Request for Additional Information from DEP – Central District dated August 26, 2008).
7. Proposed Landfill Gas Monitoring Program – Tomoka Farms Road Landfill from SCS Engineers, Daytona Beach, Florida dated May 22, 2001. Received and stamped May 29, 2001, DEP – Central District.
8. Tomoka Landfill: Hydrogeologic Summary And Groundwater Monitoring Plan, Prepared by: David N. Gomberg, Cape Coral, Florida dated May 1992. Received and stamped May 27, 1992 – Central Florida District.
9. Letter – Permit Application Complete from DEP – Central District dated October 17, 2008.

## **ATTACHMENT B**

**Figure B-1 Airport Location Map**

**Figure B-2 Aerial Vicinity Map**

**Figure B-3 Aerial Site Map**

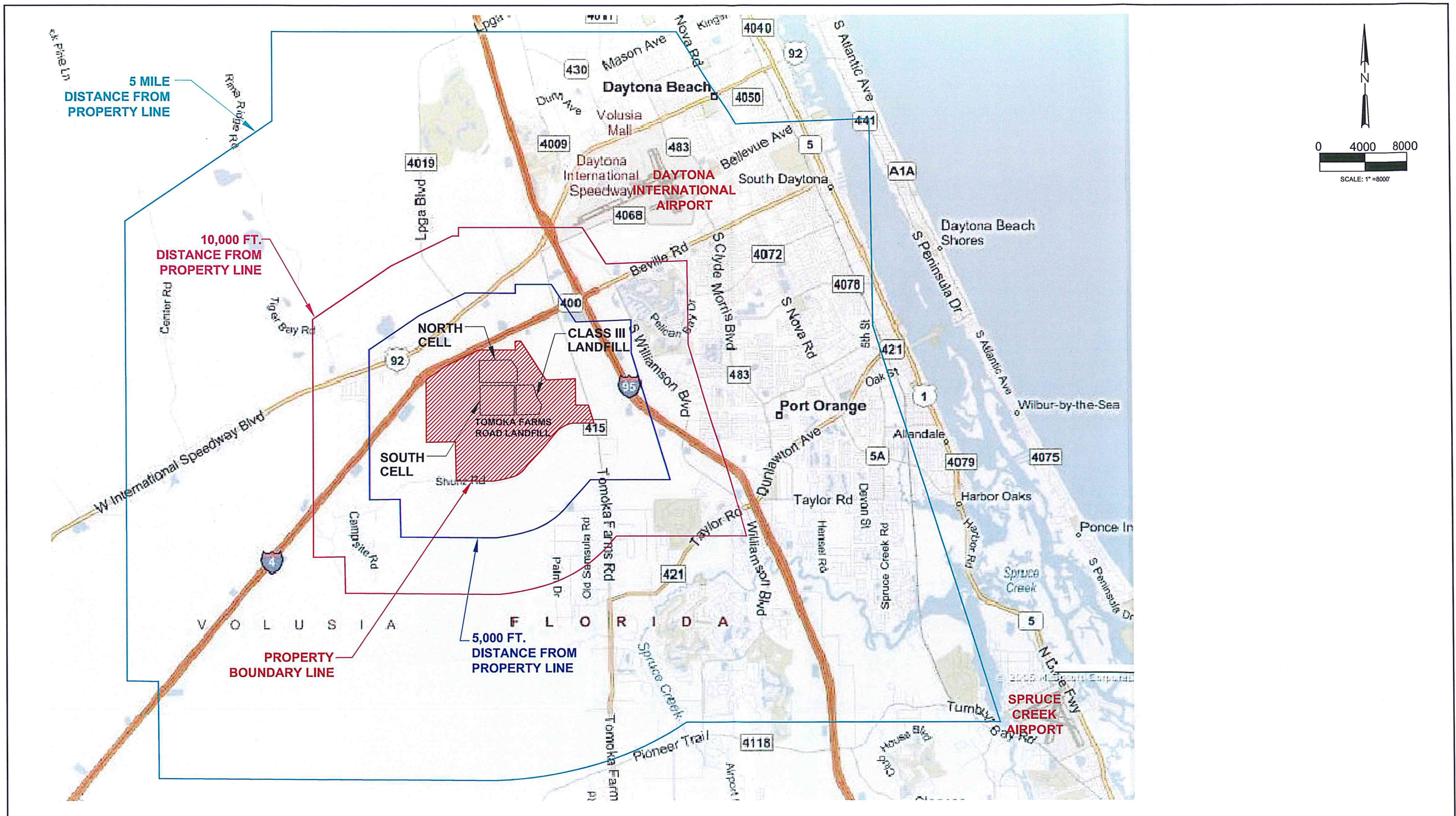
**Figure B-4 Class III Topographic Survey Map**

**Figure B-5 Cross Sections of the Class III Landfill**

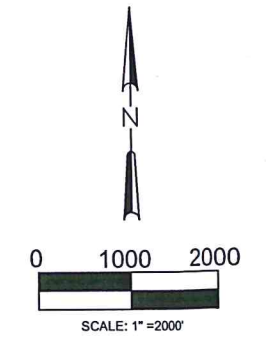
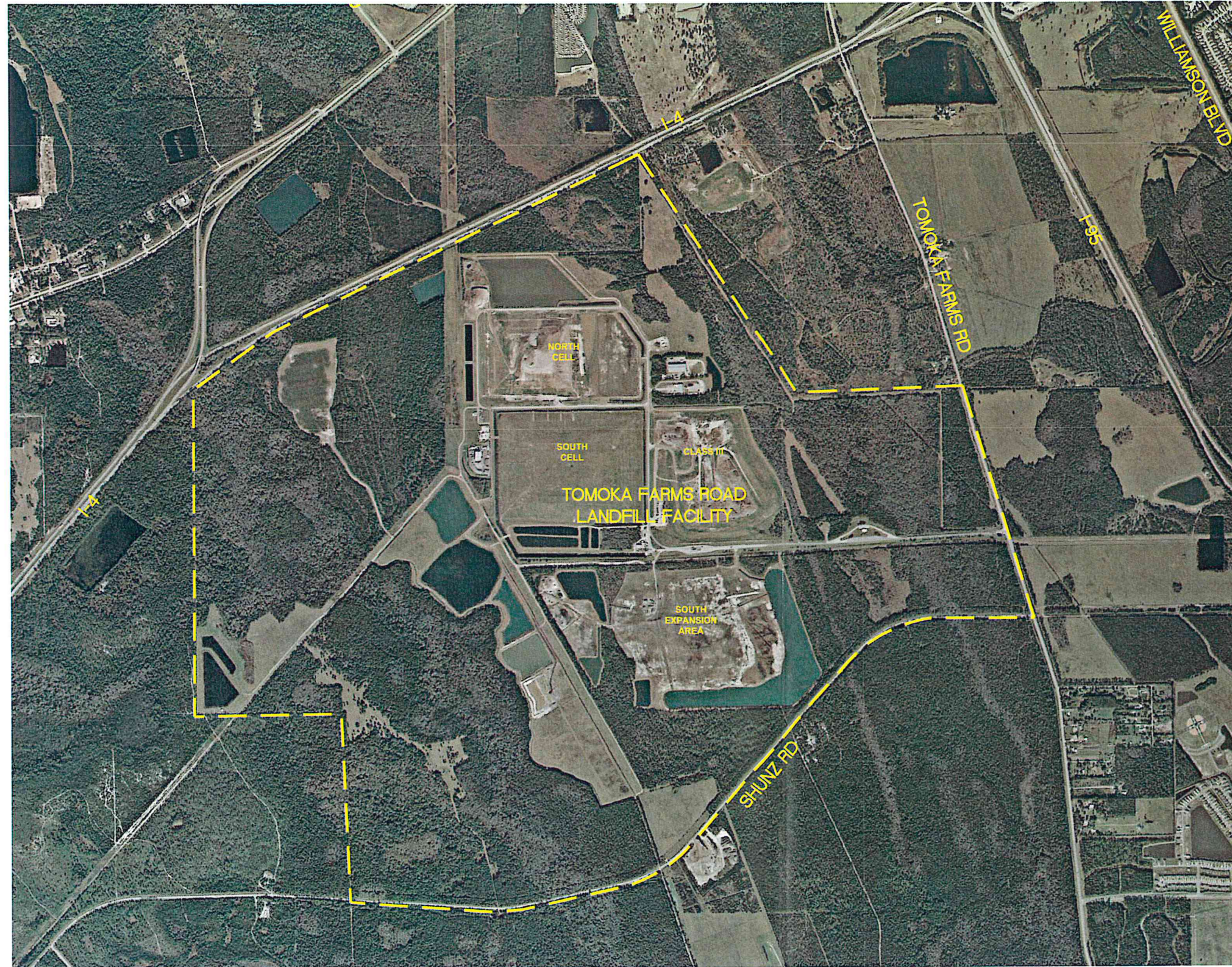
**Figure B-6 Monitoring Well and Surface Water Monitoring Locations**

**Figure B-7 Well Location Information (April 2014)**









**LEGEND**

— — — — — COUNTY OWNED PROPERTY BOUNDARY

AERIAL PHOTOGRAPHY FROM FDOT DATED JANUARY 4, 2012

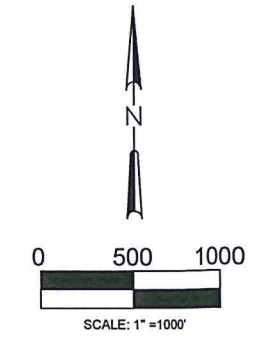
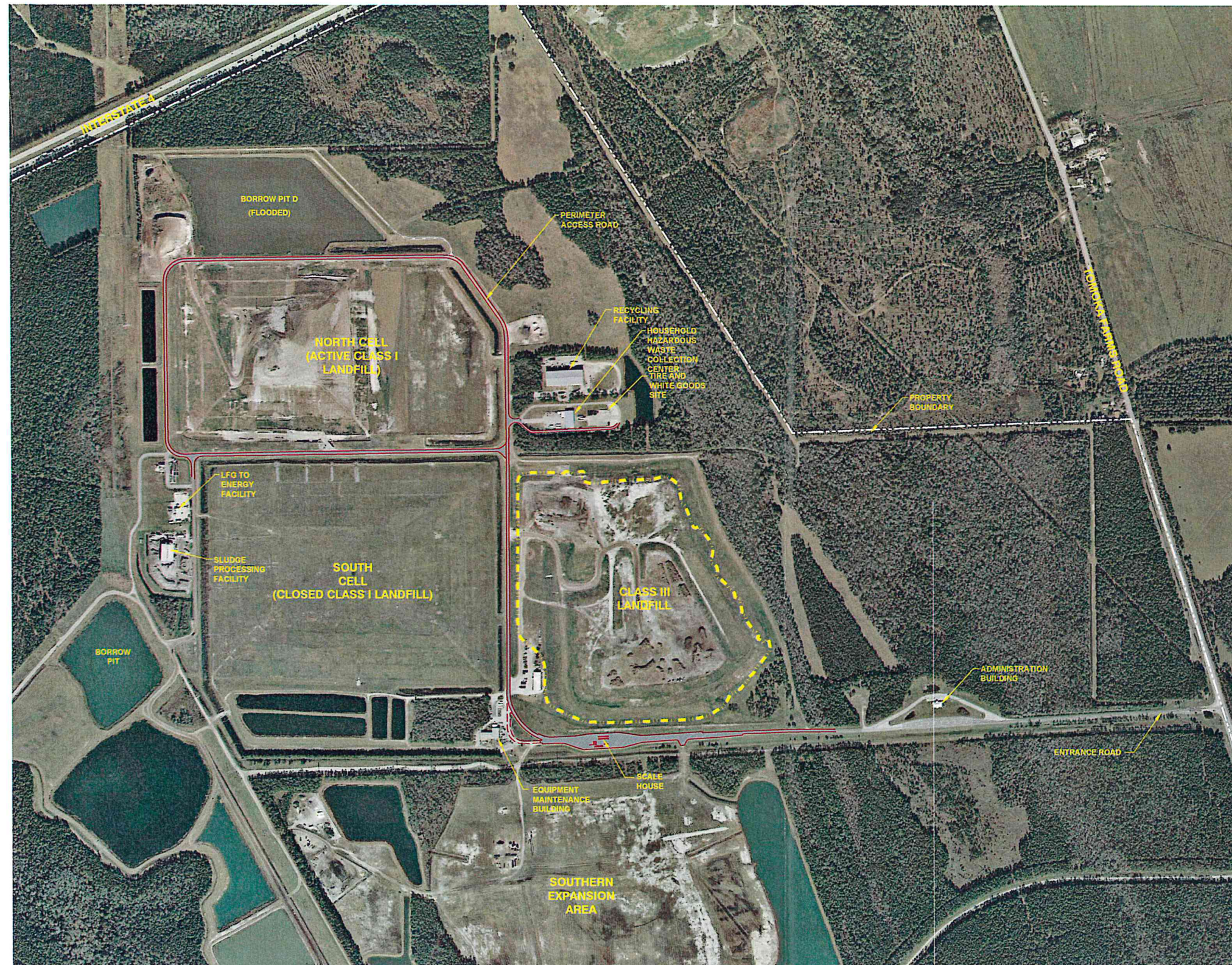


CLASS III LANDFILL - AERIAL VICINITY MAP  
TOMOKA FARMS ROAD SOLID WASTE FACILITY  
VOLUSIA COUNTY, FLORIDA

PROJ. NO.:  
NS.12033.001

FIGURE: B-2



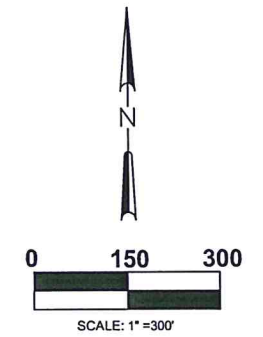
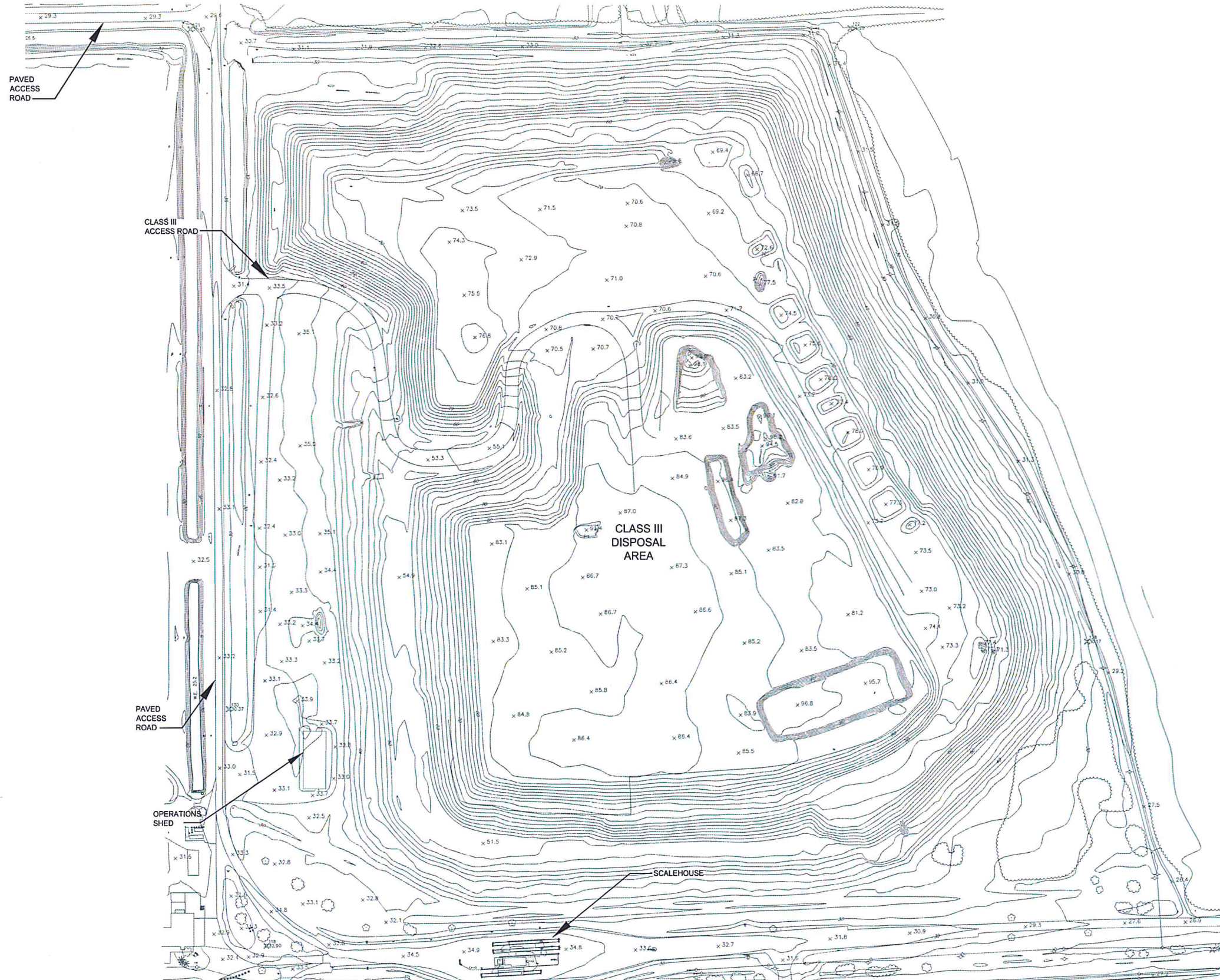


**LEGEND**

- PROPERTY BOUNDARY
- - - - - LIMITS OF CLASS III LANDFILL CELL

- NOTES:
1. AERIAL IMAGERY WAS TAKEN FROM FDOT WEBSITE DATED JANUARY 2012.
  2. PROPERTY BOUNDARY WAS OBTAINED FROM VOLUSIA COUNTY PROPERTY APPRAISERS FOR YEAR 2013.





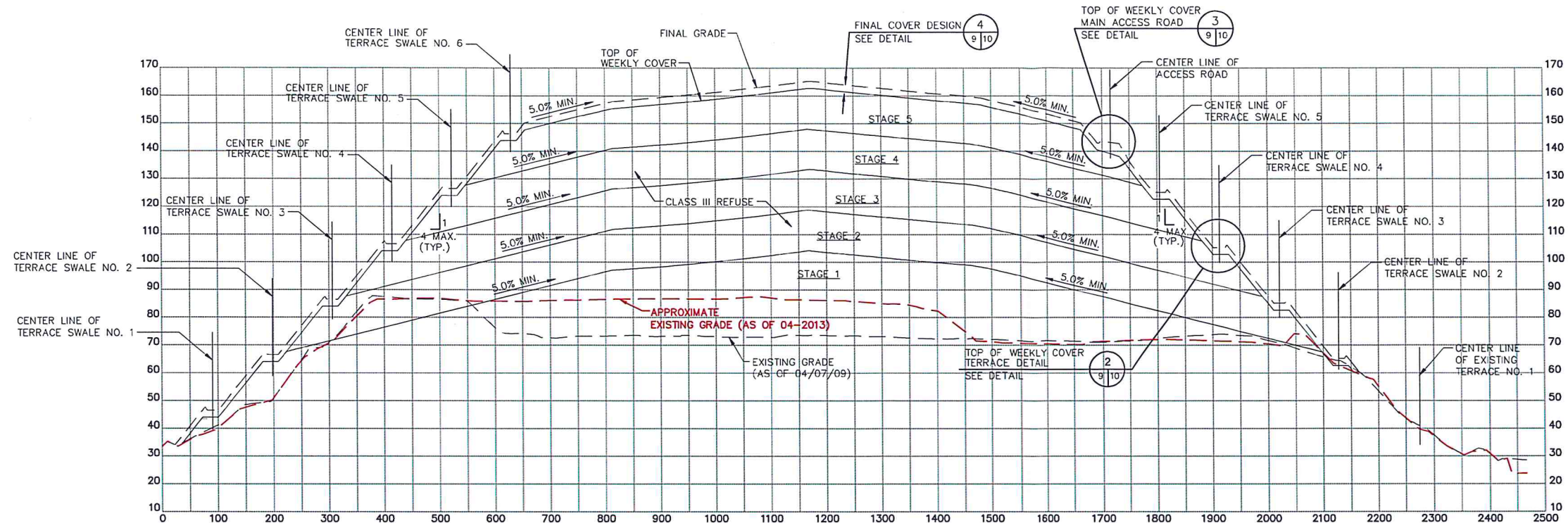
TOPOGRAPHY AS OF JUNE 2013  
(FROM VOLUSIA COUNTY SOLID WASTE DIVISION)



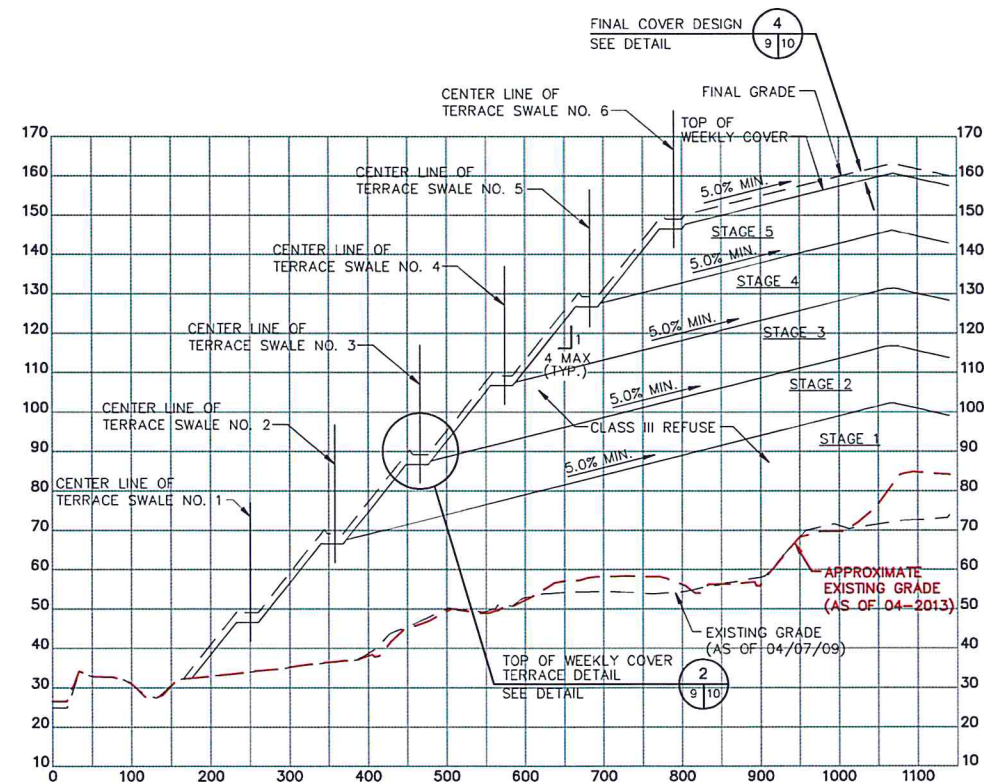
CLASS III LANDFILL - TOPOGRAPHIC SURVEY MAP  
TOMOKA FARMS ROAD SOLID WASTE FACILITY  
VOLUSIA COUNTY, FLORIDA

PROJ. NO.:  
NS.12033.001  
FIGURE: B-4

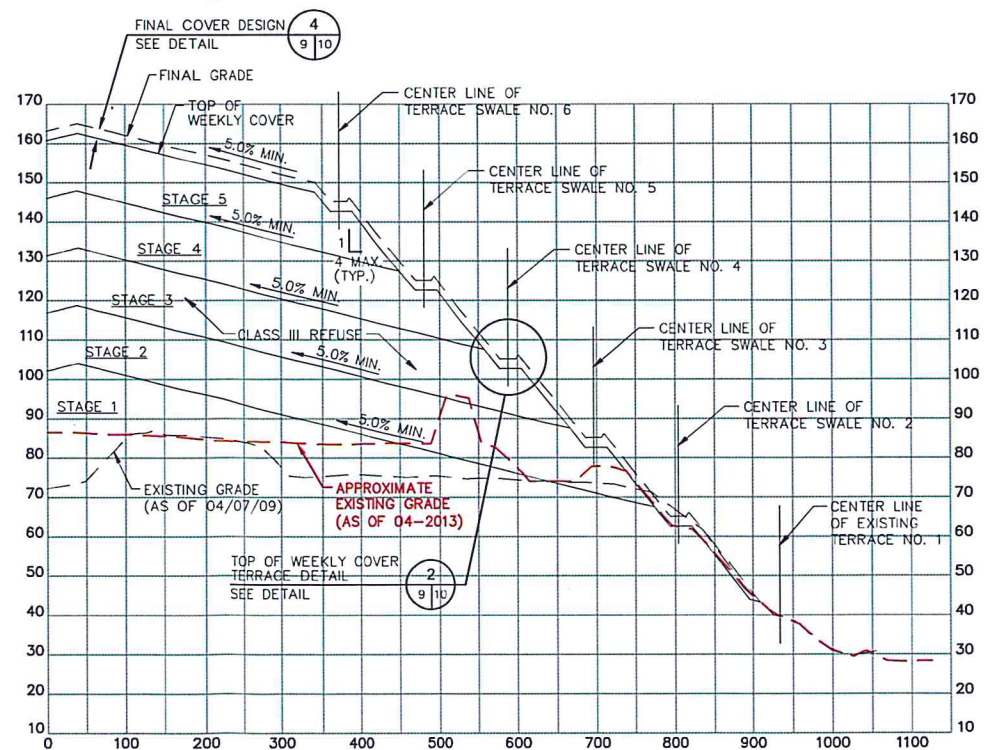




SECTION A  
SCALE: N.T.S.



SECTION B  
SCALE: N.T.S.



SECTION C  
SCALE: N.T.S.

NOTE:  
EXISTING GRADE AS OF APRIL 2014 WAS ADDED TO  
CROSS-SECTIONS FROM SHEET 5 OF 8 OF JUNE 2009  
OPERATIONS PERMIT DRAWINGS JUNE 2009  
CROSS-SECTIONS WERE NOT CHANGED.







**Figure B-7**

**2014 Well Inventory Information**

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Party Name	Location	Date(s)	Well Info	Well Street Address	References	Attachments
Owner : COUNTY OF VOLUSIA Contractor : Craig A Taylor Driller : TOMMY PETERSON	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 09/26/2013 Issue Date : -	Casing (ft) : 86 Total Depth (ft) : 96 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 TOMOKA FARMS RD., DAYTONA RD	Permit : - Item : 1242154 License : 7372 Station ID : 438086	<a href="#">Supporting Document</a>
Owner : VOLUSIA CO.SOLID WASTE Contractor : Robert B Huss Jr Driller : NOAH OELLCERS	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 03/20/2003 Issue Date : -	Casing (ft) : 18 Total Depth (ft) : 18 Diameter (in): 2 Static Water Level (ft): 0 Type of Work: - Use: Monitoring	1990 TOMOKA FARMS	Permit : - Item : 534581 License : 2879 Station ID : 86125	<a href="#">Well Completion Report</a>
Owner : VOLUSIA CO. SOLID WASTE Contractor : Robert B Huss Jr Driller : NOAH OELKERS	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 03/20/2003 Issue Date : -	Casing (ft) : 18 Total Depth (ft) : 18 Diameter (in): 2 Static Water Level (ft): 0 Type of Work: - Use: Monitoring	1990 TOMOKA FARMS	Permit : - Item : 534387 License : 2879 Station ID : 85931	<a href="#">Well Completion Report</a>
Owner : County Of Volusia Contractor : Mr David Fout Driller : David Fout	County : Volusia S : 15 T : 16S R : 32E	Completion Date : 06/18/1997 Issue Date : -	Casing (ft) : 90 Total Depth (ft) : 120 Diameter (in): 4 Static Water Level (ft): 16 Type of Work: - Use: Domestic	1990 Tomoka Frems	Permit : - Item : 762938 License : 7188 Station ID : 106641	<a href="#">Well Completion Report</a>
Owner : Volusia County Contractor : James P Smith Driller : Nick P.	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 02/04/2011 Issue Date : -	Casing (ft) : - Total Depth (ft) : 50 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	Tomoka Farms Rd Landfill, Tomoka Landfill Rd, Daytona Beach FL	Permit : - Item : 1207263 License : 7352 Station ID : 422378	<a href="#">Supporting Document</a>
Owner : Lo of Volusia Contractor : Larry D Bulcher Driller : Robby Bobbins?	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 09/05/2002 Issue Date : -	Casing (ft) : 110 Total Depth (ft) : 110 Diameter (in): 4 Static Water Level (ft): 14 Type of Work: - Use: -	1990 Tomoka Farms Db	Permit : - Item : 847209 License : 7208 Station ID : 182031	<a href="#">Well Completion Report</a>
Owner : COUNTY OF VOLUSIA Contractor : James P Hinst Driller : BILLY MOSS	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 02/07/2013 Issue Date : -	Casing (ft) : 90 Total Depth (ft) : 100 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 TOMOKA FARMS - PORT ORANGE	Permit : - Item : 1222126 License : 9311 Station ID : 428440	<a href="#">Supporting Document</a>
Owner : County of Volusia Contractor : Douglas Leonhardt Driller : Mike Miller	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 12/17/2010 Issue Date : -	Casing (ft) : 5 Total Depth (ft) : 10 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 Tomoka Farms Rd Daytona FL 32128 (landfill site)	Permit : - Item : 1208363 License : 2406 Station ID : 422896	<a href="#">Supporting Document</a>
Owner : Geno Evans Contractor : Richard Ray Trentham Driller : Jimmy Trentham?	County : Volusia S : 5 T : 16S R : 32E	Completion Date : 11/24/1999 Issue Date : -	Casing (ft) : 110 Total Depth (ft) : 140 Diameter (in): 4 Static Water Level (ft): 10 Type of Work: - Use: -	1990 Tamoka Farms Rd	Permit : - Item : 762755 License : 1234 Station ID : 106507	<a href="#">Well Completion Report</a>
Owner : Kirtan-Self C & D Landfill Contractor : Robert Richard Driller : Rendy Haire?	County : Volusia S : 3 T : 16S R : 32E	Completion Date : 05/20/2000 Issue Date : -	Casing (ft) : 30 Total Depth (ft) : 30 Diameter (in): 2 Static Water Level (ft): 70 Type of Work: - Use: Monitoring	1670 Tomoka Farms	Permit : - Item : 847096 License : 2720 Station ID : 181918	<a href="#">Well Completion Report</a>



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Page 2 of 5

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Party Name	Location	Date(s)	Well Info	Well Street Address	References	Attachments
Owner : County of Volusia Contractor : Driller : -	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 09/20/2013  Issue Date : -	Casing (ft) : 40 Total Depth (ft) : 50 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 Tomoka Farms Rd	Permit : - Item : 1242962 License : - Station ID : 438501	<a href="#">Supporting Document</a>
Owner : Volusia County Landfill Contractor : Driller : Paul Buchler "Bucky"?	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 04/28/1998  Issue Date : -	Casing (ft) : 32 Total Depth (ft) : 32 Diameter (in): 2 Static Water Level (ft): 6.5 Type of Work: - Use: Monitoring	-	Permit : - Item : 763573 License : - Station ID : 107243	<a href="#">Well Completion Report</a>
Owner : Kirtan-Self C & D Landfill Contractor : Robert Richard Driller : Bardy Haire?	County : Volusia S : 3 T : 16S R : 32E	Completion Date : 05/17/2000  Issue Date : -	Casing (ft) : 60 Total Depth (ft) : 30 Diameter (in): 2 Static Water Level (ft): 7 Type of Work: - Use: Monitoring	1670 Tomoka Fanns	Permit : - Item : 847080 License : 2720 Station ID : 181902	<a href="#">Well Completion Report</a>
Owner : Tomoka Landfill Contractor : Jerry E. Thompson Jr. Driller : Isarc Gallant	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 10/30/2002  Issue Date : -	Casing (ft) : 100 Total Depth (ft) : 110 Diameter (in): 4 Static Water Level (ft): 17 Type of Work: - Use: -	1990 Tomoka	Permit : - Item : 835071 License : 7157 Station ID : 170013	<a href="#">Well Completion Report</a>
Owner : COUNTY OF VOLUSIA Contractor : Craig A Taylor Driller : TOMMY PETERSON	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 09/30/2013  Issue Date : -	Casing (ft) : 40 Total Depth (ft) : 50 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 TOMOKA FARMS RD., DAYTONA BCH	Permit : - Item : 1242149 License : 7372 Station ID : 438081	<a href="#">Supporting Document</a>
Owner : Volusia Co. Landfill Contractor : James Nugent Driller : Paul Buckler?	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 04/27/1998  Issue Date : -	Casing (ft) : 12 Total Depth (ft) : 12 Diameter (in): 2 Static Water Level (ft): 6.5 Type of Work: - Use: Monitoring	-	Permit : - Item : 763575 License : 2407 Station ID : 107245	<a href="#">Well Completion Report</a>
Owner : VOLUSIA CO. SOLID WASTE Contractor : Robert B Huss Jr Driller : NOAH OELKERS	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 03/20/2003  Issue Date : -	Casing (ft) : 35 Total Depth (ft) : 35 Diameter (in): 2 Static Water Level (ft): 0 Type of Work: - Use: Monitoring	1990 TOMOKA FARMS	Permit : - Item : 534384 License : 2879 Station ID : 85928	<a href="#">Well Completion Report</a>
Owner : Volusia County Land Fill Contractor : James Nugent Driller : Paul Buchler?	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 04/27/1998  Issue Date : -	Casing (ft) : 47 Total Depth (ft) : 52 Diameter (in): 8 Static Water Level (ft): 4 Type of Work: - Use: Monitoring	-	Permit : - Item : 762585 License : 2407 Station ID : 106397	<a href="#">Well Completion Report</a>
Owner : Geno Evans Contractor : Richard Ray Trentham Driller : Jimmy Trentham	County : Volusia S : 3 T : 16S R : 32E	Completion Date : 11/24/1999  Issue Date : -	Casing (ft) : 110 Total Depth (ft) : 140 Diameter (in): 4 Static Water Level (ft): - Type of Work: - Use: Irrigation - Landscape	1990 Tomoka Farms Rd, Daytona Beach, FL 32128	Permit : - Item : 1255149 License : 1234 Station ID : 443813	<a href="#">Supporting Document</a>
Owner : Volusia County Contractor : James P Smith Driller : Nick P.	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 02/04/2011  Issue Date : -	Casing (ft) : - Total Depth (ft) : 34.4 Diameter (in): 2 Static Water Level (ft): - Type of Work: -	Tomoka Farms Rd Landfill, Tomoka Landfill Rd, Daytona Beach	Permit : - Item : 1207267 License : 7352 Station ID : 422381	<a href="#">Supporting Document</a>

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Page 3 of 5

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Party Name	Location	Date(s)	Well Info	Well Street Address	References	Attachments
Owner : COUNTY OF VOLUSIA Contractor : Driller : NA	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 09/20/2013 Issue Date : -	Casing (ft) : 40 Total Depth (ft) : 50 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 TOMOKA FARMS RD	Permit : - Item : 1242151 License : - Station ID : 438083	<a href="#">Supporting Document</a>
Owner : Kirtan-Self C & D Ladfill Contractor : Robert Richard Driller : Randy Haire	County : Volusia S : 3 T : 16S R : 32E	Completion Date : 05/20/2000 Issue Date : -	Casing (ft) : 12 Total Depth (ft) : 12 Diameter (in): 2 Static Water Level (ft): 7 Type of Work: - Use: Monitoring	1670 Tonaoka Forms	Permit : - Item : 847057 License : 2720 Station ID : 181879	<a href="#">Well Completion Report</a>
Owner : COUNTY OF VOLUSIA Contractor : James P Hinst Driller : BILLY MOSS	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 02/07/2013 Issue Date : -	Casing (ft) : 25 Total Depth (ft) : 35 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 TOMOKA FARMS - PORT ORANGE	Permit : - Item : 1222071 License : 9311 Station ID : 428388	<a href="#">Supporting Document</a>
Owner : VOLUSIA CO.SOLID WASTE Contractor : Robert B Huss Jr Driller : NOAH OELLCERS	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 03/20/2003 Issue Date : -	Casing (ft) : 18 Total Depth (ft) : 18 Diameter (in): 2 Static Water Level (ft): 0 Type of Work: - Use: Monitoring	1990 TOMOKA FARMS	Permit : - Item : 534571 License : 2879 Station ID : 86115	<a href="#">Well Completion Report</a>
Owner : COUNTY OF VOLUSIA Contractor : James P Hinst Driller : BILLY MOSS	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 02/07/2013 Issue Date : -	Casing (ft) : 40 Total Depth (ft) : 50 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 TOMOKA FARMS - PORT ORANGE	Permit : - Item : 1222124 License : 9311 Station ID : 428438	<a href="#">Supporting Document</a>
Owner : COUNTY OF VOLUSIA Contractor : James P Hinst Driller : BILLY MOSS	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 02/07/2013 Issue Date : -	Casing (ft) : 40 Total Depth (ft) : 50 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 TOMOKA FARMS - PORT ORANGE	Permit : - Item : 1222121 License : 9311 Station ID : 428435	<a href="#">Supporting Document</a>
Owner : County Of Volusia Contractor : Francis Harrington Driller : ?	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 03/28/2008 Issue Date : -	Casing (ft) : 0 Total Depth (ft) : 98 Diameter (in): 2 Static Water Level (ft): 16 Type of Work: - Use: Monitoring	1990 Tomoka Farms Rd	Permit : - Item : 1036621 License : 7262 Station ID : 319308	<a href="#">Well Completion Report</a>
Owner : Rushing Contractor : Driller : Ron Reese?	County : Volusia S : 3 T : 16S R : 32E	Completion Date : 05/19/1999 Issue Date : -	Casing (ft) : 113 Total Depth (ft) : 113 Diameter (in): 4 Static Water Level (ft): 0 Type of Work: - Use: -	1888 Poinsettia dr	Permit : - Item : 762686 License : - Station ID : 106439	<a href="#">Well Completion Report</a>
Owner : Kirtan-Self C & D Landfill Contractor : Robert Richard Driller : Randy Haie?	County : Volusia S : 3 T : 16S R : 32E	Completion Date : 05/19/2000 Issue Date : -	Casing (ft) : 12 Total Depth (ft) : 12 Diameter (in): 2 Static Water Level (ft): 6 Type of Work: - Use: Monitoring	1670 Tomdea Farms	Permit : - Item : 847170 License : 2720 Station ID : 181992	<a href="#">Well Completion Report</a>
Owner : VOLUSIA CO. SOLID WASTE Contractor : Robert B Huss Jr Driller : NOAH OELKERS	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 03/20/2003 Issue Date : -	Casing (ft) : 35 Total Depth (ft) : 35 Diameter (in): 2 Static Water Level (ft): 0 Type of Work: - Use: Monitoring	1990 TOMOKA FARMS	Permit : - Item : 534383 License : 2879 Station ID : 85927	<a href="#">Well Completion Report</a>



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Records: 31 to 40 of 46

Page 4 of 5

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Owner : COUNTY OF VOLUSIA Contractor : James P Hinst Driller : BILLY MOSS	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 02/07/2013 Issue Date : -	Casing (ft) : 30 Total Depth (ft) : 40 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 TOMOKA FARMS - PORT ORANGE	Permit : - Item : 1222127 License : 9311 Station ID : 428441	<a href="#">Supporting Document</a>
Owner : Volusia Home Bld. Assn. Inc Contractor : Clayton E. Beazley Driller : Hank Beazley	County : Volusia S : 5 T : 16S R : 32E	Completion Date : 05/28/2002 Issue Date : -	Casing (ft) : 89 Total Depth (ft) : 130 Diameter (in): 4 Static Water Level (ft): 25 Type of Work: - Use: -	3520 W. Intl Speed	Permit : - Item : 834651 License : 2771 Station ID : 169593	<a href="#">Well Completion Report</a>
Owner : Kirtan-Self C & D Landfill Contractor : Robert Richard Driller : Randy Haire?	County : Volusia S : 3 T : 16S R : 32E	Completion Date : 05/19/2000 Issue Date : -	Casing (ft) : 30 Total Depth (ft) : 30 Diameter (in): 2 Static Water Level (ft): 6.5 Type of Work: - Use: Monitoring	1670 Tomoka Farms Pl	Permit : - Item : 847067 License : 2720 Station ID : 181889	<a href="#">Well Completion Report</a>
Owner : Jeffrey & Christina Bankston Contractor : Richard Beazley Driller : Tony Stamper	County : Volusia S : 5 T : 16S R : 32E	Completion Date : 02/25/2002 Issue Date : -	Casing (ft) : 90 Total Depth (ft) : 140 Diameter (in): 4 Static Water Level (ft): 25 Type of Work: - Use: -	3566 Intl Speedway	Permit : - Item : 835034 License : 1431 Station ID : 169976	<a href="#">Well Completion Report</a>
Owner : Volusia County Contractor : James P Smith Driller : Nick P.	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 02/01/2011 Issue Date : -	Casing (ft) : - Total Depth (ft) : 35 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	Tomoka Farms Rd Landfill, Tomoka Landfill Rd, Daytona Beach FL	Permit : - Item : 1207272 License : 7352 Station ID : 422382	<a href="#">Supporting Document</a>
Owner : Kirtan-Self C & D Landfill Contractor : Robert Richard Driller : Randy Haire?	County : Volusia S : 3 T : 16S R : 32E	Completion Date : 05/19/2000 Issue Date : -	Casing (ft) : 12 Total Depth (ft) : 12 Diameter (in): 2 Static Water Level (ft): 6.5 Type of Work: - Use: Monitoring	1670 Tomoka Fams	Permit : - Item : 847086 License : 2720 Station ID : 181908	<a href="#">Well Completion Report</a>
Owner : COUNTY OF VOLUSIA Contractor : Craig A Taylor Driller : TOMMY PETERSON	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 09/26/2013 Issue Date : -	Casing (ft) : 86 Total Depth (ft) : 96 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Other	1990 TOMOKA FARMS RD, DAYTONA BCH	Permit : - Item : 1242155 License : 7372 Station ID : 438087	<a href="#">Supporting Document</a>
Owner : COUNTY OF VOLUSIA Contractor : Craig A Taylor Driller : TOMMY PETERSON	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 09/23/2013 Issue Date : -	Casing (ft) : 40 Total Depth (ft) : 50 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 TOMOKA FARMS RD., DAYTONA BCH	Permit : - Item : 1242152 License : 7372 Station ID : 438084	<a href="#">Supporting Document</a>
Owner : County of Volusia Contractor : Craig A Taylor Driller : Tommy Peterson	County : Volusia S : 9 T : 16S R : 32E	Completion Date : 09/23/2013 Issue Date : -	Casing (ft) : 40 Total Depth (ft) : 50 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 Tomoka Farms Rd Daytona Beach	Permit : - Item : 1242991 License : 7372 Station ID : 438517	<a href="#">Supporting Document</a>
Owner : VOLUSIA CO SOLID WASTE Contractor : Robert B Huss Jr Driller : NOAH OELKERS	County : Volusia S : 10 T : 16S R : 32E	Completion Date : 03/20/2003 Issue Date : -	Casing (ft) : 18 Total Depth (ft) : 18 Diameter (in): 2 Static Water Level (ft): 0 Type of Work: - Use: Monitoring	1990 TOMOKA FARMS	Permit : - Item : 534578 License : 2879 Station ID : 86122	

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Start Date: 04/29/1995

End Date: 04/29/2014

Sort Results: -- Order by --

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Records: 41 to 46 of 46

Page 5 of 5

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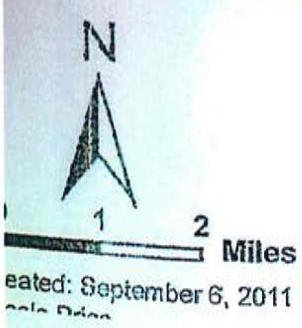
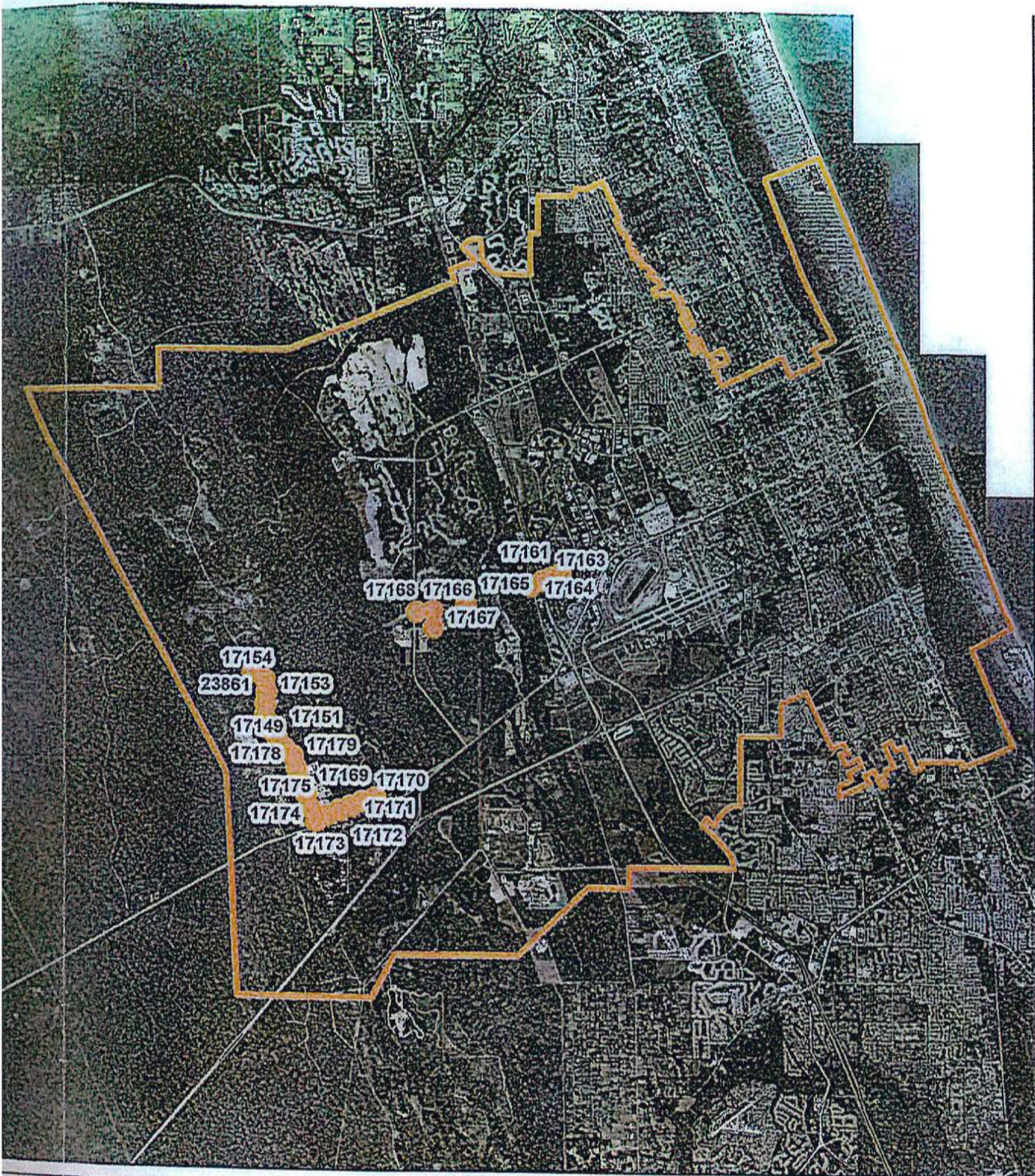


Party Name	Location	Date(s)	Well Info	Well Street Address	References	Attachments
Owner : VOLUSIA CO. SOLID WASTE Contractor : Robert B Huss Jr Driller : NOAH OELKERS	County : Volusia  S : 10 T : 16S R : 32E	Completion Date : 03/20/2003  Issue Date : -	Casing (ft) : 18 Total Depth (ft) : 18 Diameter (in): 2 Static Water Level (ft): 0 Type of Work: - Use: Monitoring	1990 TOMOKA FARMS	Permit : - Item : 534386 License : 2879 Station ID : 85930	<a href="#">Well Completion Report</a>
Owner : VOLUSIA CO.SOLID WASTE Contractor : Robert B Huss Jr Driller : NOAH OELLCERS	County : Volusia  S : 10 T : 16S R : 32E	Completion Date : 03/20/2003  Issue Date : -	Casing (ft) : 18 Total Depth (ft) : 18 Diameter (in): 2 Static Water Level (ft): 0 Type of Work: - Use: Monitoring	1990 TOMOKA FARMS	Permit : - Item : 534586 License : 2879 Station ID : 86130	<a href="#">Well Completion Report</a>
Owner : COUNTY OF VOLUSIA Contractor : James P Hinst Driller : BILLY MOSS	County : Volusia  S : 9 T : 16S R : 32E	Completion Date : 02/07/2013  Issue Date : -	Casing (ft) : 40 Total Depth (ft) : 50 Diameter (in): 2 Static Water Level (ft): - Type of Work: - Use: Monitoring	1990 TOMOKA FARMS - PORT ORANGE	Permit : - Item : 1222119 License : 9311 Station ID : 428433	<a href="#">Supporting Document</a>
Owner : County Of Volusia Contractor : Mr David Fout Driller : David Fout	County : Volusia  S : 15 T : 16S R : 32E	Completion Date : 06/18/1997  Issue Date : -	Casing (ft) : 90 Total Depth (ft) : 110 Diameter (in): 2 Static Water Level (ft): 0 Type of Work: - Use: Other	1990 Tomoka Forms	Permit : - Item : 763060 License : 7188 Station ID : 106763	<a href="#">Well Completion Report</a>
Owner : Kirtan-Self C & D Landfill Contractor : Robert Richard Driller : Randy Haire?	County : Volusia  S : 3 T : 16S R : 32E	Completion Date : 05/19/2000  Issue Date : -	Casing (ft) : 30 Total Depth (ft) : 30 Diameter (in): 2 Static Water Level (ft): 6 Type of Work: - Use: Monitoring	-	Permit : - Item : 847182 License : 2720 Station ID : 182004	<a href="#">Well Completion Report</a>
Owner : Philip Migucker Contractor : Brian Evans Driller : Ranall Buchhold	County : Volusia  S : 3 T : 16S R : 32E	Completion Date : 08/31/2010  Issue Date : -	Casing (ft) : - Total Depth (ft) : 130 Diameter (in): 4 Static Water Level (ft): - Type of Work: - Use: Irrigation - Landscape	2380 Tomoka Woods, DeLeon Springs	Permit : - Item : 1209573 License : 2765 Station ID : 423582	<a href="#">Supporting Document</a>
<div> Records: 41 to 46 of 46 <div>   Go To Page # GO   </div> <div> First Page Previous Next Last Page </div> </div>						

Page 5 of 5

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# **City of Daytona Beach Volusia County**

## **2009 Digital Ortho Quadrangle**

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Tel: (386) 329-4207  
Tel: (386) 329-4566





# **ATTACHMENT C**

**Operations and Contingency Plan (Revised April 2014)  
Including Updated Staff Training Certification List**



**OPERATION PLAN  
TOMOKA FARMS ROAD LANDFILL (TFRLF)  
VOLUSIA COUNTY, FLORIDA**

**Prepared for:**

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

**Updated June 2014**

**Prepared by:**

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

## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
<b>1 EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>1.1 CURRENT OPERATING CONDITIONS .....</b>	<b>4</b>
<b>2 LANDFILL OPERATIONS AND MAINTENANCE</b>	
<b>(RULE 62-701.500(2), F.A.C.) .....</b>	<b>2-1</b>
<b>2.1 TRAINING AND CERTIFICATION OF OPERATORS AND</b>	
<b>SPOTTERS (RULE 62-701.500(1), F.A.C.) .....</b>	<b>2-1</b>
2.1.1 Training Program.....	2-1
2.1.2 Training Administration .....	2-1
2.1.3 Certified Operators and Spotters .....	2-2
<b>2.2 DESIGNATION OF PERSONS RESPONSIBLE FOR OPERATION</b>	
<b>AND MAINTENANCE (RULE 62-701.500(2)(a), F.A.C.) .....</b>	<b>2-3</b>
<b>2.3 CONTINGENCY OPERATIONS FOR EMERGENCIES</b>	
<b>(RULE 62-701.500(2)(b), F.A.C.) .....</b>	<b>2-3</b>
2.3.1 Emergency Assistance.....	2-3
2.3.2 Equipment Failure .....	2-4
2.3.3 Poor Weather Conditions .....	4
2.3.4 Natural Disasters .....	4
2.3.5 Procedures Prior to Storm .....	4
2.3.6 Landfill Shut-Down Procedures .....	2-6
2.3.7 Procedures During Severe Storms or Hurricanes .....	2-6
2.3.8 Landfill Start-Up Procedures.....	2-6
2.3.9 Management of Excess Leachate .....	2-6
2.3.10 Accidents .....	2-7
2.3.11 Vehicular Accidents .....	2-7
2.3.12 Personal Injury.....	2-7
2.3.13 Fire.....	6
2.3.14 Unavailable Landfill Capacity.....	7
<b>2.4 CONTROL/INSPECTION OF INCOMING WASTE</b>	
<b>(RULE 62-701.500(2)(c), F.A.C.).....</b>	<b>7</b>
<b>2.5 WEIGHING OF INCOMING WASTES</b>	
<b>(RULE 62-701.500(2)(d), F.A.C.) .....</b>	<b>8</b>
<b>2.6 VEHICLE TRAFFIC CONTROL AND UNLOADING</b>	
<b>(RULE 62-701.500(2)(e), F.A.C.).....</b>	<b>8</b>
<b>2.7 METHOD AND SEQUENCING OF FILLING WASTES</b>	
<b>(RULE 62-701.500(2)(f), F.A.C.) .....</b>	<b>8</b>



2.8	<b>WASTE COMPACTION AND APPLICATION OF COVER (RULE 62-701.50(2)(g), F.A.C.)</b>	8
2.8.1	Method of Filling Wastes/Compaction	8
2.8.2	Initial and Intermediate Cover	2-11
2.8.3	Final Cover	9
2.9	<b>OPERATION OF GAS, LEACHATE, AND STORMWATER CONTROLS (RULE 62-701.500(2)(h), F.A.C.)</b>	10
2.9.1	Landfill Gas Controls	10
2.9.2	Leachate Controls	10
2.9.3	Stormwater Controls	11
2.10	<b>WATER QUALITY MONITORING (RULE 62-701.500(2)(i), F.A.C.)</b>	11
2.11	<b>MAINTAINING AND CLEANING THE LEACHATE COLLECTION SYSTEM (RULE 62-701.500(2)(j), F.A.C.)</b>	11
3	<b>OPERATING RECORDS (RULE 62-701.500(3), F.A.C.)</b>	1
4	<b>WASTE RECORDS (RULE 62-701.500(4), F.A.C.)</b>	1
5	<b>ACCESS CONTROL (RULE 62-701.500(5), F.A.C.)</b>	1
6	<b>WASTE MONITORING (RULE 62-701.500(6), F.A.C.)</b>	1
6.1	<b>WASTE INSPECTION (RULE 62-701.500(6)(a), F.A.C.)</b>	1
6.2	<b>HAZARDOUS WASTES AND HANDLING PROCEDURES (RULE 62-701.500(6)(b), F.A.C.)</b>	6-3
6.3	<b>RECORDING INSPECTION RESULTS (RULE 62-701.500(6)(c), F.A.C.)</b>	6-3
7	<b>WASTE HANDLING REQUIREMENTS (RULE 62-701.500(7), F.A.C.)</b>	1
7.1	<b>WASTE THICKNESS AND COMPACTION FREQUENCIES (RULE 62-701.500(7)(a), F.A.C.)</b>	1
7.2	<b>FIRST LAYER OF WASTE (RULE 62-701.500(7)(b), F.A.C.)</b>	1
7.3	<b>SLOPES OF WORKING FACE (RULE 62-701.500(7)(c), F.A.C.)</b>	1
7.4	<b>WIDTH OF WORKING FACE (RULE 62-701.500(7)(d), F.A.C.)</b>	1
7.5	<b>INITIAL/DAILY COVER (RULE 62-701.500(7)(e), F.A.C.)</b>	1
7.6	<b>INTERMEDIATE COVER (RULE 62-701.500(7)(f), F.A.C.)</b>	2
7.7	<b>FINAL COVER (RULE 62-701.500(7)(g), F.A.C.)</b>	2
7.8	<b>SCAVENGING AND SALVAGING CONTROL (RULE 62-701.500(7)(i), F.A.C.)</b>	2
7.9	<b>LITTER POLICING METHODS (RULE 62-701.500(7)(i), F.A.C.)</b>	2
7.10	<b>EROSION CONTROL (RULE 62-701.500(7)(j), F.A.C.)</b>	2



	7.10.1 Intermediate Soil Cover.....	7-3
	7.10.2 Down Drains.....	3
	7.10.3 Inspections.....	3
<b>8</b>	<b>LEACHATE MANAGEMENT (RULE 62-701.500(8), F.A.C.) .....</b>	<b>1</b>
8.1	MONITORING, SAMPLING, AND ANALYSIS OF LEACHATE (RULE 62-701.500(8)(a), F.A.C.) .....	1
8.2	OPERATION AND MAINTENANCE OF LEACHATE COLLECTION SYSTEM (RULE 62-701.500(8)(b), F.A.C.).....	1
8.3	LEACHATE HANDLING (IF REGULATED AS HAZARDOUS WASTE) (RULE 62-701.500(8)(b), F.A.C.) .....	2
8.4	OFF-SITE TREATMENT (RULE 62-701.500(8)(c), F.A.C.) .....	2
8.5	ON-SITE TREATMENT (RULE 62-701.500(8)(d), F.A.C.) .....	2
8.6	CONTINGENCY PLAN FOR MANAGING LEACHATE (RULE 62- 701.500(8)(e), F.A.C.) .....	3
8.7	RECORDING LEACHATE QUANTITIES (RULE 62-701.500(8)(f), F.A.C.).....	4
8.8	RECORDING PRECIPITATION (RULE 62-701.500(8)(g), F.A.C.) .....	4
8.9	INSPECTION AND CLEANING (RULE 62-101.500(8)(h), F.A.C.) .....	4
8.10	CONTROLLING LEACHATE SEEPS .....	4
<b>9</b>	<b>LANDFILL GAS MONITORING (RULE 62-701.500(9), F.A.C.).....</b>	<b>1</b>
9.1	LANDFILL GAS MONITORING PROBES.....	1
9.2	GAS PROBE MONITORING.....	1
9.3	GAS MONITORING IN STRUCTURES .....	1
9.4	REPORTING .....	2
<b>10</b>	<b>STORMWATER MANAGEMENT SYSTEM AND MAINTENANCE (RULE 62-701.500(10), F.A.C.) .....</b>	<b>1</b>
10.1	STORMWATER BEST MANAGEMENT PRACTICES.....	1
10.2	STORMWATER MAINTENANCE PROCEDURES .....	1
<b>11</b>	<b>EQUIPMENT AND OPERATION FEATURES (RULE 62-701.500(11), F.A.C.) .....</b>	<b>1</b>
11.1	EQUIPMENT (RULE 62-701.500(11)(a), F.A.C.).....	1
11.2	BACKUP EQUIPMENT (RULE 62-701.500(11)(b), F.A.C.).....	1
11.3	COMMUNICATION EQUIPMENT (RULE 62-701.500(11)(c), F.A.C.) .....	1
11.4	DUST CONTROL (RULE 62-701.500(11)(d), F.A.C.) .....	1
11.5	FIRE PROTECTION AND FIRE FIGHTING CAPABILITIES (RULE 62-701.500(11)(e), F.A.C.).....	1
11.6	LITTER CONTROL PROGRAM (RULE 62-701.500(11)(f), F.A.C.).....	2
11.7	SIGNS (RULE 62-701.500 (11)(g), F.A.C.) .....	2



12	ROADS (RULE 62-701.500(12), F.A.C.) .....	1
12.1	ALL-WEATHER ROADS (RULE 62-701.500(12)(a), F.A.C.) .....	1
12.2	PERIMETER AND OTHER ON-SITE ROADS (RULE 62-701.500(12)(b), F.A.C.) .....	1
13	RECORDKEEPING (RULE 62-701.500(13), F.A.C.) .....	1
13.1	PERMIT APPLICATION DOCUMENTATION (RULE 62 -701 .500(13)(a), F.A.C.) .....	1
13.2	MONITORING INFORMATION (RULE 62-701.500(13)(b), F.A.C.).....	1
13.3	REMAINING LIFE AND CAPACITY ESTIMATE (RULE 62-701.500(13)(c), F.A.C.).....	1
13.4	ARCHIVED RECORDS (RULE 62-701.500(13)(d), F.A.C.).....	1
14	CLOSED CELL INSPECTIONS.....	1

## APPENDICES

- A Sample Load Checking Inspection Forms
- B Employee Training Plan & Certifications- June 2014

## TABLES

1-1	Cross Reference of FDEP Permit Application, Part L Requirements .....	1
2-1	Emergency Telephone Numbers .....	2-3

## 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)**

<b>PART L- LANDFILL OPERATION REQUIREMENTS (RULE 62-701.500, F.A.C.)</b>	<b>Corresponding Section of Operation Plan</b>
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

<p>8. Describe operational procedures for leachate management including: (62-701.500(8), F.A.C.)</p> <ul style="list-style-type: none"> <li>a. Leachate level monitoring, sampling, analysis and data results submitted to the Department;</li> <li>b. Operation and maintenance of leachate collection and removal system, and treatment as required;</li> <li>c. Procedures for managing leachate if it becomes regulated as a hazardous waste;</li> <li>d. Agreements for off-site discharge and treatment of leachate;</li> <li>e. Provisions for on-site leachate treatment;</li> <li>f. Contingency plan for managing leachate during emergencies or equipment problems;</li> <li>g. Procedures for recording quantities of leachate generated in gal/ day and including this in the operating record;</li> <li>h. Procedures for comparing precipitation experienced at the landfill with leachate generation rates and including this information in the operating record;</li> <li>i. Procedures for water pressure cleaning or video inspection of leachate collection systems.</li> <li>j. Controlling Leachate Seeps</li> </ul>	<p>Section 8.1</p> <p>Section 8.2</p> <p>Section 8.3</p> <p>Section 8.4</p> <p>Section 8.5</p> <p>Section 8.6</p> <p>Section 8.7</p> <p>Section 8.8</p> <p>Section 8.9</p> <p>Section 8.10</p>
<p>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.)</p>	<p>Section 9</p>
<p>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.)</p>	<p>Section 10</p>
<p>11. Equipment and operation feature requirements; (62-701.500(11), F.A.C.)</p> <ul style="list-style-type: none"> <li>a. Sufficient equipment for excavating, spreading, compacting and covering waste;</li> <li>b. Reserve equipment or arrangements to obtain additional equipment within 24 hours of breakdown;</li> <li>c. Communications equipment;</li> </ul>	<p>Section 11.1</p> <p>Section 11.2</p> <p>Section 11.3</p>



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 administering 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:

<u>Component</u>	<u>Responsible Party</u>
Overall County Solid Waste Operations Responsibility	Solid Waste Division Director
Landfill Operations and Maintenance	Operations Manager (Engineer III)
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: Junos Reed, Engineer III	Cell: (386) 527-6333 Home: (386) 736-2885 Office: (386) 947-2952
Environmental Specialist: Jennifer Stirk (ESIII)	Cell: (386) 527-6336 Home: (386) 960-6670 Office: (386) 947-2952
Solid Waste Services Director: Leonard Marion	Cell: (386) 527-6332 Home: (386) 624-7959 Office: (386) 943-7889
Florida Department of Environmental Protection Central District-Main Reception:	(407) 897-4100
Central District-Solid Waste Section:	(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 safely 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.

##### **2.4.1 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. Pump 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):

- Sides wales
- Grass
- Sod
- Down-drains
- 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) \_\_\_\_\_

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**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:**

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INSPECTOR'S SIGNATURE

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## **Appendix B**

### **Employee Training Plan & Certifications**

## **Volusia County Solid Waste Division Training Plan & Certifications**

The purpose of this document is to provide a description of the training plan for the Volusia County Solid Waste Division. All training received for the purposes of Department of Environmental Protection (DEP) certification will be obtained through public sources approved by the DEP in accordance with Section 403.716, F.S., such as the University of Florida's TREEO Center and/or Kohl Consulting.

Landfill and Transfer Station Supervisors, Operations Manager, and applicable administrative and operational employees that are identified by the Solid Waste Director will receive the initial 16 hour Waste Facility training. Every three (3) years thereafter these employees will be scheduled to attend eight (8) hours of continued training. In addition, at a minimum the Transfer Station floor equipment operator(s) and yard waste operator(s) will receive an initial eight (8) hour spotter training and every three (3) years thereafter they will be scheduled to attend four (4) hours of continued training.

Solid Waste Division employee training certificates are kept on file in the administration office at the Landfill. Volusia County Solid Waste Division maintains a detailed spreadsheet that tracks by employee the specific training received, the continued training credits needed and the timeframe for completion. Attached is the current edition of the spreadsheet along with a copy of the TREEO catalog identifying potential continued training credits.



**SPOTTER OF ALL FACILITIES**

NAME		EXPIRES	HOURS NEEDED	Training Time Frame
BAILEY, WALLACE	COMPLIANCE OFFICER	03/24/18	4	3/25/15 - 3/24/18
BAKER, C. DAVID	EQUIPMENT OPERATOR III	08/05/15	4	8/06/12 - 8/05/15
BRENNAN, SUSAN	LANDFILL ATTENDANT	03/04/16	4	3/6/15 - 3/03/16
BUNCH, BRETT	EQUIPMENT OPERATOR III	03/11/17	4	3/13/14 - 3/10/17
CASEY, PATRICK	EQUIPMENT OPERATOR III	03/06/18	4	3/08/15 - 3/05/18
CLEMENTS, CHARLIE	MAINTENANCE WORKER III	03/16/19	4	3/17/16 - 3/15/19
COLFLESH, C. DENISE	LANDFILL ATTENDANT	02/04/17	4	2/6/14 - 2/4/17
COOPER, TRACY	EQUIPMENT OPERATOR III	02/04/17	4	2/6/14 - 2/4/17
DANIELS, DUANE	EQUIPMENT OPERATOR III	08/06/15	4	8/08/12 - 8/05/15
DOMINY, RICHARD	EQUIPMENT OPERATOR III	03/06/18	4	3/7/15 - 3/05/18
ELLIS, CHRISTOPHER	SUPERVISOR III	03/25/18	4	3/25/15 - 3/24/18
FARNELL, ROBERT	EQUIPMENT OPERATION III	03/06/18	4	3/08/15 - 3/05/18
GOMBOZ, RICHARD	MAINTENANCE WORKER III	03/24/18	4	3/24/15 - 3/23/18
HALL, DONNIE	MAINTENANCE WORKER II	03/04/16	4	3/05/13 - 3/03/16
HARRIS, RICK	EQUIPMENT OPERATOR III	08/06/15	4	8/07/12 - 8/05/15
HASTINGS, HERMAN	EQUIPMENT OPERATOR III	03/24/18	4	3/25/15 - 3/23/18
HILL, ERIC	SUPERVISOR III	08/07/18	4	8/06/15 - 8/7/18
HOPTON, TROY	EQUIPMENT OPERATOR III	08/05/18	4	8/06/15 - 8/04/18
HUBBARD, RANDY	EQUIPMENT OPERATOR III	03/24/18	4	3/25/15 - 3/23/18
JONES, RICHARD	MAINTENANCE WORKER III	03/20/17	4	3/21/14 - 3/19/17
KELLY, DAVID	SUPERVISOR III	08/07/18	4	8/06/15 - 8/04/18
LAWSON, DAVID	MAINTENANCE WORKER II	03/11/17	4	3/11/14 - 3/10/17
LOPEZ NIEVES, VICTOR	EQUIPMENT OPERATOR III	08/06/15	4	8/07/12 - 8/05/15
LYONS, ROBERT	EQUIPMENT OPERATOR III	03/24/18	4	3/24/15 - 3/23/18
MCCONNELL, MICHAEL	EQUIPMENT OPERATOR III	08/05/18	4	8/06/15 - 8/04/18
MCCORMICK, DAN S	SUPERVISOR III	03/04/19	4	3/05/16 - 3/3/19
MONTGOMERY, REGINA	RECYCLING COORDINATOR	03/30/18	4	3/31/12 - 3/29/15
MOORE, SANDRA	LANDFILL ATTENDANT	03/16/16	4	3/17/13 - 3/15/16
MOREHOUSE, EDWIN	EQUIPMENT OPERATOR III	03/25/18	4	3/25/15 - 3/23/18
NORMAN, WILLIE	EQUIPMENT OPERATOR	03/12/17	4	3/13/11 - 3/10/14
PETERSON, JERRY	COMPLIANCE OFFICER	03/30/18	4	3/31/15 - 3/29/18
POWERS, GREGORY	EQUIPMENT OPERATOR III	10/21/15	4	10/22/12 - 10/20/15
PREVATT, GEORGE	EQUIPMENT OPERATOR III	03/06/18	4	3/08/15 - 3/05/18
RICHARDSON, REYNOLDS	EQUIPMENT OPERATOR III	02/27/19	4	2/29/15 - 2/26/19
ROBINSON, BOBBY	EQUIPMENT OPERATOR III	08/06/18	4	8/07/15 - 8/05/18
SKARIN, JAMES	EQUIPMENT OPERATOR III	03/04/16	4	3/08/13 - 3/03/16
STAUFFER, JON	LANDFILL ATTENDANT	08/06/15	4	8/07/12 - 8/05/15
STEWART, ANDREW	EQUIPMENT OPERATOR III	08/06/15	4	8/07/12 - 8/05/15
STONE, PETER	EQUIPMENT OPERATOR III	08/05/15	4	8/09/12 - 8/04/15
TRUSSEL, WILLIE	EQUIPMENT OPERATOR III	03/30/18	4	3/31/15 - 3/29/18
WEBER, JENNIE	ADMIN COORD II	02/27/16	4	2/29/13 - 2/27/16
WILLIAMS, DENNIS	EQUIPMENT OPERATOR III	08/06/15	4	8/07/12 - 8/05/15
WOODHAM, CHRISTOPHER	MATERIALS COORDINTOR	03/06/18	4	3/07/15 - 3/05/18
WOULARD, KORY	EQUIPMENT OPERATOR III	08/05/15	4	8/06/12 - 8/04/15
WYGANT, GARY	EQUIPMENT OPERATOR III	02/04/17	4	2/06/14 - 2/04/17
ZOW, SAMUEL (DEXTER)	EQUIPMENT OPERATOR III	03/06/18	4	3/08/15 - 3/05/18

# LANDFILL OPERATOR I, II, III

NAME		EXPIRES	HOURS NEEDED	Training Time Frame
ELLIS, CHRISTOPHER	SUPERVISOR III	11/16/16	16	11/17/13 - 11/15/16
HILL, ERIC	SUPERVISOR III	11/17/18	16	11/18/15 - 11/16/18
HUBBARD, RANDY	EQUIPMENT OPERATOR III	12/07/18	16	12/08/15- 12/06/18
KELLY, DAVID	SUPERVISOR III	12/07/18	16	12/08/15 - 12/06/18
MCCORMICK, DAN S	SUPERVISOR III	05/20/16	16	5/21/13- 5/19/16
MONTGOMERY, REGINA	RECYCLING COORDINATOR	11/17/17	16	11/18/14 - 11/17/17
REED, JUNOS	CIVIL ENGINEER III	11/15/18	16	11/16/15 - 11/14/18
ROBINSON, BOBBY	EQUIPMENT OPERATOR III	12/07/18	16	12/08/15 - 12/06/18
STIRK, JENNIFER	ENVIRONMENTAL SPECIALISTS III	11/17/17	6	11/18/14- 11/16/17
ZOW, S. DEXTER	SUPERVISOR III	11/15/18	16	11/16/15 - 11/14/18



# CONSTRUCTION & DEMOLITION

NAME		EXPIRES	HOURS NEEDED	Training Time Frame
KELLY, DAVID	SUPERVISOR III	12/07/18	16	12/08/15 - 12/6/18
HUBBARD, RANDY	EQUIPMENT OPERATOR III	12/07/18	16	12/08/15- 12/06/18
MCCORMICK, DAN S	SUPERVISOR III	05/20/16	16	5/21/13- 5/19/16
MONTGOMERY, REGINA	RECYCLING COORDINATOR	11/17/17	16	11/18/14 - 11/16/17
REED, JUNOS	CIVIL ENGINEER III	11/15/18	16	11/16/15 - 11/14/18
ROBINSON, BOBBY	EQUIPMENT OPERATOR III	12/07/18	16	12/8/15 - 12/06/18
STIRK, JENNIFER	ENVIRONMENTAL SPECIALISTS III	11/17/17	6	11/18/14- 11/16/17
ZOW, S. DEXTER	SUPERVISOR III	11/15/18	16	11/16/15 - 11/14/18

# MATERIAL RECOVERY FACILITY

NAME		EXPIRES	HOURS NEEDED	Training Time Frame
ELLIS, CHRISTOPHER	SUPERVISOR III	09/17/18	8	9/18/15 - 9/16/18
HILL, ERIC	SUPERVISOR III	07/23/17	8	7/22/14 - 7/24/17
KELLY, DAVID	SUPERVISOR III	07/23/17	8	7/24/14 - 7/22/17
MCCORMICK, DAN S	SUPERVISOR III	10/30/18	8	10/31/15 - 10/29/18
MONTGOMERY, REGINA	RECYCLING COORDINATOR	10/30/18	8	10/31/15 - 10/29/18
ROBINSON, BOBBY	EQUIPMENT OPERATOR III	04/14/17	8	4/15/15 - 4/13/17



# TRANSFER STATION

NAME		EXPIRES	HOURS NEEDED	Training Time Frame
ELLIS, CHRISTOPHER	SUPERVISOR III	09/17/18	8	9/18/15 - 9/16/18
HILL, ERIC	SUPERVISOR III	07/23/17	8	7/24/14 - 7/22/17
KELLY, DAVID	SUPERVISOR III	07/23/17	8	7/24/15 - 7/22/17
MCCORMICK, DAN S	SUPERVISOR III	10/30/18	8	10/31/15 - 10/29/18
MONTGOMERY, REGINA	RECYCLING COORDINATOR	10/30/18	2	10/31/15 - 10/29/18
ROBINSON, BOBBY	EQUIPMENT OPERATOR III	04/14/17	8	4/15/14 - 4/13/17

## **Appendix C**

### **Operations Plan for the Citizen's Convenience Center**



# **OPERATIONS PLAN FOR THE CITIZEN'S CONVENIENCE CENTER**

## **1. Introduction**

This Operation Plan has been prepared for the Citizen's Convenience Center (CCC) at the Tomoka Farms Road Landfill (TFRLF). The CCC serves as a drop off point at the TFRFLF for residents of Volusia County seeking to dispose of their Class III materials such as yard waste, construction and demolition debris (C&D), carpet, cardboard, paper, glass, plastic, furniture other than appliances. Although not a Class III material, the County will accept white goods for recycling at the CCC. This facility will not accept waste from commercial waste haulers that collect municipal solid waste from multiple generators, Class I waste (e.g. garbage), nor unacceptable waste such as Household Hazardous Waste (HHW), whole tires, gas cylinders, white goods, batteries, etc. for disposal to the landfill.

## **2. Facility Description**

The CCC is located east of the existing HHW facility, west of the existing tire storage and loading area, and south of the G.E.L. Materials Recovery Facility (MRF). The CCC occupies 0.7-acres and consists of an elevated reinforced concrete pad that measures approximately 130-feet x 75-feet. The total height of the pad on the west side is 4.5-feet above the existing ground surface, sloping slightly down towards the east to collect stormwater runoff. There is an entrance ramp from the local perimeter access road on the south side and exit ramp on the north side of the elevated pad to maintain one directional traffic flow. On the west side of the pad is a 6 foot high retaining wall, which then allows, on the elevated pad side, for an 18-inch curb serving as a back stop to prevent vehicles from driving into the storage containers. Additionally, 2-foot high removable wire mesh fence sections are placed on top of the 18-inch curb for safety purposes. There are 5 concrete paved spaces for 30-ft x 10-ft x 6 ft roll-off containers for storing various residential Class III materials. The containers are placed by the County adjacent to the retaining wall at 5 designated loading areas. When in position, the top of the containers are at the same elevation as the top of the retaining wall and 18-inch curb. County access to the loading areas for loading and unloading the roll off containers is by a concrete paved road that ties into an existing perimeter asphalt road. Stormwater inlets and piping are being improved for this location. Stormwater is collected and conveyed to an existing stormwater basin to the east of the CCC.

## **3. Operations**

a) Load Checking, Unloading, and Materials Management

Residents first enter the TFRLF and stop at the scale house where loads are visually inspected and weighed. If the scale house attendant classifies the load as residential Class III material, they direct the customer to the CCC. Signage will be in place to provide the residents directions to the CCC entrance. Vehicles enter the CCC from the south, up an inclined ramp and then are directed by a trained spotter to the appropriate waste container bay containing an empty or partially full container. Residents then back up their vehicle, at the appropriate waste container bay, unload their waste, into a storage container, and exit the facility. Signage will be in place to provide the residents directions to exit the landfill.

The County will maintain containers at all 5 loading bays except during the time a full container is being swapped out with an empty one. Once a container is observed to be full with Class III materials, a County vehicle will back-up to the full container, hook up and load the container, and haul the full container to the on-site Class III landfill. Materials, such as white goods and scrap metal are hauled to the local scrap yard for recycling; whereas, other recyclables, such as cardboard, are hauled to the onsite G.E.L. MRF for recycling. It is expected that loaded containers will be hauled away from the CCC 5-7 times a day, or more frequently, if needed. All hauling operations for the disposal of Class III materials are being conducted within the landfill property. No waste will be left within the containers for more than 24 hours, with the exception of scrap metal and cardboard. Due to the bulky nature of the material, the County may occasionally tamp down the load within the container to provide for additional space or to keep the load within the dimensions of the box. During this time of waste compaction, a customer may be directed to unload the waste into another container.

b) Trained Spotter

The County will have a spotter, trained in accordance with Rule 62-701.320(15), FAC, on site at all times to: a) direct unloading activities, b) monitor for unauthorized waste deliveries, and c) keep customers near their vehicles during unloading activities. On occasion, the spotter may be responsible for monitoring deliveries at both the HHW and the CCC, depending on the waste volume, staffing level, vacations, etc.

c) Unauthorized Wastes

A trained spotter is on site to direct unloading activities and monitor for unauthorized waste deliveries. The CCC will not accept waste from commercial waste haulers that collect municipal solid waste from multiple generators, Class I waste (e.g. garbage), nor



unacceptable waste such as HHW, whole tires, gas cylinders, white goods, batteries, etc. for disposal in the landfill. Customers with any of these waste streams will be directed to the appropriate location within landfill operations for proper disposal.

If a de-minimus quantity of Class I waste is found, this material will be pulled out of the container or segregated from the waste load and taken to the Class I landfill working face for disposal. Occasionally, whole tires that are delivered by a resident to the CCC will be segregated and relocated to the tire storage and loading area. HHW and other unauthorized waste such as propane tanks, used oil/gas, batteries, etc. are to be pulled and managed at the HHW or as according to Section 6 of the Landfill Operation Plan.

If a resident delivers a load that contains electronic-waste (e-waste), the customer will be directed to the HHW Center for proper sorting and temporary storage. If e-waste is brought to the CCC from a commercial business, the County will provide them with necessary information for means of disposal.

A list of unauthorized waste that is provided in Section 6.1 of the Landfill Operation Plan is provided below:

- Restricted materials.
- Regulated hazardous waste.
- Biomedical waste.
- Used oil filters.
- Compressed gas cylinders.
- PCB wastes.
- Household hazardous waste.

d) Operating Hours

The CCC will be open during normal landfill hours of 7:00 AM to 5.30 PM Monday through Saturday.

e) Dust and Other Fugitive Particles Control

Any dust generation from residential and County vehicles will be minimal since the CCC is completely paved with concrete and access to the CCC is via paved roads. However, if needed, the County will use a water wagon to minimize the potential for dust and other fugitive particle generation.

f) Leachate and Odor Control

The County will accept only Class III materials that are not putrescible in nature and are not expected to produce leachate that poses a threat to public health or the environment at the CCC. However, de-minimus quantities of leachate, if generated as a result of incident precipitation, will be retained inside the containers. If needed, the County will have roll-off liners readily available to be used inside any containers observed to leak. The County will empty the waste containers several times a day to minimize leachate and odor generation. No waste will be left within the containers for more than 24 hours, with the exception of scrap metal and cardboard.

g) Litter Control

Litter is not expected to be generated as a result of the CCC Operations. However, occasionally, de-minimus quantity of litter may fall in between the container and push wall when residents unload waste into a container or fly out of the container when being hauled within the landfill. When needed, the County will pick up this litter by hand or by using a shovel or other litter collection device.





# **ATTACHMENT D**

**Operations Permit Drawings 2009**

**Filling Sequence Drawings 2009**



# VOLUSIA COUNTY DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION

## TOMOKA FARMS ROAD LANDFILL

### CLASS III CELL OPERATION PERMIT RENEWAL

VOLUSIA COUNTY, FLORIDA

JUNE 2009

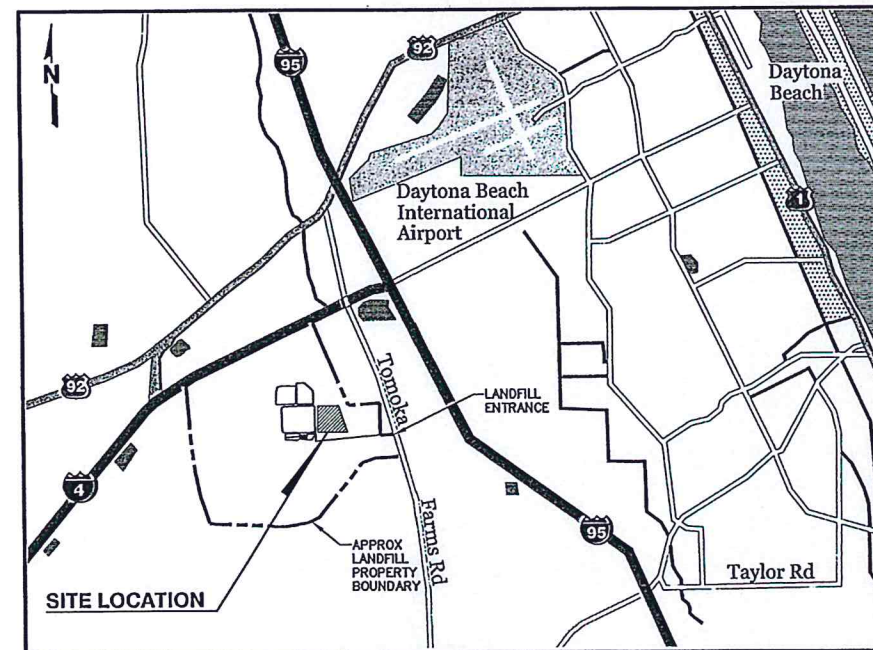
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DEP. Central

516857 #70



#### Volusia County Council Members

Frank Bruno Jr., County Chair  
Joie Alexander, At-Large, Vice Chair  
Andy Kelly, District 1  
Josh Wagner, District 2  
Jack Hayman, District 3  
Carl G. Persis, District 4  
Pat Northey, District 5



0 1 MILE 2 MILES  
APPROX SCALE  
**LOCATION MAP**

#### **DRAWING INDEX**

DRAWING NO.	DRAWING TITLE
1 -	COVER SHEET
2 -	AERIAL PHOTOGRAPH SITE PLAN
3 -	EXISTING TOPOGRAPHY SITE PLAN
4 -	FINAL CLOSURE SITE PLAN
5 -	SECTIONS
6 -	DETAILS - 1
7 -	DETAILS - 2
8 -	PASSIVE VENT SYSTEM SITE PLAN

**SCS ENGINEERS**  
STEARNS, CONRAD AND SCHMIDT  
CONSULTING ENGINEERS  
4041 PARK OAKS BLVD, SUITE 100  
TAMPA, FLORIDA 33610  
PH (813) 621-0080 FAX NO. (813) 623-6757  
Florida Certificate of Authorization No. 00004892  
WWW.SCSENGINEERS.COM  
SCS PROJECT NO. 09208007.07

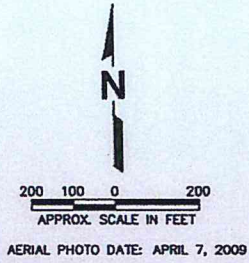
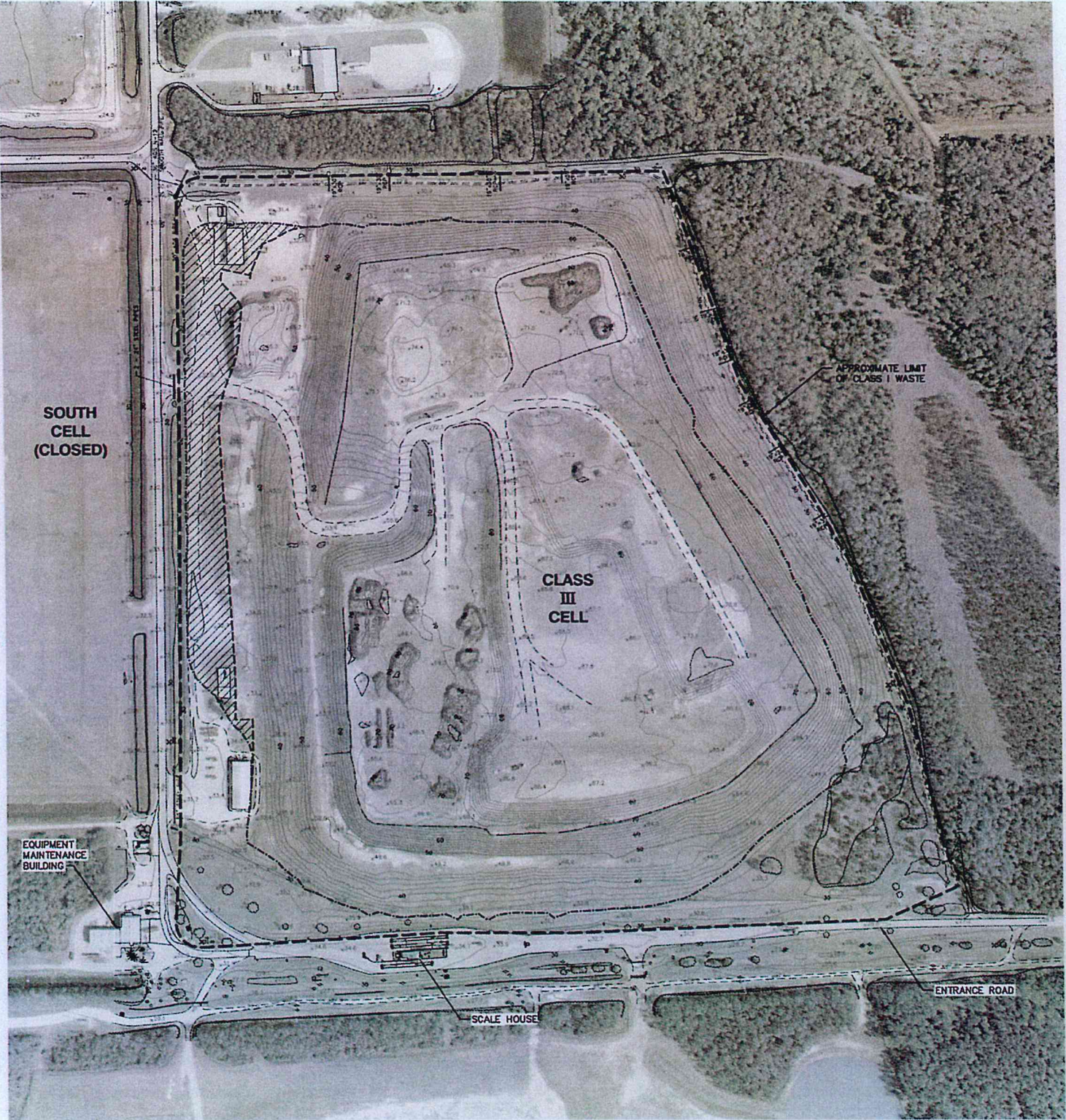








- SURVEY SOURCE NOTES:**
1. TOPOGRAPHIC SURVEY SHOWN PRODUCED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY: AERIAL CARTOGRAPHICS OF AMERICA, P.O. BOX 593846, ORLANDO FLORIDA, 32859-3846 (1722 W. OAK RIDGE ROAD, ORLANDO FLORIDA, 32809), LB # 0006748.
  2. AERIAL PHOTO DATE: APRIL 7, 2009
  3. SURVEYOR AND MAPPER IN RESPONSIBLE CHARGE: MARK DETRICK, PSM # 5433.
  4. MAPPING COORDINATES ARE BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM 1983 (1990 ADJUSTMENT).
  5. FIELD SURVEY CONTROL ELEVATIONS AND RESULTING MAPPING ELEVATIONS ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929.



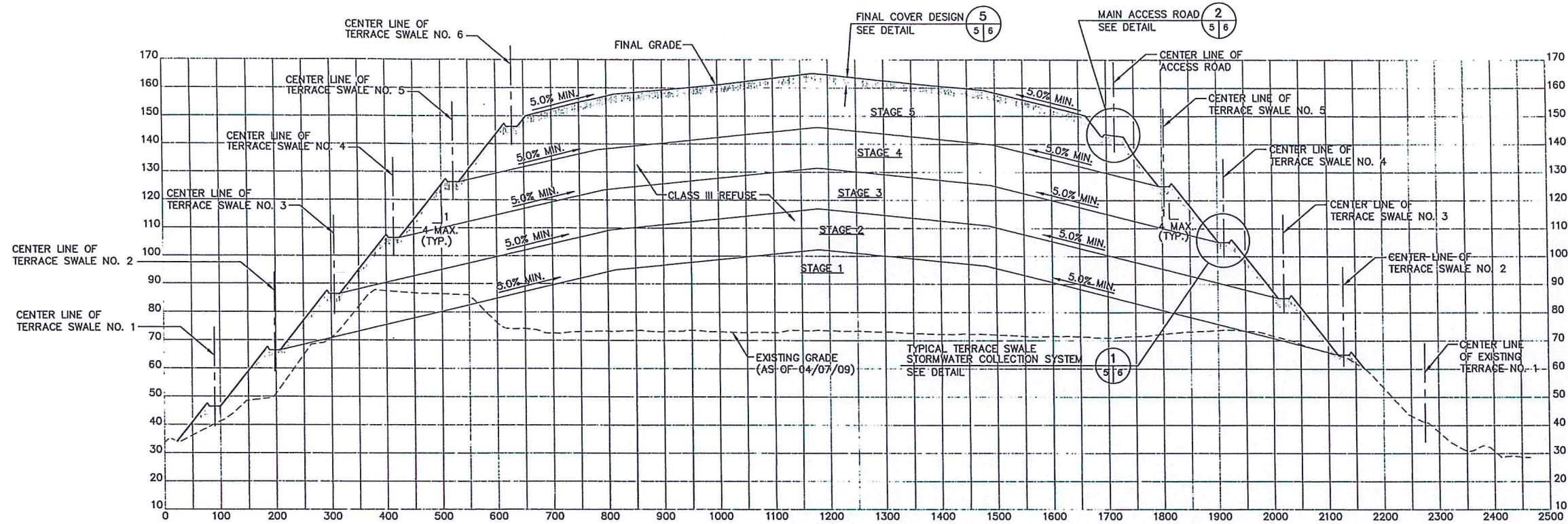
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  - EXISTING ELEVATIONAL CONTOUR (1 FOOT INTERVAL) - 04/07/09 SURVEY
  - EXISTING SPOT ELEVATION - 04/07/09 SURVEY
  - LIMITS OF PERMITTED CLASS III
  - EXPANSION AREA
  - APPROXIMATE LIMIT OF CLASS I WASTE

DRAWING TITLE		EXISTING TOPOGRAPHY	BY	DATE	DESCRIPTION	REV	DATE	DESCRIPTION
PROJECT TITLE		TOMOKA FARMS ROAD LANDFILL						
PROJECT TITLE		CLASS III CELL						
PROJECT TITLE		OPERATION PERMIT RENEWAL						
CLIENT		VOLUSIA COUNTY						
CLIENT		DEPARTMENT OF PUBLIC WORKS						
CLIENT		SOLID WASTE DIVISION						
CLIENT		DELAND, FLORIDA						
SCS ENGINEERS		STEARN, CONRAD AND SCHMIDT						
SCS ENGINEERS		CONSULTING ENGINEERS						
SCS ENGINEERS		401 PARK LANE S.W. SUITE 100, TAMPA, FL 33610						
SCS ENGINEERS		FLORIDA CERTIFICATE OF AUTHORIZATION NO. 0004882						
SCS ENGINEERS		DATE: 09/20/07						
SCS ENGINEERS		BY: SDA						
SCS ENGINEERS		CHECKED: JH						
SCS ENGINEERS		DATE: 09/20/07						
SCS ENGINEERS		DATE: 09/20/07						
CADD FILE:		080707AERIAL						
DATE:		JUNE 2009						
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DRAWING NO.		3 of 8						

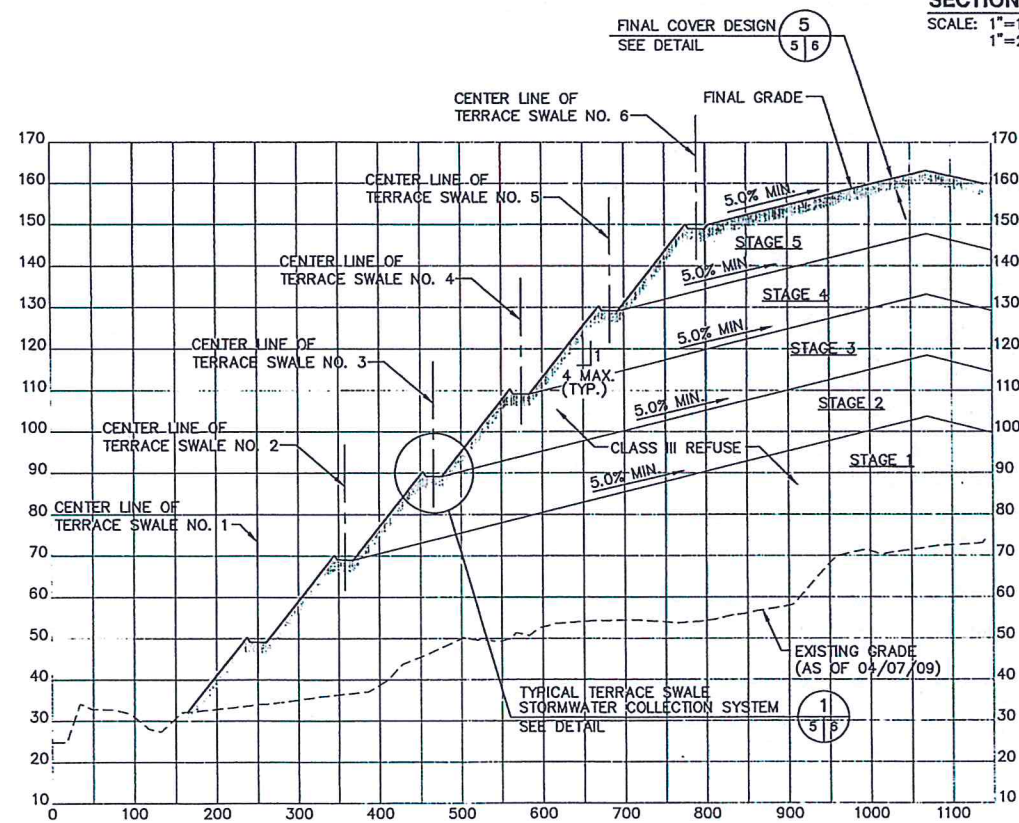




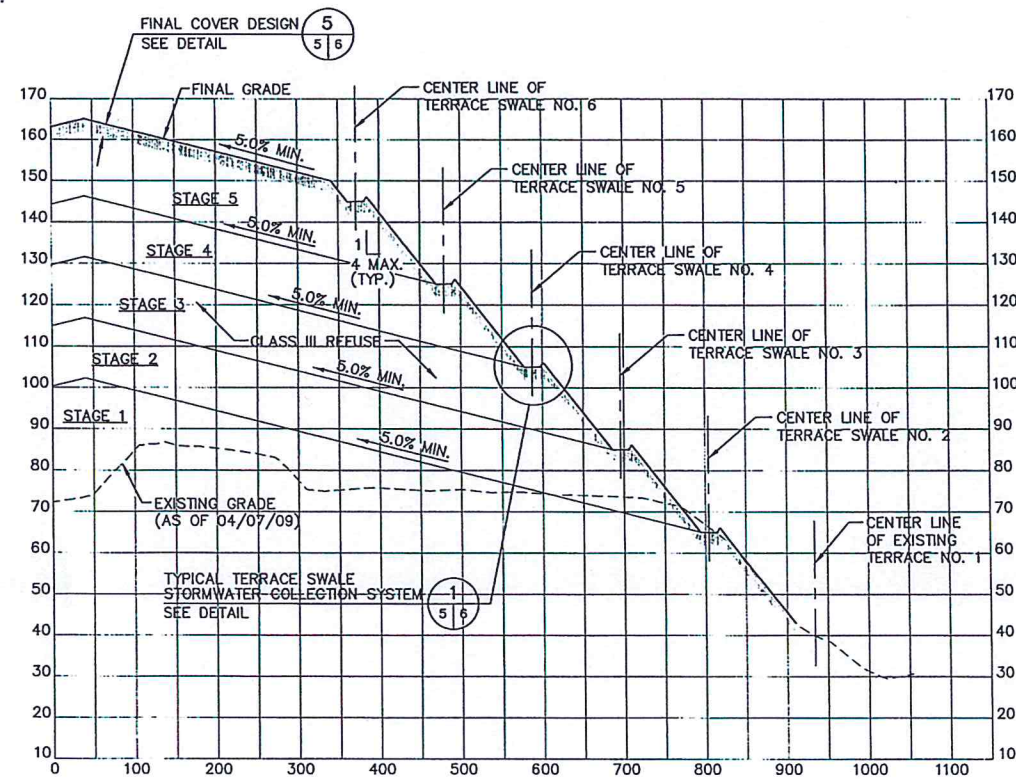




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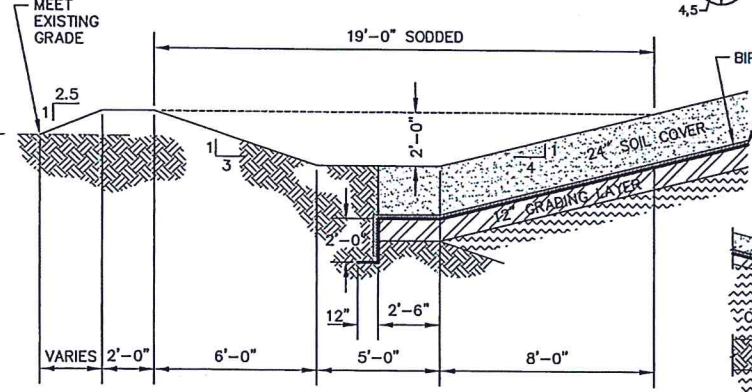
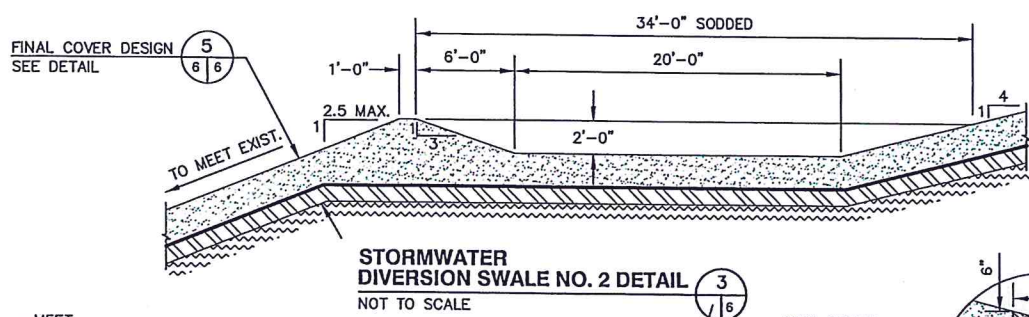
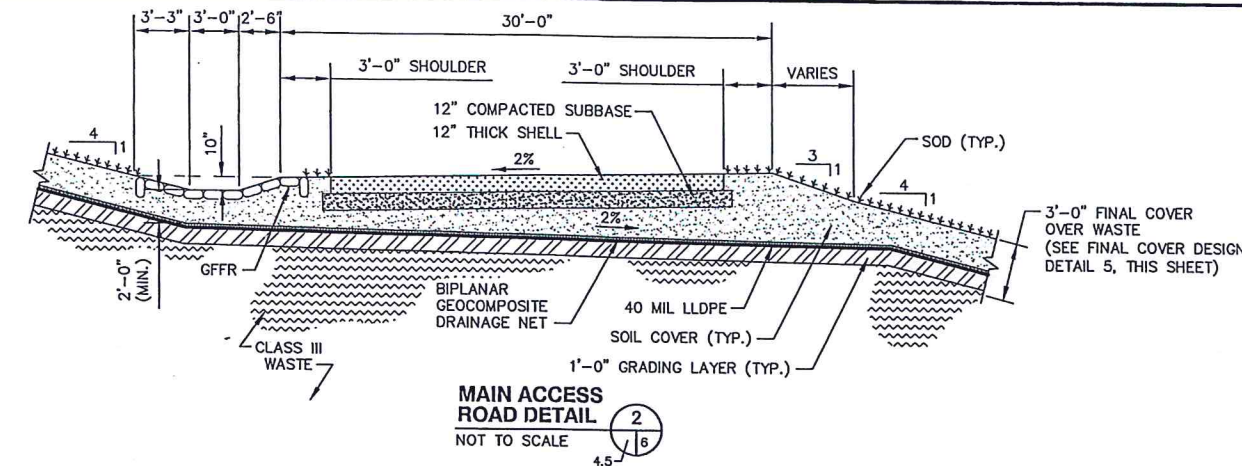
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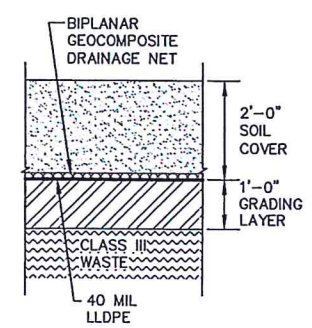
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DATE	DATE
REV	REV
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CLIENT VOLUSIA COUNTY DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA	
CADD FILE: 080707SECTIONS	
DATE: JUNE 2009	
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DRAWING NO. <b>5</b> of 8	

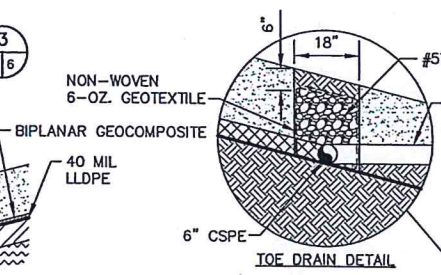




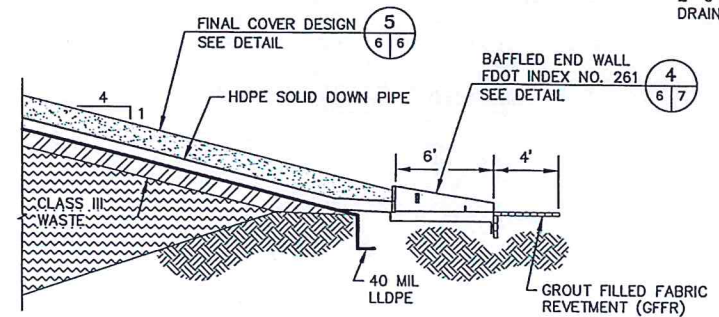
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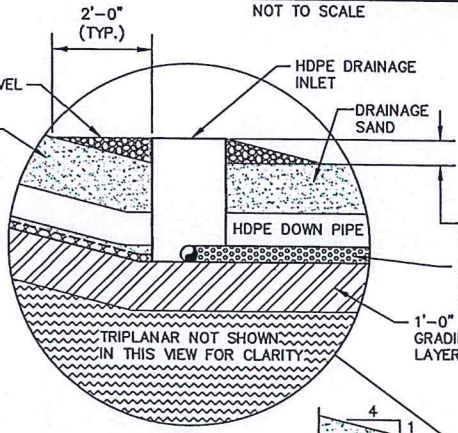
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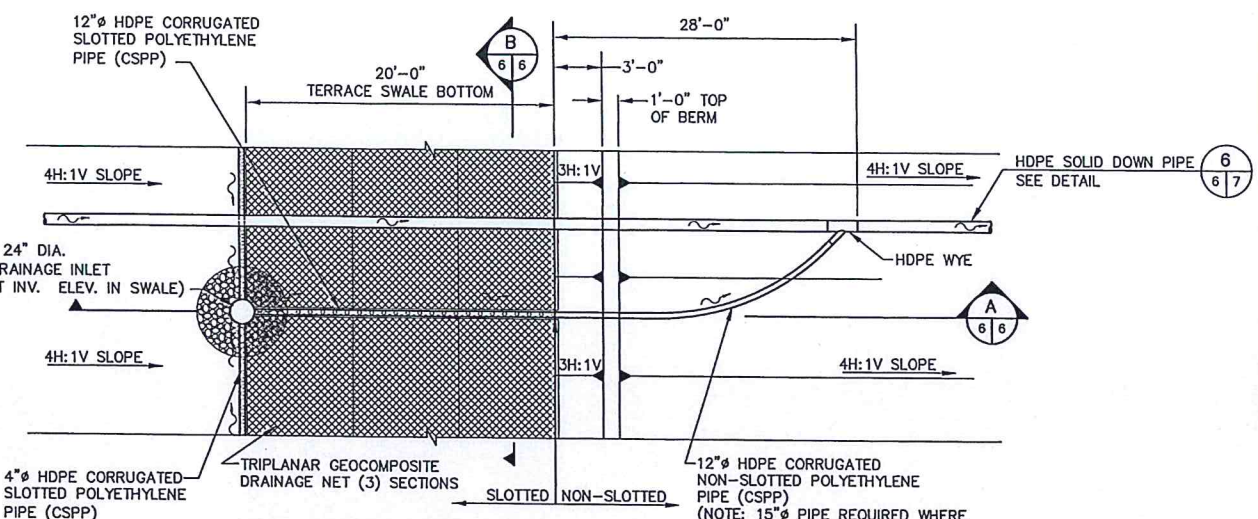
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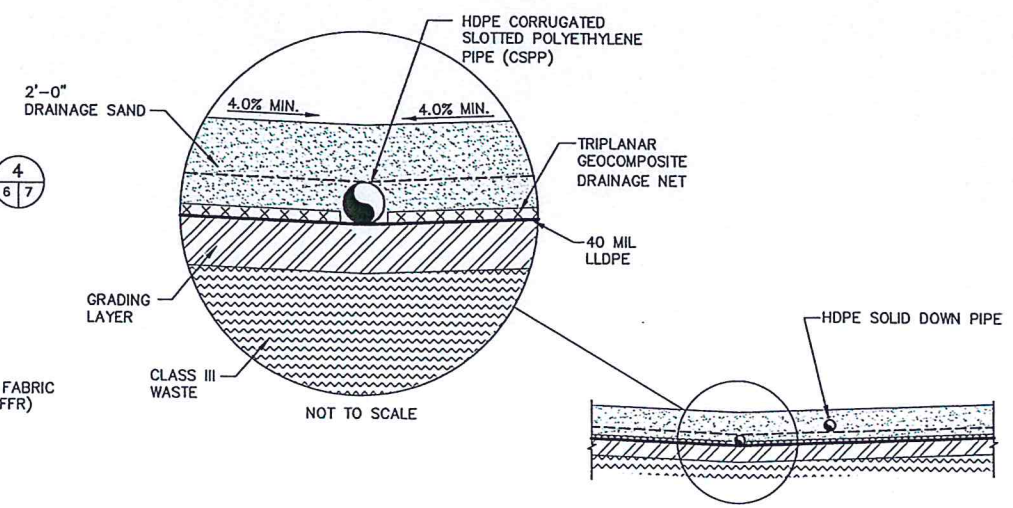
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**TYPICAL TERRACE SWALE STORMWATER COLLECTION SYSTEM DETAIL**  
NOT TO SCALE



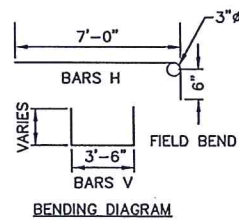
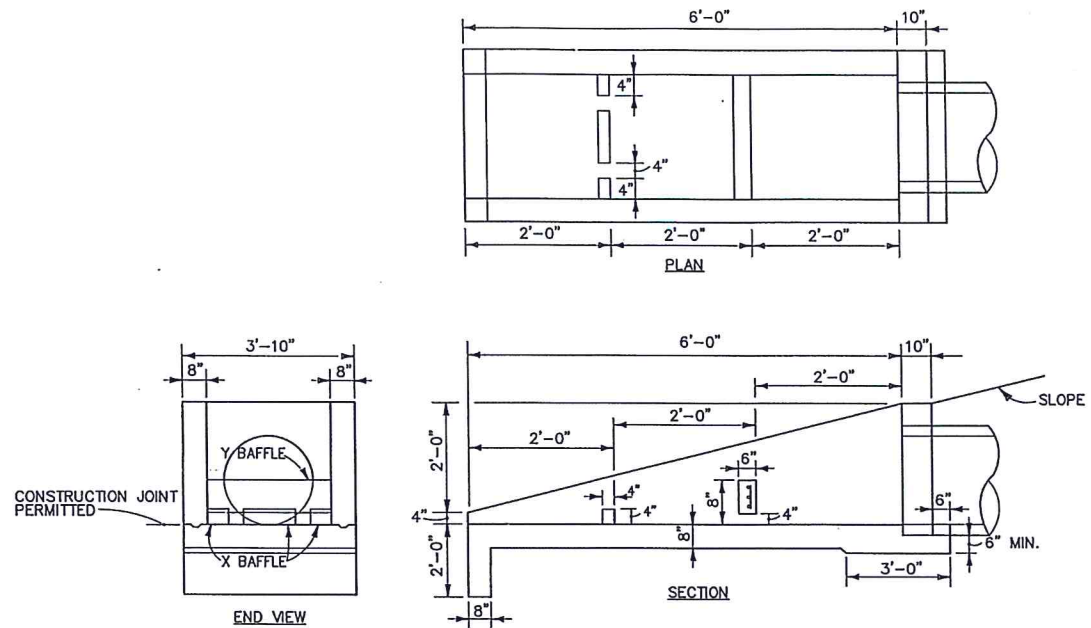
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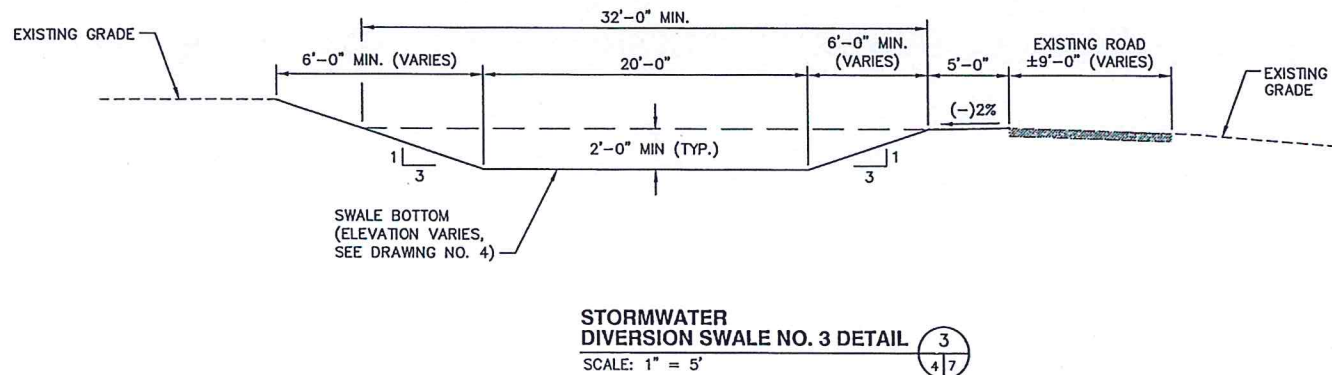
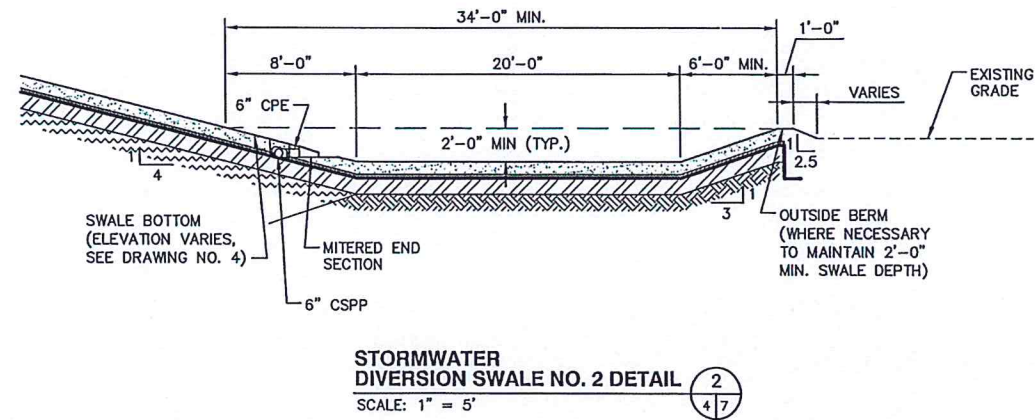
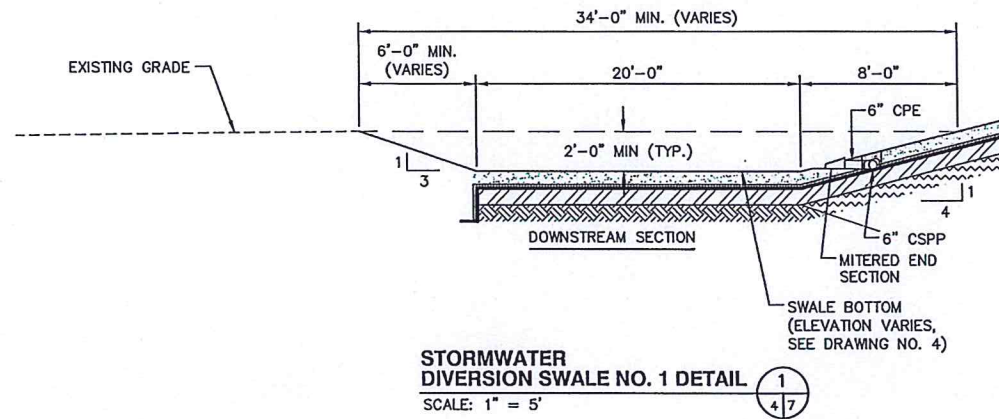
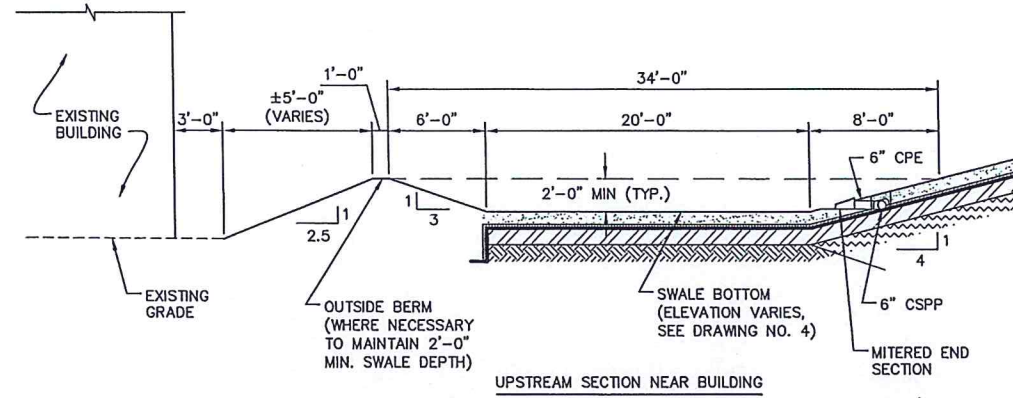
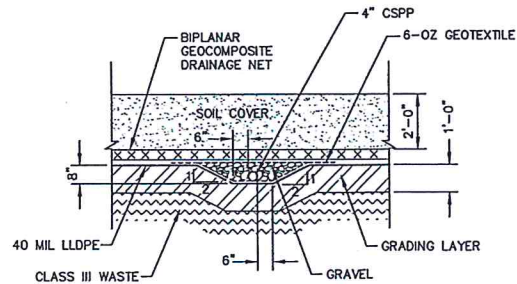
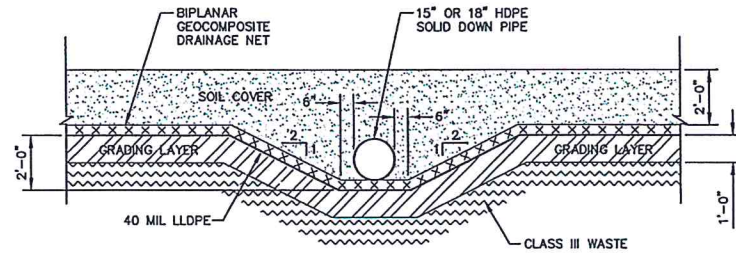
<b>SCS ENGINEERS</b> STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 401 S. W. 10th Ave., Suite 1000 Fort Lauderdale, FL 33310 TEL: 954-575-1000 FAX: 954-575-1001 FLORIDA CERTIFICATE OF AUTHORIZATION NO. 0000487 PROJECT NO. 08070701 DATE: 07/07/07 DESIGNED BY: SDA CHECKED BY: LAP DRAWN BY: LAP R.D.		CLIENT <b>VOLUSIA COUNTY</b> DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA	DRAWING TITLE <b>DETAILS - 1</b>	PROJECT TITLE <b>TOMOKA FARMS ROAD LANDFILL          CLASS III CELL          OPERATION PERMIT RENEWAL</b>	BY DATE REV	DESCRIPTION DATE REV	LICENSE NO. 35592 LEE A. POWELL, P.E.
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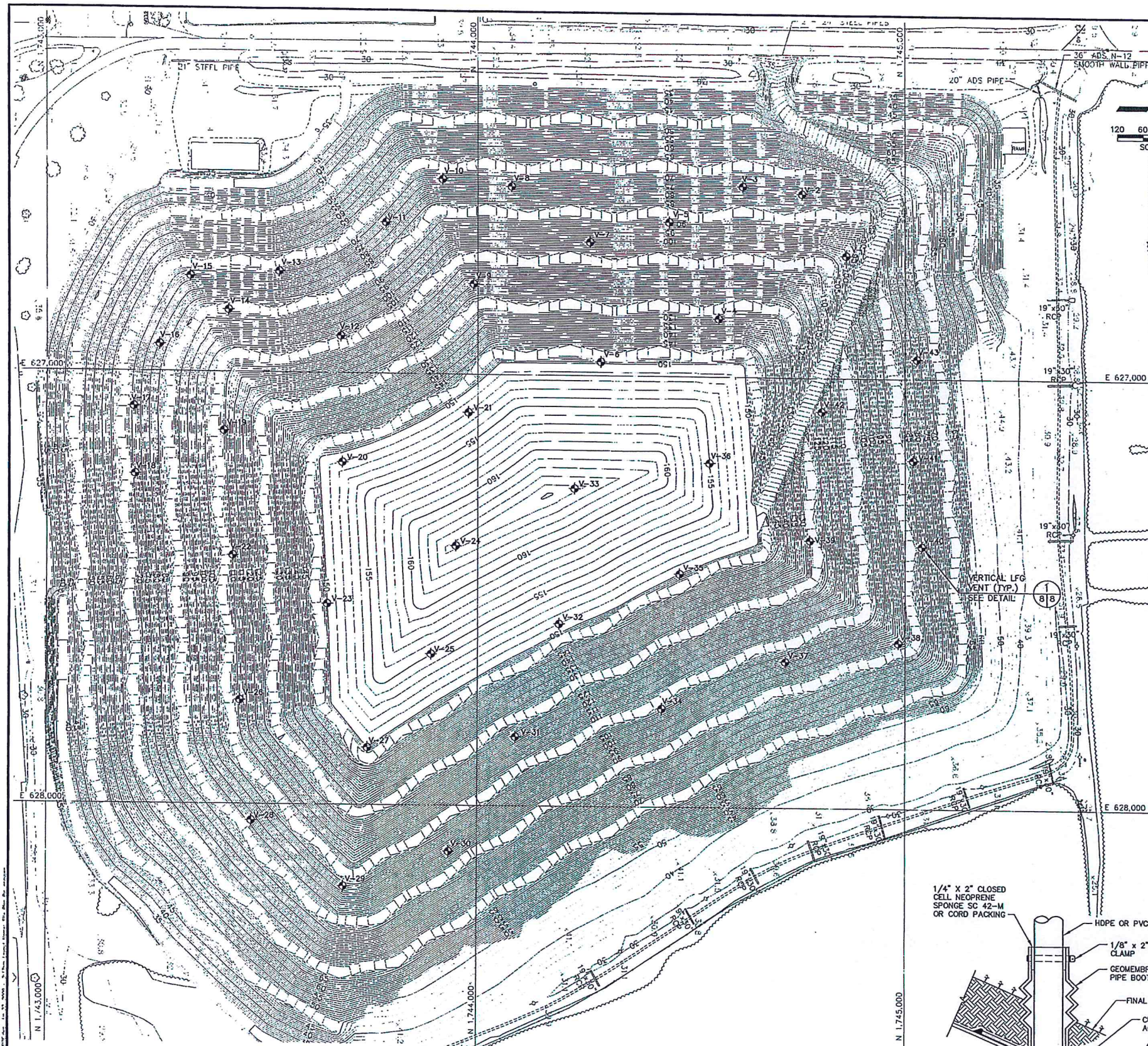
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NOT TO SCALE



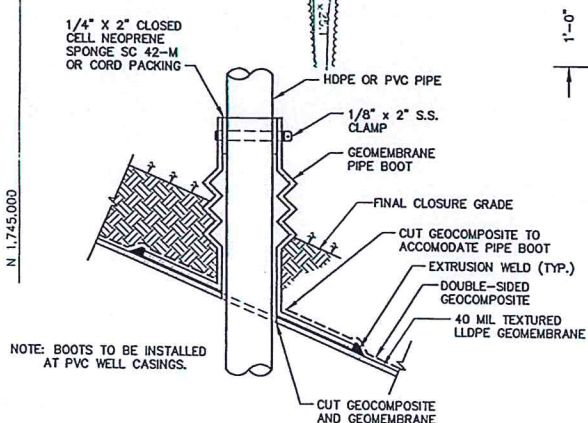
<b>SCS ENGINEERS</b> STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 4041 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610 TEL: 813-971-0000 FAX: 813-971-0007 FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004003 PRD. NO. 0000000707 TSS: 8/10/07.07	BY	DATE	DESCRIPTION	REV
	DATE	DATE	DESCRIPTION	REV
	DATE	DATE	DESCRIPTION	REV
	DATE	DATE	DESCRIPTION	REV
<b>VOLUSIA COUNTY</b> DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA	<b>DETAILS - 2</b>			
	PROJECT TITLE <b>TOMOKA FARMS ROAD LANDFILL</b> <b>CLASS III CELL</b> <b>OPERATION PERMIT RENEWAL</b>			
	CLIENT <b>VOLUSIA COUNTY</b> DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA			
	CADD FILE: 080707DET2			
DATE: JUNE 2009 SCALE: AS SHOWN DRAWING NO. <b>7</b> of 8	DATE: JUNE 2009 SCALE: AS SHOWN DRAWING NO. <b>7</b> of 8			
	DATE: JUNE 2009 SCALE: AS SHOWN DRAWING NO. <b>7</b> of 8			
	DATE: JUNE 2009 SCALE: AS SHOWN DRAWING NO. <b>7</b> of 8			
	DATE: JUNE 2009 SCALE: AS SHOWN DRAWING NO. <b>7</b> of 8			



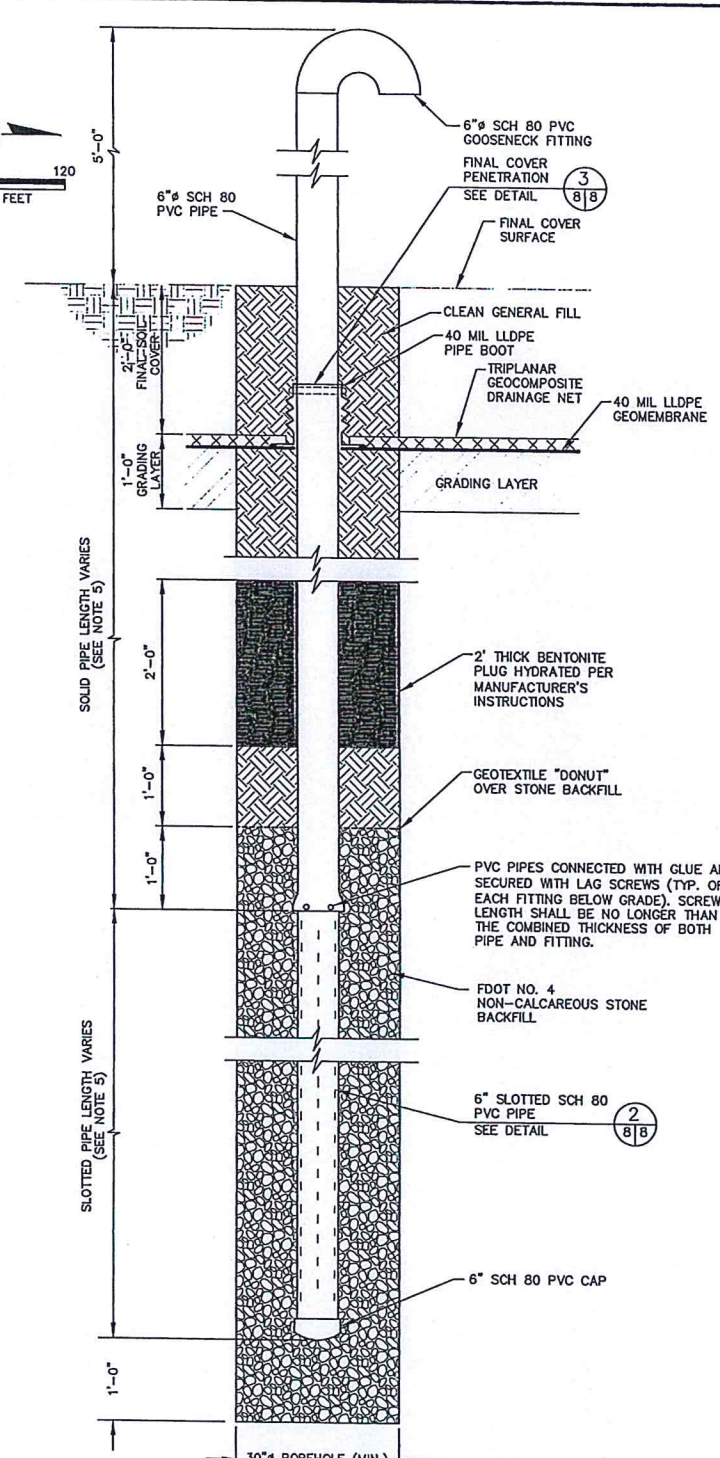


- SURVEY SOURCE NOTES:**
1. TOPOGRAPHIC SURVEY SHOWN PRODUCED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY: AERIAL CARTOGRAPHICS OF AMERICA, P.O. BOX 593846, ORLANDO FLORIDA, 32859-3846 (1722 W. OAK RIDGE ROAD, ORLANDO FLORIDA, 32809), LB # 0006748.
  2. AERIAL PHOTO DATE: APRIL 7, 2009
  3. SURVEYOR AND MAPPER IN RESPONSIBLE CHARGE: MARK DETRICK, PSM # 5433.
  4. MAPPING COORDINATES ARE BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM 1983 (1990 ADJUSTMENT).
  5. FIELD SURVEY CONTROL ELEVATIONS AND RESULTING MAPPING ELEVATIONS ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929.

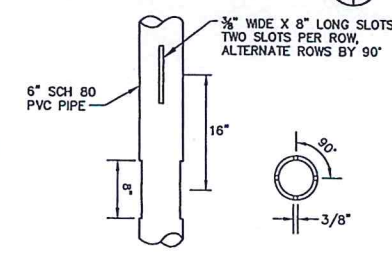
- NOTES:**
1. WELL BOREHOLES SHALL TERMINATE A MINIMUM OF 15 FEET ABOVE THE BOTTOM OF REFUSE.
  2. DRILLER SHALL LOG REFUSE DESCRIPTION, TEMPERATURE, APPROX. MOISTURE CONTENT, PRESENCE OF LIQUID AND DEGREE OF DECOMPOSITION AT 10-FT. INTERVALS.
  3. CONTRACTOR SHALL SURVEY AND STAKE THE PROPOSED VENT LOCATIONS AND PROVIDE THE GROUND SURFACE ELEVATION TO THE ENGINEER AND OWNER AT LEAST ONE WEEK PRIOR TO THE COMMENCEMENT OF WELL DRILLING.
  4. DURING DRILLING OF WASTE, CONTRACTOR SHALL EMPLOY ALL HEALTH AND SAFETY STANDARDS FOR LFG DRILLING. CONTRACTOR SHALL PREPARE AND ADHERE TO A HEALTH AND SAFETY PLAN THAT MUST BE SUBMITTED TO THE ENGINEER AND OWNER PRIOR TO COMMENCEMENT OF CONSTRUCTION.
  5. VENT SCHEDULE TO BE ADDED AS PART OF LANDFILL CLOSURE CONSTRUCTION DOCUMENTS.



**FINAL COVER PENETRATION DETAIL** 3/8/8  
NOT TO SCALE



**VERTICAL LFG VENT DETAIL** 1/8/8  
NOT TO SCALE



**SLOTTED PIPE DETAIL** 2/8/8  
NOT TO SCALE

<b>SCS ENGINEERS</b> STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 1100 N. W. 10TH AVE., SUITE 100, MIAMI, FL 33136 TEL: 305-576-1100 FAX: 305-576-1101 FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004882		BY: <i>L. J. Ladd</i>	DESCRIPTION:	DATE:	REV:
CADD FILE: 080707LFGSITE		DATE: JUNE 2009	DATE:	DATE:	DATE:
SCALE: AS SHOWN		SCALE:	SCALE:	SCALE:	SCALE:
DRAWING NO. 8 of 8		PROJECT TITLE: TOMOKA FARMS ROAD LANDFILL CLASS III CELL OPERATION PERMIT RENEWAL	PROJECT TITLE:	PROJECT TITLE:	PROJECT TITLE:
CLIENT: VOLUSIA COUNTY DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA		CLIENT:	CLIENT:	CLIENT:	CLIENT:
PROJ. NO. 080707		PROJ. NO.:	PROJ. NO.:	PROJ. NO.:	PROJ. NO.:
DESIGNER: J.S./LEK		DESIGNER:	DESIGNER:	DESIGNER:	DESIGNER:
CHECKER: J.S./LEK		CHECKER:	CHECKER:	CHECKER:	CHECKER:
APP. BY: RJD		APP. BY:	APP. BY:	APP. BY:	APP. BY:
LIC. NO. 0000707		LIC. NO.:	LIC. NO.:	LIC. NO.:	LIC. NO.:
LIC. TYPE: L.E.K.		LIC. TYPE:	LIC. TYPE:	LIC. TYPE:	LIC. TYPE:
LIC. EXPIRATION: 12/31/10		LIC. EXPIRATION:	LIC. EXPIRATION:	LIC. EXPIRATION:	LIC. EXPIRATION:
LIC. STATE: FL		LIC. STATE:	LIC. STATE:	LIC. STATE:	LIC. STATE:
LIC. CATEGORY: L.E.K.		LIC. CATEGORY:	LIC. CATEGORY:	LIC. CATEGORY:	LIC. CATEGORY:
LIC. NO. 35992		LIC. NO.:	LIC. NO.:	LIC. NO.:	LIC. NO.:
LIC. TYPE: L.E.K.		LIC. TYPE:	LIC. TYPE:	LIC. TYPE:	LIC. TYPE:
LIC. EXPIRATION: 12/31/10		LIC. EXPIRATION:	LIC. EXPIRATION:	LIC. EXPIRATION:	LIC. EXPIRATION:
LIC. STATE: FL		LIC. STATE:	LIC. STATE:	LIC. STATE:	LIC. STATE:
LIC. CATEGORY: L.E.K.		LIC. CATEGORY:	LIC. CATEGORY:	LIC. CATEGORY:	LIC. CATEGORY:



**VOLUSIA COUNTY  
DEPARTMENT OF PUBLIC WORKS  
SOLID WASTE DIVISION**

**TOMOKA FARMS ROAD LANDFILL**

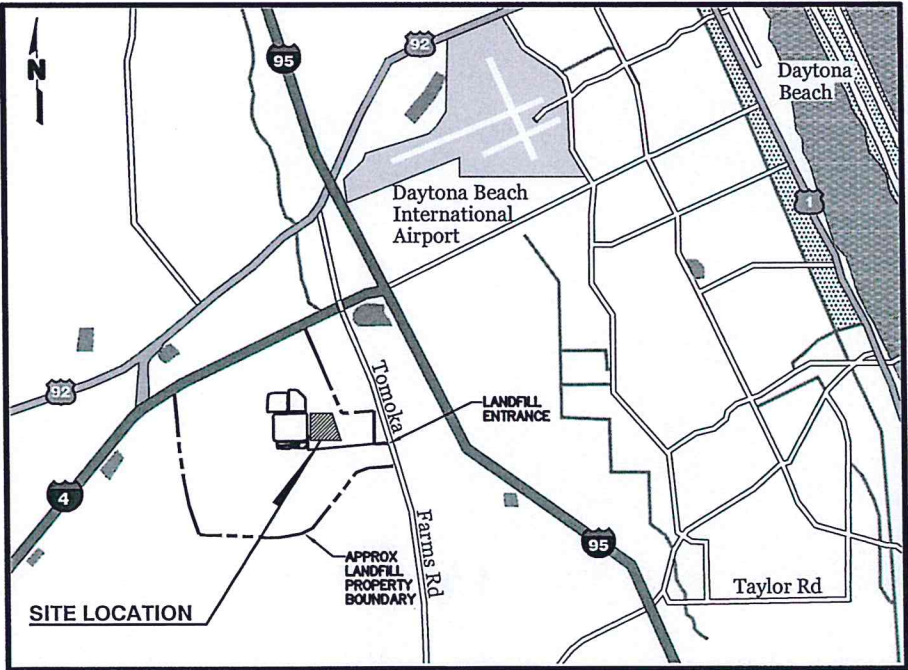
**CLASS III CELL  
FILL SEQUENCE PLAN**

**VOLUSIA COUNTY, FLORIDA  
SEPTEMBER 2009**



**Volusia County Council Members**

Frank Bruno Jr., County Chair  
Joie Alexander, At-Large, Vice Chair  
Andy Kelly, District 1  
Josh Wagner, District 2  
Jack Hayman, District 3  
Carl G. Persis, District 4  
Pat Northey, District 5



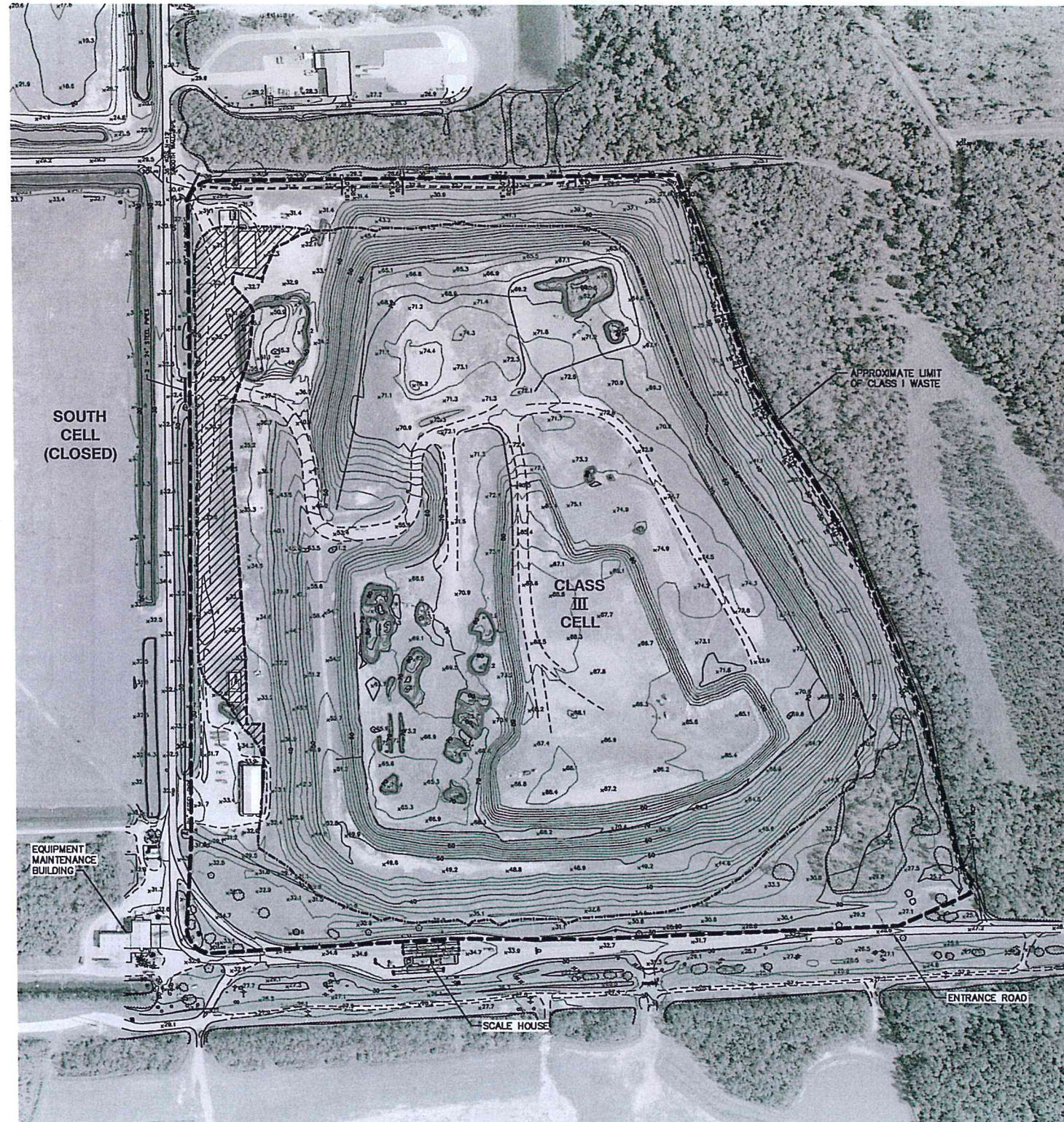
0 1 MILE 2 MILES  
APPROX SCALE  
**LOCATION MAP**

**SCS ENGINEERS**  
STEARNS, CONRAD AND SCHMIDT  
CONSULTING ENGINEERS  
4041 PARK OAKS BLVD, SUITE 100  
TAMPA, FLORIDA 33610  
PH (813) 621-0080 FAX NO. (813) 623-6757  
Florida Certificate of Authorization No. 00004892  
WWW.SCSENGINEERS.COM  
SCS PROJECT NO. 09208007.07

**DRAWING INDEX**

DRAWING NO.	DRAWING TITLE
1	COVER SHEET
2	EXISTING TOPOGRAPHY SITE PLAN
3	TOP OF WEEKLY COVER, STAGE 1 - SITE PLAN
4	TOP OF WEEKLY COVER, STAGE 2 - SITE PLAN
5	TOP OF WEEKLY COVER, STAGE 3 - SITE PLAN
6	TOP OF WEEKLY COVER, STAGE 4 - SITE PLAN
7	TOP OF WEEKLY COVER, STAGE 5 - SITE PLAN
8	TOP OF WEEKLY COVER, FINAL - SITE PLAN
9	SECTIONS
10	DETAILS
11	GRADING CONTROL POINTS TABLE, STAGE 1
12	GRADING CONTROL POINTS TABLE, STAGE 1 (cont.)
13	GRADING CONTROL POINTS TABLE, STAGE 2 AND 3
14	GRADING CONTROL POINTS TABLE, STAGE 4 AND 5





200 100 0 200  
APPROX. SCALE IN FEET

AERIAL PHOTO DATE: APRIL 7, 2009

- EXISTING ELEVATIONAL CONTOUR  
(5 FOOT INTERVAL) - 04/07/09 SURVEY
- EXISTING ELEVATIONAL CONTOUR  
(1 FOOT INTERVAL) - 04/07/09 SURVEY
- EXISTING SPOT ELEVATION - 04/07/09 SURVEY
- LIMITS OF PERMITTED CLASS III
- EXPANSION AREA
- APPROXIMATE LIMIT OF CLASS I WASTE

1. TOPOGRAPHIC SURVEY SHOWN PRODUCED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY: AERIAL CARTOGRAPHICS OF AMERICA, P.O. BOX 593846, ORLANDO FLORIDA, 32859-3846 (1722 W. OAK RIDGE ROAD, ORLANDO FLORIDA, 32809), LB # 0006748.
2. AERIAL PHOTO DATE: APRIL 7, 2009
3. SURVEYOR AND MAPPER IN RESPONSIBLE CHARGE: MARK DETRICK, PSM # 5433.
4. MAPPING COORDINATES ARE BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM 1983 (1990 ADJUSTMENT).
5. FIELD SURVEY CONTROL ELEVATIONS AND RESULTING MAPPING ELEVATIONS ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929.

<b>SCS ENGINEERS</b> STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 401 PARK QUAS BLVD., SUITE 100, TAMPA, FL 33610 813 821-0000 FAX 813 822-8757 FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892	CADD FILE: 080707ETOPO		PROJ. NO. 09209007.07		DWG. BY SDA	O/A ROW BY RJD
	DATE: SEPTEMBER 2009		SCALE: AS SHOWN		DESK. BY CEH	APP. BY CEH
DRAWING NO.						
CLIENT VOLUSIA COUNTY DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA						
DRAWING TITLE EXISTING TOPOGRAPHY SITE PLAN						
REV	DATE	DESCRIPTION	BY			
△						
△						
△						
△						
△						
△						
PROJECT TITLE TOMOKA FARMS ROAD LANDFILL CLASS III CELL FILL SEQUENCE PLAN				CHARLES E. HILTON, P.E. LICENSE NO. 46918		

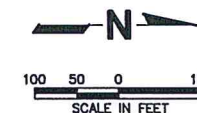
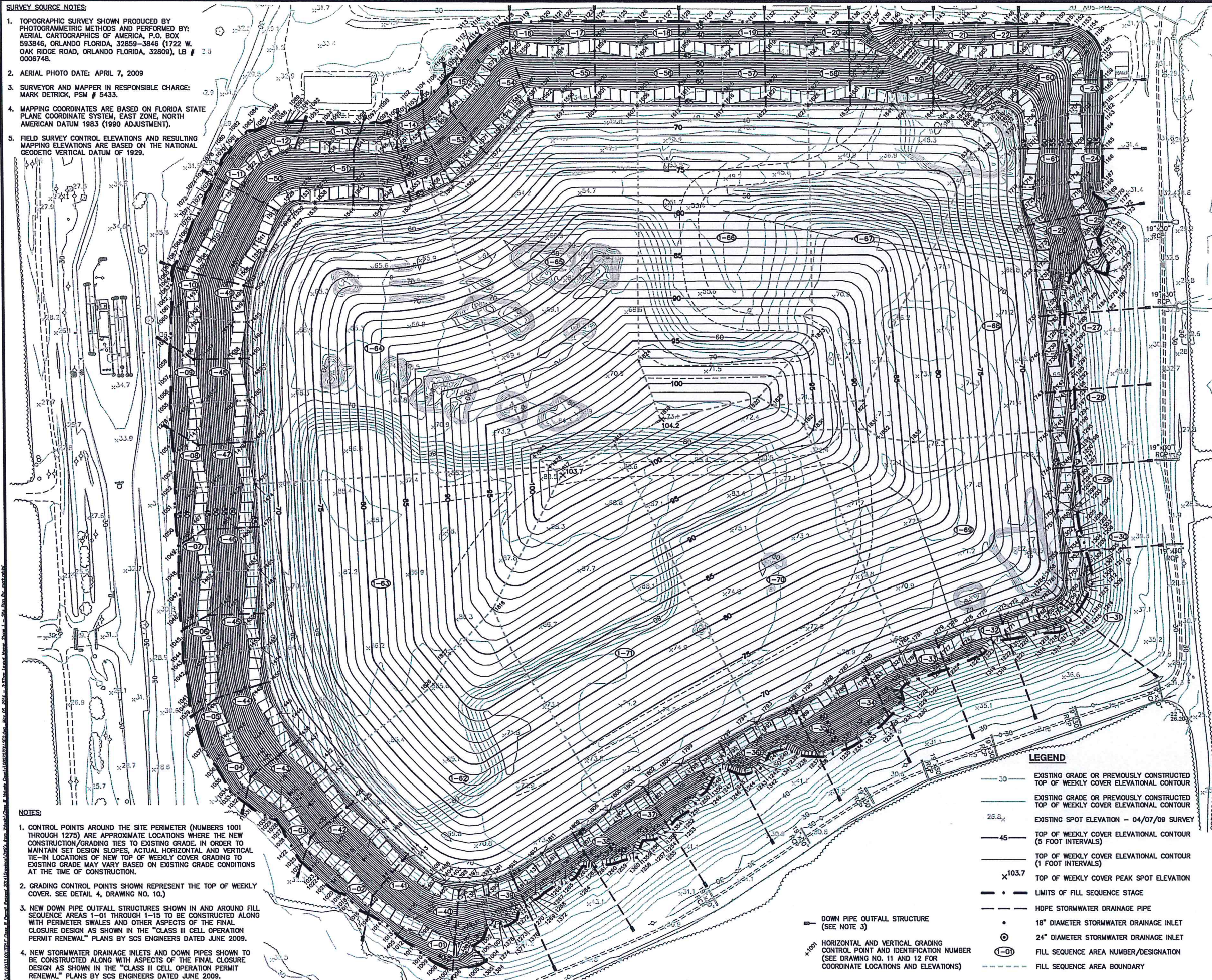


# **SURVEY SOURCE NOTES:**

1. TOPOGRAPHIC SURVEY SHOWN PRODUCED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY: AERIAL CARTOGRAPHICS OF AMERICA, P.O. BOX 593846, ORLANDO FLORIDA, 32859-3846 (1722 W. OAK RIDGE ROAD, ORLANDO FLORIDA, 32809), LB # 25 0006748.
2. AERIAL PHOTO DATE: APRIL 7, 2009
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5. FIELD SURVEY CONTROL ELEVATIONS AND RESULTING MAPPING ELEVATIONS ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929.

## **NOTES:**

1. CONTROL POINTS AROUND THE SITE PERIMETER (NUMBERS 1001 THROUGH 1275) ARE APPROXIMATE LOCATIONS WHERE THE NEW CONSTRUCTION/GRADING TIES TO EXISTING GRADE. IN ORDER TO MAINTAIN SET DESIGN SLOPES, ACTUAL HORIZONTAL AND VERTICAL TIE-IN LOCATIONS OF NEW TOP OF WEEKLY COVER GRADING TO EXISTING GRADE MAY VARY BASED ON EXISTING GRADE CONDITIONS AT THE TIME OF CONSTRUCTION.
2. GRADING CONTROL POINTS SHOWN REPRESENT THE TOP OF WEEKLY COVER. SEE DETAIL 4, DRAWING NO. 10.)
3. NEW DOWN PIPE OUTFALL STRUCTURES SHOWN IN AND AROUND FILL SEQUENCE AREAS 1-01 THROUGH 1-15 TO BE CONSTRUCTED ALONG WITH PERIMETER SWALES AND OTHER ASPECTS OF THE FINAL CLOSURE DESIGN AS SHOWN IN THE "CLASS III CELL OPERATION PERMIT RENEWAL" PLANS BY SCS ENGINEERS DATED JUNE 2009.
4. NEW STORMWATER DRAINAGE INLETS AND DOWN PIPES SHOWN TO BE CONSTRUCTED ALONG WITH ASPECTS OF THE FINAL CLOSURE DESIGN AS SHOWN IN THE "CLASS III CELL OPERATION PERMIT RENEWAL" PLANS BY SCS ENGINEERS DATED JUNE 2009.



STAGE 1 FILL SEQUENCE TABLE	
AREA NUMBER	FILL PRIORITY
1-01	21
1-02	22
1-03	23
1-04	24
1-05	25
1-06	60
1-07	61
1-08	26
1-09	27
1-10	28
1-11	29
1-12	30
1-13	31
1-14	32
1-15	33
1-16	34
1-17	35
1-18	36
1-19	37
1-20	38
1-21	39
1-22	40
1-23	01
1-24	41
1-25	02
1-26	42
1-27	03
1-28	43
1-29	04
1-30	44
1-31	05
1-32	45
1-33	06
1-34	46
1-35	07
1-36	47
1-37	08
1-38	48
1-39	09
1-40	49
1-41	10
1-42	15
1-43	11
1-44	51
1-45	12
1-46	13
1-47	52
1-48	14
1-49	53
1-50	15
1-51	54
1-52	16
1-53	55
1-54	17
1-55	56
1-56	18
1-57	57
1-58	19
1-59	58
1-60	20
1-61	59
1-62	67
1-63	68
1-64	69
1-65	70
1-66	71
1-67	62
1-68	63
1-69	64
1-70	65
1-71	66

## **LEGEND**

- 30 — EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 25.8 — EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 45 — EXISTING SPOT ELEVATION - 04/07/09 SURVEY
- 45 — TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (5 FOOT INTERVALS)
- — TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (1 FOOT INTERVALS)
- x103.7 TOP OF WEEKLY COVER PEAK SPOT ELEVATION
- • — LIMITS OF FILL SEQUENCE STAGE
- — HOPE STORMWATER DRAINAGE PIPE
- 18" DIAMETER STORMWATER DRAINAGE INLET
- ⊙ 24" DIAMETER STORMWATER DRAINAGE INLET
- (1-01) FILL SEQUENCE AREA NUMBER/DESIGNATION
- FILL SEQUENCE AREA BOUNDARY

- DOWN PIPE OUTFALL STRUCTURE (SEE NOTE 3)
- HORIZONTAL AND VERTICAL GRADING CONTROL POINT AND IDENTIFICATION NUMBER (SEE DRAWING NO. 11 AND 12 FOR COORDINATE LOCATIONS AND ELEVATIONS)

BY		DATE		REV	
DESCRIPTION		DATE		REV	
DRAWING TITLE: TOP OF WEEKLY COVER STAGE 1 - SITE PLAN					
PROJECT TITLE: TOMOKA FARMS ROAD LANDFILL CLASS III CELL FILL SEQUENCE PLAN					
CLIENT: VOLUSIA COUNTY DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA					
<div> <div> <b>SCS ENGINEERS</b>  <small>STEARN, CONRAD AND SCHMIDT  CONSULTING ENGINEERS  441 PARK QUAIL BLVD, SUITE 100, TAMPA, FL 33610  813 821-0000 FAX 813 821-0077  FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004803  PROJ. NO. 080707FILLSEQ  DATE: 08/07/07  DRAWN BY: SDA  CHECKED BY: CSH</small> </div> <div> <small>DATE: SEPTEMBER 2009  SCALE: AS SHOWN  DRAWING NO. 3 of 14</small> </div> </div>					

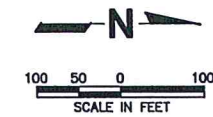
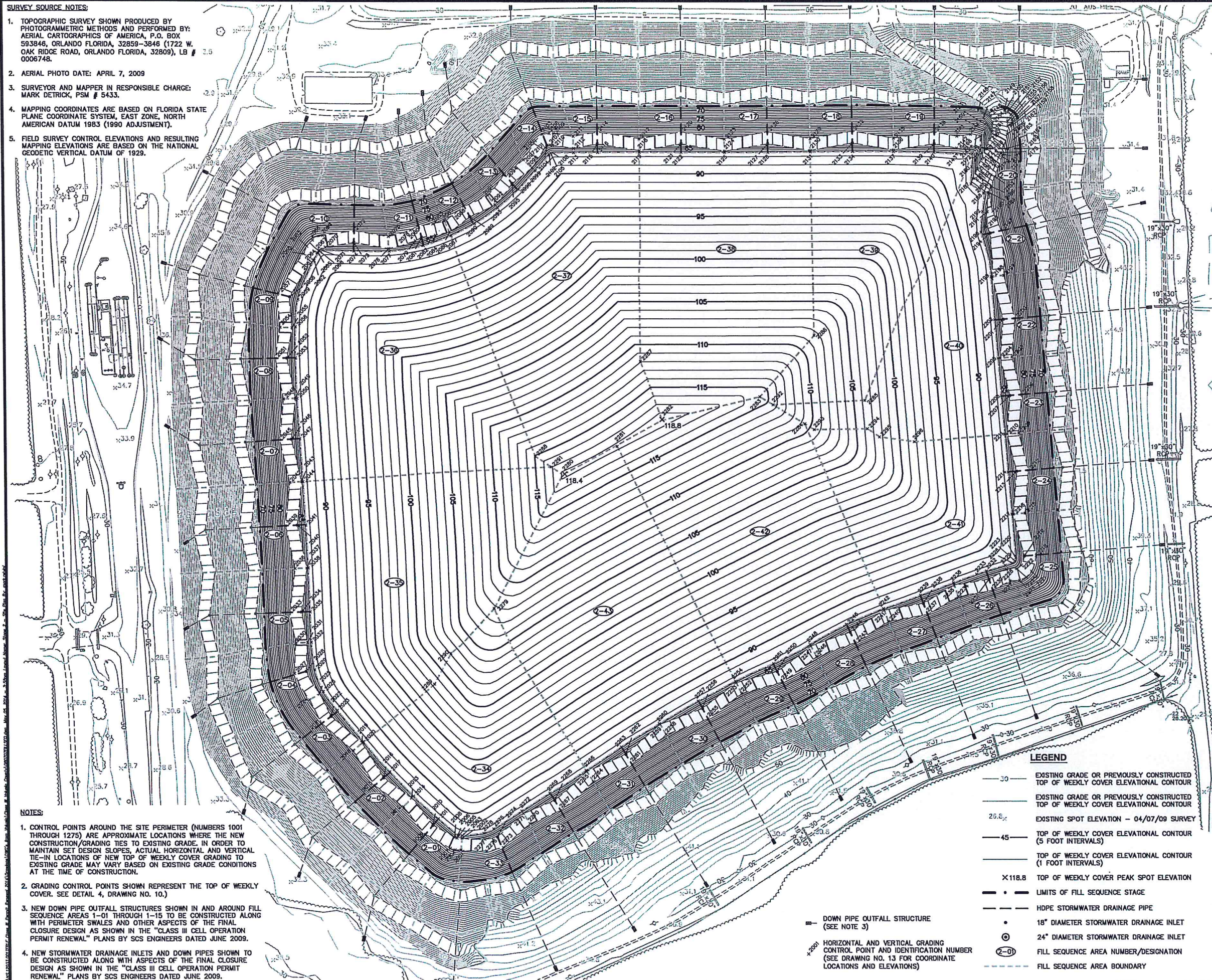


# **SURVEY SOURCE NOTES:**

1. TOPOGRAPHIC SURVEY SHOWN PRODUCED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY: AERIAL CARTOGRAPHICS OF AMERICA, P.O. BOX 593846, ORLANDO FLORIDA, 32859-3846 (1722 W. OAK RIDGE ROAD, ORLANDO FLORIDA, 32809), LB # 2.5 0006748.
2. AERIAL PHOTO DATE: APRIL 7, 2009
3. SURVEYOR AND MAPPER IN RESPONSIBLE CHARGE: MARK DETRICK, PSM # 5433.
4. MAPPING COORDINATES ARE BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM 1983 (1990 ADJUSTMENT).
5. FIELD SURVEY CONTROL ELEVATIONS AND RESULTING MAPPING ELEVATIONS ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929.

## **NOTES:**

1. CONTROL POINTS AROUND THE SITE PERIMETER (NUMBERS 1001 THROUGH 1275) ARE APPROXIMATE LOCATIONS WHERE THE NEW CONSTRUCTION/GRADING TIES TO EXISTING GRADE. IN ORDER TO MAINTAIN SET DESIGN SLOPES, ACTUAL HORIZONTAL AND VERTICAL TIE-IN LOCATIONS OF NEW TOP OF WEEKLY COVER GRADING TO EXISTING GRADE MAY VARY BASED ON EXISTING GRADE CONDITIONS AT THE TIME OF CONSTRUCTION.
2. GRADING CONTROL POINTS SHOWN REPRESENT THE TOP OF WEEKLY COVER. SEE DETAIL 4, DRAWING NO. 10.)
3. NEW DOWN PIPE OUTFALL STRUCTURES SHOWN IN AND AROUND FILL SEQUENCE AREAS 1-01 THROUGH 1-15 TO BE CONSTRUCTED ALONG WITH PERIMETER SWALES AND OTHER ASPECTS OF THE FINAL CLOSURE DESIGN AS SHOWN IN THE "CLASS III CELL OPERATION PERMIT RENEWAL" PLANS BY SCS ENGINEERS DATED JUNE 2009.
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STAGE 2 FILL SEQUENCE TABLE		
AREA NUMBER	FILL PRIORITY	
2-01	20	
2-02	21	
2-03	22	
2-04	23	
2-05	24	
2-06	25	
2-07	26	
2-08	27	
2-09	28	
2-10	29	
2-11	30	
2-12	31	
2-13	32	
2-14	33	
2-15	01	
2-16	02	
2-17	03	
2-18	04	
2-19	05	
2-20	06	
2-21	07	
2-22	08	
2-23	09	
2-24	10	
2-25	11	
2-26	12	
2-27	13	
2-28	14	
2-29	15	
2-30	16	
2-31	17	
2-32	18	
2-33	19	
2-34	39	
2-35	40	
2-36	41	
2-37	42	
2-38	43	
2-39	34	
2-40	35	
2-41	36	
2-42	37	
2-43	38	

## **LEGEND**

- 30 — EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 25.8 — EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 45 — EXISTING SPOT ELEVATION - 04/07/09 SURVEY
- TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (5 FOOT INTERVALS)
- TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (1 FOOT INTERVALS)
- ×118.8 TOP OF WEEKLY COVER PEAK SPOT ELEVATION
- • — LIMITS OF FILL SEQUENCE STAGE
- HOPE STORMWATER DRAINAGE PIPE
- 18" DIAMETER STORMWATER DRAINAGE INLET
- ⊙ 24" DIAMETER STORMWATER DRAINAGE INLET
- ②-01 FILL SEQUENCE AREA NUMBER/DESIGNATION
- FILL SEQUENCE AREA BOUNDARY

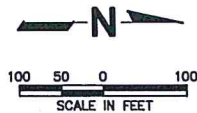
- DOWN PIPE OUTFALL STRUCTURE (SEE NOTE 3)
- HORIZONTAL AND VERTICAL GRADING CONTROL POINT AND IDENTIFICATION NUMBER (SEE DRAWING NO. 13 FOR COORDINATE LOCATIONS AND ELEVATIONS)

<b>SCS ENGINEERS</b> STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 4041 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610 813 832-0000 FAX 813 832-0777 FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004882 PROJECT NO. 080707/FILLSEQ DATE: SEPTEMBER 2009 SCALE: AS SHOWN DRAWING NO. 4 of 14	CLIENT VOLUSIA COUNTY DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA	DRAWING TITLE TOP OF WEEKLY COVER STAGE 2 - SITE PLAN	PROJECT TITLE TOMOKA FARMS ROAD LANDFILL CLASS III CELL FILL SEQUENCE PLAN	
	BY DESCRIPTION DATE REV DATE	REV DATE		BY DESCRIPTION DATE REV DATE
	CHARGE 080707/FILLSEQ			DATE SEPTEMBER 2009
	SCALE AS SHOWN			DRAWING NO. 4 of 14



**SURVEY SOURCE NOTES:**

1. TOPOGRAPHIC SURVEY SHOWN PRODUCED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY: AERIAL CARTOGRAPHICS OF AMERICA, P.O. BOX 593846, ORLANDO FLORIDA, 32859-3846 (1722 W. OAK RIDGE ROAD, ORLANDO FLORIDA, 32809), LB # 25 0006748.
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STAGE 3 FILL SEQUENCE TABLE		
AREA NUMBER	FILL PRIORITY	
3-01	16	
3-02	17	
3-03	18	
3-04	19	
3-05	20	
3-06	21	
3-07	22	
3-08	23	
3-09	24	
3-10	25	
3-11	26	
3-12	27	
3-13	01	
3-14	02	
3-15	03	
3-16	04	
3-17	05	
3-18	06	
3-19	07	
3-20	08	
3-21	09	
3-22	10	
3-23	11	
3-24	12	
3-25	13	
3-26	14	
3-27	15	
3-28	33	
3-29	34	
3-30	35	
3-31	36	
3-32	37	
3-33	28	
3-34	29	
3-35	30	
3-36	31	
3-37	32	

**NOTES:**

1. CONTROL POINTS AROUND THE SITE PERIMETER (NUMBERS 1001 THROUGH 1275) ARE APPROXIMATE LOCATIONS WHERE THE NEW CONSTRUCTION/GRADING TIES TO EXISTING GRADE. IN ORDER TO MAINTAIN SET DESIGN SLOPES, ACTUAL HORIZONTAL AND VERTICAL TIE-IN LOCATIONS OF NEW TOP OF WEEKLY COVER GRADING TO EXISTING GRADE MAY VARY BASED ON EXISTING GRADE CONDITIONS AT THE TIME OF CONSTRUCTION.
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**LEGEND**

- 30 — EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 25.8 — EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 45 — EXISTING SPOT ELEVATION - 04/07/09 SURVEY
- 133.5 x — TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (5 FOOT INTERVALS)
- — TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (1 FOOT INTERVALS)
- 133.5 x TOP OF WEEKLY COVER PEAK SPOT ELEVATION
- • — LIMITS OF FILL SEQUENCE STAGE
- — HOPE STORMWATER DRAINAGE PIPE
- 18" DIAMETER STORMWATER DRAINAGE INLET
- ⊙ 24" DIAMETER STORMWATER DRAINAGE INLET
- ⊙-01 FILL SEQUENCE AREA NUMBER/DESIGNATION
- FILL SEQUENCE AREA BOUNDARY
- DOWN PIPE OUTFALL STRUCTURE (SEE NOTE 3)
- HORIZONTAL AND VERTICAL GRADING CONTROL POINT AND IDENTIFICATION NUMBER (SEE DRAWING NO. 13 FOR COORDINATE LOCATIONS AND ELEVATIONS)

<b>SCS ENGINEERS</b> STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 4401 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610 813 821-0000 FAX 813 822-0757 FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004862 PROJECT NO. 08070707 DATE: 09/07/07 DRAWN BY: SDA CHECKED BY: CSH APP. BY: CSH	CLIENT <b>VOLUSIA COUNTY</b> DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA	DRAWING TITLE <b>TOP OF WEEKLY COVER</b> <b>STAGE 3 - SITE PLAN</b>	PROJECT TITLE <b>TOMOKA FARMS ROAD LANDFILL</b> <b>CLASS III CELL</b> <b>FILL SEQUENCE PLAN</b>	BY DESCRIPTION DATE REV DATE
	CADD FILE: 08070707FILLSEQ			
	DATE: SEPTEMBER 2009			
	SCALE: AS SHOWN			
DRAWING NO. <b>5</b> of 14				

CHARLES E. HILTON, P.E.  
LICENSE NO. 48916

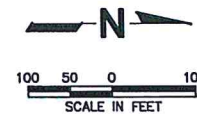
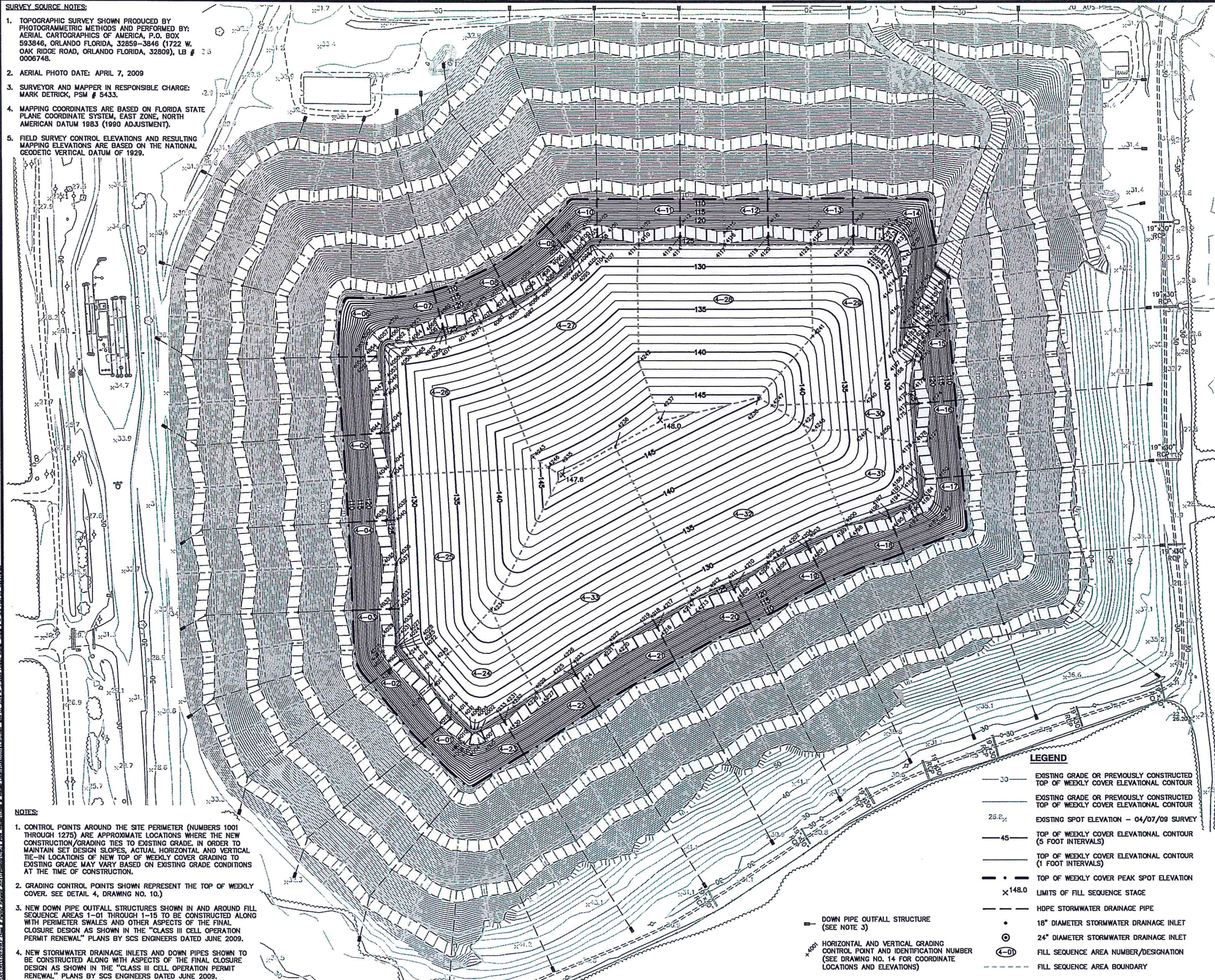


# **SURVEY SOURCE NOTES:**

1. TOPOGRAPHIC SURVEY SHOWN PRODUCED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY: AERIAL CARTOGRAPHICS OF AMERICA, P.O. BOX 593846, ORLANDO FLORIDA, 32859-3846 (1722 W. OAK RIDGE ROAD, ORLANDO FLORIDA, 32809), LB # 2-3 0006748.
2. AERIAL PHOTO DATE: APRIL 7, 2009
3. SURVEYOR AND MAPPER IN RESPONSIBLE CHARGE: MARK DETRICK, PSM # 5433.
4. MAPPING COORDINATES ARE BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM 1983 (1990 ADJUSTMENT).
5. FIELD SURVEY CONTROL ELEVATIONS AND RESULTING MAPPING ELEVATIONS ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929.

## **NOTES:**

1. CONTROL POINTS AROUND THE SITE PERIMETER (NUMBERS 1001 THROUGH 1275) ARE APPROXIMATE LOCATIONS WHERE THE NEW CONSTRUCTION/GRADING TIES TO EXISTING GRADE. IN ORDER TO MAINTAIN SET DESIGN SLOPES, ACTUAL HORIZONTAL AND VERTICAL TIE-INS IN LOCATIONS OF NEW TOP OF WEEKLY COVER GRADING TO EXISTING GRADE MAY VARY BASED ON EXISTING GRADE CONDITIONS AT THE TIME OF CONSTRUCTION.
2. GRADING CONTROL POINTS SHOWN REPRESENT THE TOP OF WEEKLY COVER. SEE DETAIL 4, DRAWING NO. 10.)
3. NEW DOWN PIPE OUTFALL STRUCTURES SHOWN IN AND AROUND FILL SEQUENCE AREAS 1-01 THROUGH 1-15 TO BE CONSTRUCTED ALONG WITH PERIMETER SWALES AND OTHER ASPECTS OF THE FINAL CLOSURE DESIGN AS SHOWN IN THE "CLASS III CELL OPERATION PERMIT RENEWAL" PLANS BY SCS ENGINEERS DATED JUNE 2009.
4. NEW STORMWATER DRAINAGE INLETS AND DOWN PIPES SHOWN TO BE CONSTRUCTED ALONG WITH ASPECTS OF THE FINAL CLOSURE DESIGN AS SHOWN IN THE "CLASS III CELL OPERATION PERMIT RENEWAL" PLANS BY SCS ENGINEERS DATED JUNE 2009.



STAGE 4 FILL SEQUENCE TABLE	
AREA NUMBER	FILL PRIORITY
4-01	14
4-02	15
4-03	16
4-04	17
4-05	18
4-06	19
4-07	20
4-08	21
4-09	22
4-10	23
4-11	01
4-12	02
4-13	03
4-14	04
4-15	05
4-16	06
4-17	07
4-18	08
4-19	09
4-20	10
4-21	11
4-22	12
4-23	13
4-24	29
4-25	30
4-26	31
4-27	32
4-28	33
4-29	24
4-30	25
4-31	26
4-32	27
4-33	28

## **LEGEND**

- 30 — EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 25.8 — EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 45 — EXISTING SPOT ELEVATION - 04/07/09 SURVEY
- 45 — TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (5 FOOT INTERVALS)
- 45 — TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (1 FOOT INTERVALS)
- • — TOP OF WEEKLY COVER PEAK SPOT ELEVATION
- x148.0 LIMITS OF FILL SEQUENCE STAGE
- — HOPE STORMWATER DRAINAGE PIPE
- 18" DIAMETER STORMWATER DRAINAGE INLET
- 24" DIAMETER STORMWATER DRAINAGE INLET
- ④-01 FILL SEQUENCE AREA NUMBER/DESIGNATION
- - - FILL SEQUENCE AREA BOUNDARY

- DOWN PIPE OUTFALL STRUCTURE (SEE NOTE 3)
- x1001 HORIZONTAL AND VERTICAL GRADING CONTROL POINT AND IDENTIFICATION NUMBER (SEE DRAWING NO. 14 FOR COORDINATE LOCATIONS AND ELEVATIONS)

<p><b>SCS ENGINEERS</b> STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 401 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610 TEL: 813-888-0000 FAX: 813-888-0001 FLORIDA CERTIFICATE OF REGISTRATION NO. 00004822 DATE: 08/08/07 BY: SDA APP: BJC CEN</p>		<p><b>VOLUSIA COUNTY</b> DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA</p>		<p><b>PROJECT TITLE</b> TOMOKA FARMS ROAD LANDFILL CLASS III CELL FILL SEQUENCE PLAN</p>	
<p><b>DRAWING TITLE</b> TOP OF WEEKLY COVER STAGE 4 - SITE PLAN</p>	<p><b>DATE</b> SEPTEMBER 2009</p>	<p><b>SCALE</b> AS SHOWN</p>	<p><b>DRAWING NO.</b> 6 of 14</p>	<p><b>BY</b></p>	<p><b>DESCRIPTION</b></p>

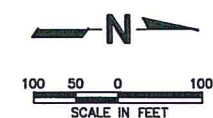
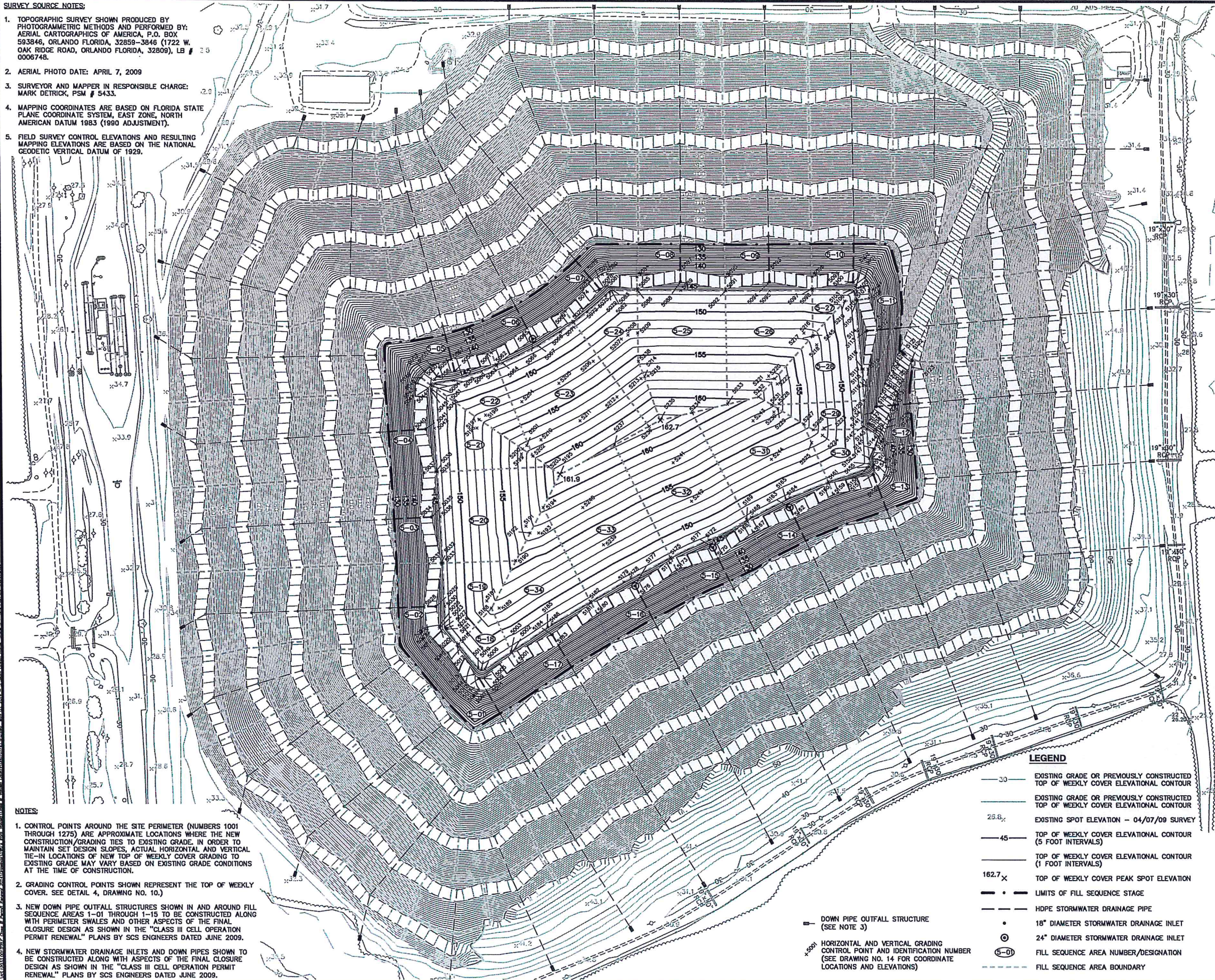


SURVEY SOURCE NOTES:

1. TOPOGRAPHIC SURVEY SHOWN PRODUCED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY: AERIAL CARTOGRAPHICS OF AMERICA, P.O. BOX 593846, ORLANDO FLORIDA, 32859-3846 (1722 W. OAK RIDGE ROAD, ORLANDO FLORIDA, 32809), LB # 35 0006748.
2. AERIAL PHOTO DATE: APRIL 7, 2009
3. SURVEYOR AND MAPPER IN RESPONSIBLE CHARGE: MARK DETRICK, PSM # 5433.
4. MAPPING COORDINATES ARE BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM 1983 (1980 ADJUSTMENT).
5. FIELD SURVEY CONTROL ELEVATIONS AND RESULTING MAPPING ELEVATIONS ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929.

NOTES:

1. CONTROL POINTS AROUND THE SITE PERIMETER (NUMBERS 1001 THROUGH 1275) ARE APPROXIMATE LOCATIONS WHERE THE NEW CONSTRUCTION/GRADING TIES TO EXISTING GRADE. IN ORDER TO MAINTAIN SET DESIGN SLOPES, ACTUAL HORIZONTAL AND VERTICAL TIE-IN LOCATIONS OF NEW TOP OF WEEKLY COVER GRADING TO EXISTING GRADE MAY VARY BASED ON EXISTING GRADE CONDITIONS AT THE TIME OF CONSTRUCTION.
2. GRADING CONTROL POINTS SHOWN REPRESENT THE TOP OF WEEKLY COVER. SEE DETAIL 4, DRAWING NO. 10.)
3. NEW DOWN PIPE OUTFALL STRUCTURES SHOWN IN AND AROUND FILL SEQUENCE AREAS 1-01 THROUGH 1-15 TO BE CONSTRUCTED ALONG WITH PERIMETER SWALES AND OTHER ASPECTS OF THE FINAL CLOSURE DESIGN AS SHOWN IN THE "CLASS III CELL OPERATION PERMIT RENEWAL" PLANS BY SCS ENGINEERS DATED JUNE 2009.
4. NEW STORMWATER DRAINAGE INLETS AND DOWN PIPES SHOWN TO BE CONSTRUCTED ALONG WITH ASPECTS OF THE FINAL CLOSURE DESIGN AS SHOWN IN THE "CLASS III CELL OPERATION PERMIT RENEWAL" PLANS BY SCS ENGINEERS DATED JUNE 2009.



STAGE 5 FILL SEQUENCE TABLE	
AREA NUMBER	FILL PRIORITY
5-01	12
5-02	13
5-03	14
5-04	15
5-05	16
5-06	17
5-07	01
5-08	02
5-09	03
5-10	04
5-11	05
5-12	06
5-13	07
5-14	08
5-15	09
5-16	10
5-17	11
5-18	28
5-19	29
5-20	30
5-21	31
5-22	32
5-23	33
5-24	34
5-25	18
5-26	19
5-27	20
5-28	21
5-29	22
5-30	23
5-31	24
5-32	25
5-33	26
5-34	27

LEGEND

- 30 EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 25.6 EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 25.6 EXISTING SPOT ELEVATION - 04/07/09 SURVEY
- 45 TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (5 FOOT INTERVALS)
- 162.7 TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (1 FOOT INTERVALS)
- 162.7 TOP OF WEEKLY COVER PEAK SPOT ELEVATION
- LIMITS OF FILL SEQUENCE STAGE
- HOPE STORMWATER DRAINAGE PIPE
- 18" DIAMETER STORMWATER DRAINAGE INLET
- 24" DIAMETER STORMWATER DRAINAGE INLET
- 5-01 FILL SEQUENCE AREA NUMBER/DESIGNATION
- FILL SEQUENCE AREA BOUNDARY

- DOWN PIPE OUTFALL STRUCTURE (SEE NOTE 3)
- HORIZONTAL AND VERTICAL GRADING CONTROL POINT AND IDENTIFICATION NUMBER (SEE DRAWING NO. 14 FOR COORDINATE LOCATIONS AND ELEVATIONS)

BY

DESCRIPTION

DATE

REV

DRAWING TITLE

PROJECT TITLE

CLIENT

CAAD FILE

DATE

SCALE

DRAWING NO.

TOP OF WEEKLY COVER  
STAGE 5 - SITE PLAN

TOMOKA FARMS ROAD LANDFILL  
CLASS III CELL  
FILL SEQUENCE PLAN

VOLUSIA COUNTY  
DEPARTMENT OF PUBLIC WORKS  
SOLID WASTE DIVISION  
DELAND, FLORIDA

SCS ENGINEERS  
STEVEN S. SCHMIDT  
CONSULTING ENGINEERS  
1111 N. W. 10th Ave., Suite 100, Ft. Lauderdale, FL 33304  
TEL: 954-575-1111 FAX: 954-575-1112  
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004882  
09/20/2007/07  
CHK: BT/CEH  
APP: BT/CEH

080707FILLSEQ  
SEPTEMBER 2009  
AS SHOWN

7 of 14

CHARLES E. HILTON, P.E.  
LICENSE NO. 48916

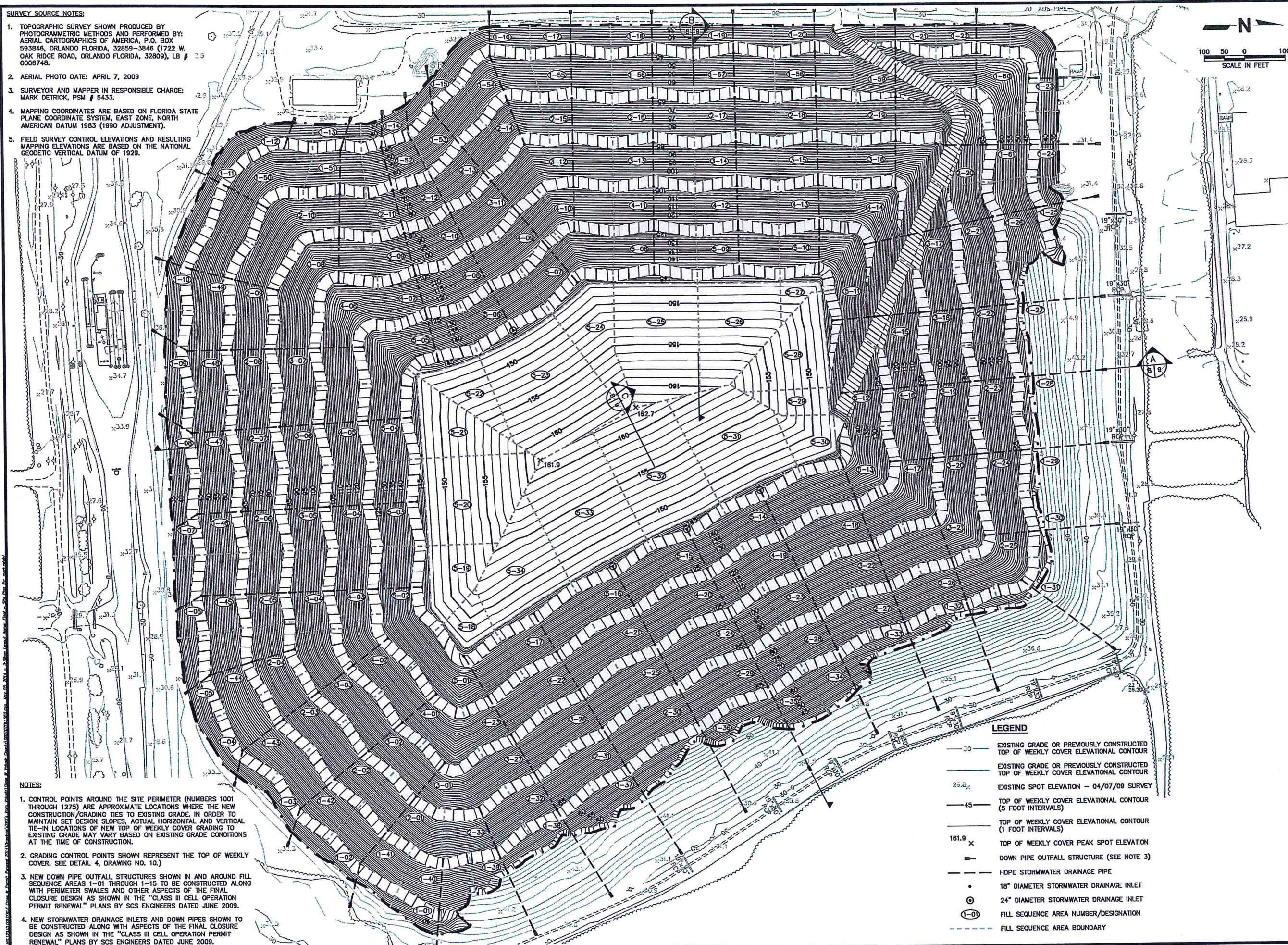


# **SURVEY SOURCE NOTES:**

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2. AERIAL PHOTO DATE: APRIL 7, 2009
3. SURVEYOR AND MAPPER IN RESPONSIBLE CHARGE: MARK DETRICK, PSM # 5433.
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## **NOTES:**

1. CONTROL POINTS AROUND THE SITE PERIMETER (NUMBERS 1001 THROUGH 1275) ARE APPROXIMATE LOCATIONS WHERE THE NEW CONSTRUCTION/GRADING TIES TO EXISTING GRADE. IN ORDER TO MAINTAIN SET DESIGN SLOPES, ACTUAL HORIZONTAL AND VERTICAL TIE-IN LOCATIONS OF NEW TOP OF WEEKLY COVER GRADING TO EXISTING GRADE MAY VARY BASED ON EXISTING GRADE CONDITIONS AT THE TIME OF CONSTRUCTION.
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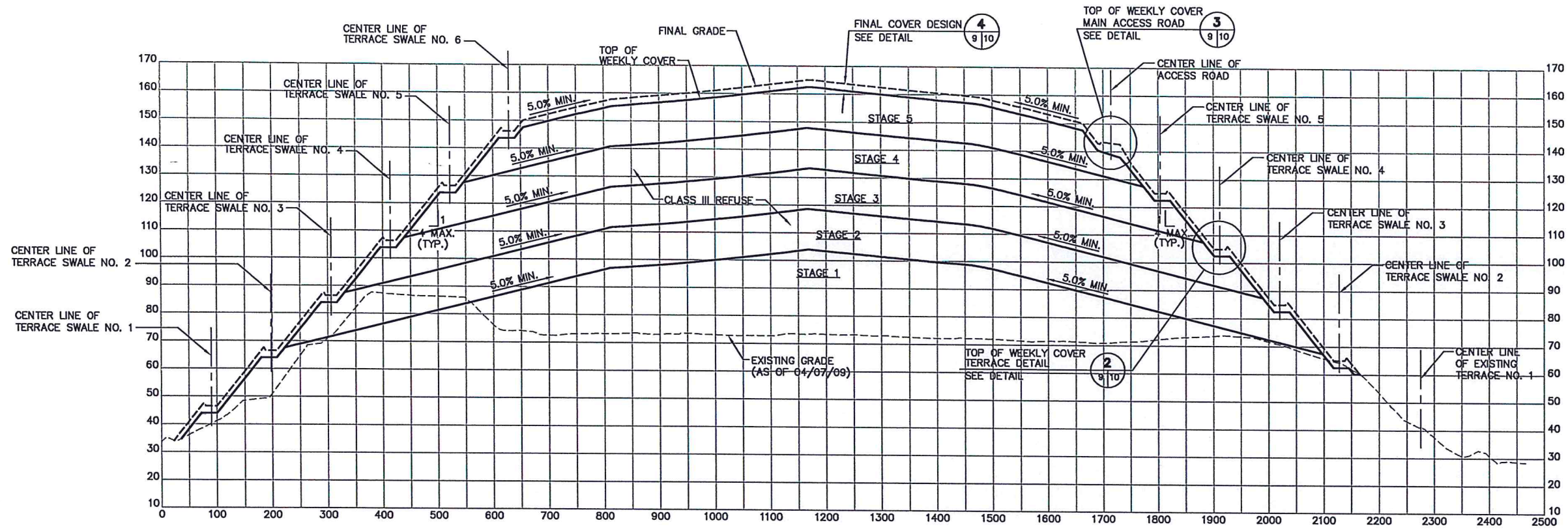


## **LEGEND**

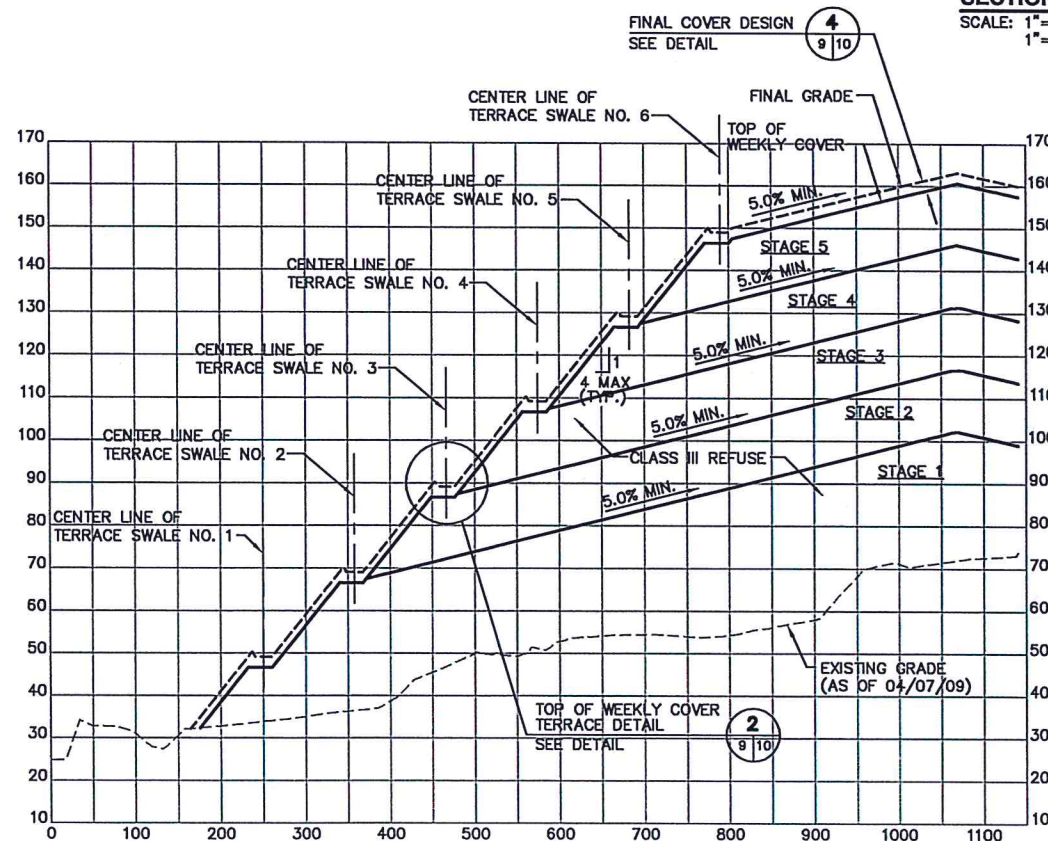
- 30 EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 25.0 EXISTING GRADE OR PREVIOUSLY CONSTRUCTED TOP OF WEEKLY COVER ELEVATIONAL CONTOUR
- 25.0 EXISTING SPOT ELEVATION - 04/07/09 SURVEY
- 45 TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (5 FOOT INTERVALS)
- TOP OF WEEKLY COVER ELEVATIONAL CONTOUR (1 FOOT INTERVALS)
- 161.9 TOP OF WEEKLY COVER PEAK SPOT ELEVATION
- DOWN PIPE OUTFALL STRUCTURE (SEE NOTE 3)
- HOPE STORMWATER DRAINAGE PIPE
- 18" DIAMETER STORMWATER DRAINAGE INLET
- 24" DIAMETER STORMWATER DRAINAGE INLET
- 1-01 FILL SEQUENCE AREA NUMBER/DESIGNATION
- FILL SEQUENCE AREA BOUNDARY

<div>SCS ENGINEERS STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 411 PARK CUS BLVD, SUITE 100, TAMPA, FL 33610 813 641-0000 FAX 813 624-4787 FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004862 PNSA NO. 09208007.07 DSC BR: CCH</div> <div>CADD FILE: 080707FILLSEQ</div> <div>DATE: SEPTEMBER 2009</div> <div>SCALE: AS SHOWN</div> <div>DRAWING NO. 8 of 14</div>										CLIENT VOLUSIA COUNTY DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA		DRAWING TITLE TOP OF WEEKLY COVER FINAL - SITE PLAN PROJECT TITLE TOMOKA FARMS ROAD LANDFILL CLASS III CELL FILL SEQUENCE PLAN		REV △ 
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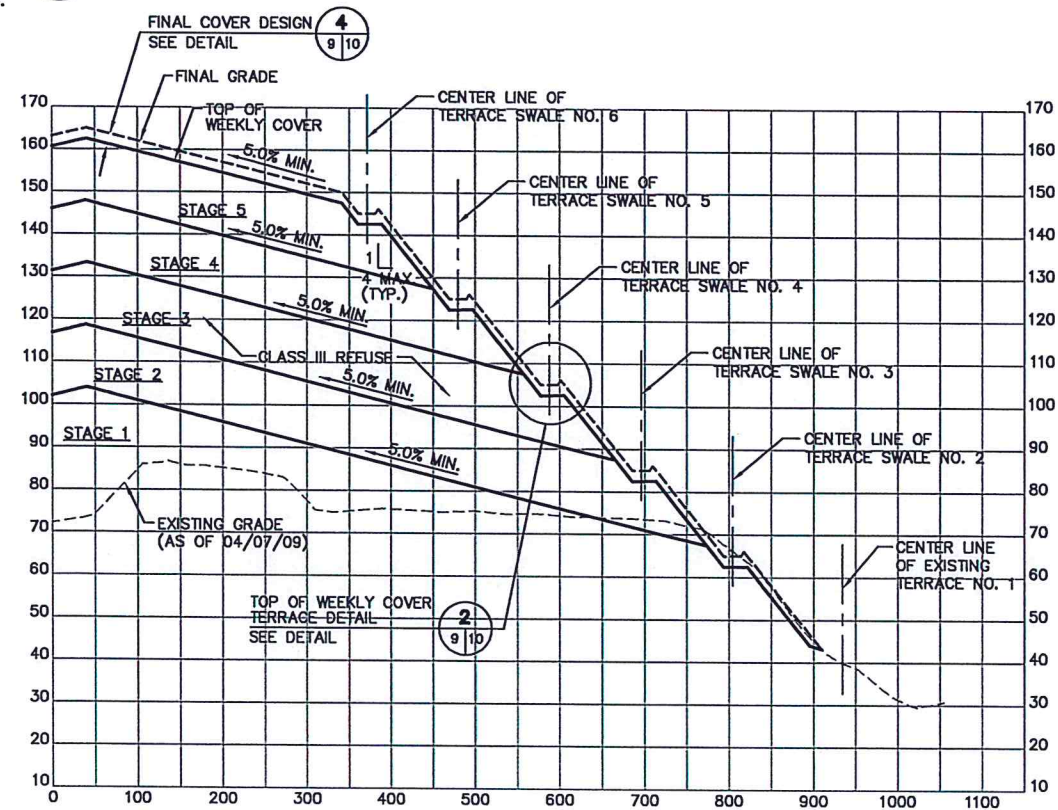




**SECTION A**  
SCALE: 1"=100' HORIZ.  
1"=20' VERT.



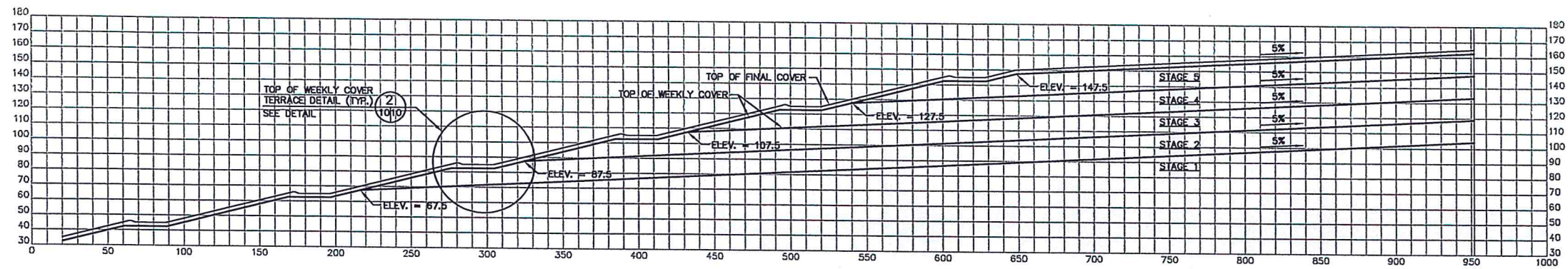
**SECTION B**  
SCALE: 1"=100' HORIZ.  
1"=20' VERT.



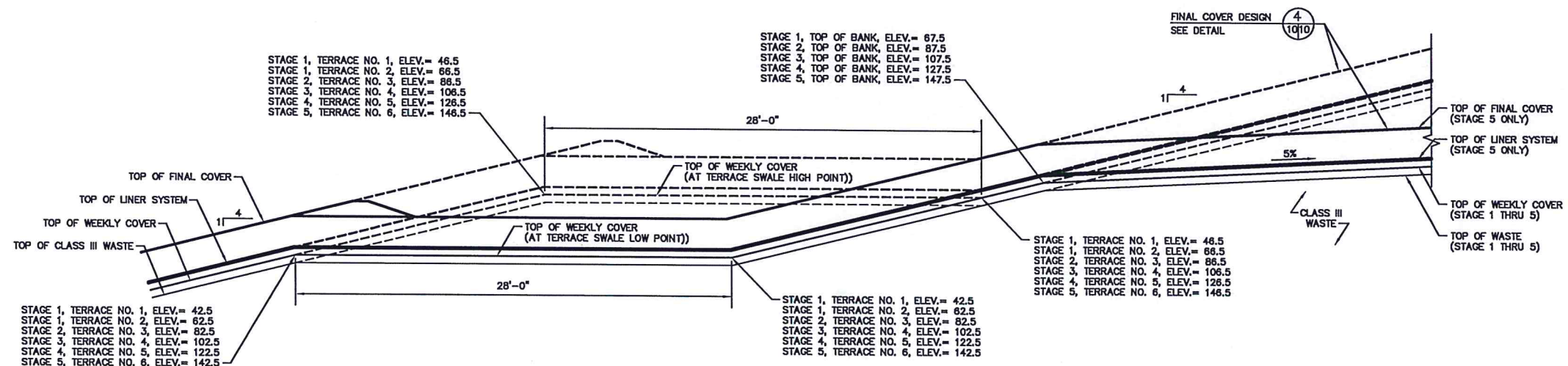
**SECTION C**  
SCALE: 1"=100' HORIZ.  
1"=20' VERT.

DRAWING TITLE	SECTIONS	BY	DESCRIPTION	DATE	REV
	PROJECT TITLE				
	TOMOKA FARMS ROAD LANDFILL				
	CLASS III CELL				
CLIENT	FILL SEQUENCE PLAN				
	VOLUSIA COUNTY				
	DEPARTMENT OF PUBLIC WORKS				
	SOLID WASTE DIVISION				
CLIENT	SCS ENGINEERS				
	STEARN, CONRAD AND SCHMIDT				
	4011 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610				
	813 841-0080 FAX 813 843-4757				
CLIENT	FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004682				
	DATE: 09/07/07				
	APP: BY: CSH				
	CHK: BY: CSH				
CLIENT	CAD FILE: 080707FS-SECTIONS				
	DATE: SEPTEMBER 2009				
	SCALE: AS SHOWN				
	DRAWING NO. 9 of 14				
CHARLES E. HILTON, P.E.					
LICENSE NO. 48916					

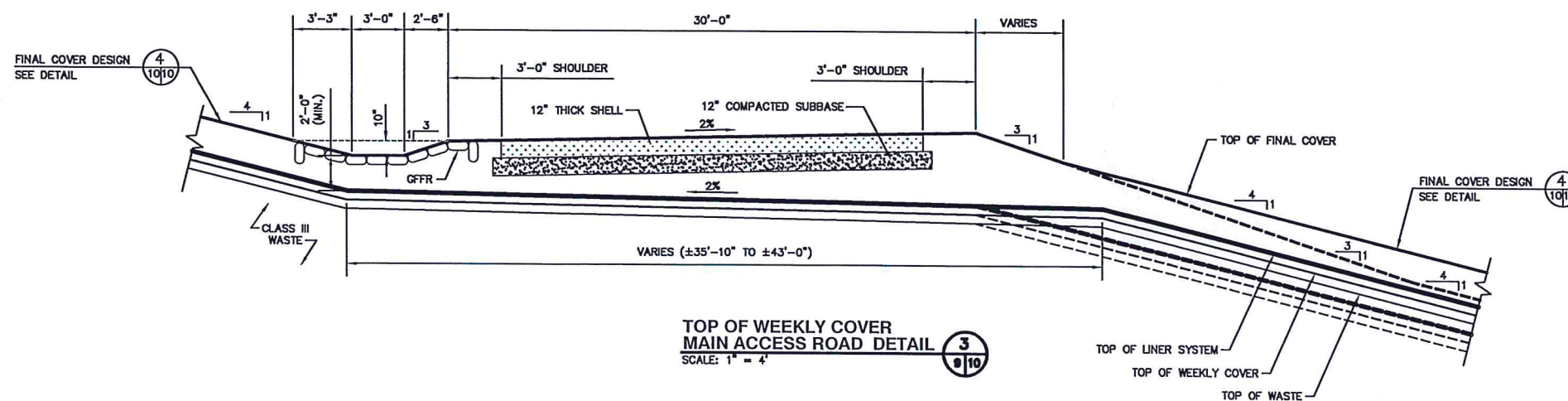




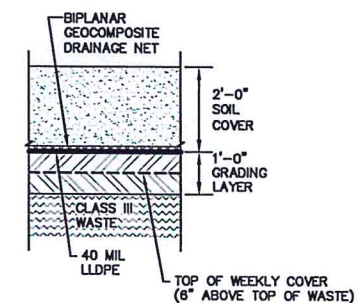
TOP OF WEEKLY COVER  
FILL SEQUENCE STAGES DETAIL  
SCALE: 1" = 40'



TOP OF WEEKLY COVER  
TERRACE DETAIL  
SCALE: 1" = 4'



TOP OF WEEKLY COVER  
MAIN ACCESS ROAD DETAIL  
SCALE: 1" = 4'



FINAL COVER DESIGN DETAIL  
SCALE: 1" = 2'

SCS ENGINEERS STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 4011 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610 813 821-0000 FAX 813 822-0757 FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004882	CAO FILE: 080707FILLSEQ		DATE: SEPTEMBER 2009		SCALE: AS SHOWN		DRAWING NO. 10 of 14	
	PROJ. NO. 08208007.07	ISS. BY: CSH	CHK. BY: CSH	APP. BY: CSH				
	OWN. BY: SDA	DATE: RYS. BY: RJD						
CLIENT VOLUSIA COUNTY DEPARTMENT OF PUBLIC WORKS SOLID WASTE DIVISION DELAND, FLORIDA	DRAWING TITLE PROJECT TITLE TOMOKA FARMS ROAD LANDFILL CLASS III CELL FILL SEQUENCE PLAN		REV DATE		DESCRIPTION		BY	
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STAGE 1 -- TOWC GRADING CONTROL TABLE			
POINT NUMBER	NORTHING	EASTING	ELEVATION
1001	1743748.19	628460.19	50.48
1002	1743739.92	628489.72	44.75
1003	1743718.09	628508.03	42.58
1004	1743746.51	628540.62	38.55
1005	1743726.13	628553.09	36.98
1006	1743672.47	628561.31	35.21
1007	1743658.98	628562.91	34.73
1008	1743628.12	628548.90	34.81
1009	1743608.78	628536.98	35.85
1010	1743596.57	628528.31	36.81
1011	1743573.19	628509.19	38.73
1012	1743550.54	628495.39	39.78
1013	1743525.38	628472.97	40.90
1014	1743499.11	628450.60	41.11
1015	1743473.43	628437.06	39.68
1016	1743447.86	628425.51	37.92
1017	1743428.26	628402.76	38.43
1018	1743419.95	628394.99	38.81
1019	1743406.55	628385.22	38.34
1020	1743390.08	628379.17	36.68
1021	1743367.86	628363.88	35.65
1022	1743350.26	628349.02	35.31
1023	1743346.02	628343.38	35.73
1024	1743314.09	628313.80	35.69
1025	1743302.50	628300.99	35.77
1026	1743275.08	628253.15	37.68
1027	1743268.05	628235.30	39.33
1028	1743251.92	628212.25	39.81
1029	1743241.93	628210.80	38.73
1030	1743237.92	628207.68	38.56
1031	1743196.17	628185.85	35.85
1032	1743164.58	628160.85	35.43
1033	1743148.40	628152.68	34.36
1034	1743143.11	628138.46	35.24
1035	1743127.71	628112.58	35.58
1036	1743114.65	628089.65	35.87
1037	1743083.24	628048.16	34.23
1038	1743070.25	628001.29	33.96
1039	1743058.57	627959.55	33.68
1040	1743051.34	627940.08	33.21
1041	1743051.79	627931.37	33.53
1042	1743044.05	627866.42	33.89
1043	1743037.46	627837.35	33.41
1044	1743038.16	627826.79	33.56
1045	1743036.71	627788.27	33.84
1046	1743030.94	627736.53	32.90
1047	1743031.68	627686.85	33.40
1048	1743028.90	627636.84	33.31
1049	1743029.54	627587.71	33.92
1050	1743024.67	627537.71	33.44
1051	1743020.95	627481.28	33.13
1052	1743021.65	627438.04	34.02
1053	1743022.22	627399.04	34.71
1054	1743017.70	627338.41	34.61
1055	1743012.83	627239.74	35.07
1056	1743015.14	627210.69	35.69
1057	1743014.04	627174.32	35.68
1058	1743011.90	627135.00	35.50
1059	1743015.18	627085.04	36.07
1060	1743015.75	627033.62	36.15
1061	1743018.78	627012.73	36.39
1062	1743016.91	626993.11	35.56
1063	1743017.56	626961.55	35.18
1064	1743020.62	626941.71	35.02
1065	1743018.12	626935.71	34.17
1066	1743022.30	626917.12	34.07
1067	1743037.32	626892.89	35.56
1068	1743048.00	626862.39	35.59
1069	1743054.56	626851.71	35.95
1070	1743069.97	626808.33	35.38
1071	1743079.08	626799.80	36.20
1072	1743087.63	626784.72	36.33
1073	1743097.13	626756.25	34.98
1074	1743100.61	626745.82	34.68
1075	1743107.74	626736.78	34.92
1076	1743116.06	626720.57	35.00
1077	1743122.76	626698.20	33.87
1078	1743133.24	626681.02	34.02
1079	1743145.25	626655.43	32.98
1080	1743154.40	626648.99	33.92
1081	1743170.23	626623.91	33.51
1082	1743167.73	626611.34	33.79
1083	1743197.48	626601.12	32.77
1084	1743216.11	626598.79	33.76
1085	1743233.53	626590.90	33.50
1086	1743238.65	626589.78	33.77
1087	1743254.24	626581.70	33.27
1088	1743263.57	626580.04	33.42
1089	1743287.56	626579.82	33.96
1090	1743293.55	626579.32	33.87
1091	1743302.59	626578.87	33.82
1092	1743310.29	626576.57	33.35
1093	1743334.83	626577.66	33.33
1094	1743372.09	626579.90	33.84
1095	1743391.81	626581.16	33.82
1096	1743449.68	626580.57	33.47
1097	1743489.36	626581.84	33.38
1098	1743499.08	626579.98	33.07
1099	1743513.47	626582.21	33.41
1100	1743532.47	626575.46	33.09

STAGE 1 -- TOWC GRADING CONTROL TABLE			
POINT NUMBER	NORTHING	EASTING	ELEVATION
1101	1743546.45	626569.35	32.97
1102	1743572.29	626556.37	32.47
1103	1743581.81	626549.27	32.40
1104	1743594.69	626543.03	32.67
1105	1743610.27	626533.44	33.10
1106	1743631.03	626513.64	33.86
1107	1743672.74	626468.37	33.99
1108	1743688.92	626454.11	34.26
1109	1743697.30	626443.43	34.57
1110	1743703.34	626435.10	34.23
1111	1743709.99	626423.92	33.73
1112	1743716.19	626412.65	33.26
1113	1743725.13	626400.61	32.81
1114	1743734.82	626391.58	32.89
1115	1743748.47	626378.33	32.52
1116	1743768.95	626363.36	32.26
1117	1743784.56	626355.63	32.08
1118	1743803.15	626348.72	32.02
1119	1743838.60	626345.56	32.15
1120	1743887.25	626344.59	31.97
1121	1743918.12	626342.49	31.75
1122	1743940.25	626342.00	31.49
1123	1743990.07	626342.86	31.81
1124	1744018.28	626342.89	32.00
1125	1744069.59	626343.16	32.00
1126	1744118.37	626342.20	32.02
1127	1744176.03	626343.23	32.23
1128	1744218.67	626343.23	32.21
1129	1744271.93	626344.75	32.39
1130	1744318.41	626344.16	32.38
1131	1744376.89	626346.76	32.70
1132	1744417.97	626344.90	32.69
1133	1744475.98	626345.24	32.76
1134	1744517.85	626344.99	32.97
1135	1744568.67	626345.52	33.09
1136	1744618.26	626345.21	33.30
1137	1744653.47	626346.51	33.73
1138	1744682.45	626346.58	33.66
1139	1744691.26	626346.84	33.39
1140	1744719.12	626347.09	33.18
1141	1744742.77	626347.30	33.43
1142	1744778.69	626347.57	33.35
1143	1744819.62	626347.49	33.29
1144	1744878.81	626346.68	32.66
1145	1744919.80	626346.16	32.50
1146	1744993.24	626345.69	31.83
1147	1745011.92	626349.05	32.59
1148	1745019.72	626348.30	32.49
1149	1745056.16	626346.54	31.74
1150	1745104.34	626346.46	31.67
1151	1745128.41	626348.99	31.73
1152	1745149.16	626351.23	31.71
1153	1745166.93	626357.44	31.54
1154	1745181.91	626365.36	31.37
1155	1745197.47	626379.69	31.45
1156	1745212.33	626404.20	31.39
1157	1745215.57	626422.30	31.70
1158	1745214.96	626433.63	31.00
1159	1745216.97	626477.20	32.13
1160	1745216.86	626507.96	32.00
1161	1745219.29	626537.78	31.37
1162	1745218.47	626558.52	31.75
1163	1745217.19	626567.56	31.88
1164	1745216.19	626603.21	32.13
1165	1745217.73	626639.16	31.88
1166	1745216.28	626678.48	32.00
1167	1745216.02	626716.98	31.96
1168	1745214.74	626734.75	31.74
1169	1745191.29	626743.69	37.55
1170	1745219.59	626761.35	32.07
1171	1745223.71	626769.56	32.03
1172	1745225.75	626779.02	32.11
1173	1745222.65	626796.61	34.03
1174	1745216.32	626819.52	37.87
1175	1745203.08	626845.53	43.72
1176	1745206.11	626860.31	43.54
1177	1745208.27	626860.19	44.00
1178	1745217.75	626886.05	44.08
1179	1745229.22	626906.49	44.00
1180	1745223.66	626933.26	44.38
1181	1745221.37	626934.52	44.48
1182	1745194.46	626924.83	46.13
1183	1745190.22	626920.28	46.68
1184	1745169.58	626904.38	49.64
1185	1745157.11	626918.33	52.11
1186	1745147.82	626928.12	54.03
1187	1745136.76	626932.55	56.44
1188	1745127.16	626955.61	59.49
1189	1745121.11	626992.10	61.53
1190	1745124.19	627022.03	61.36
1191	1745120.72	627066.43	63.11
1192	1745126.00	627098.10	62.23
1193	1745134.19	627111.46	60.66
1194	1745135.43	627139.51	60.91
1195	1745138.40	627165.35	60.68
1196	1745144.06	627209.04	60.15
1197	1745144.75	627245.10	60.69
1198	1745148.70	627290.93	60.63
1199	1745154.52	627338.62	60.13
1200	1745154.76	627352.64	60.35

STAGE 1 -- TOWC GRADING CONTROL TABLE			
POINT NUMBER	NORTHING	EASTING	ELEVATION
1201	1745150.57	627399.11	62.32
1202	1745154.76	627446.95	62.23
1203	1745155.03	627477.00	62.77
1204	1745151.98	627489.30	63.77
1205	1745147.34	627491.68	65.02
1206	1745152.16	627529.42	64.53
1207	1745154.31	627531.25	64.03
1208	1745159.34	627546.83	63.09
1209	1745166.93	627580.40	61.87
1210	1745177.49	627619.68	60.02
1211	1745181.04	627639.46	59.53
1212	1745181.97	627657.27	59.49
1213	1745176.57	627673.77	60.43
1214	1745168.04	627690.56	61.44
1215	1745153.94	627714.05	61.96
1216	1745125.55	627751.77	60.07
1217	1745114.41	627788.44	57.66
1218	1745091.16	627775.05	57.97
1219	1745072.49	627775.58	59.20
1220	1745022.81	627784.00	60.79
1221	1744962.02	627792.36	62.90
1222	1744948.48	627796.20	63.45
1223	1744923.32	627824.20	58.99
1224	1744886.62	627840.18	58.31
1225	1744836.56	627860.82	58.06
1226	1744797.35	627874.32	58.36
1227	1744766.39	627884.09	58.58
1228	1744739.10	627895.27	58.80
1229	1744728.74	627909.28	58.99
1230	1744736.78	627948.62	45.45
1231	1744705.67	627985.56	45.45
1232	1744678.60	627993.32	42.42
1233	1744652.97	628011.79	41.41
1234	1744627.82	628032.09	39.39
1235	1744602.59	628046.89	38.38
1236	1744547.33	628066.06	41.41
1237	1744533.55	628067.42	42.42
1238	1744501.56	628065.23	48.48
1239	1744480.05	628060.77	49.49
1240	1744452.92	628047.93	55.55
1241	1744415.16	628059.22	56.56
1242	1744398.72	628069.61	52.52
1243	1744382.85	628102.23	51.51
1244	1744355.44	628108.26	53.53
1245	1744333.99	628104.57	56.56
1246	1744318.58	628098.53	58.58
1247	1744297.30	628096.39	62.62
1248	1744278.35	628123.84	63.63
1249	1744266.01	628146.37	55.55
1250	1744247.48	628166.48	53.53
1251	1744222.21	628195.58	50.50
1252	1744194.70	628212.22	50.50
1253	1744169.38	628242.54	46.46
1254	1744156.00	628254.51	47.47
1255	1744140.71	628260.76	48.48
1256	1744117.78	628262.50	48.48
1257	1744109.32	628281.53	45.45
1258	1744101.76	628302.22	47.47
1259	1744068.31	628309.58	44.44
1260	1744046.99	628317.08	49.49
1261	1744020.63	628319.48	45.45
1262	1743998.86	628325.59	53.53
1263	1743973.29	628322.81	51.51
1264	1743956.51	628348.98	51.51
1265	1743933.68	628361.44	54.54
1266	1743904.21	628370.99	51.51
1267	1743882.21	628384.63	51.51
1268	1743868.20	628397.06	51.51
1269	1743854.98	628403.50	51.51
1270	1743849.35	628409.69	51.51
1271	1743824.72	628423.98	51.51
1272	1743818.33	628446.84	47.47
1273	1743801.50	628458.81	44.44
1274	1743777.92	628466.54	47.47
1275	1743755.48	628459.78	51.51
1276	1743013.48	627274.87	33.33
1277	1745224.96	626907.92	47.47
1278	1745219.86	626929.25	47.47
1279	1745196.50	626920.92	47.47
1280	1745174.03	626901.57	47.47
1281	1745168.37	626900.89	47.47
1282	1745155.15	626918.48	51.51
1283	1745146.05	626925.83	51.51
1284	1745135.48	626929.45	51.51
1285	1745126.36	626929.48	51.51
1286	1745116.15	626961.70	51.51
1287	1745110.48	626991.20	61.61
1288	1745113.64	627021.71	61.61
1289	1745110.22	627067.09	61.61
1290	1745123.99	627114.80	61.61
1291	1745127.84	627166.89	61.61
1292	1745133.53	627209.49	61.61
1293	1745134.08	627243.75	61.61
1294	1745138.21	627291.03	61.61
1295	1745143.82	627337.67	61.61
1296	1745144.11	627352.17	61.61
1297	1745140.08	627398.44	61.61
1298	1745144.14	627447.55	61.61
1299	1745144.31	627475.54	61.61
1300	1745140.55	627478.78	61.61



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STAGE 1 - TOWC GRADING CONTROL TABLE			
POINT NUMBER	NORTHING	EASTING	ELEVATION
1601	1744019.10	626520.82	62.50
1602	1744018.82	626540.81	67.50
1603	1744118.51	626400.91	46.70
1604	1744118.58	626428.77	46.70
1605	1744118.53	626509.06	66.70
1606	1744118.62	626536.94	66.70
1607	1744118.59	626540.33	67.50
1608	1744218.56	626384.38	42.50
1609	1744218.49	626412.26	42.50
1610	1744217.87	626492.32	62.50
1611	1744217.92	626520.20	62.50
1612	1744217.53	626540.19	67.50
1613	1744318.48	626401.43	46.70
1614	1744318.52	626429.33	46.70
1615	1744318.97	626509.04	66.60
1616	1744319.00	626536.92	66.60
1617	1744318.93	626540.57	67.50
1618	1744418.27	626384.14	42.50
1619	1744418.48	626412.01	42.50
1620	1744419.44	626492.15	62.50
1621	1744419.60	626520.00	62.50
1622	1744419.30	626540.00	67.50
1623	1744518.42	626399.92	46.70
1624	1744518.72	626427.81	46.70
1625	1744519.54	626507.80	66.70
1626	1744519.83	626535.68	66.70
1627	1744519.78	626538.96	67.50
1628	1744618.38	626382.02	42.50
1629	1744618.47	626409.94	42.50
1630	1744619.45	626490.02	62.50
1631	1744619.59	626517.93	62.50
1632	1744619.16	626537.93	67.50
1633	1744645.34	626386.64	43.62
1634	1744640.67	626413.76	43.44
1635	1744671.91	626405.38	44.67
1636	1744683.07	626421.07	45.22
1637	1744712.89	626425.89	46.40
1638	1744713.28	626430.24	47.50
1639	1744719.00	626508.24	66.32
1640	1744717.87	626534.36	66.50
1641	1744717.93	626538.36	67.50
1642	1744817.12	626510.15	62.54
1643	1744816.41	626520.19	62.50
1644	1744815.98	626540.18	67.50
1645	1744889.74	626533.58	65.53
1646	1744892.02	626539.02	66.86
1647	1744893.13	626541.67	67.50
1648	1744920.26	626543.45	67.50
1649	1744881.47	626379.95	37.09
1650	1744704.79	626403.41	41.39
1651	1744729.43	626422.95	44.08
1652	1744752.97	626436.47	46.07
1653	1744786.92	626460.31	50.40
1654	1744840.88	626484.14	54.73
1655	1744884.83	626507.98	59.07
1656	1744917.52	626525.71	62.31
1657	1744933.14	626537.21	64.86
1658	1744944.67	626552.07	67.50
1659	1744723.71	626361.60	36.71
1660	1744734.60	626379.47	41.56
1661	1744740.08	626385.46	42.29
1662	1744749.68	626393.41	43.34
1663	1744770.05	626404.99	45.34
1664	1744814.00	626428.83	49.69
1665	1744857.95	626452.66	54.02
1666	1744901.90	626476.50	58.35
1667	1744934.81	626494.35	61.59
1668	1744941.42	626498.27	62.25
1669	1744955.15	626508.75	63.76
1670	1744964.02	626517.79	64.91
1671	1744972.79	626529.44	66.27
1672	1744979.32	626541.03	67.50
1673	1744746.43	626382.33	42.37
1674	1744769.98	626391.83	44.55
1675	1744770.99	626398.15	45.00
1676	1744871.21	626422.06	44.73
1677	1744946.47	626493.62	62.25
1678	1744973.62	626503.07	64.20
1679	1744968.36	626511.06	64.50
1680	1744991.61	626528.47	63.50
1681	1744988.90	626543.32	67.50
1682	1744818.95	626384.33	42.50
1683	1744818.28	626402.42	42.51
1684	1744918.67	626402.94	46.70
1685	1744918.12	626430.81	46.70
1686	1745018.94	626388.32	42.50
1687	1744995.04	626500.30	42.50
1688	1745030.32	626505.83	62.50
1689	1745015.92	626529.87	62.50
1690	1745004.49	626553.83	67.50
1692	1745101.47	626403.68	46.00
1693	1745100.17	626431.42	46.00
1694	1745128.81	626401.34	44.82
1695	1745129.02	626428.93	44.82
1696	1745152.62	626409.35	44.50
1697	1745166.40	626430.68	44.21
1698	1745139.52	626436.75	44.22
1699	1745175.51	626477.71	42.50
1700	1745147.58	626478.05	42.50

STAGE 1 - TOWC GRADING CONTROL TABLE			
POINT NUMBER	NORTHING	EASTING	ELEVATION
1701	1745055.78	626541.93	63.47
1702	1745029.70	626550.79	63.49
1703	1745161.88	626558.43	45.90
1704	1745133.99	626558.39	45.90
1705	1745057.68	626582.77	64.80
1706	1745030.04	626584.30	64.80
1707	1745016.47	626585.25	67.50
1708	1745175.24	626639.06	42.50
1709	1745147.35	626639.00	42.50
1710	1745067.26	626638.92	62.50
1711	1745039.36	626638.88	62.50
1712	1745019.36	626638.96	67.50
1713	1745161.70	626718.42	45.70
1714	1745133.97	626717.41	45.70
1715	1745051.50	626730.00	66.25
1716	1745023.84	626728.62	66.25
1717	1745018.83	626728.77	67.50
1718	1745167.02	626752.40	43.94
1719	1745140.50	626759.72	44.01
1720	1745057.59	626768.79	64.23
1721	1745031.93	626778.78	64.18
1722	1745164.34	626783.80	42.50
1723	1745157.90	626793.37	42.50
1724	1745077.57	626805.71	62.50
1725	1745051.06	626815.22	62.50
1726	1745032.18	626821.79	67.50
1727	1745207.87	626889.28	46.67
1728	1745181.18	626896.07	46.76
1729	1745086.48	626873.94	64.95
1730	1745058.97	626875.67	64.95
1731	1745083.62	626922.67	66.90
1732	1745055.66	626924.16	66.90
1733	1745053.29	626924.35	67.50
1734	1745101.54	626922.05	62.50
1735	1745109.63	627028.05	62.50
1736	1745081.84	627030.21	62.50
1737	1745061.94	627032.25	67.50
1738	1745101.74	627118.39	66.25
1739	1745073.94	627120.62	66.25
1740	1745069.05	627120.93	67.50
1741	1745123.93	627206.27	62.50
1742	1745096.14	627208.53	62.50
1743	1745076.20	627210.10	67.50
1744	1745116.22	627296.94	66.25
1745	1745088.42	627299.18	66.25
1746	1745083.38	627299.55	67.50
1747	1745138.24	627384.66	62.50
1748	1745110.44	627386.85	62.50
1749	1745090.53	627388.79	67.50
1750	1745129.23	627486.23	66.75
1751	1745101.42	627488.45	66.75
1752	1745098.54	627488.62	67.50
1753	1745154.30	627585.20	62.50
1754	1745126.53	627587.58	62.50
1755	1745106.55	627588.56	67.50
1756	1745149.30	627650.41	65.00
1757	1745121.69	627650.83	65.00
1758	1745111.59	627651.58	67.50
1759	1745145.58	627695.15	63.53
1760	1745119.38	627686.47	63.48
1761	1745107.41	627673.81	67.50
1762	1745125.30	627727.48	62.50
1763	1745107.07	627706.04	62.50
1764	1745095.58	627689.59	67.50
1765	1745094.84	627740.79	63.32
1766	1745089.11	627713.78	63.32
1767	1745080.19	627698.47	67.50
1768	1745045.11	627746.64	65.50
1769	1745037.25	627719.87	65.50
1770	1745034.92	627712.23	67.50
1771	1744978.09	627779.39	62.50
1772	1744969.59	627752.93	62.50
1773	1744964.18	627733.67	67.50
1774	1744897.25	627793.02	66.00
1775	1744887.79	627768.73	66.00
1776	1744886.08	627760.90	67.50
1777	1744828.69	627834.49	62.50
1778	1744816.98	627808.30	62.50
1779	1744811.21	627789.10	67.50
1780	1744736.89	627850.71	66.25
1781	1744727.66	627824.43	66.25
1782	1744725.99	627819.42	67.50
1783	1744664.31	627898.82	62.50
1784	1744650.67	627872.48	62.50
1785	1744642.01	627854.45	67.50
1786	1744572.29	627929.40	66.50
1787	1744558.62	627905.04	66.50
1788	1744556.57	627901.62	67.50
1789	1744492.08	627988.77	62.50
1790	1744480.03	627963.53	62.50
1791	1744471.42	627945.47	67.50
1792	1744397.07	628014.28	66.50
1793	1744384.69	627989.11	66.50
1794	1744382.83	627985.57	67.50
1795	1744319.72	628073.37	62.50
1796	1744306.25	628049.05	62.50
1797	1744297.16	628031.24	67.50
1798	1744222.09	628110.02	66.70
1799	1744208.14	628065.88	66.70
1800	1744206.58	628063.15	67.50

STAGE 1 - TOWC GRADING CONTROL TABLE			
POINT NUMBER	NORTHING	EASTING	ELEVATION
1801	1744144.57	628176.88	62.50
1802	1744129.14	628153.61	62.51
1803	1744118.32	628136.80	67.50
1804	1744051.79	628217.96	66.70
1805	1744036.57	628194.63	66.70
1806	1744034.68	628191.80	67.50
1807	1743975.13	628285.33	62.50
1808	1743960.66	628261.55	62.50
1809	1743950.68	628244.22	67.50
1810	1743892.88	628319.25	66.25
1811	1743878.05	628295.61	66.24
1812	1743875.15	628291.39	67.50
1813	1743823.69	628379.66	62.50
1814	1743811.71	628353.95	62.50
1815	1743802.79	628336.04	67.50
1816	1743767.11	627719.39	93.02
1817	1743934.10	627405.06	103.50
1818	1744058.74	627334.70	103.50
1819	1744168.70	627273.16	104.00
1820	1744398.80	627220.56	100.58
1821	1744501.73	627284.12	96.08
1822	1744644.23	627228.48	89.10
1823	1744525.47	627078.55	93.72
1824	1744118.26	627138.09	97.27
1825	1743866.78	627360.82	100.37
1826	1743625.08	627895.67	83.70
1827	1743664.25	627823.76	87.50
1828	1743903.63	627385.96	102.23
1829	1744427.60	627239.21	99.78
1830	1744524.01	627297.62	94.98
1831	1744649.61	627295.59	89.10
1832	1744677.63	627314.44	87.78
1833	1744760.45	627325.86	83.70
1834	1744904.83	626650.62	72.13
1835	1744923.69	626641.12	71.37



STAGE 2 - TOWC GRADING CONTROL TABLE			
POINT NUMBER	NORTHING	EASTING	ELEVATION
2001	1743683.88	628284.55	85.90
2002	1743686.69	628257.11	85.90
2003	1743687.42	628250.64	87.50
2004	1743670.11	628284.21	85.38
2005	1743674.72	628256.82	85.38
2006	1743677.28	628249.59	87.50
2007	1743658.78	628280.60	85.13
2008	1743669.83	628255.28	85.13
2009	1743600.21	628247.52	82.50
2010	1743618.52	628226.28	82.50
2011	1743631.48	628211.08	87.50
2012	1743549.18	628182.12	85.80
2013	1743568.50	628182.18	85.80
2014	1743573.26	628157.64	87.50
2015	1743481.98	628133.02	82.50
2016	1743502.61	628114.03	82.50
2017	1743517.11	628100.28	87.50
2018	1743431.59	628050.58	86.50
2019	1743452.81	628032.57	86.50
2020	1743455.98	628030.13	87.50
2021	1743358.31	627987.31	82.50
2022	1743380.41	627970.08	82.50
2023	1743394.77	627956.08	87.50
2024	1743350.19	627931.52	85.00
2025	1743353.82	627917.31	85.00
2026	1743362.53	627912.24	87.50
2027	1743295.44	627869.94	82.50
2028	1743233.09	627864.94	82.50
2029	1743242.87	627862.00	87.50
2030	1743298.64	627799.08	85.25
2031	1743326.40	627797.78	85.25
2032	1743335.47	627797.47	87.50
2033	1743285.21	627727.45	82.50
2034	1743313.04	627728.65	82.50
2035	1743333.04	627728.51	87.50
2036	1743298.42	627624.92	86.70
2037	1743326.30	627623.72	86.70
2038	1743329.52	627623.58	87.50
2039	1743276.52	627524.17	82.50
2040	1743304.35	627522.72	82.50
2041	1743324.37	627522.67	87.50
2042	1743287.80	627421.99	86.70
2043	1743315.64	627420.37	86.70
2044	1743318.81	627420.18	87.50
2045	1743264.87	627321.70	82.50
2046	1743292.49	627319.95	82.50
2047	1743312.48	627319.13	87.50
2048	1743274.66	627225.81	86.50
2049	1743302.44	627224.54	86.50
2050	1743306.44	627224.35	87.50
2051	1743255.78	627130.49	82.50
2052	1743283.78	627130.18	82.50
2053	1743303.75	627130.04	87.50
2054	1743268.41	627058.42	85.50
2055	1743296.12	627059.61	85.50
2056	1743304.19	627057.77	87.50
2057	1743264.80	626978.83	82.50
2058	1743291.59	626987.51	82.50
2059	1743310.73	626993.38	87.50
2060	1743324.70	626886.65	87.00
2061	1743348.30	626901.07	87.00
2062	1743350.14	626902.17	87.50
2063	1743332.87	626869.37	86.23
2064	1743356.44	626883.88	86.23
2065	1743359.89	626884.75	87.50
2066	1743348.27	626854.84	85.82
2067	1743361.24	626878.06	85.92
2068	1743363.05	626881.08	87.50
2069	1743370.08	626844.02	85.24
2070	1743375.92	626870.94	85.24
2071	1743369.35	626878.72	87.50
2072	1743442.91	626832.66	82.50
2073	1743442.69	626860.53	82.50
2074	1743442.84	626880.53	87.50
2075	1743524.13	626846.59	85.90
2076	1743524.97	626874.64	85.90
2077	1743525.78	626880.75	87.50
2078	1743576.92	626831.20	83.20
2079	1743588.25	626856.40	83.20
2080	1743584.10	626821.49	82.50
2081	1743603.07	626848.03	82.50
2082	1743607.00	626867.76	87.50
2083	1743629.85	626816.65	83.81
2084	1743635.84	626843.50	83.85
2085	1743657.93	626810.08	85.25
2086	1743669.43	626835.63	85.25
2087	1743673.26	626843.78	87.50
2088	1743702.88	626775.59	82.50
2089	1743717.22	626799.42	82.50
2090	1743728.32	626816.07	87.50
2091	1743760.73	626749.56	85.30
2092	1743777.73	626771.86	85.30
2093	1743783.03	626778.75	87.50
2094	1743797.85	626702.03	82.50
2095	1743817.92	626721.28	82.50
2096	1743832.22	626735.26	87.50
2097	1743844.79	626665.76	85.00
2098	1743865.14	626684.79	85.00
2099	1743872.52	626691.37	87.50
2100	1743873.93	626621.32	82.79

STAGE 2 - TOWC GRADING CONTROL TABLE			
POINT NUMBER	NORTHING	EASTING	ELEVATION
2101	1743896.47	626637.38	82.79
2102	1743906.14	626653.39	87.50
2103	1743889.84	626606.23	82.50
2104	1743901.53	626632.34	82.50
2105	1743909.88	626650.52	87.50
2106	1743906.57	626603.83	82.77
2107	1743908.43	626631.34	82.78
2108	1743914.69	626649.32	87.50
2109	1743916.98	626604.17	83.02
2110	1743914.66	626631.60	83.03
2111	1743963.22	626611.18	85.00
2112	1743963.63	626639.06	85.00
2113	1743963.67	626649.08	87.50
2114	1744019.34	626600.93	82.50
2115	1744019.70	626628.82	82.50
2116	1744019.95	626648.49	87.50
2117	1744118.49	626616.81	86.50
2118	1744118.58	626644.34	86.50
2119	1744118.57	626648.20	87.50
2120	1744217.44	626600.32	82.50
2121	1744217.35	626628.20	82.50
2122	1744217.29	626648.19	87.50
2123	1744319.14	626617.61	86.75
2124	1744319.17	626645.51	86.75
2125	1744319.18	626648.57	87.50
2126	174420.49	626600.13	82.50
2127	174420.72	626628.00	82.50
2128	174421.41	626647.99	87.50
2129	1744520.72	626615.89	86.70
2130	1744521.02	626643.58	86.70
2131	1744520.79	626648.98	87.50
2132	174420.82	626598.01	82.50
2133	174420.71	626625.92	82.50
2134	174420.96	626645.92	87.50
2135	1744717.88	626614.53	86.50
2136	1744717.54	626642.37	86.50
2137	1744717.51	626648.37	87.50
2138	1744814.87	626600.31	82.50
2139	1744814.39	626628.17	82.50
2140	1744813.60	626648.27	87.50
2141	1744868.09	626610.18	84.70
2142	1744867.44	626638.03	84.70
2143	1744866.77	626651.41	87.50
2144	1744901.03	626605.98	83.34
2145	1744901.82	626633.55	83.34
2146	1744919.63	626550.60	69.63
2147	1744932.44	626567.47	73.37
2148	1744919.10	626561.25	68.93
2149	1744982.26	626547.71	68.17
2150	1744983.45	626550.83	68.47
2151	1744991.09	626551.85	68.64
2152	1744997.12	626560.99	69.47
2153	1744935.62	626581.68	76.20
2154	1744953.58	626579.70	71.60
2155	1744989.21	626576.06	70.88
2156	1744999.31	626571.90	70.41
2157	1744989.75	626586.52	71.83
2158	1744996.29	626583.76	71.48
2159	1744997.75	626586.55	71.22
2160	1744933.42	626594.53	79.15
2161	1744952.88	626598.68	74.26
2162	1744988.09	626605.22	73.58
2163	1745003.43	626617.63	70.49
2164	1745017.04	626614.07	67.50
2165	1745002.99	626605.23	70.51
2166	1744925.07	626609.72	62.79
2167	1744946.64	626617.78	76.92
2168	1744979.39	626632.27	76.21
2169	1744988.08	626638.68	74.95
2170	1744923.59	626641.72	82.65
2171	1744936.52	626640.84	79.23
2172	1744904.83	626650.62	87.50
2173	1744969.27	626655.13	78.51
2174	1744975.79	626658.02	78.36
2175	1744972.33	626648.22	77.81
2176	1744977.65	626652.47	77.83
2177	1744926.40	626663.50	81.54
2178	1744959.15	626677.99	80.82
2179	1744966.64	626681.31	80.65
2180	1744902.84	626661.49	87.50
2181	1744916.28	626666.36	83.84
2182	1744949.03	626700.85	83.13
2183	1744957.38	626704.55	82.93
2184	1744906.16	626709.22	86.19
2185	1744938.91	626723.71	85.47
2186	1744947.90	626727.69	85.47
2187	1744900.64	626721.68	87.50
2188	1744930.37	626742.99	87.50
2189	1744941.72	626741.57	86.73
2190	1744952.30	626765.62	84.46
2191	1744938.67	626766.98	84.59
2192	1744927.87	626766.47	87.50
2193	1744972.04	626829.51	82.50
2194	1744945.02	626836.90	82.50
2195	1744936.08	626822.80	83.16
2196	1744923.78	626834.92	87.50
2197	1744976.76	626936.31	86.70
2198	1744949.15	626939.30	86.70
2199	1744946.16	626939.54	87.50
2200	1745001.97	627036.60	82.50

STAGE 2				TOWC GRADING CONTROL TABLE	
POINT NUMBER	NORTHING	EASTING	ELEVATION		
2201	1744974.18	627038.84	82.50		
2202	1744954.18	627039.59	87.50		
2203	1744994.25	627127.14	86.25		
2204	1744986.46	627129.38	86.25		
2205	1744981.42	627129.78	87.50		
2206	1745016.27	627214.91	82.50		
2207	1744988.48	627217.16	82.50		
2208	1744988.49	627218.03	87.50		
2209	1745008.61	627305.70	86.25		
2210	1744980.84	627307.79	86.25		
2211	1744975.74	627308.38	87.50		
2212	1745030.58	627393.26	82.50		
2213	1745002.78	627395.48	82.50		
2214	1744982.88	627397.45	87.50		
2215	1745021.80	627494.83	86.70		
2216	1744994.00	627497.06	86.70		
2217	1744990.87	627497.13	87.50		
2218	1745047.07	627595.56	82.50		
2219	1745018.87	627596.20	82.50		
2220	1744999.17	627600.59	87.50		
2221	1745035.65	627631.81	83.40		
2222	1745011.98	627617.71	83.44		
2223	1744987.25	627608.00	87.50		
2224	1745007.29	627653.41	84.02		
2225	1745001.07	627628.21	84.02		
2226	1744990.91	627612.72	87.50		
2227	1744984.65	627654.65	85.00		
2228	1744976.90	627627.53	85.00		
2229	1744973.98	627617.85	87.50		
2230	1744944.03	627676.93	82.50		
2231	1744934.84	627650.61	82.50		
2232	1744928.70	627631.58	87.50		
2233	1744905.45	627639.07	87.50		
2234	1744861.54	627691.08	86.00		
2235	1744852.02	627664.81	86.00		
2236	1744849.95	627659.10	87.50		
2237	1744788.46	627733.48	82.50		
2238	1744776.91	627707.23	82.50		
2239	1744772.41	627688.31	87.50		
2240	1744695.15	627749.64	86.50		
2241	1744685.02	627723.48	86.50		
2242	1744683.43	627719.80	87.50		
2243	1744616.92	627799.52	82.50		
2244	1744604.93	627774.56	82.50		
2245	1744598.06	627756.63	87.50		
2246	1744525.05	627831.67	86.50		
2247	1744511.25	627807.48	86.50		
2248	1744509.58	627803.80	87.50		
2249	1744443.88	627891.93	82.50		
2250	1744431.79	627866.72	82.50		
2251	1744423.44	627848.54	87.50		
2252	1744347.81	627918.11	86.50		
2253	1744335.41	627892.99	86.50		
2254	1744333.57	627889.44	87.50		
2255	1744269.31	627977.87	82.50		
2256	1744255.94	627953.48	82.50		
2257	1744245.73	627936.25	87.50		
2258	1744169.86	628014.41	86.99		
2259	1744155.38	627990.44	87.00		
2260	1744154.02	627988.78	87.50		
2261	1744088.99	628004.00	82.50		
2262	1744074.30	628060.35	82.51		
2263	1744063.22	628043.74	87.50		
2264	1743996.82	628124.61	86.70		
2265	1743981.45	628101.33	86.70		
2266	1743979.87	628098.57	87.50		
2267	1743920.12	628192.33	82.50		
2268	1743905.70	628168.56	82.50		
2269	1743894.85	628151.73	87.50		
2270	1743848.67	628222.69	85.75		
2271	1743831.89	628199.25	85.75		
2272	1743827.87	628193.48	87.50		
2273	1743763.71	628278.56	82.50		
2274	1743770.56	628253.47	82.50		
2275	1743761.83	628235.41	87.50		
2276	1743744.63	628268.78	83.66		
2277	1743740.99	628259.44	83.72		
2278	1743738.59	628245.31	87.50		
2279	1743767.11	627719.39	107.80		
2280	1743935.96	627402.63	118.37		
2281	1744059.80	627237.32	118.40		
2282	1744166.09	627233.97	118.75		
2283	1744396.80	627220.56	115.34		
2284	1744501.73	627284.12	110.62		
2285	1744644.23	627228.48	103.70		
2286	1744525.47	627076.55	108.32		
2287	1744116.26	627138.09	111.94		
2288	1743866.78	627360.82	115.04		
2289	1743625.08	627895.67	98.30		
2290	1743664.25	627823.76	102.10		
2291	1743903.83	627385.96	116.82		
2292	1744427.60	62739.21	114.38		
2293	1744524.01	627297.62	109.53		
2294	1744649.89	627295.39	103.69		
2295	1744677.63	627314.44	102.38		
2296	1744760.45	627325.86	98.00		



STAGE 4 - TOWC GRADING CONTROL TABLE			
POINT NUMBER	NORTHING	EASTING	ELEVATION
4001	1743747.75	628031.10	125.16
4002	1743738.73	628005.12	125.15
4003	1743732.44	627998.21	127.50
4004	1743738.02	628034.03	125.50
4005	1743731.03	628007.42	125.50
4006	1743725.37	628000.00	127.50
4007	1743720.99	628036.85	125.13
4008	1743724.32	628008.72	125.21
4009	1743700.01	628030.37	124.72
4010	1743713.28	628008.15	124.72
4011	1743718.04	627996.75	127.50
4012	1743849.35	627995.28	122.50
4013	1743869.70	627975.55	122.50
4014	1743863.95	627981.92	127.50
4015	1743860.40	627916.73	126.25
4016	1743821.51	627998.62	126.25
4017	1743825.08	627995.87	127.50
4018	1743830.94	627856.99	122.29
4019	1743852.60	627839.35	122.50
4020	1743515.88	627829.82	123.44
4021	1743541.05	627818.50	123.44
4022	1743554.48	627810.21	127.50
4023	1743512.44	627818.21	123.68
4024	1743539.21	627811.85	123.72
4025	1743552.52	627806.85	127.50
4026	1743511.47	627807.00	123.89
4027	1743539.02	627807.59	123.89
4028	1743551.79	627803.15	127.50
4029	1743513.71	627781.15	125.00
4030	1743541.48	627779.50	125.00
4031	1743550.97	627779.17	127.50
4032	1743501.05	627720.34	122.50
4033	1743528.91	627719.27	122.50
4034	1743548.90	627718.78	127.50
4035	1743514.60	627615.44	126.70
4036	1743542.49	627614.24	126.70
4037	1743545.33	627614.27	127.50
4038	1743492.20	627512.62	122.50
4039	1743520.04	627511.23	122.50
4040	1743540.02	627510.30	127.50
4041	1743504.16	627408.78	126.90
4042	1743532.03	627407.15	126.90
4043	1743534.41	627406.96	127.50
4044	1743480.15	627307.10	122.50
4045	1743508.01	627305.43	122.50
4046	1743528.00	627304.74	127.50
4047	1743490.41	627215.67	126.50
4048	1743518.23	627214.36	126.50
4049	1743522.23	627214.21	127.50
4050	1743471.73	627128.08	122.50
4051	1743499.71	627125.53	122.50
4052	1743519.71	627125.52	127.50
4053	1743476.73	627096.29	123.37
4054	1743503.14	627105.11	123.37
4055	1743519.38	627108.67	127.50
4056	1743494.47	627070.15	124.11
4057	1743512.31	627091.13	124.09
4058	1743522.73	627100.29	127.50
4059	1743529.11	627057.68	124.81
4060	1743527.86	627085.20	124.82
4061	1743530.58	627096.79	127.50
4062	1743539.48	627096.41	127.50
4063	1743575.62	627062.58	127.00
4064	1743579.66	627090.65	127.00
4065	1743579.84	627092.63	127.50
4066	1743638.82	627036.58	122.86
4067	1743651.53	627061.09	122.86
4068	1743654.82	627079.18	127.50
4069	1743648.04	627030.71	122.50
4070	1743657.28	627057.44	122.50
4071	1743663.30	627076.50	127.50
4072	1743703.54	627024.65	124.79
4073	1743709.44	627051.60	124.84
4074	1743711.61	627061.21	127.50
4075	1743734.79	627017.66	126.50
4076	1743745.95	627043.34	126.50
4077	1743747.42	627047.06	127.50
4078	1743771.04	626993.61	124.30
4079	1743786.81	627016.16	124.30
4080	1743793.40	627025.97	127.50
4081	1743804.04	626966.79	122.50
4082	1743817.90	626991.09	122.50
4083	1743827.85	627008.46	127.50
4084	1743842.60	626952.74	124.18
4085	1743853.74	626977.89	124.20
4086	1743873.68	626980.20	127.50
4087	1743884.44	626933.04	126.50
4088	1743900.57	626955.79	126.50
4089	1743903.00	626958.96	127.50
4090	1743912.34	626904.25	124.39
4091	1743933.46	626921.88	124.39
4092	1743955.27	626916.47	127.50
4093	1743937.18	626867.40	122.50
4094	1743957.16	626887.20	122.50
4095	1743973.46	626899.31	127.50
4096	1743969.32	626846.44	124.50
4097	1743989.24	626866.28	124.50
4098	1743997.89	626874.58	127.50
4099	1743979.64	626833.94	123.75
4100	1743993.58	626859.57	124.10

STAGE 4 - TOWC GRADING CONTROL TABLE			
POINT NUMBER	NORTHING	EASTING	ELEVATION
4101	1744004.49	626867.77	127.50
4102	1743989.63	626826.63	123.48
4103	1744002.58	626851.23	123.48
4104	1744007.79	626865.72	127.50
4105	1744018.28	626816.57	122.50
4106	1744020.84	626844.82	122.50
4107	1744011.58	626884.87	127.50
4108	1744022.17	626884.80	127.50
4109	1744118.71	626832.48	126.50
4110	1744118.81	626860.34	126.50
4111	1744118.83	626864.34	127.50
4112	1744216.21	626816.32	122.50
4113	1744216.31	626844.22	122.51
4114	1744216.17	626864.19	127.50
4115	1744319.87	626833.70	126.70
4116	1744319.91	626861.59	126.70
4117	1744319.96	626864.58	127.50
4118	1744422.71	626816.12	122.50
4119	1744422.91	626843.99	122.50
4120	1744423.73	626863.98	127.50
4121	1744522.80	626831.74	126.70
4122	1744523.09	626859.82	126.70
4123	1744523.03	626862.95	127.50
4124	1744623.19	626881.94	122.50
4125	1744622.95	626884.91	122.50
4126	1744623.15	626881.91	127.50
4127	1744685.30	626826.07	125.50
4128	1744683.97	626853.83	125.50
4129	1744684.09	626861.83	127.50
4130	1744707.16	626825.07	124.52
4131	1744704.54	626852.51	124.52
4132	1744698.63	626862.08	127.50
4133	1744734.01	626834.79	123.84
4134	1744716.83	626856.63	123.89
4135	1744705.82	626864.70	127.50
4136	1744747.78	626850.21	123.35
4137	1744724.40	626864.78	123.35
4138	1744709.59	626870.27	127.50
4139	1744759.84	626872.22	122.50
4140	1744733.01	626880.28	122.50
4141	1744760.53	626879.62	122.79
4142	1744713.63	626885.21	127.50
4143	1744737.00	626933.06	124.85
4144	1744729.36	626939.57	127.50
4145	1744741.60	626968.24	126.44
4146	1744735.14	627010.22	127.50
4147	1744728.51	627110.50	127.50
4148	1744804.96	626937.82	110.04
4149	1744837.70	626952.31	109.33
4150	1744794.84	626960.68	112.38
4151	1744827.58	626975.17	111.66
4152	1744784.72	626983.54	114.72
4153	1744817.46	626998.03	114.00
4154	1744774.60	627006.40	117.05
4155	1744807.34	627020.89	116.34
4156	1744768.39	627024.93	118.95
4157	1744764.47	627029.28	119.39
4158	1744797.22	627043.75	118.67
4159	1744793.68	627051.78	119.48
4160	1744798.91	627058.14	119.52
4161	1744754.35	627052.12	121.72
4162	1744787.10	627068.61	121.01
4163	1744744.23	627074.98	124.03
4164	1744776.98	627089.47	123.31
4165	1744734.11	627097.84	126.26
4166	1744766.86	627112.33	125.55
4167	1744758.01	627132.32	127.50
4168	1744759.34	627133.36	127.50
4169	1744765.06	627133.12	127.06
4170	1744775.91	627136.96	126.88
4171	1744752.66	627190.41	127.50
4172	1744751.41	627213.13	127.50
4173	1744763.56	627197.95	124.17
4174	1744801.02	627232.17	122.50
4175	1744773.17	627234.43	122.50
4176	1744753.17	627235.18	127.50
4177	1744782.27	627323.27	126.50
4178	1744764.43	627325.54	126.50
4179	1744760.45	627325.86	127.50
4180	1744815.43	627410.91	122.50
4181	1744787.47	627412.74	122.50
4182	1744767.42	627412.79	127.50
4183	1744806.99	627466.14	124.30
4184	1744781.08	627456.19	124.30
4185	1744770.34	627448.23	127.50
4186	1744796.14	627483.31	124.70
4187	1744776.05	627464.20	124.70
4188	1744768.42	627456.64	127.50
4189	1744776.71	627495.19	125.09
4190	1744768.02	627469.00	125.09
4191	1744762.80	627461.11	127.50
4192	1744768.89	627497.09	125.50
4193	1744758.25	627471.37	125.50
4194	1744755.13	627464.01	127.50
4195	1744712.63	627531.28	122.50
4196	1744702.77	627505.09	122.50
4197	1744686.17	627486.21	127.50
4198	1744611.18	627549.08	126.70
4199	1744601.03	627522.94	126.70
4200	1744589.83	627520.06	127.50

STAGE 4 - TOWC GRADING CONTROL TABLE			
POINT NUMBER	NORTHING	EASTING	ELEVATION
4201	1744525.34	627603.71	122.50
4202	1744513.39	627578.72	122.50
4203	1744514.17	627555.80	127.50
4204	1744505.27	627560.40	127.50
4205	1744430.23	627635.74	126.70
4206	1744416.79	627611.25	126.70
4207	1744431.20	627598.72	127.50
4208	1744415.37	627608.32	127.50
4209	1744347.43	627698.27	122.50
4210	1744335.31	627673.08	122.50
4211	1744327.47	627654.69	127.50
4212	1744281.61	627674.41	127.50
4213	1744249.31	627725.20	126.70
4214	1744236.87	627700.09	126.70
4215	1744235.38	627697.01	127.50
4216	1744168.76	627786.67	122.50
4217	1744155.32	627762.34	122.50
4218	1744144.74	627745.29	127.50
4219	1744125.74	627755.34	127.50
4220	1744063.93	627825.83	127.00
4221	1744048.82	627801.74	127.00
4222	1744048.96	627799.98	127.50
4223	1743966.78	627848.41	127.50
4224	1743979.10	627897.61	122.50
4225	1743964.21	627874.15	122.50
4226	1743954.30	627856.74	127.50
4227	1743887.17	627939.11	126.50
4228	1743872.12	627915.73	126.50
4229	1743870.02	627912.33	127.50
4230	1743810.53	628006.29	122.50
4231	1743795.99	627982.47	122.50
4232	1743818.12	627946.84	127.50
4233	1743786.08	627965.10	127.50
4234	1743777.11	627719.39	137.14
4235	1743935.53	627403.08	147.56
4236	1744059.59	627336.94	147.56
4237	1744165.93	627273.78	147.96
4238	1744396.80	627220.56	145.09
4239	1744501.73	627284.12	139.78
4240	1744644.23	627228.48	132.90
4241	1744525.47	627076.55	137.51
4242	1744116.26	627138.09	141.14
4243	1743866.78	627360.82	144.25
4244	1743567.88	627826.45	127.50
4245	1743664.25	627823.76	131.27
4246	1743903.83	627385.96	146.03
4247	1744427.60	627239.21	143.60
4248	1744524.01	627297.62	138.73
4249	1744646.89	627295.39	132.89
4250	1744677.63	627314.44	131.58





## **ATTACHMENT E**

**2014 Updated Closing and Long-Term Care Estimates for  
Class III Landfill**

**FDEP Approval Letter - 2013 Financial Responsibility and  
Long-Term Care Cost Estimates**





FLORIDA DEPARTMENT OF  
ENVIRONMENTAL PROTECTION

CENTRAL DISTRICT  
3319 MAGUIRE BOULEVARD, SUITE 232  
ORLANDO, FLORIDA 32803-3767

RICK SCOTT  
GOVERNOR

HERSCHEL T. VINYARD JR.  
SECRETARY

September 24, 2013

Electronic Mail  
lmarion@co.volusia.fl.us

Mr. Leonard Marion  
Volusia County Solid Waste Division  
3151 East New York Avenue  
DeLand, FL 32724

OCD-SW-13-3435

Volusia County – SW WACS #27540  
Tomoka Farms Road Landfill – Class I, North Cell; South Cell; Class III  
**Approval of Closing and Long-Term Care Cost Estimates**

Dear Mr. Marion:

The Department has reviewed the document “Financial Assurance Responsibility Report (Fiscal Year 2013)”, dated August 29, 2013, submitted on your behalf by HDR Engineering, Inc. The inflation adjustment factor of 1.017 was used to calculate the closing and long-term care estimates. The Central District approves the following cost estimates:

- Tomoka Farms Road Landfill – Class I, North Cell  
Closing Cost Estimate = \$9,394,491.23  
30-year Long Term Care Cost Estimate = \$5,374,185.89  
Waste Tire Closing Cost Estimate = \$5,926
- Tomoka Farms Road Landfill – South Cell  
30-year Long Term Care Cost Estimate = \$3,553,374.91
- Tomoka Farms Road Landfill – Class III  
Closing Cost Estimate = \$8,237,675.54  
30-year Long Term Care Cost Estimate = \$2,888,191.32

The documentation to demonstrate financial assurance must be sent to Susan Eldredge, FDEP Solid Waste Section, MS-4565, 2600 Blair Stone Road, Tallahassee, Florida 32399.

If you have any questions, please contact Kim Rush at (407) 897-4314 or by e-mail at [kim.rush@dep.state.fl.us](mailto:kim.rush@dep.state.fl.us) or contact Susan Eldredge by email at [Susan.F.Eldredge@dep.state.fl.us](mailto:Susan.F.Eldredge@dep.state.fl.us) or by phone at (850) 245-8740.

Sincerely,

F. Thomas Lubozynski, P.E.  
Waste & Air Resource Programs Administrator

FTL/kr

cc:  
FDEP Solid Waste Financial Coordinator, [solid.waste.financial.coordinator@dep.state.fl.us](mailto:solid.waste.financial.coordinator@dep.state.fl.us)  
Cliff Koenig, P.E. – HDR Engineering, Inc., [cliff.koenig@hdrinc.com](mailto:cliff.koenig@hdrinc.com)  
Junos Reed, P.E., Volusia County, [jreed@co.volusia.fl.us](mailto:jreed@co.volusia.fl.us)



**Financial Assurance Responsibility  
Closure and Long-term Care Cost Estimates  
Tomoka Farms Road Landfill – Class III Landfill  
Volusia County, Florida  
June 2014**

Closure and long-term care cost estimates for the Volusia County Tomoka Farms Road Class III Landfill (Landfill) are being re-calculated according to 62-701.630(3)(a), FAC. The signed and sealed FDEP Form is provided in Attachment R-1. Quotes from third-party sources are provided in Attachment R-2.

The basis for the landfill closure & long term care related quantities is the revised Financial Assurance Cost Estimates (FACE) Report (September 2008) provided with “*RAI Response regarding July 2008 Application for Class III Expansion*”. The FACE estimates were approved by the FDEP on January 21, 2009 when the FDEP issued a permit authorizing Class III expansion. No changes are proposed to the closure design as part of this permit renewal application.

The basis for unit cost include 2014 pricing, FDEP-submitted closure design and regulations contained in Chapter 62-701 of the Florida Administrative Code (FAC). Revised cost estimates are provided on FDEP Form 62-701.900(28). Note that some unit costs are obtained from 2014 RS Means and 2014 FDOT Estimates. The RS Means unit costs are obtained from 2014 online edition and adjusted for the Orlando area. The FDOT estimates are for either for FDOT Area 6 (if available) that includes Volusia County or for state wide average.

### **CLOSURE COSTS**

Closure footprint area = 88.06 AC  
Closure 3-D area from CAD = 3,915,560 SF = 435,062 SY

#### **Monitoring Wells (Item 1)**

It is assumed that monitoring wells will be in place at time of closure; therefore wells are not included as part of the closure construction estimate.

#### **Slope and Fill (Item 2)**

Quantity of soil required for 12” grading/intermediate cover layer = 145,021 CY (*from Sept 2008 FACE Report*)

It is assumed that the 12” intermediate cover layer will be in place at the time of closure. Moreover, it is assumed that approximately 25% of the intermediate cover soil will require grading before liner installation.

Thus, quantity of cover soil in 12” intermediate cover soil layer requiring grading = 36,255 CY

A unit cost of \$3.00/CY for soil installation (spreading and placement) has been obtained from Southeast Environmental Contracting, Inc (SEC). The unit cost for soil grading is assumed to be the same as soil installation cost.



### **Cover Material (Item 3)**

The proposed final cover consists of 40-mil textured LLDPE geomembrane, 250-mil geocomposite drainage layer and 18" layer of cover soil.

#### **(a) Cover Soil:**

From *Sept 2008 FACE Report*, the area requiring cover soil = 3,915,560 SF

Volume of Cover Soil in 18" layer =  $(3,915,560 \text{ SF} \times 1.5 \text{ FT} / 27) = 217,531 \text{ CY}$

A unit cost of \$11.25/CY for off-site installed cover soil has been obtained from August 2013 FACE Report for North Cell Class I Landfill closure as an average unit cost from two different third party contractors (original quotes provided in Attachment R-2). The unit cost has been inflated using FDEP approved inflation factor of 1.015; therefore, unit cost of installed off-site cover soil is calculated as \$11.42/CY.

#### **(b) Synthetics-40 mil:**

Quantity of textured 40-mil LLDPE geomembrane = 435,062 SY

Units cost of \$4.05/SY for installed geomembrane has been obtained from Comanco.

#### **(c) Geocomposite:**

Total 250-mil geocomposite required = 309,446 SY

(Note: Above quantity is based on *Sept 2008 FACE Report* and excludes the diversion swale area of 125,616 SY)

Units cost of \$3.60 for installed geocomposite has been obtained from Comanco.

### **Top Soil Cover (Item 4)**

The top soil cover consists of 6" layer of soil capable of supporting vegetative growth. From *Sept 2008 FACE Report* the area requiring top soil = 3,915,560 SF

Volume of Cover Soil in 6" layer =  $(3,915,560 \text{ SF} \times 0.5 \text{ FT} / 27) = 72,510 \text{ CY}$

A unit cost of \$12.50/CY for off-site installed top soil has been obtained from August 2013 FACE Report for North Cell Class I Landfill closure as an average cost from two different third party contractors (original quotes provided in Attachment R-2). The unit cost has been inflated using FDEP approved inflation factor of 1.015; therefore, unit cost of installed off-site top soil is calculated as \$12.69/CY.

### **Vegetation (Item 5)**

From *Sept 2008 FACE Report*, the area from the CAD Civil 3-D that requires vegetation = 315,105 SY

It is assumed that approximately 13 acres of top area (with 5% slope) will be hydro seeded and remainder of the area will be sodded.

Area requiring hydroseeding = 13 AC = 62,920 SY

Area requiring sodding = 252,185 SY



A unit cost of \$36.64 per 1000 SF (or \$1,596.04 per AC) for hydroseeding is obtained from RS Means 2014 online edition.

A unit cost of \$1.51 per SY for installed sod has been obtained from 2014 FDOT Estimates.

#### **Stormwater Control System (Item 6)**

No separate earthwork and grading are considered as it is covered in items 2 through 4, and berm installation. Also, the installation of the perimeter channel is a part of the landfill's on-going operations and therefore, not included in this cost estimate.

- Piping:

Total length of 18" corrugated HDPE downchutes required for drainage = 6,686 LF

Total length of 15" HDPE pipe required for drainage = 11,879 LF

(Above quantities obtained from *Sept 2008 FACE Report*)

A unit cost of \$19.01/LF and \$12.09/LF for installed 18"HDPE and 15" HDPE respectively has been obtained from 2014 RS Means online edition.

Average unit cost for 18,565 LF piping = \$14.58/LF

- Control Structures:

Number of control structures required = 39 (*from Sept 2008 FACE Report*)

Control structures are assumed to be FDOT U-Type Endwall with 1:4 slope and 18" downcomer pipe diameter. A unit cost of \$1,200 for an installed FDOT U-Type Endwall has been obtained from 2014 FDOT Cost Estimates.

- Berm:

Length of tack-on berm= 30,443 FT

Cross sectional area of berm= 4.5 SF

(Length and Cross Sectional Area obtained from *Sept 2008 FACE Report*)

Volume of soil =  $(30,443 \text{ FT} \times 4.5 \text{ SF} / 27) = 5,074 \text{ CY}$

For unit cost of soil, refer to unit cost of Item 3(a). Note that the unit price includes off-site materials, spreading and placement.

- Others:

Number of 24" HDPE Inlets = 4

Number of 18" HDPE Inlets = 35

(Number of inlets obtained from *Sept 2008 FACE Report*)

Length of 12" HDPE pipe required for inlet to downchute connections= 1,872 FT

(*from Closure Plan Details provided in Class III Operations Permit Renewal, dated June 2009*)

Unit costs of \$800/EA and \$700/EA for 24"HDPE and 18" HDPE inlets have been obtained from SEC.



A unit cost of \$10.25/LF for installed 12"HDPE pipe has been obtained from RS Means 2014 Online Edition.

The total cost for inlets and inline drain piping has been added as lump sum cost.

**Passive Gas Control (Item 7)**

Passive gas venting will be used for the Class III Landfill closure. As reported in the *Sept 2008 FACE Report*, 43 vents will be installed with total depth for all vents estimated to be 3,795 ft.

A unit cost of \$130 /LF for installed passive vent has been obtained from SEC Contracting.

**Active Gas Extraction Control (Item 8)**

No active gas collection system is proposed as a part of the Closure.

**Security System (Item 9)**

Perimeter fencing, gates and signs already exists at the facility and some cost has already been allocated in Class I Landfill's closure cost estimate for this line item.

**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. Engineering and professional services hours and cost estimates listed are based on HDR experience on similar projects.

**Contingency (Item 12)**

A 5% of total closure cost will be allocated as a contingency.

**Site Specific Costs (Item 13)**

Mobilization is based on HDR's experience with construction projects and requirements included in contract documents for similar projects.



## **LONG-TERM CARE COSTS**

### **Ground Water Monitoring (Item 1)**

Groundwater monitoring cost for the Tomoka Farms Road Landfill is included with the Class I Landfill's Long Term Care (LTC) cost. Thus, no separate cost has been considered for Class III Landfill's LTC.

### **Surface Water Monitoring (Item 2)**

Surfacewater monitoring cost for the Tomoka Farms Road Landfill is included with the Class I Landfill's LTC cost. Thus, no separate cost has been considered for Class III Landfill's LTC.

### **Gas Monitoring (Item 3)**

Perimeter gas probe monitoring cost for the Tomoka Farms Road Landfill is included with the Class I Landfill's LTC cost. Thus, no separate cost has been considered for Class III Landfill's LTC.

### **Leachate Collection System (Items 4&5)**

The Class III landfill does not have a leachate collection system.

### **Groundwater Monitoring Well Maintenance (Item 6)**

Groundwater monitoring well maintenance cost for the Tomoka Farms Road Landfill is included with the Class I Landfill's LTC cost. Thus, no separate cost has been considered for Class III Landfill's LTC.

### **Gas System Maintenance (Item 7)**

Assume a lump sum amount of \$500 per year for passive vent maintenance and replacement.

### **Landscaping (Item 8)**

The closure area of 88.06 AC has been adjusted with a factor of 1.03 to count 4(H) to 1(V). Thus, 90.7 AC landfill cap will need landscaping/mowing four times a year.

The unit cost of \$28.30 per AC is based on 2014 FDOT Cost Estimates

Total annual mowing cost = \$28.30 per AC \* 4 = \$113.20 per AC

### **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 were considered. An annual average soil loss of 666 CY was calculated using the United Soil Loss Equation (USLE). This is a conservative calculation since it is assumed that 60% of the ground is covered by vegetation. Refer to Attachment R-3 for further explanation of the USLE equation.

For this financial assurance estimate, it is assumed that soil will erode in channels that will cut an average of six inches deep into the final cover. It was assumed that 25% of the disturbed area will require liner repairs.

- Sodding:  $3,996 \text{ SY} = 35,964 \text{ SF} = 666 \text{ CY} * 27 \text{ CF/CY} / (0.5 \text{ FT average depth})$
- Liner Repair:  $999 \text{ SY} = 8,991 \text{ SF} = 666 \text{ CY} * 27 \text{ CF/CY} * 25\% / 0.5 \text{ FT}$



- Soil: 666 CY

Refer to Item 5 of the closure cost for installed sod unit cost.

Refer to Item 3 of the closure cost for LLDPE & geocomposite (combined) repair unit cost.

Refer to Item 4 of the closure cost for installed off-site soil cost (top soil assumed). Note that grading of disturbed area is included in this unit cost.

#### **Stormwater Maintenance (Item 10)**

The following assumptions have been made for stormwater system maintenance:

- 500 feet of downcomer piping will need to be replaced every 5-years;
- 1 control structure need to be replaced every 5-years;
- Berm maintenance cost has been assumed as part of Item 9 above and no cost is added;
- 1 inlet needs to be replaced every year; and
- 250 feet of inline drain piping needs to be replaced every 5-years.

The unit costs for the above components are listed in Item 6 of the closure cost estimates. Note that the downchute piping cost is an average of 18" and 15" HDPE pipe unit costs, and the inlet unit cost is an average of 24" and 18" inlets.

Annual costs are itemized below:

- Downcomer Piping: \$1,555 ( $= 500 * \$15.55 / 5$ )
- Control Structure: \$240 ( $= 1 * \$1,200 / 5$ )
- Inlet Replacement: \$750
- Inline drain piping: \$512.50 ( $= 250 * \$10.25 / 5$ )

Thus, total annual cost = \$3,057.50.

#### **Security System Maintenance (Item 11)**

Security system maintenance cost for the Tomoka Farms Road Landfill is included with the Class I Landfill's Long Term Care (LTC) cost. Thus, no separate cost has been considered for Class III Landfill's LTC.

#### **Utilities (Item 12)**

A lump sum amount of \$50/month is assumed as cost associated with utilities associated with Class III landfill.

#### **Leachate Collection/Treatment Systems Operation (Item 13)**

The Class III landfill does not have a leachate collection system.

#### **Administrative Costs (Item 14)**

Professional engineering services expected during the long-term care period include semiannual water quality reports and 5-year water quality technical reports, ten-year long-term care permit renewal applications, five-year stabilization reports and other miscellaneous reporting requirements. Administrative cost estimates listed on the FDEP Form are based on HDR experience on similar projects.



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





# 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- Class III Landfill WACS ID: 27540  
 Permit Application or Consent Order No.: SO64-0078767-019 Expiration Date: 10/9/2014  
 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 ' 53 " Longitude: 81 ° 05 ' 31 "  
 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
Class III LF	88.06	June 1998	16.0 years	29.6 years	NA	NA

Total disposal unit acreage included in this estimate: Closure: 88.06 Long-Term Care: 88.06

Facility type: ☐ Class I ☒ Class III ☐ C&D Debris Disposal  
 (Check all that apply) ☐ 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 adjustment below.

☐ (a) Inflation Factor Adjustment

☒ (b) Recalculated or New Cost Estimates

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

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

Latest Department Approved  
Closing Cost Estimate:

Current Year Inflation  
Factor, e.g. 1.02

Inflation Adjusted Closing  
Cost Estimate:

x

=

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

Latest Department Approved  
Annual Long-Term Care  
Cost Estimate:

Current Year Inflation  
Factor, e.g. 1.02

Inflation Adjusted Annual  
Long-Term Care Cost  
Estimate:

x

=

Number of Years of Long Term Care Remaining:

x

Inflation Adjusted Long-Term Care Cost Estimate:

=

Signature by: ☐ Owner/Operator

☒ Engineer

(check what applies)

Signature

Address

Name & Title

City, State, Zip Code

Date

E-Mail Address

Telephone Number



**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
<b>1. Proposed Monitoring Wells (Do not include wells already in existence.)</b>				
	EA	0	\$0.00	
			Subtotal Proposed Monitoring Wells:	
<b>2. Slope and Fill (bedding layer between waste and barrier layer):</b>				
Excavation	CY			
Placement and Spreading	CY			
Grading of in-place Material	CY	36,255	\$3.00	\$108,765.00
Off-Site Material	CY			
Delivery	CY			
			Subtotal Slope and Fill:	\$108,765.00
<b>3. Cover Material (Barrier Layer):</b>				
Off-Site Material (Installed)	CY	217,531	\$11.42	\$2,484,204.02
Synthetics - 40 mil	SY	435,062	\$4.05	\$1,762,001.10
Synthetics - GCL	SY			
Synthetics - Geonet	SY			
Synthetics - Other (explain)	SY	309,446	\$3.60	\$1,114,005.60
250-mil Geocomposite			Subtotal Cover Material:	\$5,360,210.72
<b>4. Top Soil Cover:</b>				
Off-Site Material (Installed)	CY	72,510	\$12.69	\$920,151.90
Delivery	CY			
Spread	CY			
			Subtotal Top Soil Cover:	\$920,151.90
<b>5. Vegetative Layer</b>				
Sodding	SY	252,185	\$1.51	\$380,799.35
Hydroseeding	AC	13	\$1,596.04	\$20,748.52
Fertilizer	AC			
Mulch	AC			
Other (explain)				
			Subtotal Vegetative Layer:	\$401,547.87
<b>6. Stormwater Control System:</b>				
Installed Berm (off-site material)	CY	5,074	\$11.42	\$57,945.08
Grading	SY			
Piping	LF	18,565	\$14.58	\$270,677.70
Ditches	LF			
Berms	LF			
Control Structures	EA	39	\$1,200.00	\$46,800.00
Other (explain)	LS	1	\$46,888.00	\$46,888.00
See Report text			Subtotal Stormwater Control System:	\$422,310.78



Description	Unit	Number of Units	Cost / Unit	Total Cost
<b>7. Passive Gas Control:</b>				
Wells	EA			
Pipe and Fittings	LF	3,795	\$130.00	\$493,350.00
Monitoring Probes	EA			
NSPS/Title V requirements	LS	1		
Subtotal Passive Gas Control:				\$493,350.00
<b>8. Active Gas Extraction Control:</b>				
Traps	EA			
Sumps	EA			
Flare Assembly	EA			
Flame Arrestor	EA			
Mist Eliminator	EA			
Flow Meter	EA			
Blowers	EA			
Collection System	LF			
Other (explain) _____				
Subtotal Active Gas Extraction Control:				
<b>9. Security System:</b>				
Fencing	LF			
Gate(s)	EA			
Sign(s)	EA			
Subtotal Security System:				
<b>10. Engineering:</b>				
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		
Final Survey	LS	1	\$25,000.00	\$25,000.00
Certification of Closure	LS	1	\$25,000.00	\$25,000.00
Other (explain) _____				
Subtotal Engineering:				\$125,000.00

Description	Hours	Cost / Hour	Hours	Cost / Hour	Total Cost
<b>11. Professional Services</b>					
	<u>Contract Management</u>		<u>Quality Assurance</u>		
P.E. Supervisor	120	\$130.00	40	\$130.00	\$20,800.00
On-Site Engineer	360	\$90.00	200	\$90.00	\$50,400.00
Office Engineer	100	\$100.00	144	\$100.00	\$24,400.00
On-Site Technician			2,000	\$65.00	\$130,000.00
Other (explain) _____					

Description	Unit	Number of Units	Cost / Unit	Total Cost
Quality Assurance Testing	LS	1	\$50,000.00	\$50,000.00
Subtotal Professional Services:				\$275,600.00



**Subtotal of 1-11 Above:** \$8,106,936.27

<b>12. Contingency</b>	<u>5</u>	% of Subtotal of 1-11 Above	\$405,346.81
------------------------	----------	-----------------------------	--------------

Subtotal Contingency:	\$405,346.81
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**Estimated Closing Cost Subtotal:** \$8,512,283.08

Description	Total Cost
<b>13. Site Specific Costs</b>	
Mobilization	\$150,000.00
Waste Tire Facility	
Materials Recovery Facility	
Special Wastes	
Leachate Management System Modification	
Other (explain) _____	
<b>Subtotal Site Specific Costs:</b>	<b>\$150,000.00</b>

**TOTAL ESTIMATED CLOSING COSTS (\$):** \$8,662,283.08



## 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
<b>1. Groundwater Monitoring [62-701.510(6), and (8)(a)]</b>				
Monthly	12	_____	_____	_____
Quarterly	4	_____	_____	_____
Semi-Annually	2	_____	_____	_____
Annually	1	_____	_____	_____
Subtotal Groundwater Monitoring:				_____
<b>2. Surface Water Monitoring [62-701.510(4), and (8)(b)]</b>				
Monthly	12	_____	_____	_____
Quarterly	4	_____	_____	_____
Semi-Annually	2	_____	_____	_____
Annually	1	_____	_____	_____
Subtotal Surface Water Monitoring:				_____
<b>3. Gas Monitoring [62-701.400(10)]</b>				
Monthly	12	_____	_____	_____
Quarterly	4	_____	_____	_____
Semi-Annually	2	_____	_____	_____
Annually	1	_____	_____	_____
Subtotal Gas Monitoring:				_____
<b>4. Leachate Monitoring [62-701.510(5), (6)(b) and 62-701.510(8)c]</b>				
Monthly	12	_____	_____	_____
Quarterly	4	_____	_____	_____
Semi-Annually	2	_____	_____	_____
Annually	1	_____	_____	_____
Other (explain) _____	_____	_____	_____	_____
Subtotal Leachate Monitoring:				_____

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



Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
<b>5. (continued)</b>				
<u>Impoundments</u>				
Liner Repair	SY	_____	_____	_____
Sludge Removal	CY	_____	_____	_____
<u>Aeration Systems</u>				
Floating Aerators	EA	_____	_____	_____
Spray Aerators	EA	_____	_____	_____
<u>Disposal</u>				
Off-site (Includes transportation and disposal)	1000 gallon	_____	_____	_____
			Subtotal Leachate Collection / Treatment Systems Maintenance:	_____
<b>6. Groundwater Monitoring Well Maintenance</b>				
Monitoring Wells	LF	_____	_____	_____
Replacement	EA	_____	_____	_____
Abandonment	EA	_____	_____	_____
			Subtotal Groundwater Monitoring Well Maintenance:	_____
<b>7. Gas System Maintenance</b>				
Piping, Vents	LS	1	\$500.00	\$500.00
Blowers	EA	_____	_____	_____
Flaring Units	EA	_____	_____	_____
Meters, Valves	EA	_____	_____	_____
Compressors	EA	_____	_____	_____
Flame Arrestors	EA	_____	_____	_____
Operation	LS	1	_____	_____
			Subtotal Gas System Maintenance:	\$500.00
<b>8. Landscape Maintenance</b>				
Mowing	AC	90.7	\$113.20	\$10,267.24
Fertilizer	AC	_____	_____	_____
			Subtotal Landscape Maintenance:	\$10,267.24
<b>9. Erosion Control and Cover Maintenance</b>				
Sodding	SY	3,996	\$1.51	\$6,033.96
Regrading	AC	_____	_____	_____
Liner Repair	SY	999	\$10.70	\$10,689.30
Clay	CY	666	\$12.69	\$8,451.54
			Subtotal Erosion Control and Cover Maintenance:	\$25,174.80
<b>10. Storm Water Management System Maintenance</b>				
Conveyance Maintenance	LS	1	\$3,057.50	\$3,057.50
			Subtotal Storm Water Management System Maintenance:	\$3,057.50
<b>11. Security System Maintenance</b>				
Fences	LS	1	_____	_____
Gate(s)	EA	_____	_____	_____
Sign(s)	EA	_____	_____	_____
			Subtotal Security System Maintenance:	_____

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
12. Utilities	LS	1	\$600.00	\$600.00
Subtotal Utilities:				\$600.00

### 13. Leachate Collection/Treatment Systems Operation

#### Operation

P.E. Supervisor	HR			
On-Site Engineer	HR			
Office Engineer	HR			
OnSite Technician	HR			
Materials	LS	1		

Subtotal Leachate Collection/Treatment Systems Operation:

### 14. Administrative

P.E. Supervisor	HR	30	\$135.00	\$4,050.00
On-Site Engineer	HR			
Office Engineer	HR	60	\$100.00	\$6,000.00
OnSite Technician	HR	48	\$65.00	\$3,120.00
Other				

Administrative Assistant

Subtotal Administrative: \$13,170.00

Subtotal of 1-14 Above: \$52,769.54

15. Contingency	5	% of Subtotal of 1-14 Above		\$2,638.48
Subtotal Contingency:				\$2,638.48

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

ANNUAL LONG-TERM CARE COST (\$ / YEAR): \$55,408.02

Number of Years of Long-Term Care: 30

TOTAL LONG-TERM CARE COST (\$): \$1,662,240.51



## 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.

Cliff G  
Signature

Clifford G. Koenig, Project Manager  
Name and Title (please type)

6-12-2014  
Date

No. 64078  
Florida Registration Number  
(please affix seal)  


200 W Forsyth St, Ste 800  
Mailing Address

Jacksonville, FL 32202  
City, State, Zip Code

Cliff.Koenig@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 R-2  
Third-Party Quotes**



FROM AUGUST 2013 FACE REPORT FOR NORTH CELL CLOSURE  
USED FOR 18" COVER SOIL AND 6" TOP SOIL UNIT COSTS

**Beben, David**

**From:** Jerry L. Pinder <jerry.pinder@ercflorida.com>  
**Sent:** Tuesday, August 13, 2013 11:11 AM  
**To:** Beben, David  
**Cc:** Nestor Reyes  
**Subject:** RE: Volusia Cost Estimates

---

**From:** Beben, David [<mailto:David.Beben@hdrinc.com>]  
**Sent:** Monday, August 12, 2013 1:33 PM  
**To:** Jerry Pinder ([jerry.pinder@ercflorida.com](mailto:jerry.pinder@ercflorida.com))  
**Subject:** RE: Volusia Cost Estimates

Hi Jerry – any updates?

---

**From:** Beben, David  
**Sent:** Thursday, August 08, 2013 4:40 PM  
**To:** Jerry Pinder ([jerry.pinder@ercflorida.com](mailto:jerry.pinder@ercflorida.com))  
**Subject:** Volusia Cost Estimates

Hi Jerry, we are collecting cost quotes for the Tomoka Farms landfill in Daytona. It will be for the regulatory submittal for closure of the North Cell. Please complete the unit cost for the six items to the best of your knowledge.

Item	Quantity	Unit	Unit Cost	Comments
18" Cover soil Layer (off-site material)	221,281	CY	9.00	Installed unit cost including materials, hauling and installation costs.
6" Top vegetative soil (off-site materials)	73,760	CY	10.00	Installed unit cost including materials, hauling and installation costs.
Textured 40-mil LLDPE	460,264	SY	.30	Installed unit cost including materials and installation costs.
Double sided geocomposite	460,264	SY	.41	Installed unit cost including materials and installation costs.
Sodding	387,175	SY	2.10	Installed unit cost including materials and installation costs.
Hydroseeding	11.44	AC	2,500	

Thanks,

DAVID BEBEN  
PE

HDR Engineering, Inc.  
Project Engineer

200 West Forsyth St. Suite 800 | Jacksonville, FL 32202

FROM AUGUST 2013 FACE REPORT FOR NORTH CELL CLOSURE  
USED FOR 18" COVER SOIL AND 6" TOP SOIL UNIT COSTS

**Beben, David**

---

**From:** Earl Holmes <secontracting@windstream.net>  
**Sent:** Thursday, August 08, 2013 5:00 PM  
**To:** Beben, David  
**Subject:** Fw: Volusia Cost Estimates

**From:** [Beben, David](#)  
**Sent:** Thursday, August 08, 2013 4:41 PM  
**To:** <mailto:earl@southeastenvironmental.com>  
**Subject:** Volusia Cost Estimates

Hi Earl, we are collecting cost quotes for the Tomoka Farms landfill in Daytona. It will be for the regulatory submittal for closure of the North Cell. Please complete the unit cost for the six items to the best of your knowledge.

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Comments</u>
18" Cover soil Layer (off-site material)	221,281	CY	13.50	Installed unit cost including materials, hauling and installation costs.
6" Top vegetative soil (off-site materials)	73,760	CY	15.00	Installed unit cost including materials, hauling and installation costs.
Textured 40-mil LLDPE	460,264	SY	4.90	Installed unit cost including materials and installation costs.
Double sided geocomposite	460,264	SY	5.85	Installed unit cost including materials and installation costs.
Sodding	387,175	SY	2.40	Installed unit cost including materials and installation costs.
Hydroseeding	11.44	AC	2500.00	

Thanks,

**DAVID BEBEN**  
PE

**HDR Engineering, Inc.**  
Project Engineer

200 West Forsyth St. Suite 800 | Jacksonville, FL 32202  
904.598.8923 | f:904.598.8988  
[david.beben@hdrinc.com](mailto:david.beben@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

Follow Us - [Facebook](#) | [Twitter](#) | [YouTube](#)



## Singh, Karamjit

---

**From:** Beben, David  
**Sent:** Friday, May 30, 2014 10:42 AM  
**To:** Singh, Karamjit  
**Subject:** FW: Cost Quotes

Karam,

Here are the unit cost estimates from Earl Holmes of Southeast Environmental Contracting, Inc. (5667 Val Del Rd, Hahira, GA 31632).

Let me know if you have any questions.

**David Beben, PE**  
D 904.598.8923 M 225.223.5384

[hdrinc.com/follow-us](http://hdrinc.com/follow-us)

----- Original message -----

**From:** Earl Holmes <[secontracting@windstream.net](mailto:secontracting@windstream.net)>  
**Date:** 05/14/2014 2:05 PM (GMT-05:00)  
**To:** "Beben, David" <[David.Beben@hdrinc.com](mailto:David.Beben@hdrinc.com)>  
**Subject:** Fw: Cost Quotes

Please see the costs below.

**From:** [Beben, David](#)  
**Sent:** Friday, May 02, 2014 3:45 PM  
**To:** <mailto:secontracting@windstream.net> ; [mailto:southern\\_m\\_n\\_m@yahoo.com](mailto:southern_m_n_m@yahoo.com)  
**Subject:** Cost Quotes

Earl & Michelle,  
HDR is working on two cost estimates for FDEP landfill permits – Steelfield Road Landfill near Panama City and Tomoka Farms. We need some assistance procuring Contractor quotes for the estimates. A table with the material and quantities is below to fill out. Please let me know if you have any questions or need clarification. Thank you for the assistance. Have a great weekend.

**David Beben, PE**  
*Engineer*

**HDR**  
200, W. Forsyth Street, Ste. 800  
Jacksonville, FL 32259  
D 904.598.8923 M 225.223.5384  
[david.beben@hdrinc.com](mailto:david.beben@hdrinc.com)

[hdrinc.com/follow-us](http://hdrinc.com/follow-us)

Volusia County Tomoka Farms Road Landfill	
Quantity	Unit Cost (\$)

Offsite Cover Soil – 18" layer over liner	217,531 CY	Place & Install\$____3____/CY
Passive Vents	43 Wells; each 88 feet deep (avg)	\$____130____/FT
HDPE Inlets 18" Diameter	4	\$____700____/EA
HDPE Inlets 24" Diameter	157	\$____800____/EA



## Singh, Karamjit

---

**From:** Beben, David  
**Sent:** Thursday, May 22, 2014 10:23 AM  
**To:** Singh, Karamjit  
**Subject:** RE: Cost Quotes

Karam,

Here is quote for geosynthetics (40-mil LLDEP and 250-mil geocomposite).

Let me know if you have any questions.

Thanks,  
David

---

**From:** Nick Bridges [<mailto:nbridges@comanco.com>]  
**Sent:** Wednesday, May 14, 2014 2:19 PM  
**To:** Beben, David  
**Subject:** FW: Cost Quotes

David,

Here is your pricing (below). Let us know if you need help with anything else.

Thanks

Nick Bridges



Nick Bridges, E.I. | Project Engineer  
COMANCO Environmental Corp.  
4301 Sterling Commerce Dr. | Plant City, FL 33566  
813-988-8829 Office | 813-323-3651 Cell  
[nbridges@comanco.com](mailto:nbridges@comanco.com) | [www.comanco.com](http://www.comanco.com)

---

**From:** Beben, David [<mailto:David.Beben@hdrinc.com>]  
**Sent:** Friday, May 02, 2014 3:48 PM  
**To:** Nick Bridges; John Jacobs  
**Subject:** Cost Quotes

Nick & John

HDR is working on two cost estimates for FDEP landfill permits – Steelfield Road Landfill near Panama City and Tomoka Farms. We need some assistance procuring Contractor quotes for the estimates. Please let me know if you have any questions or need clarification. Thank you for the assistance. Have a great weekend.

**David Beben**, PE  
Engineer

**HDR**

200, W. Forsyth Street, Ste. 800  
Jacksonville, FL 32259  
D 904.598.8923 M 225.223.5384  
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[hdrinc.com/follow-us](http://hdrinc.com/follow-us)

	Bay County Steelfield Road Landfill		Volusia County Tomoka Farms Road Landfill	
	Quantity	Unit Cost (\$)	Quantity	Unit Cost (\$)
40-mil textured LLDPE	175,160 SY	<u>\$4.05</u> /SY	435,062 SY	<u>\$4.05</u> /SY
250-mil geocomposite double-sided	175,160 SY	<u>\$3.60</u> /SY	309,466 SY	<u>\$3.60</u> /SY



Florida Department of Transportation

Item Average Unit Cost

From 2013/04/01 to 2014/03/31

Contract Type: CC AREAS: 06  
 Displaying: VALID ITEMS WITH HITS  
 From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0430175218	1	\$47.00	\$11,515.00	245.000	LF	N	PIPE CULV, OPT MATL, OTHER, 18"S/CD
0430175224	1	\$51.00	\$6,528.00	128.000	LF	N	PIPE CULV, OPT MATL, OTHER, 24"S/CD
0430982125	1	\$500.00	\$16,500.00	33.000	EA	N	MITERED END SECT, OPTIONAL RD, 18" CD
0430982129	1	\$640.00	\$7,040.00	11.000	EA	N	MITERED END SECT, OPTIONAL RD, 24" CD
0430982133	1	\$1,800.00	\$1,800.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 30" CD
0430982140	1	\$2,250.00	\$2,250.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 42" CD
0430982629	1	\$1,700.00	\$3,400.00	2.000	EA	N	MITERED END SECT, OPT - OTHER, 24" CD
0430984125	2	\$705.82	\$47,290.00	67.000	EA	N	MITERED END SECT, OPTIONAL RD, 18" SD
0430984129	2	\$892.91	\$9,822.00	11.000	EA	N	MITERED END SECT, OPTIONAL RD, 24" SD
0430984133	1	\$1,082.00	\$1,082.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 30" SD
0430984623	1	\$887.00	\$1,774.00	2.000	EA	N	MITERED END SECT, OPTIONAL, OTHER, 15" SD
0430984625	2	\$632.98	\$29,750.00	47.000	EA	N	MITERED END SECT, OPT / OTHER, 18" SD
0430984629	1	\$1,500.00	\$24,000.00	16.000	EA	N	MITERED END SECT, OPT / OTHER, 24" SD
0436 1 1	1	\$170.00	\$51,000.00	300.000	LF	N	TRENCH DRAIN, STANDARD
0458 1 21	1	\$100.00	\$61,200.00	612.000	LF	N	BRIDGE DECK EXPANSION JNT, REHAB,POURED
0520 1 7	1	\$16.00	\$32,944.00	2,059.000	LF	N	CONCRETE CURB & GUTTER, TYPE E
0520 1 10	1	\$46.00	\$9,430.00	205.000	LF	N	CONCRETE CURB & GUTTER, TYPE F
0520 6	1	\$16.00	\$12,352.00	772.000	LF	N	SHOULDER GUTTER- CONCRETE
0522 1	1	\$51.00	\$16,626.00	326.000	SY	N	CONC SIDEWALK AND DRIVEWAYS, 4" THICK
0522 2	2	\$50.15	\$4,257.00	70.770	SY	N	CONC SIDEWALK AND DRIVEWAYS, 6" THICK
0524 1 2	1	\$34.00	\$21,930.00	645.000	SY	N	CONCRETE DITCH PAVT, NR, 4"
0524 1 4	1	\$39.00	\$409,266.00	10,494.000	SY	N	CONCRETE DITCH PAVT, NR, 6"
0524 1 29	1	\$86.00	\$3,956.00	46.000	SY	N	CONC DITCH PAVT, 4", REINFORCED
0530 3 4	1	\$126.00	\$12,600.00	100.000	TN	N	RIPRAP, RUBBLE, F&I, DITCH LINING
0536 1 1	3	\$28.22	\$34,138.00	1,209.500	LF	N	GUARDRAIL- ROADWAY
0536 7	1	\$139.00	\$556.00	4.000	EA	N	SPECIAL GUARDRAIL POST
0536 8	1	\$2,200.00	\$6,600.00	3.000	EA	N	GUARDRAIL- BRIDGE ANCHORAGE ASSEM, F&I
0536 73	1	\$3.00	\$487.50	162.500	LF	N	GUARDRAIL REMOVAL
0536 85 22	3	\$1,900.00	\$11,400.00	6.000	EA	N	GUARDRAIL END ANCHORAGE ASSEMBLY- FLARED
0536 85 24	1	\$2,200.00	\$11,000.00	5.000	EA	N	GUARDRAIL END ANCHORAGE ASSEM- PARALLEL
0536 85 25	1	\$575.00	\$1,725.00	3.000	EA	N	GUARDRAIL END ANCHORAGE ASSEM- TYPE II
0550 10120	1	\$5.00	\$44,805.00	8,961.000	LF	N	FENCING, TYPE A, 5.1-6.0, STANDARD
0550 60134	1	\$2,000.00	\$8,000.00	4.000	EA	N	FENCE GATE,TYP A, SLIDE/CAN, 18.1-20.'
0570 1 1	1	\$1.51	\$789,389.25	523,164.300	SY	N	PERFORMANCE TURF, SOD
0630 2 11	3	\$4.92	\$284,782.10	57,861.000	LF	N	CONDUIT, F& I, OPEN TRENCH
0630 2 12	3	\$18.39	\$277,304.00	15,078.000	LF	N	CONDUIT, F& I, DIRECTIONAL BORE
0630 2 14	1	\$12.50	\$1,250.00	100.000	LF	N	CONDUIT, F& I, ABOVEGROUND
0630 2 15	1	\$26.50	\$22,472.00	848.000	LF	N	CONDUIT, F& I, BRIDGE MOUNT
0632 7 1	1	\$5,000.00	\$10,000.00	2.000	PI	N	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL



# Volusia County

Date: 08-May-14

Tomoka Farms Road Landfill - Class III  
Year 2014 Quarter 1  
Unit Detail Report

Prepared By:  
Karamjit Singh  
HDR

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
<b>Division 32 Exterior Improvements</b>					
329219140200	Seeding athletic fields, seeding athletic field mix with mulch and fertilizer, 8 lb. per M.S.F., hydro or air seeding	1.00	M.S.F.	\$36.64	\$36.64
<b>Division 32 Exterior Improvements Subtotal</b>					<b>\$36.64</b>
<b>Division 33 Utilities</b>					
333113203080	Public sanitary utility sewerage piping, piping HDPE Corrugated Type S with watertight gaskets, 12" diameter, excludes excavation or backfill	1.00	L.F.	\$10.25	\$10.25
333113203100	Public sanitary utility sewerage piping, piping HDPE Corrugated Type S with watertight gaskets, 15" diameter, excludes excavation or backfill	1.00	L.F.	\$12.09	\$12.09
333113203120	Public sanitary utility sewerage piping, piping HDPE Corrugated Type S with watertight gaskets, 18" diameter, excludes excavation or backfill	1.00	L.F.	\$19.01	\$19.01
<b>Division 33 Utilities Subtotal</b>					<b>\$41.35</b>
<b>Subtotal</b>				<b>\$77.99</b>	<b>\$77.99</b>
<b>General Contractor's Markup on Subs</b>			<b>0.00%</b>	<b>\$0.00</b>	<b>\$0.00</b>
<b>Subtotal</b>				<b>\$77.99</b>	<b>\$77.99</b>
<b>General Conditions</b>			<b>0.00%</b>	<b>\$0.00</b>	<b>\$0.00</b>
<b>Subtotal</b>				<b>\$77.99</b>	<b>\$77.99</b>
<b>General Contractor's Overhead and Profit</b>			<b>0.00%</b>	<b>\$0.00</b>	<b>\$0.00</b>
<b>Grand Total</b>					<b>\$77.99</b>



Florida Department of Transportation

Item Average Unit Cost

From 2013/10/01 to 2014/03/31

Contract Type: CC STATEWIDE  
 Displaying: VALID ITEMS WITH HITS  
 From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0430174230	1	\$64.50	\$2,580.00	40.000	LF	N	PIPE CULV, OPT MATL, OTHER, 30"SD
0430175112	1	\$300.00	\$5,100.00	17.000	LF	N	PIPE CULV, OPT MATL, ROUND, 12"S/CD
0430175115	6	\$160.53	\$60,678.86	378.000	LF	N	PIPE CULV, OPT MATL, ROUND, 15"S/CD
0430175118	15	\$40.74	\$1,297,381.68	31,842.000	LF	N	PIPE CULV, OPT MATL, ROUND, 18"S/CD
0430175124	8	\$48.88	\$931,735.18	19,061.000	LF	N	PIPE CULV, OPT MATL, ROUND, 24"S/CD
0430175130	7	\$66.10	\$821,108.54	12,422.000	LF	N	PIPE CULV, OPT MATL, ROUND, 30"S/CD
0430175136	4	\$77.56	\$208,636.40	2,690.000	LF	N	PIPE CULV, OPT MATL, ROUND, 36"S/CD
0430175142	4	\$101.90	\$201,656.80	1,979.000	LF	N	PIPE CULV, OPT MATL, ROUND, 42"S/CD
0430175148	2	\$115.84	\$132,401.55	1,143.000	LF	N	PIPE CULV, OPT MATL, ROUND, 48"S/CD
0430175154	1	\$130.00	\$172,250.00	1,325.000	LF	N	PIPE CULV, OPT MATL, ROUND, 54"S/CD
0430175160	1	\$160.00	\$15,520.00	97.000	LF	N	PIPE CULV, OPT MATL, ROUND, 60"S/CD
0430175215	1	\$81.02	\$18,553.58	229.000	LF	N	PIPE CULV, OPT MATL, OTHER, 15"S/CD
0430175218	7	\$45.23	\$151,214.97	3,343.000	LF	N	PIPE CULV, OPT MATL, OTHER, 18"S/CD
0430175224	3	\$56.09	\$104,888.00	1,870.000	LF	N	PIPE CULV, OPT MATL, OTHER, 24"S/CD
0430175230	1	\$74.00	\$188,848.00	2,552.000	LF	N	PIPE CULV, OPT MATL, OTHER, 30"S/CD
0430175242	1	\$130.00	\$20,410.00	157.000	LF	N	PIPE CULV, OPT MATL, OTHER, 42"S/CD
0430185142	1	\$950.00	\$113,050.00	119.000	LF	N	PIPE CULV, OPT MATL, ROUND, JACK&BORE, 42"
0430185148	1	\$1,100.00	\$260,700.00	237.000	LF	N	PIPE CULV, OPT MATL, ROUND, JACK&BORE, 48"
0430185154	1	\$1,265.00	\$149,270.00	118.000	LF	N	PIPE CULV, OPT MATL, ROUND, JACK&BORE, 54"
0430611125	1	\$1,200.00	\$2,400.00	2.000	EA	N	U-ENDWALL, BAPFLES, STD 261,1:4 SLP, 18"
0430611225	1	\$900.00	\$900.00	1.000	EA	N	U-ENDWALL, BAPFLES, STD 261,1:3 SLP, 18"
0430611325	2	\$2,037.50	\$8,150.00	4.000	EA	N	U-ENDWALL, BAPFLES, STD 261,1:2 SLP, 18"
0430830	3	\$246.58	\$24,731.64	100.300	CY	N	PIPE FILLING AND PLUGGING
0430982120	1	\$600.00	\$600.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 8" CD
0430982121	1	\$750.00	\$2,250.00	3.000	EA	N	MITERED END SECT, OPTIONAL RD, 12" CD
0430982123	1	\$695.00	\$695.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 15" CD
0430982125	5	\$671.96	\$30,910.00	46.000	EA	N	MITERED END SECT, OPTIONAL RD, 18" CD
0430982129	4	\$1,084.81	\$26,035.48	24.000	EA	N	MITERED END SECT, OPTIONAL RD, 24" CD
0430982133	2	\$1,686.00	\$6,744.00	4.000	EA	N	MITERED END SECT, OPTIONAL RD, 30" CD
0430982138	1	\$2,105.00	\$4,210.00	2.000	EA	N	MITERED END SECT, OPTIONAL RD, 36" CD
0430982140	2	\$2,447.50	\$4,895.00	2.000	EA	N	MITERED END SECT, OPTIONAL RD, 42" CD
0430982141	1	\$3,025.00	\$3,025.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 48" CD
0430982142	1	\$4,785.00	\$9,570.00	2.000	EA	N	MITERED END SECT, OPTIONAL RD, 54" CD
0430982143	1	\$4,930.00	\$4,930.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 60" CD
0430982625	1	\$1,200.00	\$9,600.00	8.000	EA	N	MITERED END SECT, OPT - OTHER, 18" CD
0430982629	3	\$1,309.00	\$10,472.00	8.000	EA	N	MITERED END SECT, OPT - OTHER, 24" CD
0430982633	1	\$1,454.00	\$1,454.00	1.000	EA	N	MITERED END SECT, OPT - OTHER, 30" CD
0430984123	1	\$370.00	\$1,850.00	5.000	EA	N	MITERED END SECT, OPTIONAL RD, 15" SD
0430984125	8	\$740.81	\$115,565.60	156.000	EA	N	MITERED END SECT, OPTIONAL RD, 18" SD
0430984129	7	\$904.20	\$41,593.00	46.000	EA	N	MITERED END SECT, OPTIONAL RD, 24" SD



Florida Department of Transportation

Item Average Unit Cost

From 2013/04/01 to 2014/03/31

Contract Type: CC AREAS: 06  
Displaying: VALID ITEMS WITH HTS  
From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0102 1	4	\$210.45	\$387,222.60	1,840.000	DA	N	MAINTENANCE OF TRAFFIC
0102 2	1	\$25,000.00	\$25,000.00	1.000	LS	N	SPECIAL DETOUR 1
0102 2	1	\$11,000.00	\$11,000.00	1.000	LS	N	SPECIAL DETOUR 2
0102 2	1	\$18,000.00	\$18,000.00	1.000	LS	N	SPECIAL DETOUR 3
0102 2	1	\$15,000.00	\$15,000.00	1.000	LS	N	SPECIAL DETOUR 4
0102 2	1	\$22,500.00	\$22,500.00	1.000	LS	N	SPECIAL DETOUR 5
0102 2	1	\$8,000.00	\$8,000.00	1.000	LS	N	SPECIAL DETOUR 6
0102 14	2	\$50.00	\$16,000.00	320.000	MH	N	TRAFFIC CONTROL OFFICER
0102 60	3	\$28	\$36,330.24	129,784.000	ED	N	WORK ZONE SIGN
0102 71	1	\$12.00	\$10,920.00	910.000	LF	N	BARRIER WALL, TEMP, F&I, CONCRETE
0102 71	1	\$4.50	\$4,095.00	910.000	LF	N	BARRIER WALL, TEMP, REL, CONCRETE
0102 74	1	\$17	\$71,200.33	412,613.000	ED	N	TEMP BARR-TYPS I, II, DI, VP, DRUM, LC
0102 74	1	\$27	\$10,600.20	39,260.000	ED	N	BARRICADE, TEMP, TYPE III, 6'
0102 76	2	\$7.46	\$4,590.00	615.000	ED	N	ARROW BOARD /ADVANCE WARNING ARROW PANEL
0102 77	3	\$2.57	\$8,622.48	411,112.000	ED	N	HIGH INTENSITY FLASH LI, TEMP, TYP B
0102 78	2	\$13	\$13,414.65	5,211.000	EA	N	TEMPORARY RETROREFLECTIVE PAVT MARKER
0102 79	1	\$13	\$659.49	5,073.000	ED	N	LIGHTS, BARR WALL MNT, TEMP, TYP C, STDY BRN
0102 89	1	\$950.00	\$5,700.00	6.000	LO	N	TEMPORARY CRASH CUSHION, RED OPT
0102 99	3	\$14.19	\$33,028.00	2,327.000	ED	N	PORTABLE CHANGEABLE MESSAGE SIGN, TEMP
0102104	1	\$5.80	\$6,264.00	1,080.000	ED	N	TEMPORARY SIGNALIZATION AND MAINT, INTER
0102107	1	\$7.40	\$7,992.00	1,080.000	ED	N	TEMP TRAFFIC DETECTION & MAINTEN, INTER
0102150	1	\$8.24	\$10,130.00	1,230.000	ED	N	PORTABLE REGULATORY, SIGN
0102150	2	\$8.24	\$10,130.00	1,230.000	ED	N	RADAR SPEED DISPLAY UNIT
0104 10	3	\$76	\$38,571.55	50,740.000	LF	N	SEDIMENT BARRIER
0104 18	3	\$57.88	\$5,556.00	96.000	EA	N	INLET PROTECTION SYSTEM
0107 1	2	\$15.55	\$38,816.00	2,496.000	AC	N	LITTER REMOVAL
0107 2	2	\$28.33	\$62,212.00	2,196.000	AC	N	MOWING
0110 1	3	\$2,457.09	\$377,655.24	153.700	AC	N	CLEARING & GRUBBING
0110 4	1	\$19.00	\$6,099.00	321.000	SY	N	REMOVAL OF EXISTING CONCRETE PAVEMENT
0110 6	1	\$2,100.00	\$6,300.00	3.000	EA	N	PLUGGING WATER WELLS, NON-ARTESIAN
0110 7	1	\$102.26	\$5,420.00	53.000	EA	N	MAILBOX, F&I SINGLE
0110 15	1	\$5,300.00	\$5,300.00	1.000	LS	N	ARBORIST WORK, COMPLETE
0120 1	1	\$3.00	\$1,218,306.00	406,102.000	CY	N	REGULAR EXCAVATION
0120 2	1	\$12.82	\$179,736.40	14,020.000	CY	N	BORROW EXCAVATION, TRUCK MEASURE
0120 4	1	\$13.00	\$468,832.00	36,064.000	CY	N	SUBSOIL EXCAVATION
0120 6	1	\$1.60	\$384,363.20	240,227.000	CY	N	EMBANKMENT
0120 71	1	\$55,562.86	\$55,562.86	1.000	LS	N	REGULAR EXCAVATION (3-R PROJECTS ONLY)
0160 4	1	\$2.80	\$644,330.40	230,118.000	SY	N	TYPE B STABILIZATION
0162 1	1	\$27	\$65,870.82	243,966.000	SY	N	PREPARED SOIL LAYER, FINISH SOIL, 6"
0285701	1	\$5.80	\$220,046.78	37,939.100	SY	N	OPTIONAL BASE, BASE GROUP 01



## **Attachment R-3 USLE Calculation**

**Tomoks Farms Road Landfill - Class III**  
**May 2014**

**Soil Erosion using the Universal Soil Loss Equation (USLE)**

**The Universal Soil Loss Equation**       $A = R * K * LS * C * P$

**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**

**LS =**    7.21      Table 3 USDA "Predicting Rainfall Loss Handbook"; 150 ft slope, 25% slope (Based on Closure Design)

**Cover and Management Factor**

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

**Support Practice Factor**

**P =**    1      support practice factor, assumed for slope with no farming

**Assumptions:**

density      95 lb/ft<sup>3</sup>      dry density for silty sand  
acreage      88.06 acres

**Table of Soil Loss**

<b>C</b>	<b>A (tons/year)</b>	<b>tons/ year</b>	<b>CF/ year</b>	<b>CY/ year</b>
0.042	10	854	17,974	666

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



# PREDICTING RAINFALL EROSION LOSSES

A GUIDE TO CONSERVATION PLANNING



UNITED STATES  
DEPARTMENT OF  
AGRICULTURE

AGRICULTURE  
HANDBOOK  
NUMBER 537

PREPARED BY  
SCIENCE AND  
EDUCATION  
ADMINISTRATION



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

The soil loss equation is

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

where

- A** is the computed soil loss per unit area, expressed in the units selected for **K** and for the period selected for **R**. In practice, these are usually so selected that they compute **A** in tons per acre per year, but other units can be selected.
- R**, the rainfall and runoff factor, is the number of rainfall erosion index units, plus a factor for runoff from snowmelt or applied water where such runoff is significant.
- K**, the soil erodibility factor, is the soil loss rate per erosion index unit for a specified soil as measured on a unit plot, which is defined as a 72.6-ft length of uniform 9-percent slope continuously in clean-tilled fallow.
- L**, the slope-length factor, is the ratio of soil loss from the field slope length to that from a 72.6-ft length under identical conditions.
- S**, the slope-steepness factor, is the ratio of soil loss from the field slope gradient to that from a 9-percent slope under otherwise identical conditions.
- C**, the cover and management factor, is the ratio of soil loss from an area with specified cover and management to that from an identical area in tilled continuous fallow.
- P**, the support practice factor, is the ratio of soil loss with a support practice like contouring, stripcropping, or terracing to that with straight-row farming up and down the slope.

---

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

---

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

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

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



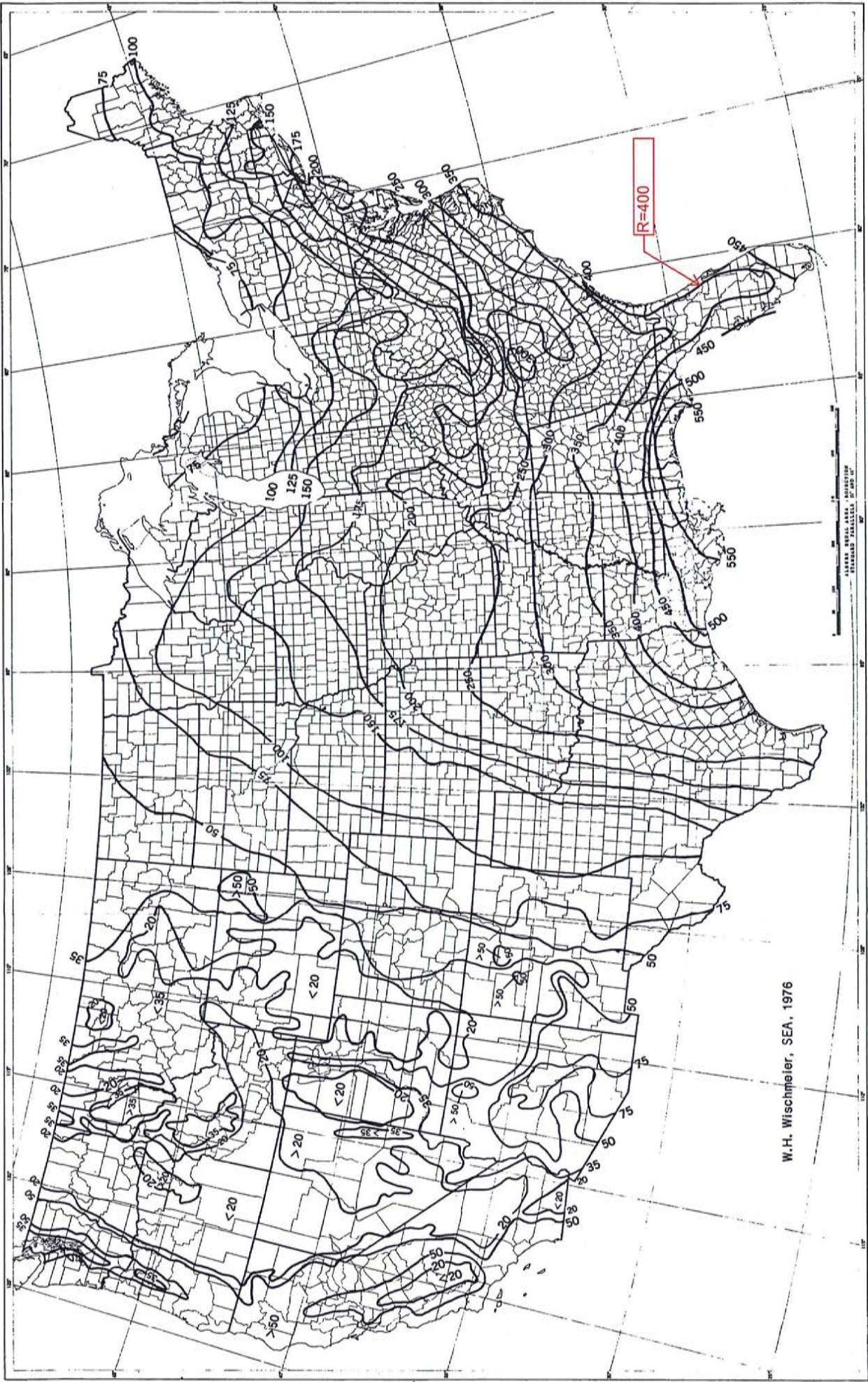


FIGURE 1.—Average annual values of the rainfall erosion index.



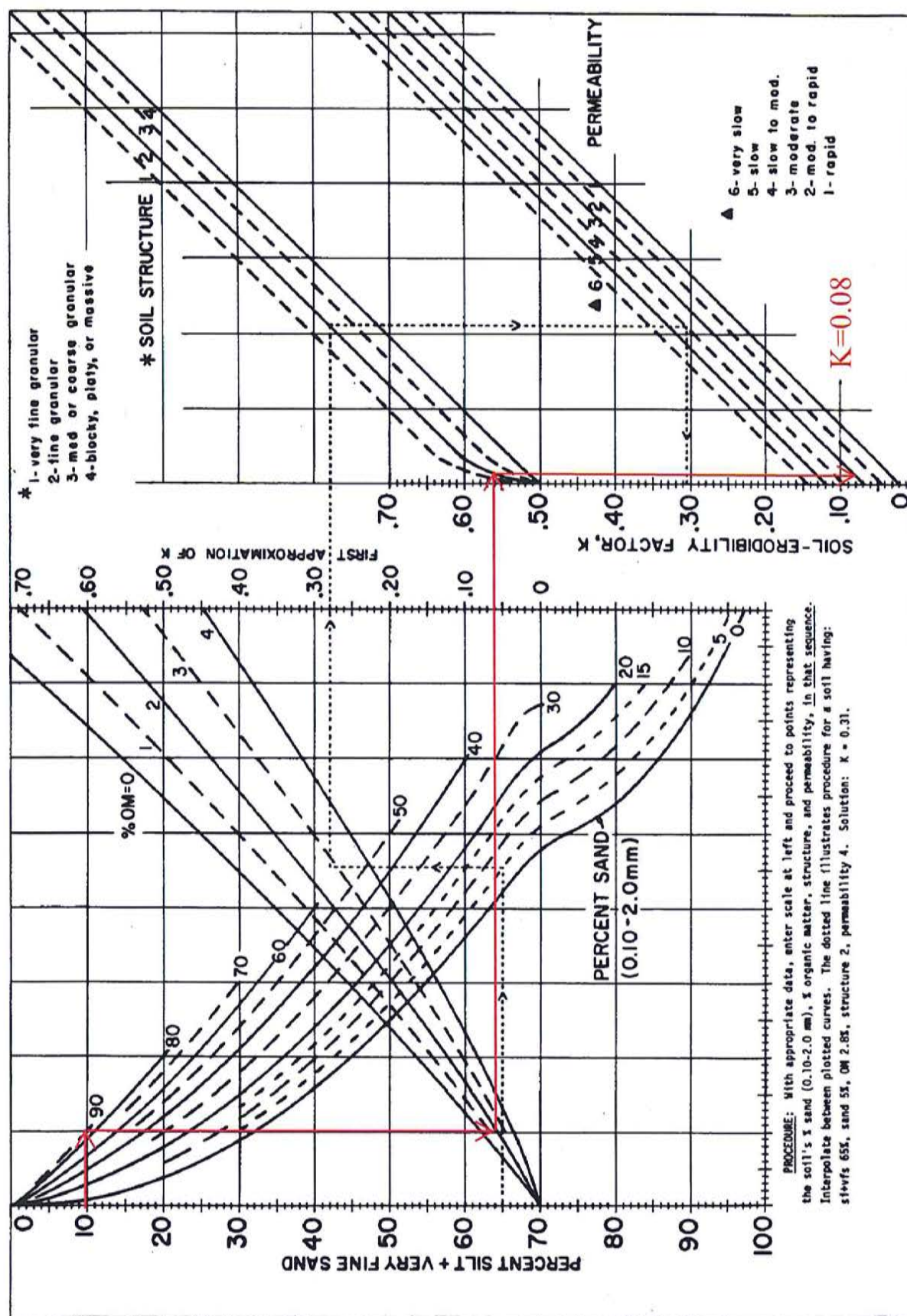


FIGURE 3.—The soil-erodibility nomograph. Where the silt fraction does not exceed 70 percent, the equation is  $100 K = 2.1 M^{1.14} (10^{-4}) (12 - a) + 3.25 (b - 2) + 2.5 (c - 3)$  where  $M = (\text{percent si} + \text{vfs}) (100 - \text{percent c})$ ,  $a = \text{percent organic matter}$ ,  $b =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



## TOPOGRAPHIC FACTOR (LS)

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

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

### Slope-Effect Chart

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

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

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

where  $\lambda$  = slope length in feet;

$\theta$  = 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<sup>1</sup>

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

<sup>1</sup>  $LS = (\lambda/72.6)^m (65.41 \sin^2 \theta + 4.56 \sin \theta + 0.065)$  where  $\lambda$  = 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  $\theta$  = angle of slope. (For other combinations of length and gradient, interpolate between adjacent values or see fig. 4.)



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

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

### *C* Values for Pasture, Range, and Idle Land

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

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

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

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

TABLE 10.—Factor *C* for permanent pasture, range, and idle land<sup>1</sup>

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

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

<sup>2</sup> 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.

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

<sup>4</sup> 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.





## **ATTACHMENT F**

**Electronic Copy of Permit Application (CD)**

