

Solid Waste Management Facility Closure Permit Application for Cell 7B/8 Class I Landfill

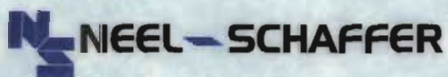
Solid Waste Management Facility Orange County, Florida

Prepared for:



Solid Waste Division
Orange County, Florida

Prepared by:



Neel-Schaffer, Inc.
2600 Lake Lucien Drive, Suite 117
Maitland, Florida 32751

Project No. WN.01111.001



ORANGE COUNTY UTILITIES – SOLID WASTE DIVISION
5901 Young Pine Road • Orlando, Florida 32829
407-836-6600 • Fax 407-836-6629

*TOM DM 12-27-05
File*

December 21, 2005

Mr. Leonard T. Kozlov, P.E.
Program Administrator
Air Resources Management
Central District
Florida Department of Environmental Protection (FDEP)
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

RECEIVED
DEC 22 2005
Central Dist. - DEP

RE: Landfill Closure Report- 40 CFR60.757 (d)
Final Closure Cell 7B/8 Class I Solid Waste Landfill
Title V Permit No. 0950113-003-AV
Orange County Solid Waste Management Facility (OCSWMF)

Dear Mr. Kozlov:

Pursuant to the results of our meeting and discussions held in your office on October 13, 2004 regarding the above referenced disposal area and in compliance with the requirements of 40 CFR 60.757 (d), we hereby provide one signed and sealed copy of the FDEP closure permit application for final closure of the Cell 7B/8 disposal area at the OCSWMF. The permit application was submitted to the Central District of FDEP-Solid Waste Section in September 2005 and FDEP has released the Notice-of-Intent to issue the permit. The closure permit application is submitted to you as the required Landfill Closure Report.

The landfill ceased disposal operations on December 13, 2005. The County plans to complete the bid documents, select a qualified Contractor, and construct the final closure cover system within the next 24 to 30 months.

The closure permit application and Drawings contain the following information for the Landfill Closure Report:

- Gas management system components including location and design of gas wells, laterals, headers and condensate management system. (Section 12.0, Appendix D and permit drawings)
- Landfill Final Closure Requirements, Closure Procedures and Long-Term-Care (Section 13.0)
- Financial Responsibility Cost Estimates documentation for FY 2004 (Section 14.0 and Appendix G)
- Geotechnical analysis & slope stability of final cover
- Detailed final grading plan, stormwater plan and gas collection & control plan

If you require additional information regarding this matter, please contact me at your convenience.

Very truly yours,
ORANGE COUNTY UTILITIES SOLID WASTE DIVISION

James W. Becker
James W. Becker,
Manager

Enclosures

CC: Mr. Dan Morrical, P.E., Chief Engineer, Orange County Solid Waste Division
Mr. James W. Flynt, P.E., Sr. Engineer, Orange County Solid Waste Division
Mr. Ron Beladi, P.E. Neel-Schaffer, Inc., Project Manager

RECEIVED
DEC 22 2005
Central Dist. - DEP

**PERMIT APPLICATION
FOR FINAL CLOSURE OF A
SOLID WASTE MANAGEMENT FACILITY**

**FINAL CLOSURE OF CELL 7B/8 CLASS I LANDFILL
SOLID WASTE MANAGEMENT FACILITY
ORANGE COUNTY, FLORIDA**

Prepared For:

**ORANGE COUNTY UTILITIES SOLID WASTE DIVISION
5901 Young Pine Road
Orlando, Florida 32829**

Prepared By:

**NEEL-SCHAFFER, INC.
2600 Lake Lucien Drive, Suite 117
Maitland, Florida 32751**

September 2005
Project No. WN.01111.001

Handwritten signature and date: 9/15/05
Circular stamp: 2005 SEP 15 10:58 AM
Vertical stamp: 2005 SEP 15 10:58 AM



ORANGE COUNTY UTILITIES - SOLID WASTE DIVISION
5901 Young Pine Road • Orlando, Florida 32829
407-836-6600 • Fax 407-836-6629

September 15, 2005

Mr. James Bradner
Solid Waste Section Manager
Central Florida District
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

**Subject: FDEP Closure Permit Application
Final Closure of Cell 7B/8 Landfill
Orange County Solid Waste Management Facility
Orange County, Florida**

Dear Mr. Bradner:

The Orange County Solid Waste Division hereby provides four (4) copies of the Application for Final Closure of the Cell 7B/8 Class I solid waste landfill at the Orange County Solid Waste Management Facility. This permit is for approval of the final landfill closure and construction of the final cover system in the remaining unclosed areas. The closure construction will include installation of the final cover system, expansion of the landfill gas extraction and collection system, and improvements to the secondary stormwater system.

The major components in the Closure Construction Permit requested by this application are as follows:

- Closure design and final cover system is the same as that previously submitted to FDEP as part of the operation permit application and sequential closure permits for Cell 7B/8.
- The final cover system design for the unclosed areas consists of a 12- inch thick earthfill for leveling course, a 40-mil geomembrane for barrier layer, and 24 inches of protective cover consisting of 18 inches of earthfill with 6- inches of topsoil and sod.
- Construction of the final cover for the remaining 60-acres of open area.
- Installation of 14 new stormwater management letdown systems (piping, inlets, manholes, energy dissipaters), and extension of three existing letdown systems to the top surface of the solid waste unit.

Mr. James Bradner, P.E.

9/7/2005

Page 2

- Installation of new vertical gas wells, connection of existing horizontal collectors to the collection system with new wellheads along with associated lateral pipes header pipes, manifolds piping, control valves and connection to the existing active LFG system.

The application, engineering report and appendices are structured according to the Chapter 62-701 (900) checklist format. A full size set of drawings accompanies each copy of the submittal.

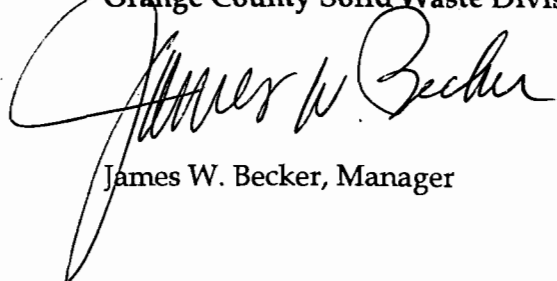
Orange County Check No. 366845 dated April 18, 2005 in the amount of \$7500.00 is submitted to the Department along with this application.

Notice of Application for a permit to close an existing solid waste disposal facility will be published in a local newspaper of general circulation, upon receipt of notification from FDEP to publish the Notice of Application. Since the Orange County Solid Waste Management Facility will continue to operate other solid waste disposal operations at the Facility, the notice of solid waste facility closure to the Department or users would not be applicable.

If you have any questions or need additional information, please advise.

Yours truly,

Orange County Solid Waste Division



James W. Becker, Manager

Enclosures: Permit Application Text Bound with Letter
Permit Drawings (24" X 36")

Distribution to:

Mr. Dan Morrival, P.E., Chief Solid Waste Engineer, OCSWD
Mr. James Flynt, P.E. Sr. Solid Waste Engineer, OCSWD
Mr. Mehran (Ron) S. Beladi, P.E., Neel Schaffer Inc.

File 021080.01

Solid Waste Management Facility Closure Permit Application for Cell 7B/8 Class I Landfill

Table of Contents

Section 1.0 Permit Application Checklist

1.1	<i>Executive Summary</i>	1-1
1.2	<i>Facility Owner and Operator</i>	1-1
1.3	<i>Checklist (FDEP Form 62-701.900 (1))</i>	1-2
1.3.1	<i>Parts A&B – General Information and Disposal Facility General Information</i>	1-2
1.3.2	<i>Parts C&D – Non-Disposal Facility General Information and Prohibitions (62-701.300, FAC)</i>	1-2
1.3.3	<i>Part E - Solid Waste Management Facility Permit General Requirements (62-701.320, FAC)</i>	1-2
1.3.4	<i>Parts F&G – Landfill Permit Requirements and General Criteria for Landfills (62-701.330 & 340, FAC)</i>	1-2
1.3.5	<i>Part H – Landfill Construction Requirements (62-701.400, FAC)</i>	
1.3.6	<i>Part I – Hydrogeological Investigation Requirements (62-701.410 (1), FAC)</i>	1-2
1.3.7	<i>Part J – Geotechnical Investigation Requirements (62-701.410 (2), FAC)</i>	1-2
1.3.8	<i>Part K – Vertical Expansion of Landfills (62-701.430, FAC)</i>	1-2
1.3.9	<i>Part L – Landfill Operation Requirements (62-701.500, FAC)</i>	1-3
1.3.10	<i>Part M – Water Quality and Leachate Monitoring Requirements (62-701.510, FAC)</i>	1-3
1.3.11	<i>Part N – Special Waste Handling Requirements (62-701.520, FAC)</i>	1-3
1.3.12	<i>Part O – Gas Management System Requirements (62-701.530, FAC)</i>	1-3
1.3.13	<i>Part P, Q, & R – Landfill Final Closure Requirements, Closure Procedures and Long Term Care Requirements (62-701.600, 610 & 620, FAC)</i>	1-3
1.3.14	<i>Part S – Financial Responsibility Requirements (62-701.630, FAC)</i>	1-3
1.3.15	<i>Part T – Certification by Applicant and Engineer or Public Officer</i>	1-3

Application Form

State of Florida Department of Environmental Protection Application for a Permit to Construct, Operate, Modify or Close a Solid Waste Management Facility

Section 2.0	Parts C & D – Non-Disposal Facility General Information and Prohibitions (62-701.300, FAC)- Not Applicable	2-1
-------------	---	-----

Solid Waste Management Facility Closure Permit Application for Cell 7B/8 Class I Landfill

Table of Contents (continued)

Section 3.0	Part E – Solid Waste Management Facility Permit General Requirements (62-701.320, FAC)	
3.1	<i>Permit Application Copies (62-701.320(5)(a), FAC)</i>	3-1
3.2	<i>Certification (62-701.320(6), FAC)</i>	3-1
3.3	<i>Transmittal Letter (62-701.320(7)(a), FAC)</i>	3-1
3.4	<i>FDEP Form (62-701.320(7)(b), FAC)</i>	3-1
3.5	<i>Permit Application Fee (62-701.320(7)(c), FAC)</i>	3-1
3.6	<i>Engineering Report (62-701.320(7)(d), FAC)</i>	3-1
3.7	<i>Operations and Closure Plan (62-701.320(7)(e) 1, FAC)</i>	3-1
3.8	<i>Contingency Plan (62-701.320(7)(e) 2, FAC)</i>	3-1
3.9	<i>Solid Waste Management Facilities Drawings (62-701.320(7)(f), FAC)</i>	3-2
3.10	<i>Proof of Property Ownership (62-70.320(7)(g), FAC)</i>	3-2
3.11	<i>Recycling Goal Achievement (62-701.320(7)(h), FAC)</i>	3-2
3.12	<i>History of FDEP Enforcement Activities (62-701.320(7)(i), FAC)</i>	3-2
3.13	<i>Proof of Publication of Landfill Permit Application (62-701.320(8), FAC)</i>	3-3
3.14	<i>Airport Safety Requirements (62-701.320(13), FAC)</i>	3-3
3.15	<i>Operator Training Requirements (62-701.320(15), FAC)</i>	3-3
Section 4.0	Part F&G – Landfill Permit Requirements and General Criteria for Landfill (62-701.330 & 340, FAC)	
4.1	<i>Zoning and Land Use (62-701.330(3)(a), FAC)</i>	4-1
4.2	<i>Airport Safety (62-701.3630(3)(b), FAC)</i>	4-1
4.3	<i>Plot Plan and Cross Sections (62-701.330(3)(c), FAC)</i>	4-1
4.4	<i>Topographic Information and Survey (62-701.330(d), FAC)</i>	4-1
4.5	<i>Report (62-701.330(3)(e), FAC)</i>	4-1
4.6	<i>Water Quality Laboratory Requirements (62-701.330(3)(h), FAC)</i>	4-2
4.7	<i>Financial Responsibility Statement (62-701.330(3)(i), FAC)</i>	4-2
4.8	<i>100-Year Flood Plain (62-701.340(4)(b))</i>	4-2
4.9	<i>Edge of Waste (62-701.340(4)(c))</i>	4-2
4.10	<i>Screening of Landfill Unit (62-701.340 (4)(d))</i>	4-2
Section 5.0	Part H – Landfill Construction Requirements (62-701.400, FAC)	
5.1	<i>Landfill Construction Requirements (62-701.400(1), FAC)</i>	5-1
5.2	<i>Closure Sequence (62-701.400(2), FAC)</i>	5-1
Section 6.0	Part I – Hydrogeological Investigation Requirements (62-701.410(1), FAC)	6-1

Solid Waste Management Facility Closure Permit Application for Cell 7B/8 Class I Landfill

Table of Contents (continued)

Section 7.0	Part J – Geotechnical Investigation Requirements (62-701.410(2), FAC)	7-1
Section 8.0	Part K – Vertical Expansion of Landfills (62-701.430, FAC)	8-1
Section 9.0	Part L – Landfill Operations Requirements (62-701.500, FAC)	9-1
Section 10.0	Part M – Water Quality and Leachate Monitoring Requirements (62-101.510, FAC)	10-1
	<i>10.1 Water Quality and Leachate Monitoring Plan</i>	
	<i>10.1.1 Hydrogeological Investigation (62-701.510(2)(a), FAC)</i>	10-1
	<i>10.1.2 Sampling and Analysis (62-701.510(2)(b), FAC)</i>	10-1
	<i>10.1.3 Groundwater Monitoring Requirements (62-701.510(3), FAC)</i>	10-1
	<i>10.1.4 Surface Water Monitoring Requirements (62-701.510(4), FAC)</i>	10-1
	<i>10.1.5 Leachate Sampling Location (62-701.510(5), FAC)</i>	10-2
	<i>10.1.6 Routine Sampling Frequency and Requirements (62-701.510(6), FAC)</i>	10-2
	<i>10.1.7 Assessment Monitoring and Corrective Action (62-701.510(7), FAC)</i>	10-2
	<i>10.1.8 Water Quality Report Requirements (62-701.510(9), FAC)</i>	10-2
Section 11.0	Part N – Special Waste Handling Requirements (62-701.520, FAC)	11-1
Section 12.0	Part O – Gas Management System Requirements (62-701.530, FAC)	12-1
	<i>12.1 Gas Management System Design (62-701.530(1), FAC)</i>	12-1
	<i>12.1.1 History of Cell 7B/8 Gas Management System</i>	12-1
	<i>12.1.2 Gas Management System Expansion Objectives</i>	12-2
	<i>12.1.3 Existing Gas Collection and Transmission System Evaluation</i>	12-3
	<i>12.1.4 Site-Specific LFG Generation Modeling Results and LFG System Design Recommendations</i>	12-4
	<i>12.1.5 LFG System Expansion Design Criteria</i>	12-4
	<i>12.1.6 Description of Proposed Landfill Gas Collection System Expansion and Collection System Modeling</i>	12-5
	<i>12.2 Gas Monitoring System and Procedures (62-701.530(2), FAC)</i>	12-5
	<i>12.3 Gas and Odor Remediation Plan (62-701.530(3), FAC)</i>	12-6
	<i>12.4 Gas Recovery Facilities (62-701.530(5), FAC)</i>	12-6

Solid Waste Management Facility Closure Permit Application for Cell 7B/8 Class I Landfill

Table of Contents (continued)

Section 13.0	Part P, Q and R – Landfill Final Closure Requirements, Closure Procedures and Long-Term Care (62-701.600, 610 & 620, FAC)	
13.1	<i>Closure Schedule Requirements (62-701.600(2), FAC)</i>	13-1
13.2	<i>Closure Permit General Requirements (62-701.600(3), FAC)</i>	13-1
13.3	<i>Closure Report Requirements (62-701.600(4), FAC)</i>	13-1
	13.3.1 <i>Description of Cell 7B/8 Disposal Area and Legal Description</i>	13-1
	13.3.2 <i>History of Landfill Disposal Unit Construction and Operation</i>	13-1
	13.3.3 <i>Type and Quantity of Waste Received</i>	13-2
	13.3.4 <i>Geotechnical Information and Adjacent Landowners</i>	13-3
	13.3.5 <i>Gas Migration Report</i>	13-3
	13.3.6 <i>Assessment Report for Effectiveness of Landfill Design</i>	13-3
13.4	<i>Closure Design Requirements (62-701.600(5), FAC)</i>	13-4
	13.4.1 <i>Closure Grading Plans</i>	13-4
	13.4.2 <i>Sideslope and Final Cover Design</i>	13-4
	13.4.2.1 <i>General Sideslope and Final Cover Configuration</i>	13-4
	13.4.2.2 <i>Final Cover Design Requirements</i>	13-5
	13.4.2.3 <i>HELP Modeling Slope Stability Analysis and for Geomembrane Barrier Layer</i>	13-5
	13.4.3 <i>Secondary Stormwater Management System Design</i>	13-6
	13.4.4 <i>Access Control and Proposed Final Use</i>	13-6
	13.4.5 <i>Description of Existing and Proposed Gas Management System</i>	13-6
13.5	<i>Closure Operation Plan (62-701.600(6), FAC)</i>	13-6
13.6	<i>Closure Procedures (62-701.610, FAC)</i>	13-6
13.7	<i>Long-Term Care Requirements (62-701.620, FAC)</i>	13-7
Section 14.0	Financial Responsibility Requirements (62-701.630, FAC)	14-1

Appendices

Appendix A	Current Operations Permit and Monitoring Plan Implementation Schedule and Environmental Resource Permit
Appendix B	Vicinity Map, Zoning, Land Use and Property Owners List
Appendix C	FAA Letter
Appendix D	Gas Management System Design Data/ NSPS Permit
Appendix E	Closure System Stability Analysis
Appendix F	Stormwater Management System Data and Information
Appendix G	Financial Assurance Plan for Year Ending September 30, 2003 (To be added)
Appendix H	Construction Quality Assurance Plan For LLDPE Geomembranes and Geonet for Cell 7B/ 8 Closure
Appendix I	Reduced Size Drawings

Solid Waste Management Facility Closure Permit Application for Cell 7B/8 Class I Landfill

Table of Contents (continued)

List of Tables

List of Figures

Figure No.	Figure Title	Follows Page
1-1	Orange County Landfill Expansion Site Location Map	1-1
1-2	OCSWMF Facility Layout Map	1-1

Section 1
Permit Application Checklist

Permit Application Checklist (62-701, FAC)

1.1 Executive Summary

Orange County Utilities Solid Waste Division (herein referred to as the "County") is permitted to operate the Orange County Solid Waste Management Facility (herein referred to as the OCSWMF) located on 12100 Young Pine Road, approximately 3 miles southeast of the Curry Ford Road and Dean Road intersection in Orange County, Florida. Under FDEP Operations Permit No. SO48-0128169-00, the County operates a Class I solid waste landfill (hereinafter referred to as "Cell 7B/8") and a Class III solid waste landfill (hereinafter referred to as "Cell 1") at the OCSWMF. The FDEP Operations Permit authorizes the disposal operations in Cell 7B/8 to a maximum height of 244.0 feet NGVD. A copy of this permit is included in Appendix A. Figures 1-1 and 1-2 present a Facility site location and a layout map the OCSWMF.

The County previously obtained approvals from FDEP to construct sequential sideslope closure of Cell 7B in areas where the final permitted elevations had been achieved. The construction of the Phase I and II sequential closures of Cell 7B, consisting of 50 acres, were completed in 1994 and 1998 respectively. The County recently completed constructing a new Class I solid waste disposal area (Cell 9) on the Southern Expansion Site (SES). The County initiated disposal operations of Cell-9 in January 2005 and expects to operate two (2) Class I solid waste landfills for a short period of time until the remaining disposal capacity of Cell 7B/8 is exhausted and the landfill is complete and ready for final closure.

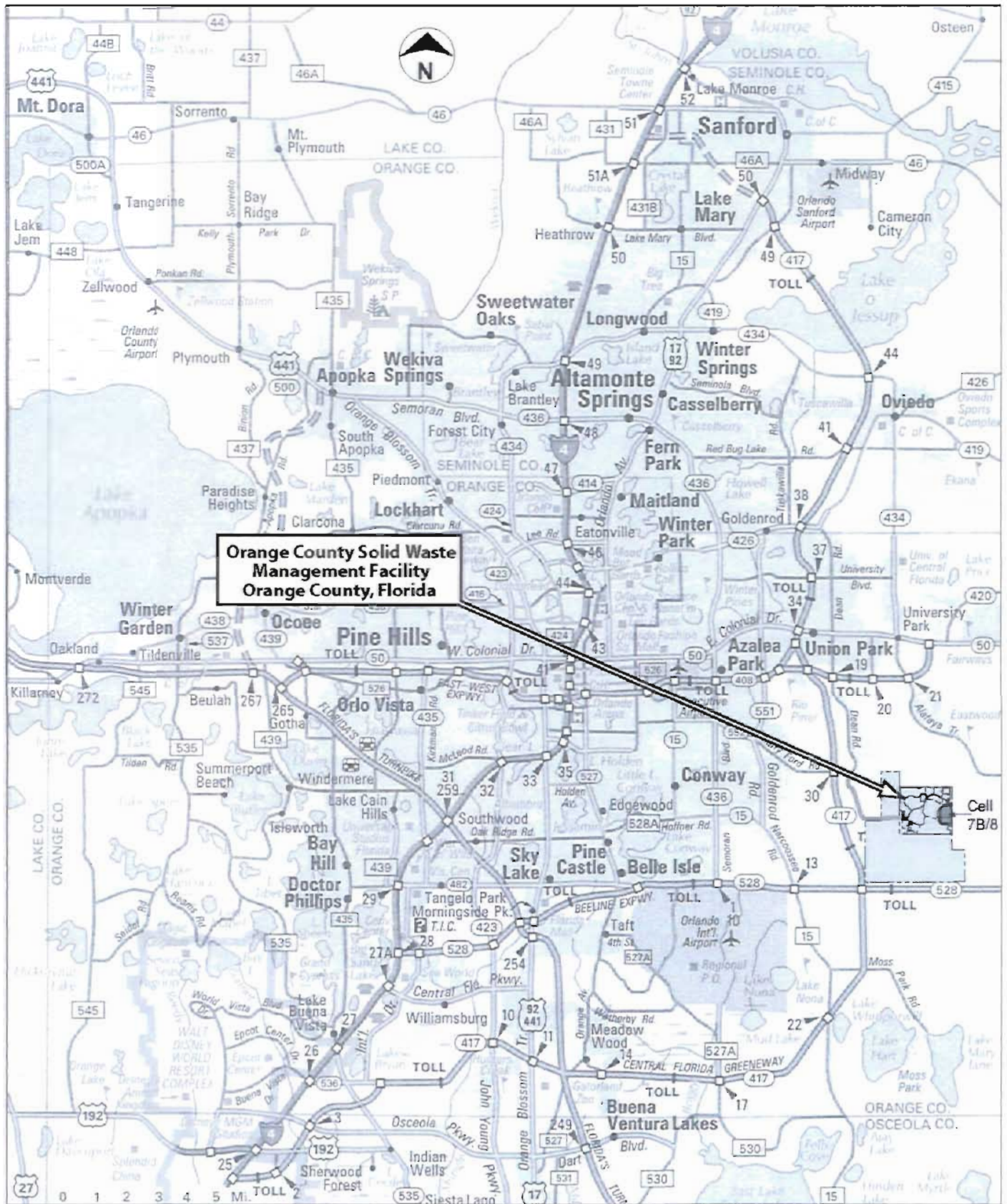
The purpose of this permit application is to obtain approval from FDEP for final closure of Cell 7B/8 and construction of the final cover over the remaining 60± acres of unclosed portion of the Cell 7B/8 landfill together with construction of expansions to the LFG well field and collection system, the addition of stormwater controls, terraces and letdown pipes and structures and other closure related construction.

1.2 Facility Owner and Operator

The Facility is owned by the Orange County Board of County Commissioners, and is operated by the County's Solid Waste Division, which is part of the Orange County Utilities Department. The designated responsible person for the OCSWF is:

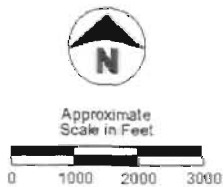
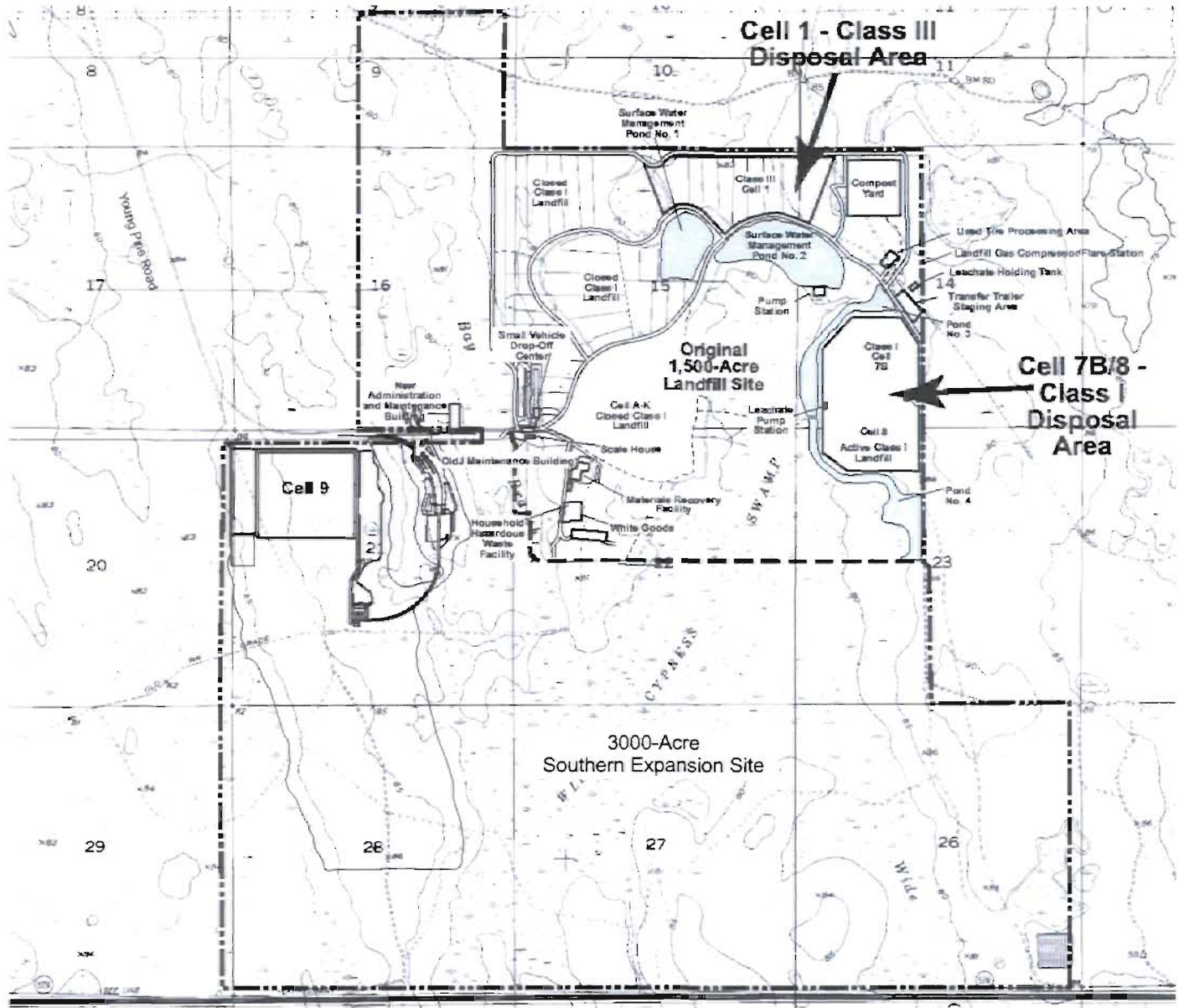
*Mr. James W. Becker, Manager
Solid Waste Division
Orange County Utilities Department
5901 Young Pine Road
Orlando, Florida 32829
Phone: (407)-836-6600
e-mail: jim.becker@ocfl.net*

It is requested that correspondence from FDEP also be copied to Mr. Dan Morrical, P.E., Chief Engineer (Dan.Morical@ocfl.net), and Mr. James W. Flynt, P.E., Senior Engineer (james.flynt@ocfl.net) at the address above for expedited response.



Not to scale

Figure 1-1
OC-SWMF Site Location Map



Base Map: USGS 7.5 Minutes Series Oviedo SW
Quadrangle, photo revised 1980, and Narcoossee NW
Quadrangle, photo revised 1980.

Legend

- Boundary of Acquisition Properties
- Boundary of Existing Landfill Site
- 32 Section Number

Figure 1-2
OC-SWMF Layout Map

1.3 Checklist (FDEP Form 62-701.900(1))

This application checklist located at the end 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.

1.3.1 PARTS A & B - General Information and Disposal Facility General Information

The required information for this section is included on the application form at the end of this section. Please see application pages 4 through 8.

1.3.2 PARTS C & D - Non-Disposal Facility General Information and Prohibitions (62-701.300, FAC)

Parts C and D of the Permit Application Form do not apply and have been noted as "Not Applicable" on the form. Please see application pages 8 through 11.

1.3.3 PART E - Solid Waste Management Facility Permit General Requirements (62-701.320, FAC)

Submittal information pertaining to the closure application (application copies, certification, transmittal letter, permitting fees, engineering report, operational drawings, and proof of publication and airport safety requirements) is included in Section 3.0 of this document. Please see application pages 12 and 13.

1.3.4 PARTS F & G - Landfill Permit Requirements and General Criteria for Landfills (62-701.330 & 340, FAC)

The pertinent information for Part F and Part G required for closure permit applications is included in Section 4.0 of this document. Please see application pages 14 and 15.

1.3.5 PART H - Landfill Construction Requirements (62-701.400, FAC)

Part H of the Permit Application Form does not generally apply to closure permit applications. However, several items such as Construction Quality Assurance (CQA) plan, and secondary stormwater management and landfill gas management systems are applicable to landfill closure construction. Closure construction requirements are addressed in Section 12 Part O, "Gas Management System Requirements", and Section 13, Parts P, Q, and R, "Landfill Final Closure Requirements." Non-applicable items in Part H have been noted as "Not Applicable" on the form. Please see application pages 16 through 24.

1.3.6 PART I - Hydrogeological Investigation Requirements (62-701.410(1), FAC)

The information for this section is not required for closure permit applications. There is no change in the previous hydrogeological investigation as a result of the final closure of Cell 7B/8 since the groundwater impact of this lined disposal area will not change. Please see application page 24.

1.3.7 PART J - Geotechnical Investigation Requirements (62-701.410(2), FAC)

There is no change to the previously submitted information. Additional geotechnical evaluation to assess the stability of the closure layering system is provided in Section 13.4 and Appendix E. Please see application page 26.

1.3.8 PART K - Vertical Expansion of Landfills (62-701.430, FAC)

No vertical expansion is proposed as a result of the final closure of Cell 7B/8. Part K of the Permit Application Form does not apply to closure permit applications and has been noted as "Not Applicable" on the application form. Please see application page 29.

1.3.9 PART L - Landfill Operation Requirements (62-701.500, FAC)

This part has been noted as "Not Applicable" or "No change" on the closure application form. The County will continue to operate Cell 7B/8 in accordance with the previously approved landfill operation plans until the permitted airspace is depleted, then move the entire Class I solid waste disposal operation to Cell 9 Class I disposal area at the SES. No change to the method of operation of the gas management system, stormwater management system or leachate removal system is proposed. The required information for long-term care and maintenance of Cell 7B/8 was previously submitted to FDEP in Operations and Maintenance Plan in the December 2003 operations permit renewal application. Please see application pages 28 through 31.

1.3.10 PART M - Water Quality and Leachate Monitoring Requirements (62-701.510, FAC)

The required information for this section is included in Sections 10.0, 13.4, Appendices A & G of this document. Please see application pages 32 and 33.

1.3.11 PART N - Special Waste Handling Requirements (62-701.520, FAC)

The required information for this section is "Not Applicable" and has been noted as such on the application form. Please see application page 34.

1.3.12 PART O - Gas Management System Requirements (62-701.530, FAC)

The required information for this section is included in Section 12.0 of this document. Please see application pages 34 and 35.

1.3.13 PART P, Q, & R - Landfill Final Closure Requirements, Closure Procedures, and Long Term Care Requirements (62-701.600, 610 & 620, FAC)

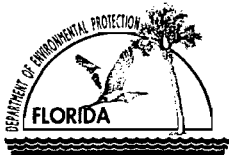
The required information for this Section is included in Section 13.0, and Appendix E of this document. Please see application pages 35 through 39.

1.3.14 PART S - Financial Responsibility Requirements (62-701.630, FAC)

The required information for this section is included in Section 14.0 of this document. Please see application page 39.

1.3.15 PART T - Certification by Applicant and Engineer or Public Officer

The required information for this section has been included on the application form at the end of this section. Please see application page 40.



Florida Department of Environmental Protection
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, FL 32399-2400

DEP Form # 62-701.900(1)
Form Title <u>Solid Waste Management Facility Permit</u>
Effective Date <u>05-27-01</u>
DEP Application No. _____ (Filled by DEP)

**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

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

APPLICATION INSTRUCTIONS AND FORMS

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

Northeast District
7825 Baymeadows Way, Ste. B200
Jacksonville, FL 32256-7590
904-448-4300

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

Southwest District
3804 Coconut Palm Dr.
Tampa, FL 33619
813-744-8100

South District
2295 Victoria Ave., Ste. 364
Fort Myers, FL 33901-3881
941-332-6975

Southeast District
400 North Congress Ave.
West Palm Beach, FL 33401
561-681-8600

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 Department's District 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,B, D through T
- B. Asbestos Monofills - Submit parts A,B,D,E,F,G,J,L,N, P through S, and T
- C. Industrial Solid Waste Facilities - Submit parts A,B, D through T
- D. Non-Disposal Facilities - Submit parts A,C,D,E,J,N,S and T

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,C and D 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,M, O through T
- B. Asbestos Monofills - Submit parts A,B,N, P through T
- C. Industrial Solid Waste Facilities - Submit parts A,B, M through T
- D. Non-Disposal Facilities - Submit parts A,C,N,S and T

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: NON-DISPOSAL FACILITY GENERAL INFORMATION

PART D: PROHIBITIONS

PART E: SOLID WASTE MANAGEMENT FACILITY PERMIT REQUIREMENTS, GENERAL

PART F: LANDFILL PERMIT REQUIREMENTS

PART G: GENERAL CRITERIA FOR LANDFILLS

PART H: LANDFILL CONSTRUCTION REQUIREMENTS

PART I: HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS

PART J: GEOTECHNICAL INVESTIGATION REQUIREMENTS

PART K: VERTICAL EXPANSION OF LANDFILLS

PART L: LANDFILL OPERATION REQUIREMENTS

PART M: WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS

PART N: SPECIAL WASTE HANDLING REQUIREMENTS

PART O: GAS MANAGEMENT SYSTEM REQUIREMENTS

PART P: LANDFILL CLOSURE REQUIREMENTS

PART Q: CLOSURE PROCEDURES

PART R: LONG TERM CARE REQUIREMENTS

PART S: FINANCIAL RESPONSIBILITY REQUIREMENTS

PART T: 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

A. GENERAL INFORMATION

1. Type of facility (check all that apply):

- Disposal
 Class I Landfill Ash Monofill
 Class II Landfill Asbestos Monofill
 Class III Landfill Industrial Solid Waste
 Other Describe: _____
- Non-Disposal
 Incinerator For Non-biomedical Waste
 Waste to Energy Without Power Plant Certification
 Other Describe: _____

NOTE: Waste Processing Facilities should apply on Form 62-701.900(4), FAC;
Land Clearing Disposal Facilities should notify on Form 62-701.900(3), FAC;
Compost Facilities should apply on Form 62-701.900(10), FAC; and
C&D Disposal Facilities should apply on Form 62-701.900(6), FAC

2. Type of application:

- Construction
 Operation
 Construction/Operation
 Closure

3. Classification of application:

- New Substantial Modification
 Renewal Intermediate Modification
 Minor Modification

4. Facility name: Orange County Solid Waste Management Facility (OCSWMF)

5. DEP ID number: 30-48-C02063 County: Orange

6. Facility location (main entrance): at the terminus of Young Pine Road. 3 miles SE of Curry Ford and Dean Road Intersection

7. Location coordinates:

Section: 14, 15, 16 Township: 23 South Range: 31 East

Latitude: 28° 28' 54" Longitude: 81° 11' 30"

8. Applicant name (operating authority): Orange County Utilities Solid Waste Division
Mailing address: 5901 Young Pine Road, Orlando, Florida 32829
Street or P.O. Box City State Zip
Contact person: Mr. James W. Becker Telephone: (407) 836-6600
Title: Manager, Solid Waste Division ; E-Mail address (if available) Jim.Becker@ocfl.net
9. Authorized agent/Consultant: Neel-Schaffer, Inc.
Mailing address: 2600 Lake Lucien Dr. Suite 117, Maitland, Florida 32751
Street or P.O. Box City State Zip
Contact person: Mehran (Ron) S. Beladi, P.E. Telephone: (407) 647-6623
Title: Director of Solid Waste Services
rbeladi@neel-schaffer.com
E-Mail address (if available)
10. Landowner(if different than applicant): N/A
Mailing address: N/A
Street or P.O. Box City State Zip
Contact person: N/A Telephone: () N/A
N/A
E-Mail address (if available)
11. Cities, towns and areas to be served: Incorporated and unincorporated Orange County
12. Population to be served:
Five-Year
Current: 896,344 (BEBR April 2000) Projection: 1,003,800 (BEBR, 2005)
13. Date site will be ready to be inspected for completion: December 2007
14. Expected life of the facility: Estimated 3-6 months of operations Cell 7B/8 years
(New Cell 9 on SES operational January 2005)
15. Estimated costs:
Total Construction: \$ _____ Closing Costs: \$ 10,000,000 (Cell 7B/8)
16. Anticipated construction starting and completion dates:
From: October 2006 To: December 2007
17. Expected volume or weight of waste to be received:
N/A _____ yds³/day _____ tons/day _____ gallons/day

B. DISPOSAL FACILITY GENERAL INFORMATION

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

Final closure of approximately 60 acres of Cell 7B/8 using 40-mil textured geomembrane as the barrier layer, including expansion of secondary stormwater management system (letdown systems with terrace inlets and energy dissipation structures) and expansion of the LFG collection system (approximately 70 new vertical LFG wells, additional horizontal collection piping, headers and cross connection piping to provide redundancy and increase reliability of the existing LFG system.

2. Facility site supervisor: **Mr. James W. Becker**

Title: **Manager, OC Solid Waste Division** Telephone: **(407) 836-6600**; E-Mail: **jim.becker@ocfl.net**

Also please send electronic copies of all correspondence to Mr. Dan Morrical, Chief Engineer: Dan.Morrical@ocfl.net; and to Mr. James Flynt, Senior Engineer James.flynt@ocfl.net

E-Mail address (if available)

3. Disposal area: Total **110** acres; Used **110** acres; Available **0** acres. Class 1

4. Weighing scales used: Yes No

5. Security to prevent unauthorized use: Yes No

6. Charge for waste received: _____ \$/yds³ **\$30.65 - \$32.95** \$/ton

7. Surrounding land use, zoning:

<input checked="" type="checkbox"/> Residential	<input checked="" type="checkbox"/> Industrial
<input checked="" type="checkbox"/> Agricultural	<input type="checkbox"/> None
<input type="checkbox"/> Commercial	<input type="checkbox"/> Other Describe: _____

8. Types of waste received:

<input checked="" type="checkbox"/> Residential	<input type="checkbox"/> C & D debris
<input checked="" type="checkbox"/> Commercial	<input type="checkbox"/> Shredded/cut tires
<input checked="" type="checkbox"/> Incinerator/WTE ash	<input type="checkbox"/> Yard trash
<input checked="" type="checkbox"/> Treated biomedical	<input type="checkbox"/> Septic tank
<input checked="" type="checkbox"/> Water treatment sludge	<input checked="" type="checkbox"/> Industrial
<input checked="" type="checkbox"/> Air treatment sludge	<input checked="" type="checkbox"/> Industrial sludge
<input type="checkbox"/> Agricultural	<input checked="" type="checkbox"/> Domestic sludge
<input type="checkbox"/> Asbestos	
<input type="checkbox"/> Other Describe: _____	

9. Salvaging permitted: Yes No

10. Attendant: Yes No Trained operator: Yes No

11. Spotters: Yes No Number of spotters used: 1

12. Site located in: Floodplain Wetlands Other Upland

13. Property recorded as a Disposal Site in County Land Records: Yes No
14. Days of operation: Seven days/week 364 days per year
15. Hours of operation: 8:00 to 5:00 p.m.
16. Days Working Face covered: Daily
17. Elevation of water table: 81± Ft. (NGVD 1929)
18. Number of monitoring wells: 109 monitoring wells in MPIS for OCLF, included in SC48-0128169-014 and SC48-0128169-015. The MPIS includes wells for Cell 9 expansion on the Southern site.
19. Number of surface monitoring points: 8 locations listed in MPIS
20. Gas controls used: Yes No Type controls: Active Passive
 Gas flaring: Yes No Gas recovery: Yes No
21. Landfill unit liner type:
 Natural soils Double geomembrane
 Single clay liner Geomembrane & composite
 Single geomembrane (Cell 7B) Double composite
 Single composite (Cell 8) None
 Slurry wall
 Other Describe: _____
22. Leachate collection method:
 Collection pipes (Cell 7B/8) Sand layer
 Geonets Gravel layer
 Well points Interceptor trench
 Perimeter ditch None
 Other Describe: _____
23. Leachate storage method:
 Tanks
 Surface impoundments
 Other Describe: _____
24. Leachate treatment method:
 Oxidation Chemical treatment
 Secondary Settling
 Advanced
 None
 Other Transmitted to offsite WWTP by force main or by tanker truck

25. Leachate disposal method:

- Recirculated
- Pumped to WWTP
- Transported to WWTP
- Discharged to surface water
- Injection well
- Percolation ponds
- Evaporation
- Other _____

26. For leachate discharged to surface waters:

Name and Class of receiving water: N/A

27. Storm Water:

Collected: Yes No

Type of treatment: Wet Detention

Name and Class of receiving water: **Little Econlockhatchee River, Class III, Used for Stormwater from Eastern stormwater system, and for bypass stormwater from Western landfill stormwater system when not sent to CHSEC cooling water pond**

28. Environmental Resources Permit (ERP) number or status: **ERP NO.48-0128114-003EM Modification of ERP48-128114-003 to provide for diversion and pumping of landfill stormwater to adjacent Curtis H. Stanton Energy Center. ERP modification Issued September 21,2004.**

C. NON-DISPOSAL FACILITY GENERAL INFORMATION "NOT APPLICABLE"

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

SECTION C IS "NOT APPLICABLE" FOR CLOSURE PERMIT APPLICATIONS _____

2. Facility site supervisor: _____

Title: _____ Telephone: (____) _____

E-Mail address (if available)

3. Site area: Facility _____ acres; Property _____ acres

4. Security to prevent unauthorized use: Yes No

5. Site located in: Floodplain Wetlands Other _____

6. Days of operation: _____

7. Hours of operation: _____

8. Number of operating staff: _____
9. Expected useful life: _____ Years
10. Weighing scales used: Yes No
11. Normal processing rate: _____ yd³/day _____ tons/day _____ gal/day
12. Maximum processing rate: _____ yd³/day _____ tons/day _____ gal/day
13. Charge for waste received: _____
14. Storm Water Collected: Yes No

Type of treatment: _____

Name and Class of receiving water: _____

15. Environmental Resources Permit (ERP) number or status: _____
- _____

16. Final residue produced:
- | | |
|-----------------------------------|------------------------------------|
| _____ % of normal processing rate | _____ % of maximum processing rate |
| _____ Tons/day | _____ Tons/day |

Disposed of at:

Facility name: _____ County: _____

17. Estimated operating costs: \$ _____
- Total cost/ton: \$ _____ Net cost/ton: \$ _____

18. Provide a site plan, at a scale not greater than 200 feet to the inch, which shows the facility location and identifies the proposed waste and final residue storage areas, total acreage of the site, and any other features which are relevant to the prohibitions or location restrictions in Rule 62-701.300, FAC, such as water bodies or wetlands on or within 200 feet of the site, and potable water wells on or within 500 feet of the site.
19. Provide a description of how the waste and final residue will be managed to not be expected to cause violations of the Department's ground water, surface water or air standards or criteria
20. Provide an estimate of the maximum amount of waste and final residue that will be store on-site.
21. Provide a detailed description of the technology use at the facility and the functions of all processing equipment that will be utilized. The descriptions shall explain the flow of waste and residue through all the proposed unit operations and shall include: (1) regular facility operations as they are expected to occur; (2) procedures for start up operations, and scheduled and unscheduled shut down operations; (3) potential safety hazards and control methods, including fire detection and control; (4) a description of any expected air emissions and wastewater discharges from the facility which may be potential pollution sources; (5) a description and usage rate of any chemical or biological additives that will be used in the process; and (6) process flow diagrams for the facility operations.

22. Provide a description of the loading, unloading and processing areas.
23. Provide a description of the leachate control system that will be used to prevent discharge of leachate to the environment and mixing of leachate with stormwater. Note: Ground water monitoring may be required for the facility depending on the method of leachate control used.
24. Provide an operation plan for the facility which includes: (1) a description of general facility operations, the number of personnel responsible for the operations including their respective job descriptions, and the types of equipment that will be used at the facility; (2) procedures to ensure any unauthorized wastes received at the site will be properly managed; (3) a contingency plan to cover operation interruptions and emergencies such as fires, explosions, or natural disasters; (4) procedures to ensure operational records needed for the facility will be adequately prepared and maintained; and (5) procedures to ensure that the wastes and final residue will be managed to not be expected to cause pollution.
25. Provide a closure plan that describes the procedures that will be implemented when the facility closes including: (1) estimated time to complete closure; (2) procedures for removing and properly managing or disposing of all wastes and final residues; (3) notification of the Department upon ceasing operations and completion of final closure.

D. PROHIBITIONS (62-701.300, FAC)

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
—	_____	<u>X</u>	—	1. Provide documentation that each of the siting criteria will be satisfied for the facility; (62-701.300(2), FAC)
—	_____	<u>X</u>	—	2. If the facility qualifies for any of the exemptions contained in Rules 62-701.300(12) through (16), FAC, then document this qualification(s).
—	_____	<u>X</u>	—	3. Provide documentation that the facility will be in compliance with the burning restrictions; (62-701.300(3), FAC)
—	_____	<u>X</u>	—	4. Provide documentation that the facility will be in compliance with the hazardous waste restrictions; (62-701.300(4), FAC)
—	_____	<u>X</u>	—	5. Provide documentation that the facility will be in compliance with the PCB disposal restrictions; (62-701.300(5), FAC)
—	_____	<u>X</u>	—	6. Provide documentation that the facility will be in compliance with the biomedical waste restrictions; (62-701.300(6), FAC)
—	_____	<u>X</u>	—	7. Provide documentation that the facility will be in compliance with the Class I surface water restrictions; (62-701.300(7), FAC)
—	_____	<u>X</u>	—	8. Provide documentation that the facility will be in compliance with the special waste for landfills restrictions; (62-701.300(8), FAC)
—	_____	<u>X</u>	—	9. Provide documentation that the facility will be in compliance with the special waste for waste-to-energy facilities restrictions; (62-701.300(9), FAC)
—	_____	<u>X</u>	—	10. Provide documentation that the facility will be in compliance with the liquid restrictions; (62-701.300(10), FAC)
—	_____	<u>X</u>	—	11. Provide documentation that the facility will be in compliance with the used oil restrictions; (62-701.300(11), FAC)

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

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
X	SECT. 3.1	___	___	1. Four copies, at minimum, of the completed application form, all supporting data and reports; (62-701.320(5)(a), FAC)
X	SECT. 3.2	___	___	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)
X	SECT. 3.3	___	___	3. A letter of transmittal to the Department; (62-701.320(7)(a), FAC)
X	SECT. 3.4	___	___	4. A completed application form dated and signed by the applicant; (62-701.320(7)(b), FAC)
X	SECT. 3.5	___	___	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)
X	SECT. 3.6	___	___	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)
X	SECT. 3.7	___	___	7. Operation Plan and Closure Plan; (62-701.320(7)(e)1, FAC)
X	SECT. 3.8	___	___	8. Contingency Plan; (62-701.320(7)(e)2, FAC)
				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; (62-702.320(7)(f), FAC)
X	Sheet G-1	___	___	a. A regional map or plan with the project location;
X	App.B	___	___	b. A vicinity map or aerial photograph no more than 1 year old;
X	Sheet G-2	___	___	c. A site plan showing all property boundaries certified by a registered Florida land surveyor;

S LOCATION N/A N/C

PART E CONTINUED

- | | | | | |
|-------------|-------------------|-------------|-------------|---|
| <u>X</u> | <u>SECT. 3.6</u> | <u> </u> | <u> </u> | d. Other necessary details to support the engineering report. |
| <u> </u> | <u> </u> | <u> </u> | <u>X</u> | 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) |
| <u> </u> | <u> </u> | <u>X</u> | <u> </u> | 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; (62-01.320(7)(h),FAC) |
| <u>X</u> | <u>SECT. 3.12</u> | <u> </u> | <u> </u> | 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 this state; (62-701.320(7)(i),FAC) |
| <u>X</u> | <u>SECT. 3.13</u> | <u> </u> | <u> </u> | 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; (62-702.320(8),FAC) |
| <u>X</u> | <u>SECT. 3.14</u> | <u> </u> | <u> </u> | 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) |
| <u> </u> | <u> </u> | <u>X</u> | <u> </u> | 15. Explain how the operator training requirements will be satisfied for the facility; (62-701.320(15), FAC) |

F. LANDFILL PERMIT REQUIREMENTS (62-701.330, FAC)

S	LOCATION	N/A	N/C	
X	App. B			1. Vicinity map or aerial photograph no more than 1 year old and of appropriate scale showing land use and local zoning within one mile of the landfill and of sufficient scale to show all homes or other structures, water bodies, and roads other significant features of the vicinity. All significant features shall be labeled; (62-701.330(3)(a), FAC)
X	App. C			2. Vicinity map or aerial photograph no more than 1 year old showing all airports that are located within five miles of the proposed landfill; (62-701.330(3)(b), FAC)
X	App. I			3. Plot plan with a scale not greater than 200 feet to the inch showing; (62-701.330(3)(c), FAC)
	App. I			a. Dimensions;
			X	b. Locations of proposed and existing water quality monitoring wells;
		X		c. Locations of soil borings;
		X		d. Proposed plan of trenching or disposal areas;
X	App. I			e. Cross sections showing original elevations and proposed final contours which shall be included either on the plot plan or on separate sheets;
			X	f. Any previously filled waste disposal areas;
			X	g. Fencing or other measures to restrict access.
				4. Topographic maps with a scale not greater than 200 feet to the inch with 5-foot contour intervals showing; (62-701.330(3)(d), FAC):
			X	a. Proposed fill areas;
		X		b. Borrow areas;
X	Plan Set			c. Access roads;
X	Plan Set			d. Grades required for proper drainage;
		X		e. Cross sections of lifts;

S **LOCATION** **N/A** **N/C**

PART F CONTINUED

X Plan Set

 X

 X

f. Special drainage devices if necessary;

g. Fencing;

h. Equipment facilities.

5. A report on the landfill describing the following;
(62-701.330(3)(e), FAC)

 SECT. 4.5 X

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

 X

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

 X

c. The anticipated facility life;

 X

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

X SECT. 4.6

6. 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)(h), FAC)

X SECT. 4.7

7. 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)(i), FAC)

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

 X

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(4)(b), FAC)

 X

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(4)(c), FAC)

 X

3. Describe what methods shall be taken to screen the landfill from public view where such screening can practically be provided; (62-701.340(4)(d), FAC)

H. LANDFILL CONSTRUCTION REQUIREMENTS (62-701.400, FAC)

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
		X		1. Describe how the landfill shall be designed so that solid waste disposal units will be constructed and closed at planned intervals throughout the design period of the landfill; (62-701.400(2), FAC)
				2. Landfill liner requirements; (62-701.400(3), FAC)
				a. General construction requirements; (62-701.400(3)(a), FAC):
		X		(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;
		X		(2) Document foundation is adequate to prevent liner failure;
		X		(3) Constructed so bottom liner will not be adversely impacted by fluctuations of the ground water;
		X		(4) Designed to resist hydrostatic uplift if bottom liner located below seasonal high ground water table;
		X		(5) Installed to cover all surrounding earth which could come into contact with the waste or leachate.
				b. Composite liners; (62-701.400(3)(b), FAC)
		X		(1) Upper geomembrane thickness and properties;
		X		(2) Design leachate head for primary LCRS including leachate recirculation if appropriate;
		X		(3) Design thickness in accordance with Table A and number of lifts planned for lower soil component.

S LOCATION N/A N/C

PART H CONTINUED

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

- (1) Upper and lower geomembrane thicknesses 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 ≤ 1 inch, head not to exceed thickness of drainage layer);

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

- (1) Field seam test methods to ensure all field seams are at least 90 percent of the yield strength for the lining material;
- (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 24-inch-thick protective layer.
- (5) HDPE geomembranes, if used, meet the specifications in GRI GM13;
- (6) PVC geomembranes, if used, meet the specifications in PGI 1197;
- (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;

PART H CONTINUED

S LOCATION N/A N/C

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

X APP. H _____

(1) Definition and qualifications of the designer, manufacturer, installer, QA consultant and laboratory, and QA program;

_____ _____ X _____

(2) Material specifications for geomembranes, geocomposites, geotextiles, geogrids, and geonets;

_____ _____ X _____

(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;

_____ _____ X _____

(4) Geomembrane installation specifications including earthwork, conformance testing, geomembrane placement, installation personnel qualifications, field seaming and testing, overlapping and repairs, materials in contact with geomembrane and procedures for lining system acceptance;

_____ _____ X _____

(5) Geotextile and geogrid specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil materials and any overlying materials;

_____ _____ X _____

(6) Geonet and geocomposite specifications including handling and placement, conformance testing, stacking and joining, repair, and placement of soil materials and any overlying materials;

_____ _____ X _____

(7) Geosynthetic clay liner specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil material and any overlying materials;

f. Standards for soil components
(62-710.400(3)(f), FAC):

_____ _____ X _____

(1) Description of construction procedures including overexcavation and backfilling to preclude structural inconsistencies and procedures for placing and compacting soil component in layers;

S LOCATION N/A N/C

PART H CONTINUED

_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____

- (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, Atterberg limits, 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.

3. Leachate collection and removal system (LCRS);
(62-701.400(4), FAC)

a. The primary and secondary LCRS requirements;
(62-701.400(4)(a), FAC)

_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____

- (1) Constructed of materials chemically resistant to the waste and leachate;
- (2) Have sufficient mechanical properties to prevent collapse under pressure;
- (3) Have granular material or synthetic geotextile to prevent clogging;
- (4) Have method for testing and cleaning clogged pipes or contingent designs for rerouting leachate around failed areas;

S LOCATION N/A N/C

PART H CONTINUED

- b. Primary LCRS requirements; (62-701.400(4)(b), FAC)
- (1) Bottom 12 inches having hydraulic conductivity $\geq 1 \times 10^{-3}$ cm/sec;
 - (2) Total thickness of 24 inches of material chemically resistant to the waste and leachate;
 - (3) Bottom slope design to accommodate for predicted settlement;
 - (4) Demonstration that synthetic drainage material, if used, is equivalent or better than granular material in chemical compatibility, flow under load and protection of geomembrane liner.

4. Leachate recirculation; (62-701.400(5), FAC)

- | | | | | |
|---------------|---------------|--------------|---------------|---|
| <u> </u> | <u> </u> | <u> X </u> | <u> </u> | a. Describe general procedures for recirculating leachate; |
| <u> </u> | <u> </u> | <u> X </u> | <u> </u> | b. Describe procedures for controlling leachate runoff and minimizing mixing of leachate runoff with storm water; |
| <u> </u> | <u> </u> | <u> X </u> | <u> </u> | c. Describe procedures for preventing perched water conditions and gas buildup; |
| <u> </u> | <u> </u> | <u> X </u> | <u> </u> | 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; |
| <u> </u> | <u> </u> | <u> X </u> | <u> </u> | e. Describe methods of gas management in accordance with Rule 62-701.530, FAC; |
| <u> </u> | <u> </u> | <u> X </u> | <u> </u> | 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. |

PART H CONTINUED

S LOCATION N/A N/C

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

a. Surface impoundment requirements; (62-701.400(6)(b), FAC)

—		<u>X</u>	—	(1) Documentation that the design of the bottom liner will not be adversely impacted by fluctuations of the ground water;
—		<u>X</u>	—	(2) Designed in segments to allow for inspection and repair as needed without interruption of service;
—		<u>X</u>	—	(3) General design requirements;
—		<u>X</u>	—	(a) Double liner system consisting of an upper and lower 60-mil minimum thickness geomembrane;
—		<u>X</u>	—	(b) Leak detection and collection system with hydraulic conductivity ≥ 1 cm/sec;
—		<u>X</u>	—	(c) Lower geomembrane placed on subbase ≥ 6 inches thick with $k \leq 1 \times 10^{-5}$ cm/sec or on an approved geosynthetic clay liner with $k \leq 1 \times 10^{-7}$ cm/sec;
—		<u>X</u>	—	(d) Design calculation to predict potential leakage through the upper liner;
—		<u>X</u>	—	(e) Daily inspection requirements and notification and corrective action requirements if leakage rates exceed that predicted by design calculations;
—		<u>X</u>	—	(4) Description of procedures to prevent uplift, if applicable;
—		<u>X</u>	—	(5) Design calculations to demonstrate minimum two feet of freeboard will be maintained;
—		<u>X</u>	—	(6) Procedures for controlling disease vectors and off-site odors.

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____

PART H CONTINUED

- 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 if needed for the tank;
 - (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 overflow prevention system such as level sensors, gauges, alarms and shutoff controls to prevent overflowing;
 - (7) Inspections, corrective action and reporting requirements;
 - (a) Overflow prevention system weekly;
 - (b) Exposed tank exteriors weekly;
 - (c) 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)
- (1) Describe materials of construction;
 - (2) A double-walled tank design system to be used with the following requirements;

PART H CONTINUED

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
_____	_____	<u>X</u>	_____
<u>X</u>	<u>App H, Sec. 5</u>	_____	_____

- (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 overflow prevention system such as level sensors, gauges, alarms and shutoff controls to prevent overflowing 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;
 - (6) Description of CQA reporting forms and documents;

PART H CONTINUED

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
X	App.H Sec.5	___	___	b. An independent laboratory experienced in the testing of geosynthetics to perform required testing;
				7. Soil Liner CQA (62-701.400(8)FAC)
		X	___	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;
		X	___	b. Description of field test section construction and test methods to be implemented prior to liner installation;
		X	___	c. Description of field test methods including rejection criteria and corrective measures to insure proper liner installation.
				8. Surface water management systems; (62-701.400(9),FAC)
X	Plan Set & App D.	___	___	a. Provide a copy of a Department permit for stormwater control or documentation that no such permit is required;
X	Plan Set & APP. D	___	___	b. Design of surface water management system to isolate surface water from waste filled areas and to control stormwater run-off;
X	Plan Set & App. D	___	___	c. Details of stormwater control design including retention ponds, detention ponds, and drainage ways;
				9. Gas control systems; (62-701.400(10),FAC)
X	SECT. 13.4 & APP D.	___	___	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;
		X	___	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)

I. **HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS** (62-701.410(1), FAC)

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
___	Section 6.0	___	<u>X</u>	1. Submit a hydrogeological investigation and site report including at least the following information:
___	_____	___	<u>X</u>	a. Regional and site specific geology and hydrogeology;
___	_____	___	<u>X</u>	b. Direction and rate of ground water and surface water flow including seasonal variations;
___	_____	___	<u>X</u>	c. Background quality of ground water and surface water;
___	_____	___	<u>X</u>	d. Any on-site hydraulic connections between aquifers;
___	_____	___	<u>X</u>	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;
___	_____	___	<u>X</u>	f. Description of topography, soil types and surface water drainage systems;
___	_____	___	<u>X</u>	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;
___	_____	___	<u>X</u>	h. Identify and locate any existing contaminated areas on the site;
___	_____	___	<u>X</u>	i. Include a map showing the locations of all potable wells within 500 feet, and all community water supply wells within 1000 feet, of the waste storage and disposal areas;
___	_____	___	<u>X</u>	2. Report signed, sealed and dated by PE or PG.

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

S LOCATION N/A N/C

- | | | | | | |
|-------|---------------------|-------|-------|----|---|
| _____ | Section 7.0 | _____ | X | | 1. Submit a geotechnical site investigation report defining the engineering properties of the site including at least the following: |
| _____ | _____ | _____ | X | a. | Description of subsurface conditions including soil stratigraphy and ground water table conditions; |
| _____ | _____ | _____ | X | b. | Investigate for the presence of muck, previously filled areas, soft ground, lineaments and sink holes; |
| _____ | _____ | _____ | X | c. | Estimates of average and maximum high water table across the site; |
| _____ | _____ | _____ | X | d. | Foundation analysis including: |
| _____ | _____ | _____ | X | | (1) Foundation bearing capacity analysis; |
| _____ | _____ | _____ | X | | (2) Total and differential subgrade settlement analysis; |
| X | SECT. 13.4 & APP. E | _____ | _____ | | (3) Slope stability analysis; |
| _____ | _____ | _____ | X | e. | Description of methods used in the investigation and includes soil boring logs, laboratory results, analytical calculations, cross sections, interpretations and conclusions; |
| _____ | _____ | _____ | X | 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. |
| _____ | _____ | _____ | X | 2. | Report signed, sealed and dated by PE or PG. |

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

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
X	SEC.8.0	___	___	1. Describe how the vertical expansion shall not cause or contribute to leachate leakage from the existing landfill or adversely affect the closure design of the existing landfill;
___	___	X	___	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;
___	___	X	___	3. Provide foundation and settlement analysis for the vertical expansion;
___	___	X	___	4. Provide total settlement calculations demonstrating that the final elevations of the lining system, that gravity drainage, and that no other component of the design will be adversely affected;
___	___	X	___	5. Minimum stability safety factor of 1.5 for the lining system component interface stability and deep stability;
___	___	X	___	6. Provide documentation to show the surface water management system will not be adversely affected by the vertical expansion;
___	___	X	___	7. Provide gas control designs to prevent accumulation of gas under the new liner for the vertical expansion.

L. LANDFILL OPERATION REQUIREMENTS (62-701.500, FAC)

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
		X		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), FAC)
				2. Provide a landfill operation plan including procedures for: (62-701.500(2), FAC)
X	SECT. 3.8			a. Designating responsible operating and maintenance personnel;
X	SECT. 3.8			b. Contingency operations for emergencies;
		X		c. Controlling types of waste received at the landfill;
		X		d. Weighing incoming waste;
		X		e. Vehicle traffic control and unloading;
		X		f. Method and sequence of filling waste;
		X		g. Waste compaction and application of cover;
			X	h. Operations of gas, leachate, and stormwater controls;
			X	i. Water quality monitoring.
			X	j. Maintaining and cleaning the leachate collection system;
			X	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. FDEP permit, engineering drawings, water quality records, etc.) (62-701.500(3), FAC)
			X	4. Describe the waste records that will be compiled monthly and provided to the Department quarterly; (62-701.500(4), FAC)
			X	5. Describe methods of access control; (62-701.500(5), FAC)
		X		6. Describe load checking program to be implemented at the landfill to discourage disposal of unauthorized wastes at the landfill; (62-701.500(6), FAC)
				7. Describe procedures for spreading and compacting waste at the landfill that include: (62-701.500(7), FAC)
		X		a. Waste layer thickness and compaction frequencies;

PART L CONTINUED

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
___	_____	<u>X</u>	___
<u>X</u>	<u>SECT 1.3.9</u>	___	___
<u>X</u>	<u>SECT 1.3.9</u>	___	___
<u>X</u>	<u>SECT 1.3.9</u>	___	___
<u>X</u>	<u>SECT. 1.3.9</u>	___	___
<u>X</u>	<u>SECT. 1.3.9</u>	___	___

- b. Special considerations for first layer of waste placed above liner and leachate collection system;
 - c. Slopes of cell working face and side grades above land surface, 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) Disease 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.
8. Describe operational procedures for leachate management including; (62-701.500(8),FAC)
- a. Leachate level monitoring, sampling, analysis and data results submitted to the Department;
 - 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. Agreements for off-site discharge and treatment of leachate;
 - e. Contingency plan for managing leachate during emergencies or equipment problems;

S LOCATION N/A N/C

PART L CONTINUED

- | | | | | | | |
|---|--|----------|---|-----|----|---|
| — | | <u>X</u> | — | | f. | Procedures for recording quantities of leachate generated in gal/day and including this in the operating record; |
| — | | <u>X</u> | — | | g. | Procedures for comparing precipitation experienced at the landfill with leachate generation rates and including this information in the operating record; |
| — | | <u>X</u> | — | | h. | Procedures for water pressure cleaning or video inspecting leachate collection systems. |
| — | | <u>X</u> | — | 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) |
| — | | <u>X</u> | — | 10. | | Describe procedures for operating and maintaining the landfill stormwater management system to comply with the requirements of Rule 62-701.400(9); (62-701.500(10), FAC) |
| | | | | 11. | | Equipment and operation feature requirements; (62-701.500(11), FAC) |
| — | | <u>X</u> | — | | a. | Sufficient equipment for excavating, spreading, compacting and covering waste; |
| — | | <u>X</u> | — | | b. | Reserve equipment or arrangements to obtain additional equipment within 24 hours of breakdown; |
| — | | <u>X</u> | — | | c. | Communications equipment; |
| — | | <u>X</u> | — | | d. | Dust control methods; |
| — | | <u>X</u> | — | | e. | Fire protection capabilities and procedures for notifying local fire department authorities in emergencies; |
| — | | <u>X</u> | — | | f. | Litter control devices; |
| — | | <u>X</u> | — | | g. | Signs indicating operating authority, traffic flow, hours of operation, disposal restrictions. |
| — | | <u>X</u> | — | 12. | | Provide a description of all-weather access road, inside perimeter road and other roads necessary for access which shall be provided at the landfill; (62-701.500(12), FAC) |

PART I CONTINUED

S LOCATION N/A N/C

13. Additional record keeping and reporting requirements;
(62-701.500(13), FAC)

_____ _____ X _____

a. Records used for developing permit applications and supplemental information maintained for the design period of the landfill;

_____ _____ _____ X

b. Monitoring information, calibration and maintenance records, copies of reports required by permit maintained for at least 10 years;

_____ _____ X _____

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;

_____ _____ X _____

d. Procedures for archiving and retrieving records which are more than five year old.

M. WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS (62-701.510, FAC)

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
X	SECT. 10.0	—	—	1. Water quality and leachate monitoring plan shall be submitted describing the proposed ground water, surface water and leachate monitoring systems and shall meet at least the following requirements;
—	—	—	X	a. Based on the information obtained in the hydrogeological investigation and signed, dated and sealed by the PG or PE who prepared it; (62-701.510(2)(a), FAC)
—	—	—	X	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)
—	—	—	X	(1) Detection wells located downgradient from and within 50 feet of disposal units;
—	—	—	X	(2) Downgradient compliance wells as required;
—	—	—	X	(3) Background wells screened in all aquifers below the landfill that may be affected by the landfill;
—	—	—	X	(4) Location information for each monitoring well;
—	—	—	X	(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;
—	—	—	X	(6) Well screen locations properly selected;
—	—	—	X	(7) Procedures for properly abandoning monitoring wells;
—	—	—	X	(8) Detailed description of detection sensors if proposed.

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
—	—	—	<u>X</u>
—	—	—	<u>X</u>
<u>X</u>	<u>APP. A.</u>	—	<u>X</u>
<u>X</u>	<u>SECT. 13.4 & APP. A</u>	—	<u>X</u>
—	—	—	<u>X</u>
—	—	—	<u>X</u>
—	—	—	<u>X</u>
<u>X</u>	<u>SECT. 13.4 APP. A</u>	—	<u>X</u>
—	—	—	<u>X</u>
—	—	—	<u>X</u>
—	—	—	<u>X</u>

PART M CONTINUED

- 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. Leachate sampling locations proposed; (62-701.510(5), FAC)
- f. Initial and routine sampling frequency and requirements; (62-701.510(6), FAC)
 - (1) Initial background ground water and surface water sampling and analysis requirements;
 - (2) Routine leachate sampling and analysis requirements;
 - (3) Routine monitoring well sampling and analysis requirements;
 - (4) Routine surface water sampling and analysis requirements.
- g. Describe procedures for implementing evaluation monitoring, prevention measures and corrective action as required; (62-701.510(7), FAC)
- h. Water quality monitoring report requirements; (62-701.510(9), FAC)
 - (1) Semi-annual report requirements;
 - (2) Bi-annual report requirements signed, dated and sealed by PG or PE.

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

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
___	_____	<u>X</u>	___	1. Describe procedures for managing motor vehicles; (62-701.520(1), FAC)
___	_____	<u>X</u>	___	2. Describe procedures for landfilling shredded waste; (62-701.520(2), FAC)
___	_____	<u>X</u>	___	3. Describe procedures for asbestos waste disposal; (62-701.520(3), FAC)
___	_____	<u>X</u>	___	4. Describe procedures for disposal or management of contaminated soil; (62-701.520(4), FAC)
___	_____	<u>X</u>	___	5. Describe procedures for disposal of biological wastes; (62-701.520(5), FAC)

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

				1. Provide the design for a gas management systems that will (62-701.530(1), FAC):
<u>X</u>	<u>SECT. 12.1</u> <u>APP. D</u>	___	___	a. Be designed to prevent concentrations of combustible gases from exceeding 25% the LEL in structures and 100% the LEL at the property boundary;
<u>X</u>	<u>SECT. 12.1</u> <u>APP. D</u>	___	___	b. Be designed for site-specific conditions;
<u>X</u>	<u>SECT. 12.1</u> <u>APP. D</u>	___	___	c. Be designed to reduce gas pressure in the interior of the landfill;
<u>X</u>	<u>SECT. 12.1</u>	___	___	d. Be designed to not interfere with the liner, leachate control system or final cover.
___	<u>SECT. 12.2</u>	___	<u>X</u>	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):
___	<u>SECT. 12.3</u>	___	<u>X</u>	3. Provide documentation describing how the gas remediation plan and odor remediation plan will be implemented; (62-701.530(3), FAC):
				4. Landfill gas recovery facilities; (62-701.530(5), FAC):
___	<u>SECT. 12.4</u>	___	<u>X</u>	a. Information required in Rules 62-701.320(7) and 62-701.330(3), FAC supplied;
___	<u>SECT. 12.4</u>	___	<u>X</u>	b. Information required in Rule 62-701.600(4), FAC supplied where relevant and practical;
___	<u>SECT. 12.4</u> <u>APP. D</u>	___	<u>X</u>	c. Estimate of current and expected gas generation rates and description of condensate disposal methods provided;

PART O CONTINUED

S **LOCATION** **N/A** **N/C**

____ SECT. 12.4 ____ X

d. Description of procedures for condensate sampling, analyzing and data reporting provided;

____ SECT. 12.4 ____ X

e. Closure plan provided describing methods to control gas after recovery facility ceases operation and any other requirements contained in Rule 62-701.400(10), FAC;

____ SECT. 12.4 ____ X

f. Performance bond provided to cover closure costs if not already included in other landfill closure costs.

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

1. Closure schedule requirements; (62-701.600(2), FAC)

X SECT. 13.1 ____ ____

a. Documentation that a written notice including a schedule for closure will be provided to the Department at least one year prior to final receipt of wastes;

____ SECT. 13.1 X ____

b. Notice to user requirements within 120 days of final receipt of wastes;

____ SECT. 13.1 X ____

c. Notice to public requirements within 10 days of final receipt of wastes.

2. Closure permit general requirements; (62-701.600(3), FAC)

X SECT. 13.2 ____ ____

a. Application submitted to Department at least 90 days prior to final receipt of wastes;

b. Closure plan shall include the following:

X SECT. 13.3 ____ ____

(1) Closure report;

X SECT. 13.4 ____ ____

(2) Closure design plan;

X SECT. 13.5 ____ ____

(3) Closure operation plan;

X SECT. 13.6 ____ ____

(4) Closure procedures;

X SECT. 13.7 ____ ____

(5) Plan for long term care;

X SECT. 14.0 ____ ____

(6) A demonstration that proof of financial responsibility for long term care will be provided.

3. Closure report requirements; (62-701.600(4), FAC)

a. General information requirements;

X SECT. 13.3 ____ ____

(1) Identification of landfill;

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	PART P CONTINUED
<u>X</u>	<u>SECT. 13.3</u>	___	___	(2) Location, description and vicinity map;
<u>X</u>	<u>SECT. 13.3</u>	___	___	(3) Total acres of disposal areas and landfill property;
<u>X</u>	<u>SECT. 13.3</u>	___	___	(4) Legal property description;
<u>X</u>	<u>SECT. 13.3</u>	___	___	(5) History of landfill;
___	<u>SECT. 13.3</u>	___	<u>X</u>	(6) Identification of types of waste disposed of at the landfill.
<u>X</u>	<u>SECT. 7.0</u>	___	<u>X</u>	b. Geotechnical investigation report and water quality monitoring plan required by Rule 62-701.330(3), FAC;
<u>X</u>	<u>APP. B</u>	___	___	c. Land use information report indicating: identification of adjacent landowners; zoning; present land uses; and roads, highways right-of-way, or easements.
<u>X</u>	<u>SECT. 13.3</u>	___	___	d. Report on actual or potential gas migration at landfills containing degradable wastes which would allow migration of gas off the landfill property;
<u>X</u>	<u>SECT. 13.3</u>	___	___	e. Report assessing the effectiveness of the landfill design and operation including results of geotechnical investigations, surface water and storm water management, gas migration and concentrations, condition of existing cover, and nature of waste disposed of at the landfill;
				4. Closure design requirements to be included in the closure design plan: (62-701.600(5), FAC)
<u>X</u>	<u>SECT. 13.4.1</u> <u>APP. I</u>	___	___	a. Plan sheet showing phases of site closing;
<u>X</u>	<u>SECT. 13.4.1</u> <u>APP. I</u>	___	___	b. Drawings showing existing topography and proposed final grades;
___	<u>SECT. 13.4.1</u>	<u>X</u>	___	c. Provisions to close units when they reach approved design dimensions;
<u>X</u>	<u>SECT. 13.4.1</u> <u>APP. I</u>	___	___	d. Final elevations before settlement;
<u>X</u>	<u>SECT. 13.4.2</u> <u>APP. I</u>	___	___	e. Side slope design including benches, terraces, down slope drainage ways, energy dissipators and discussion of expected precipitation effects;
				f. Final cover installation plans including:
<u>X</u>	<u>SECT. 13.4.2</u> <u>APP. H</u>	___	___	(1) CQA plan for installing and testing final cover;

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	PART P CONTINUED
<u>X</u>	<u>SECT. 13.4.1</u>	___	___	(2) Schedule for installing final cover after final receipt of waste;
<u>X</u>	<u>SECT. 13.4.1</u>	___	___	(3) Description of drought-resistant species to be used in the vegetative cover;
<u>X</u>	<u>SECT. 13.4.1</u>	___	___	(4) Top gradient design to maximize runoff and minimize erosion;
<u>X</u>	<u>SECT. 13.4.1</u>	___	___	(5) Provisions for cover material to be used for final cover maintenance.
				g. Final cover design requirements:
<u>X</u>	<u>SECT. 13.4.2</u>	___	___	(1) Protective soil layer design;
<u>X</u>	<u>SECT. 13.4.2</u>	___	___	(2) Barrier soil layer design;
<u>X</u>	<u>SECT. 13.4.2</u>	___	___	(3) Erosion control vegetation;
<u>X</u>	<u>SECT. 13.4.2</u>	___	___	(4) Geomembrane barrier layer design;
___	___	<u>X</u>	___	(5) Geosynthetic clay liner design if used;
<u>X</u>	<u>SECT.13.4.2</u> <u>APP. E</u>	___	___	(6) Stability analysis of the cover system and the disposed waste.
<u>X</u>	<u>SECT. 13.4.3</u> <u>APP. F</u>	___	___	h. Proposed method of stormwater control;
<u>X</u>	<u>SECT. 13.4.4</u>	___	___	i. Proposed method of access control;
<u>X</u>	<u>SECT. 13.4.4</u>	___	___	j. Description of proposed final use of the closed landfill, if any;
<u>X</u>	<u>SECT. 13.4.5</u> <u>APP. D</u>	___	___	k. Description of the proposed or existing gas management system which complies with Rule 62-701.530, FAC.
				5. Closure operation plan shall include: (62-701.600(6),FAC)
<u>X</u>	<u>SECT. 13.5</u>	___	___	a. Detailed description of actions which will be taken to close the landfill;
<u>X</u>	<u>SECT. 13.5</u>	___	___	b. Time schedule for completion of closing and long term care;
<u>X</u>	<u>SECT. 14.0</u>	___	___	c. Describe proposed method for demonstrating financial responsibility;
<u>X</u>	<u>SECT. 13.5</u>	___	___	d. Indicate any additional equipment and personnel needed to complete closure.

PART P CONTINUED

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
—	<u>SECT. 10.0</u>	—	<u>X</u>
<u>X</u>	<u>SECT. 12.0</u>	—	—
—	—	<u>X</u>	—

- e. Development and implementation of the water quality monitoring plan required in Rule 62-701.510, FAC.
 - f. Development and implementation of gas management system required in Rule 62-701.530, FAC.
6. Justification for and detailed description of procedures to be followed for temporary closure of the landfill, if desired; (62-701.600(7), FAC)

Q. CLOSURE PROCEDURES (62-701.610, FAC)

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
X	SECT. 13.6	___	___	1. Survey monuments; (62-701.610(2), FAC)
X	SECT. 13.6	___	___	2. Final survey report; (62-701.610(3), FAC)
X	SECT. 13.6	___	___	3. Certification of closure construction completion; (62-701.610(4); FAC)
X	SECT. 13.6	___	___	4. Declaration to the public; (62-701.610(5), FAC)
X	SECT. 13.6	___	___	5. Official date of closing; (62-701.610(6), FAC)
X	SECT. 13.6	___	___	6. Use of closed landfill areas; (62-701.610(7), FAC)
X	SECT. 13.6	___	___	7. Relocation of wastes; (62-701.610(8), FAC)

R. LONG TERM CARE REQUIREMENTS (62-701.620, FAC)

X	SECT. 13.7	___	___	1. Maintaining the gas collection and monitoring system; (62-701.620(5), FAC)
X	SECT. 13.7	___	___	2. Right of property access requirements; (62-701.620(6), FAC)
X	SECT. 13.7	___	___	3. Successors of interest requirements; (62-701.620(7), FAC)
X	SECT. 13.7	___	___	4. Requirements for replacement of monitoring devices; (62-701.620(9), FAC)
X	SECT. 13.7	___	___	5. Completion of long term care signed and sealed by professional engineer (62-701.620(10), FAC).

S. FINANCIAL RESPONSIBILITY REQUIREMENTS (62-701.630, FAC)

X	SECT. 14.0	___	___	1. Provide cost estimates for closing, long term care, and corrective action costs estimated by a PE for a third party performing the work, on a per unit basis, with the source of estimates indicated; (62-701.630(3)&(7), FAC).
X	SECT. 14.0	___	___	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).
X	SECT. 14.0	___	___	3. Describe funding mechanisms for providing proof of financial assurance and include appropriate financial assurance forms; (62-701.630(5), (6), &(9), FAC).

T. CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

1. Applicant:

The undersigned applicant or authorized representative of Orange County Solid Waste Division is aware that statements made in this form and attached

information are an application for a Closure (Cell 7B/8 final closure) 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.

James W. Becker
Signature of Applicant or Agent
James W. Becker, Solid Waste Div. Mgr.
Name and Title (please type)

5901 Young Pine Road
Mailing Address
Orlando, Florida 32829
City, State, Zip Code

jim.becker@ocfl.net
copies to: dan.morriscal@ocfl.net
james.flynt@ocfl.net

Telephone Number: (407) 836-6600


E-Mail address (if available)

Date: _____

Attach letter of authorization if agent is not a governmental 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.

Mehran (Ron) S. Beladi, P.E., Sr. Eng. Manager
Name and Title (please type)


2600 Lake Lucien Drive Suite 117
Mailing Address
Maitland, Florida 32751
City, State, Zip Code

rbeladi@neel-schaffer.com
E-Mail address (if available)

(407) 647-6623
Telephone Number

Florida Registration Number
(please affix seal)

Date: SEP 15 2005

Section 2
Parts C & D – Non-Disposal Facility
General Information and Prohibitions

SECTION 2.0

Parts C and D - Non-Disposal Facility General Information and Prohibitions (62-701.300, FAC)

This application is for closure of a permitted disposal facility. Parts C and D of the Permit Application do not apply and have been designated as "Not Applicable" on the application form.

Section 3

Part E – Solid Waste Management Facility Permit General Requirements

SECTION 3.0

Part E - Solid Waste Management Facility Permit General Requirements (62-701.320, FAC)

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

Four (4) copies of the completed permit renewal application, including all supporting documents and data are provided to the FDEP.

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

Appropriate professional certifications are provided on all applicable submittals herewith. The permit application, drawings and supporting information for the permit application are signed and sealed as required.

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 end of Section 1.0 of this report.

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

A check for \$7500.00 is submitted to FDEP with this document for the closure permit application fee.

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

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

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

An updated operation and maintenance plan was prepared for the renewal of the Class 1 Cell7B/8 and Class III, Cell 1 operations permit. This permit was issued April 3, 2003. A portion of the O&M plan was updated in May 2004 to reflect the addition of the stormwater pipeline project to the Curtis H. Stanton Energy Center. Information regarding closure procedures and post closure maintenance and monitoring was provided in the approved operation and maintenance plan.

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

Contingency plans are presented in the operation and maintenance plan prepared for the renewal of the Class 1 Cell 7B/8 and Class III, Cell 1 operations permit.

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

The final grading and closure plan for Cell 7B/8 submitted previously and currently on file with the Department is proposed to change due to the inclusion of a permanent access road in the final closure grading plan and expansions of the landfill gas and stormwater management systems. The drawings submitted with this Application show the proposed final closure grading plan for Cell 7B/8 and related details. In addition, the drawings submitted with this application include the gas management system expansion, secondary stormwater system expansion and supporting details. Full size signed and sealed drawings are submitted with the application document. A set of reduced size drawings is included in Appendix I. A general site plan is provided as Sheet G-2 of the Drawing Set. Boundary surveys for the original 1500 acre Orange County Landfill were previously submitted and are on file with the Department.

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

Orange County currently owns approximately 5,000 acres of land in eastern Orange County that has been zoned by the Board of County Commissioners for solid waste management activities. The property boundary and information currently on file with FDEP is not expected to change as a result of this permit renewal application, and has been designated as "No Change" on the application form.

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

The Orange County recycling program currently on file with FDEP is not expected to change as a result of this closure permit application. Recycling information is not applicable to closure permit applications and the application form has been marked "Not Applicable."

3.12 History of FDEP Enforcement Activities (62-701.320(7)(1), FAC)

A detailed history and description of enforcement actions taken by the FDEP was presented in the permit application report submitted December 11, 2003 for the operations permit renewal. There have been no enforcement activities since the approval of the operations permit in February 2003. However, the County entered into an Air Quality Consent Order (OGC File No. 01-0035) on February 18, 2002 regarding LFG emissions (flux) discharge. The County agreed to purchase \$26,900 worth of materials for a pipeline that will send landfill stormwater to the CHSEC cooling pond, where the water will be used in lieu of groundwater withdrawal. The County purchased ductile iron pipe to satisfy this requirement. The construction of the force main to deliver landfill stormwater to the adjacent Curtis H. Stanton Energy Center (CHSEC) started in November 2004 and is expected to be completed by the end of 2005.

3.13 Proof of Publication of Landfill Permit Application (62-701.320(8), FAC)

The proof of publication in a newspaper of general circulation of notice of application for a permit to close the remainder of Cell 7B/8 will be provided to the Department following receipt of notification from the FDEP to publish the Notice of Application.

3.14 Airport Safety Requirements (62-701.320(13), FAC)

The permitted maximum closure elevation for Cell 7B/8 is 244 feet NGVD. This elevation includes the 20-foot vertical expansion approved in the February 2003 operations permit. A copy of the FAA Notice of Proposed Expansion and FAA's response is included in Appendix C. The County has received approval to construct a new 65-acre Cell 9 disposal area. (See Figure 1-2) An additional runway (East runway No. 4) has been constructed at the Orlando International Airport. This runway was constructed after the original 1991 Notice of Expansion and is acknowledged in the September 11, 2000 Modification to Notice of Expansion for Cell 9 and subsequent disposal unit expansion.

3.15 Operator Training Requirements (62-701.320(15), FAC)

Operator training requirements are not applicable to closure permit applications. The paragraph in the application form has been marked "Not Applicable."

Section 4
Parts F & G – Landfill Permit Requirements and
General Criteria for Landfill

SECTION 4.0

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

4.1 Zoning and Land Use (62-701.330(3)(a), FAC)

A vicinity map of the area showing properties within a one-mile radius of the OCLF, their designated land use, and zoning classifications is included in Appendix B. This map was prepared for the Cell 7B/8 Operations Permit renewal. The property owners within each section, township, and range within one mile of the boundary of the existing landfill are also identified in Appendix B. A listing of the current landowners adjacent to the original 1500-acre site is also provided in Appendix B. The updated list of adjacent landowners was prepared from the Orange County Property appraiser's compiled listing as of October 1, 2004.

4.2 Airport Safety (62-701.330(3)(b), FAC)

A map showing airports and landing strips within a five-mile radius of the OCLF property boundary was included in operations permit renewal. The FAA approval letter is included in Appendix C.

4.3 Plot Plan and Cross Sections (62-701.330(3)(c), FAC)

The plot plan and cross sections of Cell 7B/8 currently on file with the Department will change as part of this closure permit application. The drawings submitted with this report include a revised grading plan including a permanent access road, gas management system expansion, secondary stormwater system expansion and related details. Cross Sections indicating the final grades are provided in the Drawings (Appendix I) that accompany this application.

4.4 Topographic Information and Survey (62-701.330(3)(d), FAC)

The topographic maps with a scale not greater than 200 feet per inch showing the proposed fill areas, borrow areas, access roads, and grades required for proper drainage are presented in the Drawings (Appendix I). The date of the survey is indicated on the drawing as November 2004.

4.5 Report (62-701.330(3)(e), FAC)

An engineering report with supporting information was submitted as part of the last application for renewal of the Cell 7B/8 Operations Permit. That information has not changed and is not expected to change as a result of this application. Therefore, this paragraph is designated as "No change" in the application form.

4.6 Water Quality Laboratory Requirements (62-701.330(3)(h), FAC)

Water quality monitoring procedures are included in Section 10.0. Sampling during the post-closure period will be performed by certified independent water quality technicians, with

laboratory analyses done by FDEP-approved laboratories. Proof of laboratory certification was provided in the Operations Permit renewal and is on file with FDEP.

4.7 Financial Responsibility Statement (62-701.330(3)(1), FAC)

A financial responsibility plan is included in the Annual Financial Responsibility Report prepared for submittal to the Regulatory Agency. A copy of closure-relevant portions of the FY 2004 Report is included in Appendix G of this submittal. Note that the FY 2004 Annual financial report has been submitted to FDEP under separate cover.

4.8 100-Year Flood Plain (62-701.340(4)(b))

There is "No Change" from previously submitted information. The site of the permitted 7B/8 is designated as Zone C on Federal Emergency Management Agency (FEMA) flood insurance map. This designation is defined as "areas of minimal flooding' and above the 100-year flood stage. Information regarding the floodplain has been submitted to the FDEP in previous reports and is on file with the Department. Information for Cell 7B/8 can be found in the following reports for prior permit applications;

- FDEP Solid Waste Management Facility Permit Application Modification No. SO-48-0128169-003, Renewal of Orange County Landfill Operations Permit 5048-298672, Application for Class I Cell 7B/8, dated October 1997. Permit issued October 22, 1998.
- FDEP Solid Waste Management Facility Permit Application Modification No. SO-48-0128169-006, FDEP Solid Waste Permit Application, Modification of Cell 7B/8 Operations Permit, Permit No. S048-0128169-003, dated October 1998. Permit Modification issued March 4, 1999.
- Solid Waste Management Facility Permit Application and Engineering Report For Cell 7B/8 and Cell 1, renewal of Permit No. SO-480128169-006, dated December 2003. Permit Nos. SO48-0128169-014 and SO48-0128169-015 were issued April 3, 2003.

4.9 Edge Of Waste (62-701.340(4)(c))

The edge of waste for Cell 7B/8 is at least 100 feet inside of the facility property line. The closest edge of waste occurs at the eastern property line. Along this location, the edge of waste is approximately 150 feet from the OUC's CHSEC property line. The documented edge of bottom liner for Cell 7B/8 is shown on the Drawings (Appendix I.)

4.10 Screening of Landfill Unit (62-701.340 (4)(d))

The Cell 7B/8 Landfill unit rises approximately 150 feet above surrounding grade. Presently, there is minimal screening along the eastern property line of the OCLF and the landfill is buffered from general public view by the OUC Curtis H. Stanton Energy Center property.

Section 5
Part H – Landfill Construction Requirements

SECTION 5.0

Part H-Landfill Construction Requirements (62-701.400, FAC)

5.1 Landfill Construction Requirements

Part H of the Permit Application Form is for construction of bottom liner systems rather than closure cover systems, and does not generally apply to landfill closure applications. However, specific information for closure cover systems (materials specifications and comprehensive quality assurance (CQA) plans) in accordance with 62-701.400(3) (d) and (e), F.A.C., and 62-701.400(7) F.A.C., apply by reference. Portions of Part H of the application form have been marked with the location of information that pertains to the closure cover system.

Plot plan requirements and topographic maps are provided in the Drawings (Appendix I.) information regarding landfill gas and stormwater management is provided in Appendix D and Appendix F respectively. Where requested information is not applicable to closure, the application form is marked as "Not Applicable".

5.2 Closure Sequence (62-701.400(2), F.A.C.)

The open portion of the Cell 7B/8 disposal area will be closed as one construction project. The construction will include installation of approximately 60.4 acres of final closure cover system with associated secondary stormwater and gas management expansions.

Base topographic survey will be obtained approximately a year after cessation of waste disposal operations, allowing for some pre-closure settlement of recently placed waste. Construction bid documents will be developed using the updated base topographic survey. The actual closure construction is anticipated to be in 2006-2007. This schedule of closure is a change from the previously submitted plans to close the remaining open portion in a series of sequential closures from 2003 through 2006.

Section 6

Part I – Hydrogeological Investigation Requirements

SECTION 6.0

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

Information regarding the regional and site-specific hydrogeological investigations and other requirements of this section were previously submitted to the FDEP and are on file with the Department.

An updated inventory of public and private wells within one mile of the OCLF was included in the last application for renewal of Operations Permit. Part I has been designated "No Change" on the application form.

Section 7
Part J – Geotechnical Investigation Requirements

SECTION 7.0

Part J - Geotechnical Investigation Requirements (62-701.410(2), FAC)

Information regarding Cell 7B/8 geotechnical investigations and other requirements has previously been submitted to the FDEP and is on file with the Department.

A geotechnical report for slope stability analysis was previously submitted for the Phase II sequential sideslope closure of Cell 7B. A copy is included in Appendix E.

Foundation analysis and other data were provided in the application for renewal of Operations Permit.

This information has not changed from previous FDEP submittals. Therefore, Part J has been designated "No Change" on the application form.

Section 8
Part K – Vertical Expansion of Landfills

SECTION 8.0

Part K - Vertical Expansion of Landfills (62-701.430, FAC)

No vertical expansion is proposed under this closure permit application. Part K of the application form has been designated as "Not Applicable."

Section 9
Part L – Landfill Operations Requirements

SECTION 9.0

Part L - Landfill Operations Requirements (62-701.500, FAC)

Part L is not applicable to closure permit applications. The operational activities proposed at the conclusion of filling operations are not proposed to be different from the current approved operations requirements.

Part L of the application form has been designated as "Not Applicable."

Section 10
Part M – Water Quality and
Leachate Monitoring Requirements

SECTION 10.0

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

Specific permit requirements and conditions regarding the water quality and leachate monitoring program outlined in this section have been developed consistent with the existing permit to modify and combine Cells 1 and 7B/8 (SO48-0128169-014 and SO48-0128169-015), and the construction and operation permit for Cell 9 (SC48-0128169-009 and SO48-0128169-010). The basic data and response has not changed substantially from the previous permit applications and existing permits. The most recent monitoring plan was included in the Cell 9 permit. A copy of the Monitoring Plan Implementation Schedule (MPIS) is provided in Appendix A. This plan covers the entire landfill site. The County proposes to continue the approved MPIS during the post-closure period. However, the County may submit a proposed change in the MPIS and meet with the Department when appropriate during the post closure period to seek a reduction in sampling frequency or parameters for the Cell 7B/8 disposal unit.

10.1 Water Quality and Leachate Monitoring Plan

10.1.1 Hydrogeological Investigation (62-701.510(2)(a), FAC)

An extensive hydrogeological investigation of the Orange County Landfill area has been submitted (Hydrogeological Assessment Technical Report- Orange County) and approved by the Department previously. No additional hydrogeological investigation was deemed necessary for this closure permit application.

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

Groundwater quality samples from monitoring wells are currently collected by Ardaman & Associates, Universal Engineering, or Nodarse & Associates. Analyses on collected samples have been performed for the last four years by the Utilities laboratory located at the Eastern Regional Water Plant. Each organization has a Comprehensive Quality Assurance Plan approved and on file with the FDEP. It is proposed that these collection and analysis procedures be continued for the post-closure period.

10.1.3 Groundwater Monitoring Requirements (62-701.510(3), FAC)

Groundwater monitoring requirements have been developed consistent with the Exhibit 1 of the FDEP Permit Numbers SO48-0128169-014 and SO48-0128169-015 issued on April 3, 2003. A copy of this exhibit is included in Appendix A of this closure permit application report.

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

Post-closure surface water monitoring requirements is proposed to be consistent with the current permit requirements. A copy of the Exhibit 1 (MPIS) to FDEP Permit Number SO48-0128169-014 and SO48-0128169-015 issued on April 3, 2003 is included in Appendix A of this closure permit application report.

10.1.5 Leachate Sampling Locations (62-701.510(5), FAC)

No additional post-closure leachate sampling locations are required for Cell 7B/8. The Leachate monitoring plan is proposed to be consistent with the requirements of FDEP operation permit for Class I- Cell 7B/8 and Class III- Cell 1(Permit Number SO48-0128169-014 and SO-48-0128169-015), and FDEP operation permit for Cell 9 (Permit Number SO48-0128169-010.)

10.1.6 Routine Sampling Frequency and Requirements (62-701.510(6), FAC)

The sampling requirements is proposed to be consistent with the requirements of FDEP operation permit for Class I- Cell 7B/8 and Class III- Cell 1(Permit Number SO48-0128169-014 and SO-48-0128169-015), and FDEP operation permit for Cell 9 (Permit Number SO48-0128169-010.)

The County reserves the right to request a change in sampling frequency or parameters if water quality results support a reduction in frequency or a change in the parameters list.

Groundwater quality samples from monitoring wells are collected by Ardaman and Associates, Universal Engineering, or Nodarse and Associates. Analysis on collected samples is conducted by the Orange County Utilities Laboratory (OCUL) in accordance with FAC 62-160. The current OCUL Quality Assurance/Quality Control (QA/QC) Plan No. 97005-5 was approved by the State of Florida Department of Health and Rehabilitation Services - Office of Laboratory Services on August 12, 2000. The OCUL has also prepared a QA/QC Document approved by FDEP.

10.1.7 Assessment Monitoring and Corrective Action (62-701.510(7), FAC)

Assessment monitoring and corrective action as required under the current permit were addressed as part of the engineering report for Permit Application No. SO-48-0128169-003. Orange County was required to implement an assessment monitoring program in 1997 because of increased concentrations of ammonia nitrogen detected in monitoring wells along the eastern edge of Cell 7B. A breach in the Cell 7B liner system was discovered and repaired during Phase 2 sequential closure of Cell 7B. Following the liner repair, ammonia nitrogen concentrations dropped to normal levels and the groundwater assessment has been resolved. The Groundwater Assessment Report was submitted to FDEP on September 30, 1998.

10.1.8 Water Quality Report Requirements (62-701.510(9), FAC)

Semiannual and biennial reports will continue to be submitted in accordance with reporting requirements of the Exhibit 1 (MPIS) to FDEP Permit Number SO48-0128169-014 and SO48-0128169-015 issued on April 3, 2003 is included in Appendix A of this closure permit application report.

Section 11

Part N – Special Waste Handling Requirements

SECTION 11.0

Part N - Special Waste Handling Requirements (62-701.520, FAC)

Part N is not applicable to closure permit applications. Part N of the application form has been designated as "Not Applicable."

Section 12
Part 0 – Gas Management System Requirements

SECTION 12.0

Part O - Gas Management System Requirements (62-701.530, FAC)

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

The current FDEP operations permit for Cell 7B/8 landfill requires an active landfill gas (LFG) collection system be constructed as part of closure as final grades are reached to collect the LFG and convey the gas to the compressor station or to the backup flare unit. As part of the final closure construction, the existing Cell 7B/8 gas collection system will be expanded with eleven (11) additional vertical wells on top of the Cell 7B area. In addition, fifty-eight (58) new vertical wells are proposed for installation in Cell 8 as part of the LFG collection system for final closure. Landfill gas wellheads that connect to header pipes and manifolds will be connected to vertical wells. The collected LFG will continue to be transmitted to the Blower Station for electrical power generation at the OUC's CHSEC, or be disposed by flaring.

The LFG system is proposed to be constructed on top of the final cover system. The final cover system components include a closure barrier system using a 40-mil textured geomembrane. The geomembrane is overlain with two feet of protective soils. The placement of the geomembrane barrier layer will provide containment of LFG and allow controlled extraction.

12.1.1 History of Cell 7B/8 Gas Management System

The Cell 7B/8 Class I Landfill covers approximately 110 acres of permitted solid waste disposal area. The phase I sequential closure was approximately 20 acres and was constructed coincident with the base construction of Cell 8 in 1994. The first phase of the LFG system was comprised of approximately 28 vertical vents. In 1996, as part of permitting for Phase II sequence closure and in conjunction with Clean Air Act (CAA) landfill gas emission standards, these passive vents were permitted to be converted into active LFG wells and connected to a Blower/Flare station located at the southwest corner of Cell 7B.

In 1997, following permitting and design of Phase II sequential sideslope closure, and in response to recently enacted New Source Performance Standards (NSPS) and the potential for Environmental Protection Agency funding through energy tax credits, the County entered into a long-term agreement with Biomass Energy Systems, Inc., later DTE Biomass Energy Inc. to provide landfill gas for use as supplemental fuel at the adjacent CHSEC power plant.

Phase II LFG system construction included the installation of vertical gas wells in areas to be closed and three horizontal collectors in areas that were actively being filled. Phase II gas header construction was completed by June 30, 1998, allowing the County to take advantage of federal energy credits for the recovered landfill gas. Two vertical wells were installed on the northwest slope in 2001. A sixteen-inch diameter header system was installed along the east perimeter of Cell 8 and approximately one quarter of the west edge of Cell 8 as part of the last partial closure construction project in 1998. Construction of the Phase II partial closure was completed approximately one year later. Since 2001, the County has added twenty-four (24) horizontal gas collection pipes in Cell 8. In addition, fourteen (14) vertical gas wells with liquid

extraction capability have been installed in Cell 7B to improve the Cell 7B gas collection system. The County has also extended the 16-inch diameter west LFG Header southward and connected it to the east header via a 16-inch diameter header along the south edge of Cell 8. The horizontal gas collection pipes are connected to this header along the west edge of cell 8.

The existing 16-inch header is shallow in depth, and is proposed to be abandoned in place. A new 16-inch header, as shown in the plans, will be installed above the final cover geomembrane and the existing horizontal collection pipes will be connected to the new header.

The information for the gas management system already installed and permitted by the Department for Cell 1 and Cell 7B/8 can be found in the following reports from previous permit applications:

- Modification No. SO48-0128169-011 to Orange County Landfill Operations Permit No. SO48-0128169-003 for Installation of Active Gas Collection System in Cell 1 and Pre1985 Disposal Areas dated October 29, 2001 (Application for Intermediate Modification of Operation Permit to Construct and Operate a LFG Collection and Control System, Orange County Landfill Class III and Pre-1985 Landfill Areas, SCS Engineers, July 27, 2001.)
- Certification of Construction Completion for Landfill Gas Management System and Cell 7B/8 Phase II Sequential Closure, FDEP Permit Nos. SF48-0128169-001 and SO48-0128169-002 submitted to FDEP May 30, 2000 and accepted by FDEP October 2, 2000.
- Permit Renewal Application No. SO48-0128169-003 for Orange County Landfill Operations Permit SO48-298672 continued operation of Class I Cell 7B/8 dated October 1997.

FDEP Rules 62-701.400 and 62-701.600, F.A.C. and EPA Title V Performance Standards set the requirement for LFG control systems based on the emissions and size of facilities. Orange County landfill is considered a Title V Facility and requires maintaining a Title V Air Operation Permit subject to emission controls, performance of monthly wellhead and quarterly surface monitoring and other reporting requirements. The OCLF facility currently has the following active Title V permits:

- FDEP Title V Air Operation Permit No. 0950113-003-AV, issued February 6, 2004. This permit replaced Permit No. 0950112-AV.

The transmission of collected LFG from Cell 7B/8 to the OUC Curtis H. Stanton Energy Center is expected to continue after final closure at least through the BEI's agreement period.

12.1.2 Gas Management System Expansion Objectives

The expansion of Cell 7B/8 gas collection system is proposed to meet the following objectives:

- Meet the LFG emission requirements of the Title V Emission Standards (established by federal law and administered by the Florida Department of Environmental Protection).
- Protect the integrity of the final cover barrier layer. Configure the gas collection system based on the final closure grading plan and other variables.

- Provide odor control and prevention of offsite or in-structure gas migration. LFG concentrations are required to be less than the lower explosive level LEL (5 percent methane) at the property line and less than 25 percent of the LEL (1.25 percent methane) inside structures.
- The expansion of LFG collection system into Cell 8 and other final closure areas meets the contractual obligation of the County with DTE Biomass Energy Inc.
- Increase the reliability and redundancy of the Cell 7B/8 gas system by providing a looped header system with interconnects between the east and west headers allowing rerouting of gas flows in the event of either the east or west header is out of service, and
- Provide the capability to add liquid extraction pumping to all new gas extraction wells. New vertical wells will be eight-inch diameter and be equipped with top flanges that will provide the capability to connect compressed air and leachate discharge lines.

12.1.3 Existing Gas Collection and Transmission System Evaluation

LFG Technologies Inc. a LFG specialty firm performed a detailed evaluation of the existing gas collection and transmission system in November 2002 to examine the performance of existing wells and to verify the build out capacity of the header system and the installed Phase II compressor and blower system. The blower system provides vacuum to extract the LFG from Cell 7B/8 and the A-K disposal unit and the energy to transmit the LFG to the adjacent Curtis H. Stanton Energy Center.

The Blower/flare station consists of two flares, four blowers (two per train), condensate knock out tank, control valves, oxygen sensors, and temperature and pressure gauges. LFG Technologies Inc. stated in their report that the Gardner-Denver compressors operated in series have a rated capacity of 6400 feet per minute (cfm). The normal vacuum applied is between 50 and 60 inches H₂O. However, the operational range of each compressor extends to 70 inches H₂O. The peak vacuum capability of the compressors operated in series is 110 inches H₂O.

LFG Technologies, Inc. estimated using head loss calculations that the existing 16-inch diameter gas manifold pipe along the east edge of Cell 8 has capacity for 2800 cfm if looped. The additional capacity of the west manifold is approximately 1600 cfm if not looped and 2400 CFM if looped. The final closure gas system was recommended to be looped with multiple east-west interconnects to provide additional capacity, redundancy and reliability of operations.

The existing header system along the east and west edges of Cell 8 has sufficient capacity to convey this flow from the Cell 7B/8 gas collection system to the compressor stations. The completion of construction of the proposed expansions of the header system will provide sufficient capacity as well as added redundancy. Condensate from the header system is routed to cleanout connections, new or existing condensate sumps or to the leachate manholes on the west edge of Cell 8. The condensate drains from the header system drain either into an existing condensate sump with a submersible pump system that discharges into the leachate system or into a passive condensate sump with a trap. The "trap" of liquid isolates the vacuum system from the non-vacuum system manholes. One new condensate sump pump station with a submersible pump is proposed along the south edge of Cell 8. Condensate sampling, analysis and data reporting will be performed according to the frequency, and parameters of the NSPS permit.

12.1.4 Site-Specific LFG Generation Modeling Results and LFG System Design Recommendations

LFG Technologies Inc. performed a landfill gas generation simulation to estimate the total landfill gas generation for the build out configuration of the Cell 7B/8 disposal area. Historical waste deposition and Class I solid waste projections were used for the amount of waste. The model was run with the following parameters:

1. Average methane gas content was assumed to be 54% by volume; Carbon dioxide was 45 percent, with the remainder of the gas being nitrogen or oxygen
2. Refuse density was 1200 lb/cubic yard
3. LFG Yield was estimated to be an average of 0.15 cubic foot LFG/ lb refuse/ year with an ultimate yield of 4.5 cubic yard LFG per pound of refuse over 30 years
4. Maximum recoverable LFG was assumed to be 70 percent.

The modeled peak gas production from Cell 7B/8 plus the A-K cell gas production is 4529 cfm, occurring in the year 2004. This gas production level would be expected if all of the Cell 7B/8 disposal area recoverable LFG were collected by vacuum. The average gas flow to the compressor station for calendar year 2004 was 4100 cfm. Gas flow to the compressor station from the A-K disposal unit historically is approximately 700 cfm. Thus, current flow from Cell 7B/8 is approximately 3400 cfm. The existing compressor/flare station is sufficient to accommodate the future modeled flow of 4529 cfm. No improvements to the compressor station or backup flare system are needed at this time. The existing Cell 7B/8 header system with east-west interconnection through collection piping is sufficiently sized to handle the increase in gas flow from the remaining portions of Cell 7B and 8 without retrofit.

12.1.5 LFG System Expansion Design Criteria

Based on the recommendations from the field study and evaluation and recommendations of the LFG Technologies, Inc. report, as well as the results of recent improvements to the Cell 7B LFG system, the following design criteria were used for the design of the LFG collection system.

Gas Extraction Wells:

Gas well piping will be eight-inch (8") diameter Schedule 80 CPVC pipe. Well sections will be bolted together with stainless steel bolts to assure that there is a mechanical connection at all pipe joints. Radius of Influence (ROI) is estimated to be approximately 100-120 feet, consistent with testing results from in-place cell 7B/8 gas wells. Well spacing is proposed to be approximately 175 to 200 feet in Cell 8 with an overlap allowance of 15%. The record drawings indicate that the elevation of the bottom geomembrane liner ranges from elevation 88 to 98 feet NGVD, decreasing in elevation from east to west. The bottom of the LFG well borehole is proposed to be no lower than approximately fifteen (15) feet above the geomembrane liner.

The vertical wells are proposed to be installed in a 36-inch borehole. This is similar to the borehole diameter of 14 wells replaced in Cell 7B in 2003. This size borehole has proven to be effective for Cell 7B/8. Vertical solid wall pipe is proposed to be used within a minimum of fifteen feet of the surface. Slotted pipe in the well is designed to be from the bottom to fifteen feet of the surface. Perforation slots shall be not greater than ¼ inch wide by 8 inches long per

LF of gas well piping. Perforations shall be installed at 90-degree angles around the circumference of the pipe, staggered by height to increase pipe strength.

Header Pipes:

The header pipes are proposed to be SDR 11 HDPE piping with diameters of 12- inches or greater. SDR 11 provides greater resistance to crushing or sagging than thinner-walled piping such as SDR 17, and can withstand the wheel load of 40,000 lb/SF with two feet of cover. SDR 11 is a "standard" production run for HDPE piping. Secondary header piping was sized from 6- inch in diameter to 10-inch in diameter depending on the number of wells connected to them and the expected LFG flow that they are carrying. The header piping was designed as a loop system to provide redundancy in the direction of gas flow.

Gas system head loss modeling is provided in Appendix D. The existing and proposed gas collection system is shown on the gas plans in the plan set. A reduced size set of plans is provided in Appendix I. The schedule for the new gas wells and construction details are provided in the plan set attached as Appendix I.

Laterals:

Laterals from individual wellheads are designed to be 4-inch diameter SDR-11 HDPE pipes similar to the existing lateral piping.

Wellheads:

Two-inch and three-inch LandTech Type A wellheads and QED brand wellheads are proposed for the active LFG management system to provide consistency with the existing well field. Actual wellhead size will be determined at startup based on gas flow. The top flange of the new wells will use a QED well cap design that provides capability to insert a leachate/ condensate pumps with connection for air vacuum lines and liquid discharge. Two-inch wellheads are proposed for flows below 50 scfm. Two-inch wellheads have a pressure drop ranging from 0.1 to 3.5 inches for flow of 0 to 75 scfm. The LandTech wellheads will be HDPE for UV protection and will include quick-disconnect ports and gas flow rate capabilities. All new wellheads using the QED flange will include a gas sampling port to provide pressure readings at the wellhead. Gas pressure readings will provide information to the operator to balance the system or to detect potential condensate blockage in the collection system.

Condensate Sumps

Condensate removal from headers along the east edge of Cell 8 will be gravity flow to existing condensate sumps or leachate collection pipe cleanouts. Condensate removal along the south edge of the landfill will be by gravity flow to a new condensate sump equipped with a submersible pump. This condensate sump pump station will discharge to a condensate trap, adjacent to the southernmost Cell 8 leachate manhole. Condensate removal along the west edge will be to a condensate trap, prior to the leachate manholes that empty the Cell 8 leachate collection pipes and contain the flow-through leachate header pipe.

Valves & Valve Boxes

Below grade valves with above ground actuators for isolation and control similar to the ones currently in-use are proposed. Valves will be used to shutoff or control the flow of gas in segments of the header system and to allow maintenance and repair of the header system as necessary.

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

The current gas monitoring system and procedures currently on-file with the Department are not proposed to be changed as a result of this application. Therefore, it has been designated as "No Change" on the application form.

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

If the results of monitoring show that the combustible gas concentrations exceed the lower explosive limits at the property boundary or in an enclosed structure, Orange County 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.

If gas concentrations cause objectionable odors beyond the landfill property boundary, Orange County will implement a routine odor-monitoring program to determine the timing and extent of off-site odors and will submit to the FDEP an odor remediation plan for the gas releases.

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

The information for the gas recovery facilities for Cell 7B/8 can be found in the following reports from previous permit applications:

- Solid Waste Management Facility Permit Application and Engineering Report For Class I Cell 7B/8 and Class III, Cell 1, Renewal of Permit No. SO-480128169-006, dated December 2002. Permit Nos. SO48-0128169-014 and SO48-0128169-015 were issued April 3, 2003.
- Modification No. SO-48-0128169-011 to Orange County Landfill Operations Permit No. SO-48-0128169-003 for Installation of Active Gas Collection System in Cell 1 and Pre-1985 Disposal Areas dated October 29, 2001
- Permit Renewal Application No. 5048-0128169-003 for Orange County Landfill Operations Permit S043-298672 continued operation of Class I Cell 7B/8 dated October 1997.

The LFG recovery system referenced in the above permit applications has been installed and is operational. The additional gas recovered as a result of the LFG expansions and improvements as part of the final closure construction will continue to be collected. The recovered LFG flow from Cell 7B/8 to the OUC Curtis H. Stanton Energy Center is expected to continue after final closure at least through the BEI's agreement period.

The existing LFG recovery system consisting of the LFG well field in Cell 7B/8, the existing collection system and header to compressor station, compressors, and gas transmission pipeline to CHSEC is not proposed to be changed as a result of this application. However, the system is going to be expanded with new wells, collection piping and condensate removal. This will result in more efficiency in collection of the LFG generated and the volume of LFG transmitted to CHSEC.

Section 13
Parts P, Q and R – Landfill Final Closure Requirements, Closure Procedures and
Long-Term Care

SECTION 13.0

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

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

Orange County is requesting a closure permit for construction of final cover over the approximate remaining 60 acres of disposal area in Cell 7B/8. The remaining disposal capacity of Cell 7B/8 is projected to occur during the second quarter of 2005. The County has implemented concurrent Class I operations in Cell 7B/8 and the new Cell 9. Concurrent operations are necessary to assure a base layer in Cell 9 with select waste that could not puncture the Cell 9 liner system. Users are directed either to Cell 7B/8 or Cell 9 for continued Class I waste disposal during this interim period. After this transition period, all Class I solid waste will be directed to Cell-9. Once disposal operations cease at Cell 7B/8, the County plans to prepare construction plans and bid documents for selection of a contractor to construct the final closure of Cell 7B/8 based on this permit. The construction is expected to start in late 2006 and be completed in 2007.

Notice to public for the closure of Cell 7B/8 is not specifically required as Cell 9 is operational. The disposal cell information and benchmarks that are required for the "Declaration to the Public" will be prepared and entered in the public records. Copies of these documents will be submitted to the Department for the official date of closing of Cell 7B/8.

13.2 Closure Permit General Requirements (62-701.600(3), FAC)

The information requested in this section is provided in Sections 13.3 through 13.7. The final receipt of waste in Cell 7B/8 is projected for the third quarter of 2005. The closure plan in Sections 13.3 through 13.7 provides a closure report, closure design plan, closure operation plan, and procedures for closure. Demonstration of financial responsibility is provided in Section 14.0.

13.3 Closure Report Requirements (62-701.600(4), FAC)

13.3.1 Description of Cell 7B/8 Disposal Area and Legal Description

The disposal area to be closed under this permit application is the remaining open area of Cell 7B/8 located at the 5000-acre Orange County Solid Waste Management Facility. The closure area is approximately 60 acres and is the southern half of the combined disposal unit. The total acreage of Cell 7B/8 is approximately 110 acres.

A special purpose survey to delineate the edge of the bottom liner is provided on Sheet C-1. The coordinates of the edge of bottom liner for Cell 7B/8 disposal unit is provided in the plan set submitted with this application.

13.3.2 History of Landfill Disposal Unit Construction and Operation

Cell 7B was proposed as a disposal area in late 1986 when the Department required the County to initiate permitting for a lined disposal landfill. During 1988 and 1989, the 51.5-acre Cell 7B disposal area was permitted for construction. The bottom liner for Cell 7B is a single 60-mil geomembrane in accordance with requirements at the time of construction. Cell 7B was constructed in 1990, and disposal operations started in 1991. Leachate is collected by east-west sloped collection pipes connected to a header that empties into a centrally-located pump station at the southwest corner of Cell 7B.

Cell 8 was permitted in 1994, and constructed during 1995 and 1996. Disposal operations began in late 1996. This 58-acre disposal unit is connected to Cell 7B and has a composite liner of one foot of 1×10^{-8} cm/sec clay overlain by a 60-mil HDPE liner. Leachate is collected by east-west sloped collection pipes spaced at 100-foot intervals that terminate through liner penetrations into manholes. The collection area for each collection pipe was segmented within Cell 8 to allow collected stormwater to be collected by each collection pipe prior to placement of solid waste. The header passes through each of the leachate manholes, receiving leachate from each collection pipe before connecting to the Cell 7B pump station.

Leachate from Cell 7B/8 is pumped to one of two 250,000-gallon capacity concrete storage tanks. Currently leachate is pumped from the storage tanks northward and westward via force main to Orange County Utilities Eastern Water Reclamation Facility (EWRF) for treatment. After Cell 9 became operational, the leachate from Cell 7B/8 was re-routed with a force main to the new master re-pump station that also serves the Southern Expansion Site. The leachate from the new master re-pump station is transmitted with a new force main along Young Pine Road to an existing wastewater force main that will convey the combined leachate and wastewater to the EWRF.

The total solid waste disposal capacity of Cell 7B/8 is estimated to be approximately 12.1 million cubic yards. The remaining capacity as of September 30, 2004 was estimated to be 350,000 cubic yards. As stated, the anticipated fill date for Cell 7B/8 is projected to be in the third quarter of 2005. The anticipated completion of construction of final closure is mid-2007.

13.3.3 Type and Quantity of Waste Received

The type of waste received at the Cell 7B/8 disposal area includes residential, commercial, and industrial Class I waste, industrial and domestic sludge, water and air treatment sludge, and recyclable material residue. Table 1 in the Closure Financial Assurance Report included in Appendix G presents the historical and projected solid waste quantities received at Cell 7B/8 including the assumption that commercial tonnage will increase by 45,000 tons per year beginning in January 2004. A private commercial waste hauler has signed an agreement committing to the tonnage increase.

In addition to the Cell 7B/8 Class I and Class III Cell 1 disposal areas, the County operates an asbestos disposal area, household hazardous waste facility, waste tire storage facility, and yard waste processing facility at the OCLF. Asbestos has been buried in the pre-1985 and Class III disposal areas. Asbestos has not been deposited in the Cell 7B/8 disposal area.

13.3.4 Geotechnical Information and Adjacent Landowners

Geotechnical information for the Cell 7B/8 landfill has not changed from prior submittals. This item has been marked "No Change. Additional information is listed in Section 7.0.

Land use information and a list of landowners were provided in the November 19, 2002 operations permit renewal application. Adjacent properties to the Orange County Solid Waste Management Facility are shown on the maps in Appendix B and are listed in an updated table provided in Appendix B for this closure permit application.

13.3.5 Gas Migration Report

The active gas extraction system that has been installed in Cell 7B/8 will minimize the possibility of gas migration to adjacent properties or into enclosed structures. The Phase II gas system compressor/flare station and gas transmission line to the OUC's CHSEC provides a method to utilize the collected LFG and keep the vacuum extraction system in operation under adverse conditions. In addition, Cell 7B/8 is relatively isolated from adjoining properties. The north, west and south edges of Cell 7B abut other portions of the Orange County Solid Waste Management Facility. The eastern edge of waste is approximately 150 feet from the CHSEC property line where OUC operates an ash fill. There are no enclosed structures within 300 feet of the east edge of Cell 7B/8.

The current gas migration monitoring system for the original 1500- acre orange county landfill consists of fifteen gas- monitoring probes around the perimeter of landfill units (Cell 7B/8, Class III) and at the property boundary adjacent to landfill units. Four probes are used to monitor the east perimeter of the Cell 7B/8 disposal unit on a quarterly basis. Since 1991, LFG concentrations exceeding the five percent by volume methane explosive limit have not been detected at the eastern landfill boundary except one time. The matter was investigated and found to be because of damaged liner which was repaired. Thus the existing LFG collection system appears to be effective. LFG control will increase with the installation of the complete Cell 7B/8 LFG system during final closure.

13.3.6 Assessment Report for Effectiveness of Landfill Design

Required components of the Assessment Report are geotechnical assessment results, surface water and stormwater management, gas migration and concentrations, the condition of existing cover and the nature of the waste disposed in the disposal unit.

The proposed design of the final cover system is similar to the design of the existing closed portion of Cell 7B/8 with improvements in drainage system and expansion of landfill gas extraction and collection system. The final cover system is proposed to consist of a 12-inch granular fill leveling course, a 40-mil geomembrane barrier layer, and two feet of granular fill as protective layer. The top six inches of the protective layer will be top soil and sod.

The proposed stormwater system will be corrugated HDPE pipe with extended split couplers that lock onto the corrugations of the pipe to assure that pipe segments will remain securely connected. The new letdown systems will also include energy dissipation manholes at or near the liner anchor berms to slow down the collected runoff. Runoff will be released into concrete-lined revetment systems that will further dissipate energy and protect the perimeter ditches.

The proposed expansion of the LFG system includes 77 new vertical wells (9 in Cell 7B, 68 in Cell 8) and all associated collection piping, headers, condensate sumps and other features shown on the plans.

13.4 Closure Design Requirements (62-701.600(5), FAC)

13.4.1 Closure Grading Plans

The final closure grading plan for Cell 7B/8 is submitted with this application in the permit drawings. The closure grading plan shows the final contours of the landfill at closure along with cross sections of the build-out landfill. The maximum closed elevation is 244 NGVD in accordance with the current FDEP Operation Permit. The side slopes are graded at no steeper than 4 horizontal to 1 vertical. The top deck of the landfill is proposed be graded at a minimum slope of 4 percent. An access road is proposed from the base of the landfill to the top for the purpose of sideslope maintenance and operation of the stormwater and landfill gas systems. Note that the uppermost bench at elevation 228 and elevation 236 feet NGVD will be installed at final closure. All other benches have been installed during waste filling operations.

The remaining "unclosed" areas of Cell 7B/8 covering approximately 60 acres will be closed under one construction project after the capacity is depleted. Prior to construction bidding, a new topographic survey will be obtained and a closure grading plan will be prepared based on the in-place waste contours at the time of the survey. During the construction of the final closure, the side slopes will be graded in-place to achieve the proposed contours where possible. The slopes and terraces will be graded to promote stormwater run-off toward drainage structures and prepare the sideslope for installation of the barrier layer. This will allow grading of the solid waste in-place and keeps disturbance of the in-place solid waste minimal. Hence, large scale solid waste excavations and grading are not proposed to achieve the precise closure grading.

13.4.2 Sideslope and Final Cover Design

13.4.2.1 General Sideslope and Final Cover Configuration

The proposed final cover design to minimize infiltration and erosion consists of the following components from the bottom:

- Leveling Course: Twelve (12) inches of granular fill
- Barrier Layer: 40-mil textured low density polyethylene (LDPE) geomembrane,
- Drainage Layer: (where needed) composite drainage net (CDN) in letdown valleys
- Protective Cover: 24 inches of granular fill (top 6 inches top soil and sod)

The final grading plan and stormwater management plan included in the plan set depict the configuration for drainage and access. Generally, side slopes have a 4H: 1V slope with terraces at twenty-foot vertical intervals. A twenty-four foot wide paved access road is proposed over the east south and west slopes of Cell 7B/8 to provide access to the top surface as well as access for maintenance to the cover system, stormwater system and the gas management system. A

Construction Quality Assurance Plan for the installation of the final cover system is provided in Appendix H.

Terraces are proposed to be 20-feet wide. Terraces will be sloped inward to collect runoff. Terraces will have longitudinal slopes of at least 0.5 percent toward stormwater inlets that empty into letdown piping. Slope will be created by contouring the ditches on the level terraces, providing slope toward the drop inlet structures. Stormwater inlets will be 4.0-foot diameter allowing capture of stormwater for the 100-year, one-hour duration (4.5 inch) storm event. The inlet design allows drainage even when partial blockage occurs at the inlet.

Letdown pipes will be spaced at 300 to 400-foot intervals and will increase in diameter toward the bottom of the slope. Letdown pipes on the east edge of Cell 8 will terminate into a manhole for energy dissipation. A terminal pipe will then allow flow to an energy dissipater into the lower ditch. Letdown systems on the south and west edges of Cell 8 will terminate at an energy dissipater located in the existing perimeter ditch.

The stormwater management letdown pipe system is designed for the 50-year, 24-hour duration storm. Erosion is expected to be minimized due to the 4:1 side slopes, the close spacing of letdown systems, inlets at terraces and letdown pipes that remove stormwater to the perimeter ditches. No substantial changes are proposed for the primary stormwater management system of perimeter ditches or wet detention storage ponds.

The majority of the construction for the approximate 60-acre closure is projected to occur during calendar years 2006 and 2007. Sod is proposed for all areas with slopes steeper than 10:1. Seed and mulch may be used for flat areas that are not subject to stormwater sheet flow from up gradient areas.

Cover material for final cover maintenance will be from the County's on-site borrow pit operation or from offsite sources.

13.4.2.2 Final Cover Design Requirements

Alternative barrier layers (geomembrane, GCL, and clay) were previously evaluated for effectiveness, stability, cost, ease of installation, and long term maintenance for landfill on the site. A low density polyethylene geomembrane barrier layer was selected for the final closure of Cell 7B/8. The LDPE geomembrane is consistent with prior Cell 7B closures and allows integral attachment of gas management system components. The information submitted previously regarding the final cover system and the proposed materials and components of the proposed closure cap system does not change substantially and applies to the final closure phase.

The storm water management system has several components to drain the closure layers and increase the stability of the side slopes. A six-inch (6") diameter underdrain pipe surrounded by stone and geotextile is installed along the traverse slope of each terrace a minimum of ten (10) feet upstream of terrace inlet. The underdrain pipe empties into the drop inlet at the low point. The proposed design uses a composite drainage net in the letdown pipe "valleys" to enhance stability. The composite drainage net is emptied by either a terrace underdrain, or an interceptor drain (toe drain) that discharges through solid wall pipes into the perimeter ditches. Toe drains are planned at both ends of each letdown pipe and at intervals of 150 to 200 feet.

13.4.2.3 Slope Stability Analysis for Geomembrane Barrier Layer

The slope stability analysis previously submitted as part of Phase II Cell 7B/8 sequential closure, and the information submitted as part of the application for renewal of the Operation Permit are not proposed to be changed as a result of this permit application. A copy is provided in Appendix E.

13.4.3 Secondary Stormwater Management System Design

General information regarding the secondary stormwater management system including typical calculations for contributing areas, flow routing, and terrace flows, inlet capacity and letdown pipe sizing are provided in Appendix F. The detailed plans and drawings for the stormwater management plan including structure and terrace schedules and supporting details are included in Appendix I.

13.4.5 Access Control and Proposed Final Use

The east edge of the landfill property near Cell 7B/8 is fenced, and access to the 1500-acre Orange County landfill is controlled through locked access gates at the landfill entrance on Young Pine Road. Access to the south and west edges of Cell 8, is limited by the south perimeter ditch. The Orange County Landfill is secured by gates that are locked at night and when the landfill is closed once a year for the Christmas holiday.

The County has no plans at this time for final use of Cell 7B/8. There are other solid waste and disposal operations at this site that are expected to continue for the foreseeable future. Cell 7B/8 will be used to extract LFG by BEI in accordance with their agreement with the County. The County will plan an end use plan once all other solid waste operations on this site are ceased. No end use plan is proposed at this time.

13.4.6 Description of Existing and Proposed Gas Management System

The existing gas management system and the proposed expansions and improvements are described in detail in Section 12.0. The plans for expansion and improvements of the gas collection system, well schedules, piping plans, and supporting details are provided in the drawings with this submittal.

13.5 Closure Operation Plan (62-701.600(6), FAC)

The Closure Operation Plan for Cell 7B/8 was previously submitted and is not requested to be changed as a result of this submittal. The Closure Operation Plan was submitted with the following previous permit application submittals:

- FDEP Solid Waste Permit Application and engineering report for Class I, Cell 7B/8 and Class III, Cell 1 dated November 19, 2002. Portions of the operations plan presented in the November 2002 submittal pertain to post closure maintenance and monitoring activities. No change to these procedures or activities is proposed.
- FDEP Solid Waste Permit Application Modification of Cell 7B/8 Operations Permit, Permit No. SO-48-0128169-003, dated October 1998.

- Renewal of Orange County Landfill Operations Permit S048-298672, Application for Class I Cell 7B/8, dated October 1997, and

The information previously submitted to the Department regarding the closure operation plan as part of prior permitting applications is not expected to change as result of this permit application, and has been designated as "No Substantial Change" on the application form.

The County will procure the services of a qualified General Contractor for the construction of the final closure cover. No County equipment is anticipated to be used for construction of the final closure. Landfill operations equipment will be relocated to the Cell 9 or other disposal operations at the Landfill.

Orange County is mandated by law to provide for solid waste disposal to citizens of the County. The County does not have plans to temporarily or permanently close the landfill in the foreseeable future.

13.6 Closure Procedures (62-701.610, FAC)

Orange County has installed permanent survey markers offset from the edge of solid waste placement around the perimeter of the Cell 7B/8 disposal area. Permanent markers are monuments with bronze disks that provide three-dimensional information. Survey monuments and tabulation will be included on the construction as-built drawings for the final closure project. If any of these monuments are destroyed during the final closure construction activities, additional permanent survey markers will be installed where needed and a signed and sealed special purpose survey of the monumentation will be submitted to FDEP as part of the report for certification of completion of construction. The report will also include an updated survey of the landfill boundary survey as part of the as-built drawings and the final survey.

Due to the height and extent of Cell 7B/8, a final topographical survey will be performed at the completion of the closure construction project. The final survey report will include the record drawing survey, a legal description of the edge of waste and appropriate permanent monumentation locations.

At the conclusion of construction, the Engineer-of Record will prepare the Certification of Construction Completion report that will include as-built drawings, quality assurance documentation, and a list of any deviation or approved changes to the permitting plans. The report will include certification forms and be signed and sealed by the Engineer-of-Record.

The Declaration to the Public documents for Cell 7B/8 final closure will be recorded with the Clerk of the Court as required by 62.701.610(5). Proof of recorded deed will be submitted to FDEP for notice of the official closing date.

13.7 Long-Term Care Requirements (62-701.620, FAC)

General requirements for long-term care are included in the Financial Assurance and Financial Responsibility Cost Estimates for Orange County Landfill included as Appendix G of this report. The County will continue environmental monitoring, general slope maintenance, stormwater system maintenance, and operation of the gas collection and control system throughout the thirty-year post-closure long-term care period.

Section 14
Financial Responsibility Requirements

SECTION 14.0

Part S - Financial Responsibility Requirements (62-701.630, FAC)

The response for this section is included in the Annual Financial Responsibility Report prepared by the CH2M/WCG Joint Venture, submittal to FDEP. A partial copy of the FY 2004 report is included in Appendix G of this submittal.

At the end of FY-2005, the County will have full funding for the cost of construction of closure of Cell 7B/8.

Appendix A
Current Operations Permit and
Monitoring Plan Implementation Schedule (MPIS)
Environmental Resource Permit



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

NOTICE OF PERMIT

By E-Mail
Jim.Becker@ocfl.net

In the matter of an
Application for Permit
by:

Orange County Utilities Department
Solid Waste Division
5901 Young Pine Road
Orlando, FL 32829

Attention: James W. Becker

Orange County - SW
Orange County Landfill, Class I - Cell 7B/8 & Class III - Cell 1 - Operation

Enclosed are Permit Numbers SO48-0128169-014 & SO48-0128169-015, to operate the Orange County Landfill, Class I - Cell 7B/8 & Class III - Cell 1, 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

William M. Bostwick, Jr., P.E. for

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

Date: April 3, 2003

"More Protection, Less Process"

Printed on recycled paper.

FILING AND ACKNOWLEDGMENT

FILED, on this date, under section 120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.



4/3/03

[Clerk]

[Date]

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on April 3, 2003 to the listed persons.

VFG/rc/ew

Enclosure

Copies furnished to:

Richard Tedder, P.E. - DEP - Tallahassee

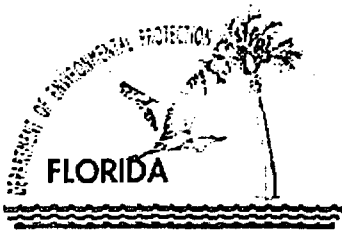
Fred Wick - DEP - Tallahassee (w/o attachments)

Orange County Environmental Protection Department

R.J. Bruner III, P.E. - CH2M/WCG

Bbruner@ch2m.com

L. Kozlov, P.E. - DEP - Central District



Department of Environmental Protection

Jeb Bush

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

David B. Struhs
Secretary

Permittee:
Orange County Utilities Department
Solid Waste Division
5901 Young Pine Road
DeLand, Florida 32724

Attention: Mr. James W. Becker

Permit Numbers:
SO48-0128169-014 & SO48-0128169-015
Date of Issue:
Expiration Date: 02/05/2008
County: Orange
Section/Township/Range:
14, 15, 16, 21, 22, 23, 27 and 28
23 South / 31 East
Latitude / Longitude:
28°28'54" North / 81°11'30 West
Project: Orange County Landfill, Class I - Cell
7B/8 & Class III - Cell 1

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 Orange County Landfill, Class I - Cell 7B/8 & Class III - Cell 1 to provide uninterrupted Class I and Class III solid waste disposal capacity for Orange County residents and businesses.

CLASS I - Cell 7B/8

The present service area for the Class I landfill is the incorporated and unincorporated areas of Orange County except the cities of Lake Buena Vista and Bay Lake. The type of waste received at the Cell 7B/8 disposal area includes residential, commercial and industrial Class I waste, industrial and domestic sludge, water and air treatment sludge, and recyclable material residue

The current landfill operations are in the lined Class I waste disposal area located in Cell 8 which is a horizontal expansion of Cell 7B. Cell 8 is constructed with a bottom composite liner consisting of 12 inches of 1×10^{-8} cm/sec. clay overlain by a 60-mil High Density Polyethylene (HDPE) geomembrane, overlain with a leachate collection and removal system. Leachate will be pumped or trucked to an off-site wastewater treatment facility or recirculated on the lined areas on an intermittent basis such as during wastewater treatment facility upsets or leachate pumping equipment failures.

CLASS III - Cell 1

The Class III landfill is an unlined solid waste disposal facility and serves all incorporated and unincorporated areas of Orange County except the cities of Lake Buena Vista and Bay Lake. As per Rule 62-701.200(14) Florida Administrative Code, waste accepted at the Class III landfill shall be Class III materials only.

Leachate from the site shall be controlled by an inward gradient pumping system which discharges ground water mixed with diluted leachate and stormwater to the on-site wetlands treatment system. Water from the wetlands treatment system currently discharges to the South Ditch leading to the Little

Econ River. Upon completion of a pipeline to Orlando Utilities Commission's Curtis H. Stanton Energy Center, this water will be pumped to the Energy Center's holding pond for use as makeup water.

GENERAL

Other operations at the County landfill included in this permit are waste tire processing, household hazardous waste collection, white goods storage and asbestos disposal. Other operations at the County landfill not included in this permit are administration area, scalehouse, yard waste composting, small vehicle waste drop-off, and materials recovery facility.

The Class I and Class III landfills have a gas management system to control odors and the migration of methane.

The project incorporates a ground water and surface water monitoring plan.

LOCATION: The landfill is located on 12100 Young Pine Road, 3 miles southeast of the Curry Ford Road/Dean Road intersection, Orlando in Orange County, Florida.

General Conditions are attached and to be distributed to the permittee only.

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. This permit also constitutes:
 - () Determination of Best Available Control Technology (BACT)
 - () Determination of Prevention of Significant Deterioration (PSD)
 - () Certification of compliance with State Water Quality Standards (Section 401, PL 92-500)
 - () Compliance with New Source Performance Standards
14. 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.
15. 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: Orange County Utilities Department

Permit/Certification Numbers:

SO48-0128169-014 &

SO48-0128169-015

Expiration Date: 02/05/2008

Attention: Mr. James W. Becker

SPECIFIC CONDITIONS: Orange County Landfill

1. **Plans and Specifications:** Drawings, plans, documents and specifications submitted by the permittee, not attached hereto, but remain on file at the Central District office, are made a part of this permit.
2. **Inspection 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 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.
5. **Site Access:** Access to the site shall be restricted by an effective barrier designed to prevent unauthorized entry and dumping.
6. **Litter, Dust & Fire Protection:** The landfill shall have litter control devices, dust controls, fire protection and fire-fighting facilities. 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. **Effluent Discharge:** There shall be no discharge of liquid effluents or contaminated runoff to surface or ground water without prior approval from this Department.
9. **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.
10. **Stormwater System Maintenance:** The stormwater system shall be maintained and visually inspected on a periodic basis and shall be cleaned as necessary to maintain proper operation.
11. **Gas Monitoring:** The landfill shall implement a gas management system to comply with Rule 62-701.530, F.A.C.
12. **Monitoring Plan Implementation Schedule:** The Monitoring Plan Implementation Schedule attached as Exhibit I, is made a part of this permit.
13. **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 owner or operator of the source to identify the nature of the problem and to submit a report to the Department on the results of the investigation and corrective action taken to prevent its recurrence.

PERMITTEE: Orange County Utilities Department

Permit/Certification Numbers:

SO48-0128169-014 &

SO48-0128169-015

Expiration Date: 02/05/2008

Attention: Mr. James W. Becker

SPECIFIC CONDITIONS: Orange County Landfill

14. **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 Department is to be immediately notified by the permittee as to the cause, what steps are being taken to correct the problem and prevent its recurrence, as required by Rule 62-4.130, F.A.C.
15. **Operation of Pollution Control Devices:** The leachate, gas and stormwater control systems shall be properly operated, monitored and maintained (Rule 62-701.500, F.A.C.)
16. **Control of Nuisance Conditions:** The operating authority 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 on adjacent or nearby properties and users. Complaints received from the general public shall be immediately investigated by the permittee and where warranted, take corrective action to abate the adverse odor.
17. **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 material to minimize ponding and erosion.
18. **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 or siltation.
19. **Operation Training Compliance:** The Orange County Landfill shall comply with Rule 62-701.320(15), F.A.C. - Operator training.
20. **Operations Plan:** An operations plan prepared by the engineer of record which shall include the sequence of filling, compaction, placement of cover, day to day operations, etc., shall be kept at the facility. The operator shall be trained and knowledgeable about the plan.
21. **Operations Report:** An operations report shall be submitted to the Department on a quarterly basis. 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.
22. **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.).
23. **Closure Permit Requirements:** At least 90 days prior to the date when wastes will no longer be accepted, the owner or operator shall submit a closure permit application to the Department.

PERMITTEE: Orange County Utilities Department

Permit/Certification Numbers:
SO48-0128169-014 &
SO48-0128169-015
Expiration Date: 02/05/2008

Attention: Mr. James W. Becker

SPECIFIC CONDITIONS: Orange County Landfill

24. Asbestos Disposal: Asbestos disposal shall meet the requirements of 40 CFR Part 61.154. After placement of the asbestos, landfill personnel shall place a minimum of six (6) inches of cover soil immediately over the asbestos. Records shall be kept for all asbestos containing materials received at the landfill.
25. Solid Waste Burning: Burning of solid waste is prohibited in accordance with Rule 62-701.300(3), F.A.C. Any fires at the landfill must be reported to the Department within 5 days by letter explaining the cause, remedial action and measures taken to prevent a recurrence.
26. Waste Tires: The permittee can operate a waste tire site and waste tires shall be received, stored and processed in accordance with the Waste Tire Rule, Chapter 62-711, F.A.C.
27. Household Hazardous Waste Transfer Facility: The household hazardous waste transfer facility consists of a hazardous waste storage building, a battery storage building and a waste oil storage tank which are intended to minimize the quantities of these materials disposed of in the landfill. The household hazardous waste transfer facility shall operate in accordance with the Hazardous Waste Rule, Chapter 62-730, F.A.C.; Section 403.7225, F.S., related to local hazardous waste management assessment; Section 403.7234, F.S., concerning conditionally exempt generator notification and verification; and Section 403.7264, F.S., dealing with Amnesty Days. The hazardous waste collection program shall allow the private contractor to collect wastes from conditionally exempt generators (those generating 100 kg or less of hazardous waste per month).
28. Hazardous Wastes: Any incidental hazardous wastes received in connection with operation of this facility must be disposed of in accordance with Rule 62-730, F.A.C.
29. Ground Water, Surface Water, and Gas Migration: Ground water, surface water, and gas migration at the site shall be monitored for up to 30 years following landfill closure.
30. 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, Twin Towers Office Building, 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.
31. Financial Responsibility: 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, 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.

PERMITTEE: Orange County Utilities Department

Permit/Certification Numbers:

SO48-0128169-014 &

SO48-0128169-015

Expiration Date: 02/05/2008

Attention: Mr. James W. Becker

SPECIFIC CONDITIONS: Orange County Landfill

32. Prevention of Significant Deterioration (PSD) Requirements: The landfill owner or operator is not required to obtain any air construction permit unless landfill construction or any modification is subject to the prevention of significant deterioration (PSD) requirements of Chapter 62-212, F.A.C. A landfill for which construction or modification is subject to PSD requirements must make application to the Bureau of Air Regulation, Mail Station 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, for an air construction permit and must obtain such permit prior to beginning any construction or modification.
33. Title V Permit Requirements: The landfill owner or operator is not required to obtain any air operating permit unless the landfill is required to obtain a Title V air operating permit (Title V permit) pursuant to Section 403.0872, F.S. A landfill is required to obtain a Title V permit if the landfill (or the total facility, if the landfill is contiguous or part of a larger facility) has the potential to emit 10 TPY of any hazardous air pollutant, 25 TPY of any combination of hazardous air pollutants or 100 TPY of any other regulated air pollutant. A landfill is also required to obtain a Title V permit if the maximum design capacity as defined in 40 CFR 60, Subpart WWW, is equal or greater than 2.5 million Megagrams or 2.5 million cubic meters. Title V permits must be applied for in accordance with the timing and content requirements of Rule 62-204.800, F.A.C. and Chapter 62-213, F.A.C. Title V applications shall be submitted to the District Air Program Administrator.
34. 40 CFR 60 Requirements: The permittee shall comply with the requirements of 40 CFR 60, Subparts WWW and Cc, as adopted by reference at Rule 62-204.800, F.A.C. The permittee shall submit to the Division of Air Resources Management, Department of Environmental Protection, Mail Station 5500, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400 any amended design capacity report and any Non-Methane Organic Compound (NMOC) emission rate report, as applicable, pursuant to 40 CFR 60.757(a)(3) and (b).
35. Substantial Changes or Revisions: 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.

PERMITTEE: Orange County Utilities Department

Permit/Certification Numbers:

SO48-0128169-014 &

SO48-0128169-015

Expiration Date: 02/05/2008

Attention: Mr. James W. Becker

SPECIFIC CONDITIONS: Orange County Landfill - Class I, Cell 7B/8

CLASS I - CELL 7B/8

36. Stormwater-Leachate Contamination: Stormwater that comes into contact with leachate shall be treated as leachate and any leachate emanating from the landfill shall be collected and treated as necessary to meet the requirements of Rules 62-302, 62-4 and 62-520, F.A.C., unless the leachate is transmitted to a permitted treatment facility.
37. Zone of Discharge: The zone of discharge 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 surficial aquifer, and defined in the horizontal plane as extending 100 feet from the foot print of the waste disposal area 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 62-522.410, F.A.C.
38. Leachate Collection and Transmission System: The leachate collection and transmission system shall collect and convey leachate so that the liner leachate depth shall not exceed one foot under normal operating conditions.
39. Leachate Storage Tanks: The integrity of the leachate storage tanks shall be checked on a weekly basis so that no leachate releases to the soils will occur. The storage tanks shall be maintained and operated in accordance with Rule 62-701.400(6), F.A.C.
40. Precipitation Records: A recording rain gauge shall be operated and maintained to record precipitation at the landfill. Precipitation records shall be maintained and used by the permittee to compare with leachate generation rates.
41. Waste Compaction and Working Face: All solid waste shall be spread in layers of approximately two (2) feet in thickness and compacted to approximately one (1) foot in thickness or as thin a layer as practical before the next layer is applied. All compacted solid waste shall be formed into cells with the working face and the side grades above land surface at a slope no greater than three feet horizontal to one foot vertical rise. The working face shall be only large enough to efficiently accommodate vehicles discharging waste.
42. Initial Cover and Intermediate Cover: Initial cover shall be applied at the end of each working day except the working face which may be covered with temporary cover if solid waste will be placed on it within 18 hours. An intermediate cover of one (1) foot of compacted earth in addition to the initial cover shall be applied within seven (7) days of cell completion if final cover or an additional lift is not to be applied 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.
43. Stormwater Terraces: Temporary stormwater terraces shall be completed at 20-foot vertical increments. Side slopes of the terraces and any related swales shall not exceed a 33 percent grade (3 horizontal to 1 vertical). Grass cover, mulch or other erosion control procedures shall be placed and maintained on the terraces and side slopes to reduce erosion and control the loss of intermediate cover material.
44. Stormwater Drainage: Stormwater drainage shall consist of benched terraces every 20 vertical feet starting at the toe of the landfill. These terraces will bring the stormwater down through a series of letdown structures to a perimeter ditch at the toe of the landfill.

PERMITTEE: Orange County Utilities Department

Permit/Certification Numbers:

SO48-0128169-014 &

SO48-0128169-015

Expiration Date: 02/05/2008

Attention: Mr. James W. Becker

SPECIFIC CONDITIONS: Orange County Landfill - Class I, Cell 7B/8

45. Domestic, Food Service Sludge and Septage: Domestic, food service sludge and septage to be disposed in the landfill shall be dewatered (paint filter test) and shall be disposed of in a manner that does not interfere with compacting and maintaining proper slopes.
46. Landfill Elevation: The final (maximum) elevation of the Orange County Landfill, Class I in Subbasins 7B and 8 shall be 244 feet NGVD as per the permit application and supporting documents submitted December 11, 2002.
47. Solid Waste Disposal Rate: The average solid waste disposal rate for this source is 1,800 tons per day as stated in the application. Actual operating rates may vary depending upon business conditions.
49. Condensate Disposal Methods: Condensate collected from the LFG system shall be added to the existing leachate holding tank for subsequent transmittal along with leachate to the wastewater treatment plant for treatment and disposal.
50. Cover System: In descending order, the cover system shall consist of 6 inches of topsoil, 18 inches of granular fill, one layer of textured 40-mil linear low density polyethylene geomembrane (LLDPE) and 12 inches of granular fill to protect the geomembrane from the underlying solid waste. Bahia grass seed and sod, a drought resistant vegetative cover shall be used to seed and sod the closure area.
51. Side Slope Design: The side slope of the closure area shall not be steeper than 4 horizontal to 1 vertical and will be sodded to minimize erosion.
52. Odor Control: Odor control shall be accomplished by using the collected LFG as an energy source. The active vacuum-extraction management system shall collect the LFG and then transmit it to the nearby Orlando Utilities Commission power plant. In the event that LFG utilization is temporarily unavailable, oxidation of LFG at the flare station shall be used as an alternative method of odor control.

PERMITTEE: Orange County Utilities Department

Permit/Certification Numbers:

SO48-0128169-014 &

SO48-0128169-015

Expiration Date: 02/05/2008

Attention: Mr. James W. Becker

SPECIFIC CONDITIONS: Orange County Landfill - Class III, Cell 1

CLASS III - CELL 1

53. Zone of Discharge: The zone of discharge for the Class III landfill shall be a three dimensional volume, defined in the vertical plane as extending from the top of the ground to the base of the surficial aquifer, and defined in the horizontal plane as extending south to the south berm and extending west, north and east to near the original 1500 acre landfill boundary as defined by the compliance perimeter monitoring wells as shown in Attachment B in Exhibit I. Class G-II water quality standards must be met at the boundary of the zone of discharge in accordance with rule 62-522.410, F.A.C.
54. Waste Compaction & Working Face: Solid waste shall be spread in layers and compacted at least weekly, using suitable heavy equipment. All compacted solid waste shall be formed into cells with the working face and the side grades above land surface at a slope no greater than three (3) feet horizontal to one (1) foot vertical rise. The working face shall be only wide enough to efficiently accommodate vehicles discharging waste and to minimize the exposed area and the use of unnecessary cover material.
55. Initial Cover and Intermediate Cover: Initial cover shall be applied at least once every week. 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.
56. Final Cover: All areas filled with Class III waste shall have a final cover of soil to minimize infiltration and erosion. 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 shall consist of one of the two following design options:
 - a) Clay Cover System: The clay final cover option shall consist of a 12-inch common soil leveling course, overlain by 18 inches of clay with a maximum hydraulic conductivity of 1×10^{-5} cm/s, overlain by a composite drainage layer consisting of a geonet thermally bonded to geotextile above and below, overlain by a 12-inch common soil protective layer, overlain by 6 inches of top soil that will sustain vegetative growth to help minimize erosion. The clay layer shall be emplaced in 6-inch lifts and compacted to a final minimum thickness of 18 inches.
 - b) Geomembrane Cover System: The geomembrane final cover option shall consist of a 12-inch common soil leveling course, overlain by one layer of 40-mil textured linear low density polyethylene (LLDPE), overlain by a composite drainage layer consisting of a geonet thermally bonded to geotextile above and below, overlain by an 18-inch common soil protective layer, overlain by 6 inches of top soil that will sustain vegetative growth to help minimize erosion. The LLDPE layer shall comply with the requirements of Rule 62-701.600(5)(g)4, Florida Administrative Code.
57. Stormwater Infiltration: Infiltration of stormwater runoff into the closed landfill shall be minimized by capping of the landfill with a barrier soil layer as part of the final cover system required by Rule 62-701.600(5)(g), F.A.C., and properly sloping the landfill surface to allow stormwater to drain from the landfill in a controlled manner.

PERMITTEE: Orange County Utilities Department

Permit/Certification Numbers:

SO48-0128169-014 &

SO48-0128169-015

Expiration Date: 02/05/2008

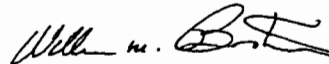
Attention: Mr. James W. Becker

SPECIFIC CONDITIONS: Orange County Landfill - Class III, Cell 1

58. Unacceptable Waste: Garbage, white goods, waste oil, hazardous wastes, infectious waste, putrescible waste and any other prohibited materials inadvertently received at the facility shall be immediately removed from the waste stream and shall be properly disposed.
59. Allowable Waste: As per Rule 62-701.200(14), F.A.C., this facility shall only process wastes that are acceptable for disposal at a Department permitted Class III landfill.
60. Final Grade: The final (maximum) elevation of the Class III landfill shall be 194 ft NGVD.
61. Disposal Rate: The solid waste disposal rate for the Class III landfill is 500 tons/day. Actual operating rates may vary depending upon business conditions.
73. Drainage Terraces: Drainage terraces shall be constructed around the full circumference of the proposed Class III landfill at elevations 95, 125, and 155 ft NGVD. These drainage terraces shall be 30 feet wide and consist of grassed swales, sloped such that the runoff from the landfill area is collected and conveyed to a series of low points. At these low points, drainage inlets shall be installed with outlet pipes to effectively transfer the runoff down the slope into the perimeter stormwater channels. The top deck shall be constructed with a 6% maximum slope from 185 to 194 ft NGVD and shall have a 20-foot wide perimeter berm and swale to achieve runoff collection and conveyance to the aforementioned low points.

ISSUED April 3, 2003

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



William M. Bostwick, Jr., P.E. for

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

EXHIBIT I

ORANGE COUNTY LANDFILL

WACS FACILITY ID: 21847

MONITORING PLAN IMPLEMENTATION SCHEDULE

GENERAL

1. The permittee must initiate implementation of this Monitoring Plan within sixty (60) days from the date of permit issuance.
2. The field testing, sample collection and preservation and laboratory testing, including quality control procedures, shall be in accordance with **Chapter 62-160 Florida Administrative Code (F.A.C.)**. Approved methods as published by the Department or as published in Standard Methods, ASTM, or EPA Methods shall be used.
3. The organization collecting samples at this site must use the Field and Laboratory Standard Operating Procedures (DEP-SOP-001/01 and DEP SOP-002/01) 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.
4. If, at any time, analyses show that ground water standards or minimum criteria are exceeded in the detection wells or at the edge of the Zone of Discharge, the Permittee shall resample the wells within thirty (30) days after the sampling data are received, to confirm the 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. If the data are confirmed, or if the permittee chooses not to resample, the permittee shall notify the Department in writing within 14 days of this finding. Upon notification by the Department, the permittee shall initiate evaluation monitoring in accordance with Rule 62-701.510(7) F.A.C.
5. The Department must be notified in writing at least fourteen (14) days prior to the installation and/or sampling of any monitoring well(s).

GROUND WATER QUALITY MONITORING

6. The ninety-seven (97) ground water monitoring wells designated for water quality testing are listed on Attachment A and are shown on Attachment B. The wells and piezometers for water level measurements are shown on Attachment B.

NOTE: 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's 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 insitu ground water contains higher levels of dissolved oxygen. All water quality analyses will be performed on unfiltered samples unless approved by the Department.

7. Samples from the ninety-seven (97) ground water monitoring wells shall be collected semi-annually and analyzed as follows: temperature (field), dissolved oxygen (field), pH (field), specific conductance (field), turbidity (field), total ammonia as N, chlorides, nitrate, total dissolved solids, iron, mercury, sodium, and the EPA 40 CFR, Part 258, Appendix I parameters. **All analyses must use detection limits at or below state standards and/or minimum criteria for ground water quality** unless dilution of the sample is necessary due to high contaminant concentrations or the Method Detection Limit using the most sensitive and currently available technology is higher than a specific criterion, in which case the practical quantitation limit must be used.

8. Ground water levels in all wells, whether sampled or not, and all piezometers must be measured to the nearest 0.01 foot and reported semiannually unless required more frequently by permit condition. All water level measurements must be made within a one day period. These measurements must be referenced to the National Geodetic Vertical Datum of 1929 (NGVD).

SURFACE WATER MONITORING

9. The four (4) surface water sites included in this monitoring plan are LFO, BRM, SBRME and SBRMW. They are listed on Attachment A and shown on Attachment B.

10. Samples from the four (4) surface water monitoring sites shall be collected and analyzed as follows: temperature (field), dissolved oxygen (field), pH (field), specific conductance (field), turbidity (field), unionized ammonia (NH₃), total hardness as CaCO₃, total organic carbon, total dissolved solids, total suspended solids, biochemical oxygen demand (5 day), chemical oxygen demand, total nitrogen as N, nitrate as N, total phosphates as P, chlorophyll A, iron, mercury, and the EPA 40 CFR, Part 258, Appendix I parameters. All analyses must use detection limits at or below state standards and/or minimum criteria unless dilution of the sample is necessary due to high contaminant concentrations or the Method Detection Limit using the most sensitive and currently available technology is higher than a specific criterion, in which case the practical quantitation limit must be used.

11. Surface water elevations at sampling locations LFO, BRM, SBRME and SBRMW must be measured to the nearest 0.01 foot on the same day as ground

water levels in the wells and reported semiannually unless required more frequently by permit condition. All water level measurements must be made within a one day period. These measurements must be referenced to NGVD.

LEACHATE QUALITY MONITORING

12. The site designated for leachate quality testing is L-1. The site is listed on Attachment A and shown on Attachment B.

13. Samples from the leachate monitoring sites shall be collected annually and analyzed for dissolved oxygen (field), pH (field), specific conductance (field) total ammonia as N, bicarbonate, chlorides, nitrate, total dissolved solids, iron, mercury, sodium and the EPA 40 CFR, Part 258, Appendix II parameters. **All analyses must use detection limits at or below 40 CFR Part 261.24 standards.**

MONITORING WELL REQUIREMENTS

14. If a monitoring well 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.

15. New or replacement monitoring well design or placement must be approved by the Department. 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 Department approval prior to well installation. Use of hollow stem auger equipment is recommended. Other drilling methods must be approved by the Department prior to well installation.

16. All wells shall be clearly and permanently labeled and the well site maintained so that the well is visible at all times. Protective barriers must be installed at all wells which may be subject to damage by heavy equipment or traffic.

17. An abandonment plan for abandoning any well which is unsuitable for ground water monitoring must be approved by the Department prior to abandonment.

REPORTING REQUIREMENTS

GENERAL

18. Well completion reports for new monitoring wells must be submitted to the Department on the attached Ground Water Monitoring Well Completion Report Form thirty (30) days after installation. Note that 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 Registered Surveyor and provided on the form. 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.

19. A drawing must be submitted within sixty (60) days following monitoring well installation showing the location of all monitoring wells (active and abandoned), 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 with an accuracy of 0.01 feet. The survey shall be conducted and certified by a Florida Registered Surveyor.

20. A total depth measurement must be made on all wells at time of permit renewal. 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.

SEMI-ANNUALLY

21. The required monitoring results must be submitted to the Department within thirty (30) days of receipt from the laboratory. These data shall be accompanied by a Ground Water Monitoring Report form (FDEP Form 62-522.900(2)). A copy of this form is attached. The monitoring reports shall include all the parameters described above.

There are two options for reporting monitoring results.

1. Paper Reporting: Parameter Report Forms FDEP Forms 62-522.900(2) are attached for reporting semi-annual analyses. In order to facilitate entry of this data into the State computer system, these forms or exact replicas must be used and must not be altered as to content. The original copies of the forms should be retained so that the necessary information is available to properly complete future reports.

2. Electronic Reporting: The monitoring data may be submitted electronically on floppy diskettes or compact disc media readable by a Microsoft Windows computer. The Department may use electronic-tools (e.g. Validator) to conduct data quality review and compliance checking. Electronic laboratory data must be submitted in a specific format called a tab-delimited text file with the first line of the file being the data field names. (Note: Microsoft Excel produces this file format when the "Save As" and "Text (Tab Delimited)" options are selected.) The following data fields must be present in the data:

- Analytical Method
- Date of Analysis

Orange County Landfill
Orange County

- Date of Preparation (if applicable)
- Date of Sampling
- Detection Limit of the Analysis
- DOH Certification Number of the Laboratory
- Matrix (Aqueous, Drinking Water, Saline/Estuarine, or Solids)
- Analytical Result
- Appropriate Data Qualifiers (as listed in Florida Administrative Code 62-160)
- Analytical Result Units
- WACS Testsite ID
- Parameter Name (Name of the Compound Analyzed for/Test Performed)
- STORET Parameter Code (as provided by the Department's Bureau of Solid and Hazardous Waste; must be six digits: e.g. 039430 for Isodrin)

All dates are to be submitted in MM/DD/YYYY HH:MI:SS format (e.g. 05/14/1973 17:18:00 for May 14, 1973, 5:18:00 p.m.). A sample of an acceptable data format will be posted to the Bureau of Laboratories web site, <http://www.floridadep.org/labs/software>

The submittal shall also include laboratory reports, Chain of Custody sheets, field data sheets, Water Sampling Logs (attached), ground water contour maps, a summary of any water quality standards or minimum criteria that are exceeded and any other required documents. These reports may be submitted electronically in portable document format (PDF) in lieu of a paper copy. If a specific document has a requirement to be signed and sealed, an original signed and sealed paper copy must also be submitted unless it is specifically permitted by law or rule to be signed electronically.

Please note that the Department of Environmental Protection's (DEP's) new Standard Operating Procedures for Field Activities, DEP-SOP-001/01, January 01, 2002, become effective on April 9, 2002. The revised protocols, including those for ground water sampling (FS2200), can be accessed at the DEP's internet <http://www.dep.state.fl.us/labs/qa/sops.htm>

22. Water levels in all monitoring wells, whether sampled or not, and all surface water sites must be measured to the nearest 0.01 foot and reported semi-annually unless required more frequently by permit condition. All water level measurements must be made within a one day period. 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, depth to water and calculated water level elevation referenced to NGVD.

23. A ground water elevation contour map for each monitored aquifer zone must be submitted semi-annually to the Department. Ground water elevation contour map(s) should include monitoring well locations, ground water elevation at each monitoring well location referenced to NGVD, a bar scale, 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 registered professional who is able to demonstrate competence in this subject area.

BIENNIALY

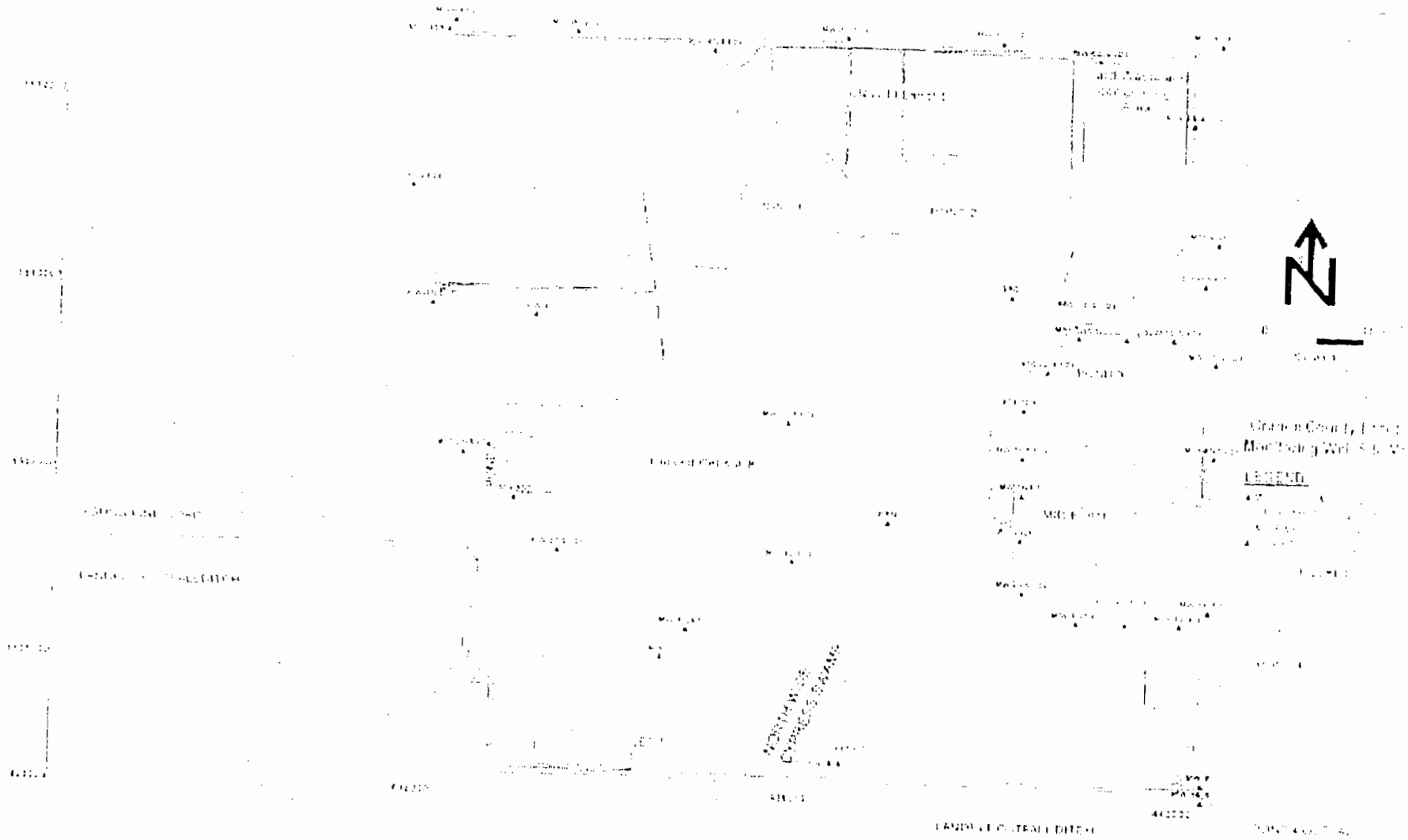
24. A technical report shall be submitted to the Department every two years, and shall be updated at the time of permit renewal. The report shall summarize and interpret the water quality data and water level measurements collected during the past four years. The report shall contain, at a minimum, the following:

- a. Tabular and graphical displays of any data which shows that a monitoring parameter has been detected, including hydrographs for all monitoring wells.
- b. Trend analyses of any monitoring parameters detected.
- c. Comparisons among shallow, middle, and deep zone wells.
- d. Comparison between upgradient and downgradient wells.
- e. Correlation 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.
- h. An evaluation of the adequacy of the water quality monitoring frequency and sampling locations based upon site conditions.

This report must 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 registered professional who is able to demonstrate competence in the subject area(s) addressed within the sealed document.

Best Available Copy

ORANGE COUNTY LANDFILL MONITORING WELL SITE MAP



ATTACHMENT B

Florida Department of Environmental Protection

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

MONITORING WELL COMPLETION REPORT

DATE _____

FACILITY NAME: Orange County Landfill _____

DER PERMIT NO.: _____ WACS FACILITY ID: 21847 _____

WACS TESTSITE ID.: _____ WACS TESTSITE SITE NAME: _____

WELL TYPE: BACKGROUND _____ DETECTION _____ COMPLIANCE _____

LATITUDE AND LONGITUDE (seconds to two decimal places): _____

AQUIFER MONITORED: _____

DRILLING METHOD: _____ DATE INSTALLED: _____

INSTALLED BY: _____

BORE HOLE DIAMETER: _____ TOTAL DEPTH: _____ (BLS)

CASING TYPE: _____ CASING DIAMETER: _____ CASING LENGTH: _____

SCREEN TYPE: _____ SCREEN SLOT SIZE: _____ SCREEN LENGTH: _____

SCREEN DIAMETER: _____ SCREEN INTERVAL: _____ TO _____ (BLS)

FILTER PACK TYPE: _____ FILTER PACK GRAIN SIZE: _____

INTERVAL COVERED: _____ TO _____ (BLS)

SEALANT TYPE: _____ SEALANT INTERVAL: _____ TO _____ (BLS)

GROUT TYPE: _____ GROUT INTERVAL: _____ TO _____ (BLS)

TOP OF CASING ELEVATION (NGVD): _____ GROUND SURFACE ELEVATION (NGVD): _____

DESCRIBE WELL DEVELOPMENT: _____

POST DEVELOPMENT WATER LEVEL ELEVATION (NGVD): _____

DATE AND TIME MEASURED: _____

REMARKS: _____

NAME OF PERSON PREPARING REPORT: _____

(Name, Organization, Phone No.)

NOTE ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.
(NGVD) NATIONAL GEODETIC VERTICAL DATUM OF 1929

(BLS) = BELOW LAND SURFACE

LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-701.510)

Semi-Annual Ground Water Monitoring (Page 1 of 4)

WACS FACILITY ID _____

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME _____

WELL TYPE: _____ (B) Background
(D) Detection
(C) Compliance
(O) Other

CLASSIFICATION OF GROUNDWATER G-II

Well Purged* prior to Sample Collection (Yes/No) _____ Ground Water Elevation (NGVD) _____ Ft

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS
00010	Temperature (field)					°C
00299	Dissolved Oxygen (field by probe)					mg/L
00406	pH (field)					STD
00094	Spec. Conductance (field)					umhos/cm
82078	Turbidity (field)					NTU's
00610	Total Ammonia as N					mg/L
00940	Chlorides					mg/L
00620	Nitrate as N					mg/L
70300	Total Dissolved Solids					mg/L
	<u>METALS</u>					
01097	Antimony					ug/L
01002	Arsenic					ug/L
01007	Barium					ug/L
01012	Beryllium					ug/L
01027	Cadmium					ug/L
01034	Chromium					ug/L
01037	Cobalt					ug/L
01042	Copper					ug/L
01045	Iron					ug/L
01051	Lead					ug/L
71900	Mercury					ug/l
01067	Nickel					ug/L

*Well Purging is the process of pumping the well prior to sampling in order to obtain a representative ground water sample.
DEP Form 62-522.900(2) Effective April 14, 1994

LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-701.510)

Semi-Annual Ground Water Monitoring (Page 2 of 4)

WACS FACILITY ID _____

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME _____

WELL TYPE: _____ (B) Background
(D) Detection
(C) Compliance
(O) Other

CLASSIFICATION OF GROUNDWATER G-II

Well Purged* prior to Sample Collection (Yes/No) _____ Ground Water Elevation (NGVD) _____ Ft

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS
01147	Selenium					ug/L
01077	Silver					ug/L
00929	Sodium					mg/L
01059	Thallium					ug/L
01087	Vanadium					ug/L
01092	Zinc					ug/L
	<u>ORGANIC CONSTITUENTS</u>					
81552	Acelone					ug/L
34215	Acrylonitrile					ug/L
34030	Benzene					ug/L
73085	Bromochloromethane					ug/L
32101	Bromodichloromethane					ug/L
34413	Bromomethane					ug/L
32104	Bromoform					ug/L
77041	Carbon Disulfide					ug/L
32102	Carbon Tetrachloride					ug/L
34301	Chlorobenzene					ug/L
34311	Chloroethane					ug/L
32106	Chloroform					ug/L
34418	Chloromethane					ug/L
32105	Dibromochloromethane					ug/L

*Well Purging is the process of pumping the well prior to sampling in order to obtain a representative ground water sample.
DEP Form 62-522.900(2) Effective April 14, 1994

LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-701.510)

Semi-Annual Ground Water Monitoring (Page 3 of 4)

WACS FACILITY ID _____

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME _____

WELL TYPE: _____ (B) Background
(D) Detection
(C) Compliance
(O) Other

CLASSIFICATION OF GROUNDWATER G-II

Well Purged* prior to
Sample Collection (Yes/No) _____ Ground Water Elevation (NGVD) _____ Ft

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS
49146	1,2-Dibromo-3-chloropropane					ug/L
77651	1,2-Dibromoethane					ug/L
77596 46361	Methylene Bromide or Dibromomethane					ug/L
34536	1,2-Dichlorobenzene					ug/L
34571	1,4-Dichlorobenzene					ug/L
49263	trans-1,4-Dichloro-2-butene					ug/L
34496	1,1-Dichloroethane					ug/L
34531	1,2-Dichloroethane					ug/L
34501	1,1-Dichloroethene					ug/L
77093	cis-1,2-Dichloroethene					ug/L
34546	trans-1,2-Dichloroethene					ug/L
34541	1,2-Dichloropropane					ug/L
34704	cis-1,3-Dichloropropene					ug/L
34699	trans-1,3-Dichloropropene					ug/L
34371	Ethylbenzene					ug/L
77103	Methyl butyl ketone					ug/L
81595	Methyl ethyl ketone					ug/L
77424	Methyl iodide					ug/L
34423	Methylene Chloride					ug/L
81596	Methyl isobutyl ketone					ug/L
77128	Styrene					ug/L

*Well Purging is the process of pumping the well prior to sampling in order to obtain a representative ground water sample.
DEP Form 62-522.900(2) Effective April 14, 1994

WATER SAMPLING LOG

FACILITY NAME: Orange County Landfill		FACILITY LOCATION:	
TESTSITE SITE NAME:		WACS TESTSITE ID:	DATE:

PURGING DATA

WELL DIAMETER (in):	TOTAL WELL DEPTH (ft):	DEPTH TO WATER (ft):	WELL CAPACITY (gal/ft):
---------------------	------------------------	----------------------	-------------------------

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) X WELL CAPACITY =
 = (–) X =

PURGE METHOD:			PURGE INITIATED AT:				PURGING ENDED AT:			
---------------	--	--	---------------------	--	--	--	-------------------	--	--	--

WELL VOLS. PURGED	CUMUL VOLUME PURGED (gal)	PURGE RATE (gpm)	pH	TEMP. (°C)	COND. (umhos)	TOTAL VOLUME PURGED (gal):				
						DISSOLVED OXYGEN (mg/L)	TURBIDITY NTUs	APPEARANCE	COLOR	ODOR

SAMPLING DATA

SAMPLED BY / AFFILIATION	SAMPLER(S) SIGNATURE(S)
--------------------------	-------------------------

SAMPLING METHOD(S):	SAMPLING INITIATED AT	SAMPLING ENDED AT:
---------------------	-----------------------	--------------------

FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N	DUPLICATE: Y N
----------------------------------	---------------------------	----------------------

SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O= OTHER (SPECIFY)
 WELL CAPACITY: 1.25" = 0.06 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 12" = 5.88 gal/ft

NOTE: The above do not constitute all of the information required by Chapter 62-160, F.A.C.

ATTACHMENT A
 ORANGE COUNTY LANDFILL
 WACS FACILITY ID: 21847
 MONITORING SITES

TESTSITE SITE NAME	WACS TESTSITE ID	TYPE	ZONE/LOCATION MONITORED
GROUND WATER			
LF-4	13098	C	UPPER SURFICIAL
LF-17S	14103	C	UPPER SURFICIAL
LF-17I	14104	C	INTERMEDIATE SURFICIAL
LF-17D	14105	C	DEEP SURFICIAL
LF-26S	14106	C	UPPER SURFICIAL
LF-26I	14107	C	INTERMEDIATE SURFICIAL
LF-26D	14108	C	DEEP SURFICIAL
LF-41S	14109	C	UPPER SURFICIAL
LF-41I	14110	C	INTERMEDIATE SURFICIAL
LF-41D	14111	C	DEEP SURFICIAL
LF-43	14112	C	UPPER SURFICIAL
LF-44I	14113	C	INTERMEDIATE SURFICIAL
LF-44D	14114	C	DEEP SURFICIAL
LF-47S	14115	C	UPPER SURFICIAL
LF-47I	14116	C	INTERMEDIATE SURFICIAL
LF-47D	14117	C	DEEP SURFICIAL
LF-51S	14118	C	UPPER SURFICIAL
LF-51I	13787	C	INTERMEDIATE SURFICIAL
LF-51D	13788	C	DEEP SURFICIAL
LF-55D	13789	C	DEEP SURFICIAL
LF-62S	13795	C	UPPER SURFICIAL

ATTACHMENT A
ORANGE COUNTY LANDFILL
WACS FACILITY ID: 21847
MONITORING SITES

TESTSITE SITE NAME	WACS TESTSITE ID	TYPE	ZONE/LOCATION MONITORED
LF-62I	13990	C	INTERMEDIATE SURFICIAL
LF-62D	14246	C	DEEP SURFICIAL
LF-64S	13992	C	UPPER SURFICIAL
LF-64I	13993	C	INTERMEDIATE SURFICIAL
LF-64D	13994	C	DEEP SURFICIAL
LF-65S	13995	C	UPPER SURFICIAL
LF-65I	13996	C	INTERMEDIATE SURFICIAL
LF-65D	13997	C	DEEP SURFICIAL
LF-66S	13998	C	UPPER SURFICIAL
LF-66I	13999	C	INTERMEDIATE SURFICIAL
LF-66D	14000	C	DEEP SURFICIAL
LF-70S	14039	C	UPPER SURFICIAL
LF-70I	14040	C	INTERMEDIATE SURFICIAL
LF-71S	14041	C	UPPER SURFICIAL
LF-71I	14042	C	INTERMEDIATE SURFICIAL
LF-71D	14119	C	DEEP SURFICIAL
LF-72S	14043	C	UPPER SURFICIAL
LF-72I	14044	C	INTERMEDIATE SURFICIAL
LF-73S	14045	C	UPPER SURFICIAL
LF-73I	14046	C	INTERMEDIATE SURFICIAL
LF-73D	14120	C	DEEP SURFICIAL
LF-74S	14047	C	UPPER SURFICIAL

ATTACHMENT A
 ORANGE COUNTY LANDFILL
 WACS FACILITY ID: 21847
 MONITORING SITES

<u>TESTSITE SITE NAME</u>	<u>WACS TESTSITE ID</u>	<u>TYPE</u>	<u>ZONE/LOCATION MONITORED</u>
<u>LF-74I</u>	<u>14048</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-75S</u>	<u>14049</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-75I</u>	<u>14050</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-75D</u>	<u>14121</u>	<u>C</u>	<u>DEEP SURFICIAL</u>
<u>LF-76S</u>	<u>14051</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-76I</u>	<u>14052</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-77S</u>	<u>14053</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-77I</u>	<u>14054</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-77D</u>	<u>14122</u>	<u>C</u>	<u>DEEP SURFICIAL</u>
<u>LF-78S</u>	<u>14187</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-78I</u>	<u>14188</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-79S</u>	<u>14189</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-79I</u>	<u>14190</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-79D</u>	<u>14191</u>	<u>C</u>	<u>DEEP SURFICIAL</u>
<u>LF-80S</u>	<u>14123</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-80I</u>	<u>14124</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-80D</u>	<u>14125</u>	<u>C</u>	<u>DEEP SURFICIAL</u>
<u>LF-81S</u>	<u>14126</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-81I</u>	<u>14127</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-81D</u>	<u>14128</u>	<u>C</u>	<u>DEEP SURFICIAL</u>
<u>LF-82S</u>	<u>14129</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-82I</u>	<u>14130</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>

ATTACHMENT A
ORANGE COUNTY LANDFILL
WACS FACILITY ID: 21847
MONITORING SITES

<u>TESTSITE SITE NAME</u>	<u>WACS TESTSITE ID</u>	<u>TYPE</u>	<u>ZONE/LOCATION MONITORED</u>
<u>LF-82D</u>	<u>14131</u>	<u>C</u>	<u>DEEP SURFICIAL</u>
<u>LF-83S</u>	<u>14132</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-83I</u>	<u>14133</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-83D</u>	<u>14134</u>	<u>C</u>	<u>DEEP SURFICIAL</u>
<u>LF-84S</u>	<u>14135</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-84I</u>	<u>14136</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-84D</u>	<u>14137</u>	<u>C</u>	<u>DEEP SURFICIAL</u>
<u>LF-85S</u>	<u>14138</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-85I</u>	<u>14139</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-85D</u>	<u>14140</u>	<u>C</u>	<u>DEEP SURFICIAL</u>
<u>LF-88S</u>	<u>14141</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-88I</u>	<u>14142</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-88D</u>	<u>14143</u>	<u>C</u>	<u>DEEP SURFICIAL</u>
<u>LF-89S</u>	<u>14144</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-89I</u>	<u>14145</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-89D</u>	<u>14146</u>	<u>C</u>	<u>DEEP SURFICIAL</u>
<u>LF-90S</u>	<u>14148</u>	<u>B</u>	<u>UPPER SURFICIAL</u>
<u>LF-90I</u>	<u>14149</u>	<u>B</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-90D</u>	<u>14150</u>	<u>B</u>	<u>DEEP SURFICIAL</u>
<u>LF-91S</u>	<u>14192</u>	<u>C</u>	<u>UPPER SURFICIAL</u>
<u>LF-91I</u>	<u>14193</u>	<u>C</u>	<u>INTERMEDIATE SURFICIAL</u>
<u>LF-91D</u>	<u>14226</u>	<u>C</u>	<u>DEEP SURFICIAL</u>

ATTACHMENT A
 ORANGE COUNTY LANDFILL
 WACS FACILITY ID: 21847
 MONITORING SITES

TESTSITE SITE NAME	WACS TESTSITE ID	TYPE	ZONE/LOCATION MONITORED
LF-92S	14194	C	UPPER SURFICIAL
LF-92I	14195	C	INTERMEDIATE SURFICIAL
LF-92D	14196	C	DEEP SURFICIAL
LF-93S	14197	C	UPPER SURFICIAL
LF-93I	14198	C	INTERMEDIATE SURFICIAL
LF-94S	14237	C	UPPER SURFICIAL
LF-94I	14238	C	INTERMEDIATE SURFICIAL
LF-94D	14239	C	DEEP SURFICIAL
LF-E	13797	C	FLORIDAN
LF-F	13798	C	FLORIDAN
SURFACE WATER			
LFO	13548	I	BORROW PIT OUTFALL TO SWAMP
BRM	13214	I	MID BERM
SBRME	14147	C	SOUTH BERM EAST
SBRMW	13654	C	SOUTH BERM WEST
LEACHATE			
L-1	14201	C	LIFT STATION AT HOLDING TANK

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-701.510)

Annual Leachate Monitoring (Page 1 of 9)

WACS FACILITY ID 21847

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME _____

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/UNITS
00010	Temperature (field)					°C	
00299	Dissolved Oxygen (field by probe)					mg/L	
00406	pH (field)					STD	
00094	Spec. Conductance (field)					umhos/cm	
00610	Total Ammonia as N					mg/L	
00940	Chlorides					mg/L	
00620	Nitrate as N					mg/L	
70300	Total Dissolved Solids					mg/L	
00440	Bicarbonate as HCO ₃					mg/L	
	<u>METALS</u>						
01097	Antimony					ug/L	
01002	Arsenic					ug/L	
01007	Barium					ug/L	
01012	Beryllium					ug/L	
01027	Cadmium					ug/L	
01034	Chromium					ug/L	
01037	Cobalt					ug/L	
01042	Copper					ug/L	
01045	Iron					ug/L	
01051	Lead					ug/L	
71900	Mercury					ug/L	
01067	Nickel					ug/L	
01147	Selenium					ug/L	
01077	Silver					ug/L	
00929	Sodium					mg/L	
01059	Thallium					ug/L	
01102	Tin					ug/L	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-701.510)

Annual Leachate Monitoring (Page 2 of 9)

WACS FACILITY ID 21847

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/ UNITS
01087	Vanadium					ug/L	
01092	Zinc					ug/L	
	<u>ORGANIC CONSTITUENTS</u>						
34205	Acenaphthene					ug/l	
34200	Acenaphthylene					ug/l	
81552	Acetone					ug/L	
76997	Acetonitrile; Methyl cyanide					ug/L	
81553	Acetophenone					ug/L	
73501	2-Acetylaminofluorene; 2-AAF or					ug/L	
34210	Acetamide, N-(9H-Fluoren-2-yl)- Acrolein					ug/L	
34215	Acrylonitrile					ug/L	
39330	Aldrin					ug/L	
78109	Allyl chloride					ug/L	
77581	4-Aminobiphenyl					ug/L	
34220	Anthracene					ug/l	
34030	Benzene					ug/L	
34526	Benzo(a)anthracene					ug/l	
34230	Benzo(b)fluoranthene					ug/L	
34242	Benzo(k)fluoranthene					ug/l	
34247	Benzo(a)pyrene					ug/l	
34521	Benzo(g,h,i)perylene					ug/l	
77147	Benzyl alcohol					ug/l	
39337	alpha-BHC					ug/L	
39338	beta-BHC					ug/L	
46323	delta-BHC					ug/L	
39340	gamma-BHC; Lindane					ug/L	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-701.510)

Annual Leachate Monitoring (Page 3 of 9)

WACS FACILITY ID 21847

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME _____

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/ UNITS
34273	Bis(2-chloroethyl)ether					ug/l	
34278	Bis(2-chloroethoxy)methane					ug/l	
034283	Bis (2-chloro-1-methylethyl) ether or propane, 2,2'-oxybis(1-chloro)- or Bis(2-chloroisopropyl) ether					ug/L	
39100	Bis(2-ethylhexyl)phthalate					ug/l	
73085	Bromochloromethane					ug/L	
32101	Bromodichloromethane					ug/L	
32104	Bromoform					ug/L	
34636	4-Bromophenyl phenyl ether					ug/l	
34292	Butyl benzyl phthalate					ug/L	
77041	Carbon Disulfide					ug/L	
32102	Carbon Tetrachloride					ug/L	
39350	Chlordane					ug/L	
73529	p-Chloroaniline					ug/L	
34301	Chlorobenzene					ug/L	
39460	Chlorobenzilate					ug/L	
34452	p-chloro-m-cresol					ug/l	
34311	Chloroethane					ug/L	
32106	Chloroform					ug/L	
34581	2-Chloronaphthalene					ug/l	
34586	2-Chlorophenol					ug/l	
34641	4-Chlorophenylphenyl ether					ug/l	
81520	Chloroprene					ug/L	
34320	Chrysene					ug/L	
77151	m-Cresol					ug/L	
77152	o-Cresol					ug/L	
77146	p-Cresol					ug/L	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT

(Rule 62-701.510)

Annual Leachate Monitoring (Page 4 of 9)

WACS FACILITY ID 21847

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME _____

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/ UNITS
00720	Cyanide					mg/l	
39730	2,4-D; 2,4-Dichlorophenoxyacetic					ug/L	
39360	4,4-DDD					ug/L	
39365	4,4-DDE					ug/L	
39370	4,4-DDT					ug/L	
73540	Dialiate					ug/L	
34556	Dibenz(a,h)anthracene					ug/L	
81302	Dibenzofuran					ug/L	
32105	Dibromochloromethane					ug/L	
49146	1,2-Dibromo-3-chloropropane					ug/L	
77651	1,2-Dibromoethane					ug/L	
39110	Di-n-butylphthalate					ug/l	
34536	1,2-Dichlorobenzene					ug/L	
34566	1,3-Dichlorobenzene					ug/l	
34571	1,4-Dichlorobenzene					ug/L	
34631	3,3-Dichlorobenzidine					ug/l	
49263	trans-1,4-Dichloro-2-butene					ug/L	
34668	Dichlorodifluoromethane					ug/L	
34496	1,1-Dichloroethane					ug/L	
34531	1,2-Dichloroethane					ug/L	
34501	1,1-Dichloroethene					ug/L	
77093	cis-1,2-Dichloroethene					ug/L	
34546	trans-1,2-Dichloroethene					ug/L	
34601	2,4-Dichlorophenol					ug/l	
77541	2,6-Dichlorophenol					ug/L	
34541	1,2-Dichloropropane					ug/L	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-701.510)

Annual Leachate Monitoring (Page 5 of 9)

WACS FACILITY ID 21847

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME _____

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/ UNITS
77173	1,3-Dichloropropane					ug/L	
77170	2,2-Dichloropropane					ug/L	
77168	1,1-Dichloropropene					ug/L	
34704	cis-1,3-Dichloropropene					ug/L	
34699	trans-1,3-Dichloropropene					ug/L	
39380	Dieldrin					ug/L	
34336	Diethyl phthalate					ug/l	
73553	Thionazin					ug/L	
46314	Dimethoate					ug/L	
73558	p-(Dimethylamino)azobenzene					ug/L	
73559	7,12-Dimethylbenz(a)anthracene					ug/L	
82213	3,3-Dimethylbenzidine					ug/L	
34606	2,4-Dimethylphenol					ug/l	
34341	Dimethyl phthalate					ug/l	
45622	m-Dinitrobenzene					ug/L	
34657	2-Methyl-4,6-dinitrophenol					ug/l	
34616	2,4-Dinitrophenol					ug/l	
34611	2,4-Dinitrotoluene					ug/l	
34626	2,6-Dinitrotoluene					ug/l	
81287	DNBP (Dinoseb)					ug/L	
34596	Di-n-octyl phthalate					ug/l	
77579	Diphenylamine					ug/L	
81888	Disulfoton					ug/L	
34361	Endosulfan I					ug/L	
34356	Endosulfan II					ug/L	
34351	Endosulfan sulfate					ug/L	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-701.510)

Annual Leachate Monitoring (Page 6 of 9)

WACS FACILITY ID 21847

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME _____

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/ UNITS
39390	Endrin					ug/L	
34366	Endrin aldehyde					ug/L	
34371	Ethylbenzene					ug/L	
73570	Ethyl methacrylate					ug/L	
73571	Ethyl methanesulfonate					ug/L	
38462	Famphur					ug/L	
34376	Fluoranthene					ug/l	
34381	Fluorene					ug/l	
39410	Heptachlor					ug/L	
39420	Heptachlor epoxide					ug/L	
39700	Hexachlorobenzene					ug/l	
34391	Hexachlorobutadiene					ug/l	
34386	Hexachlorocyclopentadiene					ug/L	
34396	Hexachloroethane					ug/l	
73576	Hexachloropropene					ug/L	
34403	Indeno (1,2,3-c,d) pyrene					ug/l	
77033	Isobutyl alcohol					ug/L	
39430	Isodrin					ug/L	
34408	Isophorone					ug/l	
73582	Isosafrole					ug/L	
81281	Kepone					ug/L	
81593	Methacrylonitrile					ug/L	
73589	Methapyrilene					ug/L	
39480	Methoxychlor					ug/L	
34413	Methyl bromide					ug/L	
77103	Methyl butyl ketone					ug/L	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-701.510)

Annual Leachate Monitoring (Page 7 of 9)

WACS FACILITY ID 21847

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME _____

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/ UNITS
34418	Methyl chloride					ug/L	
73591	3-Methylcholanthrene					ug/L	
81595	Methyl ethyl ketone					ug/L	
77424	Methyl iodide					ug/L	
81597	Methyl methacrylate					ug/L	
73595	Methyl methanesulfonate					ug/L	
77416	2-Methylnaphthalene					ug/L	
39600	Methyl Parathion					ug/L	
77596	Methylene Bromide					ug/L	
34423	Methylene Chloride					ug/L	
81596	Methyl isobutyl ketone					ug/L	
34696	Naphthalene					ug/l	
73599	1,4-Naphthoquinone or 1,4-Naphthalenedione					ug/L	
73600	1-Naphthylamine					ug/L	
73601	2-Naphthylamine					ug/L	
78142	o-Nitroaniline					ug/L	
78300	m-Nitroaniline					ug/L	
30342	p-Nitroaniline or 4-nitro-benzenamine					ug/L	
34447	Nitrobenzene					ug/l	
34591	2-Nitrophenol					ug/l	
34646	4-Nitrophenol					ug/l	
73609	N-Nitrosodi-n-butylamine					ug/L	
73611	N-Nitrosodiethylamine					ug/L	
34438	N-Nitrosodimethylamine					ug/l	
34428	N-Nitrosodipropylamine					ug/l	
34433	N-Nitrosodiphenylamine					ug/l	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-701.510)

Annual Leachate Monitoring (Page 8 of 9)

WACS FACILITY ID 21847

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/ UNITS
73613	N-Nitrosomethylethalamine					ug/L	
73619	N-Nitrosopiperidine					ug/L	
78206	N-Nitrosopyrrolidine					ug/L	
73622	5-Nitro-o-toluidine					ug/L	
39540	Parathion					ug/L	
77793	Pentachlorobenzene					ug/L	
81316	Pentachloronitrobenzene					ug/L	
39032	Pentachlorophenol					ug/l	
73626	Phenacetin					ug/L	
34461	Phenanthrene					ug/l	
34694	Phenol					ug/l	
73628	p-Phenylenediamine					ug/L	
46313	Phorate					ug/L	
39516	Polychlorinated biphenyls					ug/L	
39080	Pronamide					ug/L	
77007	Propionitrile					ug/L	
34469	Pyrene					ug/l	
77545	Safrole					ug/L	
39760	Silvex; 2,4,5-TP					ug/L	
77128	Styrene					ug/L	
00745	Sulfide					ug/L	
39740	2,4,5-Trichlorophenoxyacetic acid					ug/L	
77734	1,2,4,5-Tetrachlorobenzene					ug/L	
77562	1,1,1,2-Tetrachloroethane					ug/l	
34516	1,1,2,2-Tetrachloroethane					ug/L	
34475	Tetrachloroethene					ug/L	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-701.510)

Annual Leachate Monitoring (Page 9 of 9)

WACS FACILITY ID 21847

SAMPLE DATE _____

WACS TESTSITE ID _____

ANALYSIS DATE _____

TESTSITE SITE NAME

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/UNITS
77770	2,3,4,6-Tetrachlorophenol					ug/L	
34010	Toluene					ug/L	
77142	o-Toluidine					ug/L	
39400	Toxaphene					ug/L	
34551	1,2,4-Trichlorobenzene					ug/l	
34506	1,1,1-Trichloroethane					ug/L	
34511	1,1,2-Trichloroethane					ug/L	
39180	Trichloroethene					ug/L	
34488	Trichlorofluoromethane					ug/L	
77687	2,4,5-Trichlorophenol					ug/l	
34621	2,4,6-Trichlorophenol					ug/l	
77443	1,2,3-Trichloropropane					ug/L	
73652	0,0,0-Triethyl phosphorothioat					ug/L	
73653	sym-Trinitrobenzene					ug/L	
77057	Vinyl Acetate					ug/L	
39175	Vinyl Chloride					ug/L	
34020	Xylenes					ug/L	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-302.500, 62-302.510, 62-302.530)

Semi-Annual Surface Water Monitoring (Page 1 of 4)

FACILITY WACS# 21847

SAMPLE DATE _____

SAMPLING POINT WACS# _____

ANALYSIS DATE _____

SAMPING POINT NAME _____

Surface Water Elevation (NGVD) _____ Ft

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/ UNITS
00010	Temperature (field)					°C	
00299	Dissolved Oxygen (field by probe)					mg/L	
00406	pH (field)					STD	
00094	Spec. Conductance (field)					umhos/cm	
82078	Turbidity (field)					NTU's	
00612	Unionized Ammonia as N					mg/L	
00900	Total Hardness as CaCO ₃					mg/L	
00680	Total Organic Carbon					mg/L	
70300	Total Dissolved Solids					mg/L	
00530	Total Suspended Solids					mg/L	
00310	BOD (5 Day) @ 20 °C					mg/L	
00340	Chemical Oxygen Demand					mg/L	
00600	Total Nitrogen as N					mg/L	
00620	Nitrate as N					mg/L	
00650	Total Phosphates as PO ₄					mg/L	
32211	Chlorophyll A					ug/L	
	<u>METALS</u>						
01097	Antimony					ug/L	
01002	Arsenic					ug/L	
01007	Barium					ug/L	
01012	Beryllium					ug/L	
01027	Cadmium					ug/L	
01034	Chromium					ug/L	
01037	Cobalt					ug/L	
01042	Copper					ug/L	
01045	Iron					ug/L	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-302.500, 62-302.510, 62-302.530)

Semi-Annual Surface Water Monitoring (Page 2 of 4)

FACILITY WACS# 21847

SAMPLE DATE _____

SAMPLING POINT WACS# _____

ANALYSIS DATE _____

SAMPING POINT NAME _____

Surface Water Elevation (NGVD) _____ Ft

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/ UNITS
01051	Lead					ug/L	
71900	Mercury					ug/l	
01067	Nickel					ug/L	
01147	Selenium					ug/L	
01077	Silver					ug/L	
01059	Thallium					ug/L	
01087	Vanadium					ug/L	
01092	Zinc					ug/L	
	<u>ORGANIC CONSTITUENTS</u>						
81552	Acetone					ug/L	
34215	Acrylonitrile					ug/L	
34030	Benzene					ug/L	
73085	Bromochloromethane					ug/L	
32101	Bromodichloromethane					ug/L	
34413	Bromomethane					ug/L	
32104	Bromoform					ug/L	
77041	Carbon Disulfide					ug/L	
32102	Carbon Tetrachloride					ug/L	
34301	Chlorobenzene					ug/L	
34311	Chloroethane					ug/L	
32106	Chloroform					ug/L	
34418	Chloromethane					ug/L	
32105	Dibromochloromethane					ug/L	
049146	1,2-Dibromo-3-chloropropane					ug/L	
46369	1,2-Dibromoethane					ug/L	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
(Rule 62-302.500, 62-302.510, 62-302.530)

Semi-Annual Surface Water Monitoring (Page 3 of 4)

FACILITY WACS# 21847

SAMPLE DATE _____

SAMPLING POINT WACS# _____

ANALYSIS DATE _____

SAMPLING POINT NAME _____

Surface Water Elevation (NGVD) _____ Ft

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/ UNITS
46361	Dibromomethane					ug/L	
34536	1,2-Dichlorobenzene					ug/L	
34571	1,4-Dichlorobenzene					ug/L	
49263	trans-1,4-Dichloro-2-butene					ug/L	
34496	1,1-Dichloroethane					ug/L	
34531	1,2-Dichloroethane					ug/L	
34501	1,1-Dichloroethene					ug/L	
77093	cis-1,2-Dichloroethene					ug/L	
34546	trans-1,2-Dichloroethene					ug/L	
34541	1,2-Dichloropropane					ug/L	
34704	cis-1,3-Dichloropropene					ug/L	
34699	trans-1,3-Dichloropropene					ug/L	
34371	Ethylbenzene					ug/L	
77103	Methyl butyl ketone					ug/L	
81595	Methyl ethyl ketone					ug/L	
77424	Methyl iodide					ug/L	
34423	Methylene Chloride					ug/L	
81596	Methyl isobutyl ketone					ug/L	
77128	Styrene					ug/L	
77562	1,1,1,2-Tetrachloroethane					ug/l	
34516	1,1,2,2-Tetrachloroethane					ug/L	
34475	Tetrachloroethene					ug/L	
34010	Toluene					ug/L	
34506	1,1,1-Trichloroethane					ug/L	
34511	1,1,2-Trichloroethane					ug/L	
39180	Trichloroethene					ug/L	

ORANGE COUNTY LANDFILL

PARAMETER MONITORING REPORT
 (Rule 62-302.500, 62-302.510, 62-302.530)

Semi-Annual Surface Water Monitoring (Page 4 of 4)

FACILITY WACS# 21847

SAMPLE DATE _____

SAMPLING POINT WACS# _____

ANALYSIS DATE _____

SAMPING POINT NAME _____

Surface Water Elevation (NGVD) _____ Ft

STORET CODE	PARAMETER MONITORED	SAMPLING METHOD	FIELD FILTERED	ANALYSIS METHOD	ANALYSIS RESULT	UNITS	DETECTION LIMITS/ UNITS
34488	Trichlorofluoromethane					ug/L	
77443	1,2,3-Trichloropropane					ug/L	
77057	Vinyl Acetate					ug/L	
39175	Vinyl Chloride					ug/L	
34020	Xylenes					ug/L	
031616	Fecal coliform					#/100	

Florida Department of Environmental Protection

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

GROUND WATER MONITORING REPORT

Rule 62-522.600(11)

PART I GENERAL INFORMATION

- (1) Facility Name Orange County Landfill
Address _____
City _____ Zip _____ County _____
Telephone Number (_____) _____
- (2) WACS Facility ID 21847
- (3) DEP Permit Number _____
- (4) Authorized Representative's Name _____ Title _____
Address _____
City _____ Zip _____ County _____
Telephone Number (_____) _____
- (5) Type of Discharge _____
- (6) Method of Discharge _____

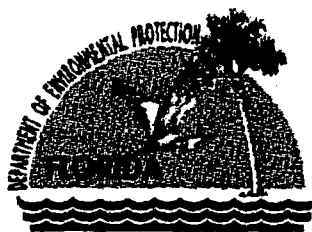
CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submission of false information including the possibility of fine and imprisonment.

Date Owner or Authorized Representative's Signature

PART II QUALITY ASSURANCE REQUIREMENTS

- Sampling Organization Comp QAP # _____
- Analytical Lab Comp QAP #/ HRS Certification _____
- Lab Name _____
- Address _____
- Phone Number (_____) _____



Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

NOTICE OF PERMIT

In the Matter of an
Application for Permit by:

Orange County, Board of County Commissioners
c/o Mr. James Becker
Orange County Utilities Department
5901 Young Pine Road
Orlando, FL 32829

Orange County - ERP
Modification of Environmental Resource Permit ERP48-0128114-002-EM
for Orange County Landfill Stormwater Force Main
File No. 48-0128114-003

Dear Mr. Becker:

Enclosed is Permit Number ERP48-0128114-003-EM for the modification of part of the stormwater system at the Orange County Landfill, at 5901 Young Pine Road in Sections 14, 15, 16, 21, 22, and 23 Township 23 South, Range 31 East in Orange County. This permit is issued pursuant to Sections 373.118, 373.413, 373.416, and 373.426, *Florida Statutes* (F.S.) and Rules 40C-4, 40C-40, 40C-41, 40C-42, 62-312, and 62-343, *Florida Administrative Code* (F.A.C.).

Pursuant to Operating Agreements executed between the Department and the water management districts, as referenced in Chapter 62-113, F.A.C., the Department is responsible for reviewing this application.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 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 30 days from the date this notice is filed with the Clerk of the Department.

Mediation under section 120.573 of the Florida Statutes is not available for this proceeding.


"More Protection, Less Process"

Printed on recycled paper.

If you have any questions, please contact Debra Laisure, P.E. of the Submerged Lands and Environmental Resource Program by telephone (407/893-7874), fax (407/893-3075) or Internet (Debra.Laisure@dep.state.fl.us).

Executed in Orlando, Florida.

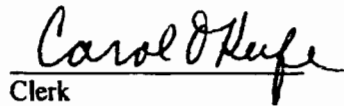
STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION


Vivian F. Garfein
Director, Central District

Date of Issue: 9/21/04

VFG/dh/dl
Dec
JP. W

FILING AND ACKNOWLEDGEMENT FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


Clerk

9/21/04
Date

Enclosures: Permit No. ERP48-0128114-003-EM

Copies furnished to: ACOE, Merritt Island
Stanley J. Keely, PE, CH2M/G&R (e)

CERTIFICATE OF SERVICE

This is to certify that this NOTICE OF PERMIT and all copies were mailed before the close of business on 9-21-04 to the listed persons by Carol O'Keefe.



Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

PROJECT INFORMATION:

Permit Number: ERP48-0128114-003-EM
Expiration Date: March 2, 2008
County: Orange
Latitude: 28° 15' 41"N
Longitude: 81° 12' 26"W
Sections 14, 15, 16, 21, 22, and 23
Townships 23 South Range 31 East
Project: Orange County Landfill Stormwater Force Main

PERMITTEE:

Orange County, Board of County Commissioners
c/o Mr. James Becker
Orange County Utilities Department
5901 Young Pine Road
Orlando, FL 32829

Orange County - ERP
DEP File Number: 48-0128114-003

Dear Mr. Becker:

This permit is issued under the provisions 62-343.060, Florida Administrative Code, Part IV of Chapter 373, *Florida Statutes* (F.S.) and Chapters 62.4, 62-302, 62-312, 62-330, 62-343, 62-101.040, 40E-4, 40E-40, 40C-41, and 40E-42, *Florida Administrative Code* (F.A.C.). 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:

Construct and Operate: a modification of the existing stormwater system for the landfill. The project is located at 5901 Young Pine Road, Orlando, Sections 14, 15, 16, 21, 22, and 23, Township 23 South, Range 31 East in Orange County. This permit is for improvements and additions to the pump station of stormwater Pond 2 including the installation of an influent pipe from the intake structure, piping to a 250 HP pump, the optional installation of a second pump at a later date, electrical service upgrades, an emergency generator and switchgear, as well as the installation of approximately 2800 linear feet of 20-inch diameter ductile iron (DIP) stormwater force main from Pond 2 to the east property line between the landfill and Orlando Utilities Commission's Curtis H. Stanton Energy Center (CHSEC). The force main is designed for primary pumping conditions of 5500 gpm at 114 feet of total dynamic head. The proposed discharge volume for a 24-hour period is 7.8 million gallons. This modification also includes changes to the discharge structures at the south berm of Pond 2 to limit OUC bypass discharge to the landfill outfall ditch (LOD) only in the event of a major storm. After construction of the entire stormwater force main (including the portion on OUC property,) Pond 2 will normally discharge to the CHSEC cooling pond. The discharge to the Wide Cypress Swamp wetland should be allowed only for hydration, storage, or when excess effluent from Pond 2 cannot be delivered to CHSEC cooling pond. The discharge from Outfall D-001 or the possible future Outfall D-003 shall be in accordance with the Industrial Wastewater Permit requirements.

This modification also extends the expiration date for ERP48-0128114-002-EM from March 2, 2003, to March 2, 2008.

This project includes permit-exempt maintenance work on the LOD.

This permit also retains the authorization to construct a force main west from Pond 2, cascade aerator discharge structure, modifications to the existing stormwater pump station and modifications to the discharge structures at the south berm that control discharge to the LOD. Such construction is authorized only in the event the permittee is required to permanently cease the delivery of Pond 2 effluent to the CHSEC.

The 13 accompanying figures will be attached to, and become a part of, this permit.

Other Permits: Solid Waste Permit Number SO48-212592
 Title V Air Operating Permit Number 0950133-002-AV
 NPDES Industrial Waste Permit Number 48-FL0037133 (Preliminary Draft sent 06/28/04)

Permittee: Orange County, Board of County Commissioners
Attention: James Becker

Permit Number: ERP48-0128114-003-EM
Expiration Date: March 2, 2008

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, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violations 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 or 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 the 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.Reasonable time may depend on the nature of the concern being investigated.
8. If, for any reason, the permittee does not comply with or will be unable to comply with any conditions 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.

GENERAL CONDITIONS:

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 62-30.300, 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. This permit also constitutes:
 - () Determination of Best Available Control Technology (BACT)
 - () Determination of Prevention of Significant Deterioration (PSD)
 - () Certification of compliance with state Water Quality Standards (Section 401, PL 92-500)
 - () Compliance with New Source Performance Standards.
14. 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 instrumentation) 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 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.
15. 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.

SPECIFIC CONDITIONS:

PERMIT ALTERATIONS

1. This permit authorizes design and construction of a new force main from the Pond 2 pumping facility west to the LOD only in the event the permittee is required to permanently cease delivery of Pond 2 effluent to the CHSEC. Before proceeding with construction, the permittee shall supply all documentation and comply with all the requirements of Industrial Waste Permit No. 48-FL0037133-002-IW7A.
2. All construction, operation, and maintenance shall be as set forth in the plans, specifications and performance criteria contained in the Department's files and approved by this permit. Any alteration or modification to the stormwater system as permitted requires prior approval from the Department.
3. If any other regulatory agency should require revisions or modifications to the permitted project, the Department is to be notified of the revisions so that a determination can be made whether a permit modification is required.
4. Permittee must obtain a permit from the Department prior to beginning construction of subsequent phases or any other work associated with this project not specifically authorized by this permit.

SITE INSPECTION BY DEP STAFF

5. Department-authorized staff, upon proper identification, will have permission to enter, inspect, and observe the system to insure conformity with the plans and specifications approved by the permit. The plans are on file in the Central District Office of the Department of Environmental Protection.

WATER QUALITY

6. Turbidity must be controlled to prevent violations of water quality pursuant to Rule 62-302.530(70), *Florida Administrative Code*. Turbidity shall not exceed 29 Nephelometric Turbidity Units above natural background conditions. Turbidity barriers shall be correctly installed at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the proposed work. It is understood that "receiving waterbody" shall not be construed to mean the permittee's settling pond, dredge lake, or other parts of the permittee's closed water system. Turbidity barriers shall remain in place at all locations until construction is completed, soils are stabilized, and vegetation has been established.

Upon final completion of the project and upon reasonable assurance that the project is no longer a potential turbidity source, the permittee will be responsible for the removal of the barriers. No discharge may occur to the Econolockhatchee River, which is an Outstanding Florida Water.

INSPECTION REPORTS

7. Copies of all turbidity monitoring reports shall be provided to the Department on a monthly basis. Reports shall be submitted to the letterhead address.

SPECIFIC CONDITIONS:

CONSTRUCTION DETAILS

8. The permittee shall require the contractor to review and to maintain in good condition at the construction site a copy of this permit complete with all conditions, attachments, exhibits, and permit modifications issued for this permit. The complete permit copy must be available for review upon request by Department representatives.
9. Adequate measures must be taken to prevent siltation of these treatment systems and control structures during construction or siltation must be removed prior to final grading and stabilization.

EROSION CONTROL MEASURES

10. Prior to and during construction, the permittee shall correctly implement and maintain all erosion and sediment control measures (best management practices) required to retain sediment on-site and to prevent violations of state water quality standards. All practices must be in accordance with the guidelines and specifications in chapter 6 of the Florida Land Development Manual: A Guide to Sound Land and Water Management (FDEP 1988), which are hereby incorporated by reference, unless a project specific erosion and sediment control plan is approved as part of the permit, in which case the practices must be in accordance with the plan.

If site specific conditions require additional measures during any phase of construction or operation to prevent erosion or control sediment, beyond those specified in the erosion and sediment control plan, the permittee shall implement additional best management practices as necessary, in accordance with the specification in chapter 6 of the Florida Land Development Manual: A Guide to Sound Land and Water Management (FDEP 1988). The permittee shall correct any erosion or shoaling that causes adverse impacts to the water courses.

11. The following measures shall be taken to minimize erosion:
 - A. Swales and dry ponds: sodding of all side slopes; seeding and mulching of flat-lying bottom areas;
 - B. Berms and other disturbed flat-lying areas: seed and mulch

Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased.

12. All wetland areas or water bodies which are outside of the specific limits of construction authorized by this permit must be protected from erosion, siltation, scouring or excess turbidity and dewatering.

SPECIFIC CONDITIONS:

SUBMITTAL OF AS-BUILT PLANS

13. Within 30 days after completion of construction of the surface water management system, the permittee shall submit the enclosed form and two sets of record drawings of the project as actually constructed thereby notifying the Department that the facilities area ready for final inspection and approval. The permit will be converted from a construction permit to an operation permit once the project is determined to be in compliance with the permitted plans and with conditions provided in Rule 40C-42.028, F.A.C.
14. If the system is not functioning as designed and permitted, operational maintenance must be performed immediately to restore the system. If operational maintenance measures are insufficient to enable the system to meet the design and performance standards of this chapter, the permittee must either replace the system or construct an alternative design. A permit modification must be obtained from the Department prior to constructing such an alternate design pursuant to section 40C-4.331, F.A.C.

MAINTENANCE ACTIVITIES

15. The following maintenance activities shall be performed as needed on
 - A. All permitted systems:
 1. Removal of trash and debris;
 2. Inspection of inlets and outlets;
 3. Removal of sediments when the storage volume or conveyance capacity of the stormwater management system is below design levels; and
 4. Stabilization and restoration of eroded areas.
 - B. Retention, swale, and underdrain systems:
 1. Mowing and removal of grass clippings;
 2. Aeration, tilling, or replacement of topsoil; and
 3. Re-establishment of vegetation on disturbed surfaces.
 - C. Wet detention systems:
 1. Replanting of natural vegetation within the littoral zone;
 2. Control of nuisance and exotic vegetation;

DEWATERING

16. If dewatering is to occur during any phase of construction or thereafter and the surface water pump(s), wells or facilities are capable of withdrawing one million gallons of water per day or more or an average of 100,000 gallons per day for more than a year and discharge is to be off-site, a consumptive use permit (40C-2) will be required prior to any dewatering.
17. A plan for routing of discharge water must be submitted to the DEP Central District Office for approval prior to commencement of dewatering.

SPECIFIC CONDITIONS:

WETLAND/SURFACE WATER IMPACTS

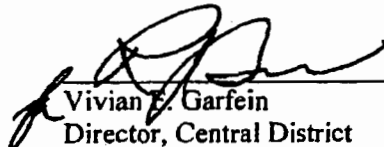
18. The "incidental/temporary" impacts to wetlands around Structures 8, 9A, and 9B on the south landfill berm include removal of the stop log channels in the modified FDOT-type C drop inlet structures (No. 9A and 9B) and grouting of the opening to establish a revised permanent weir elevation. Wetland discharge through the top grate will begin to occur at elevation 82 feet, NGVD. This increased elevation will allow increased storage in onsite Wide Cypress Swamp (WCS) prior to any discharge to the south ditch.

TEMPORARY WETLAND IMPACTS AND RESTORATION

19. Clearing in wetlands shall be limited to authorized areas, as shown in attached drawings. The cut trunks, stumps, roots and branches shall be removed from the wetlands upon completion of construction.
20. If any damage occurs to the adjacent wetlands as a result of any construction activities, the permittee shall be required to restore the wetland area by regrading the damaged areas back to the natural preconstruction elevations and planting vegetation of the size, densities and species that exist in the adjacent areas pursuant to a consent order. The restoration shall be completed within 30 days of completion of the construction and shall be done to the satisfaction of the Department.
21. The issuance of this permit does not infer, nor guarantee nor imply that future permits or modifications will be granted by the Department. This permit does not infer authorization from any other agency.

Executed in Orlando, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



Vivian E. Garfein
Director, Central District

Date of Issue: 2/25/04



Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

ENVIRONMENTAL RESOURCE PERMIT AS-BUILT CERTIFICATION BY A REGISTERED PROFESSIONAL

Permit Number: _____

Project Name: _____

I hereby certify that all components of this surface water management system have been built substantially in accordance with the approved plans and specifications and are ready for inspection. Any substantial deviations (noted below) from the approved plans and specifications will not prevent the system from functioning as designed when properly maintained and operated. These determinations are based upon on-site observation of the system conducted by me or by my designee under my direct supervision and/or my review of as-built plans certified by a registered professional or Land Surveyor licensed in the State of Florida.

Name (please print)

Signature of Professional Engineer

Company Name

Florida Registration Number

Company Address

Date

City, State, Zip Code

Telephone Number

(Affix Seal)

Substantial deviations from the approved plans and specifications:

(Note: attach two copies of as-built plans when there are substantial deviations)

Within 30 days of completion of the system, submit two copies of the form to:

**Florida Department of Environmental Protection
Submerged Lands and Environmental Resources Program
3319 Maguire Blvd., Suite 232
Orlando, FL 32803**



Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

ENVIRONMENTAL RESOURCE PERMIT CONSTRUCTION COMMENCEMENT NOTICE

Project Name: _____ Phase: _____

I hereby notify the Department of Environmental Protection that the construction of the surface water management system authorized by Environmental Resource Permit No. _____ has commenced/is expected to commence on _____ 200__ and will require a duration of approximately _____ months _____ weeks to complete. It is understood that should the construction term extend beyond one year, I am obligated to submit the Annual Status Report for Surface Water Management System Construction.

PLEASE NOTE: If the actual construction commencement date is not known, Department staff should be so notified in writing to satisfy permit conditions.

Permittee or Authorized Agent

Title and Company

Company Address

Date

City, State, Zip Code

Telephone Number

Please send the completed form to:

**Florida Department of Environmental Protection
Submerged Lands and Environmental Resources Program
3319 Maguire Blvd., Suite 232
Orlando, FL 32803**



Department of Environmental Protection

Orig. to File
Copy to JB
RECEIVED

APR 16 10 32 AM '01

Jeb Bush
Governor

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

SOLID WASTE David B. Struhs
Secretary

April 12, 2001

Orange County Utilities Department
5901 Young Pine Road
Orlando, Florida 32829

OCD-ERP-01-0180

attn: James Becker,
Manager Solid Waste Division

Orange County - ERP
Major Modification for Stormwater Forcemain
File No. 48-128114-003

Dear Mr. Becker:

The Department of Environmental Protection has received your Environmental Resource Permit Application. The information requested below is required to sufficiently review the application, pursuant to Chapters 373 and 403, Florida Statutes, and Florida Administrative Code (F.A.C.) Chapters 62-302, 62-330, 62-343, 40C-4, 40C-40, and 40C-42.

A portion of the proposed modification request includes the installation of a 24 inch force main through wetlands and which will ultimately discharge to the west side of the Orange County Landfill parcel into a ditch.

While permitting pipelines are common, this particular water source may be useable by others and therefore, the Department is recommending the routing of the force main another direction.

Specifically, Orange County Landfill's neighbor to the immediate east, Orlando Utilities Commission has an application for expansion. Within the expansion OUC has an increased need for useable water. With the drought conditions and growth within the subject area water shortage is projected by the St. Johns River Water Management District to be of concern by as early as 2010.

In light of the fact that to the immediate west, (approximately 1 mile apart) Orange County has excess water which is proposed to be discharged into our surface waters it would appear a workable solution for all entities to have Orange County redirect there excess water to Orlando Utilities Commission.

Orange County Utilities Department
OCD-ERP-00-0180
April 12, 2001
Page 2

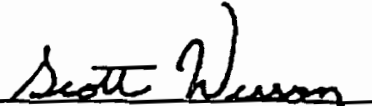
In exchange, for the potential added costs, the Department would be willing to consider the pipeline project as one of the forms of mitigation to offset the wetland impacts associated with the Orange County Landfill, Cell 9 12 expansion project, File No.: 48-177603-001.

Please coordinate a meeting with us to discuss the merits of our suggestion.

Any application, which has not been technically completed within sixty (60) days from the date of receipt of a request for additional information by the Department, may be denied. In order to expedite the review of your application, use the application number 48-0177603-001 on all correspondence, and submit one copy of all requested information.

If you have questions, please call Julie Morris or me at 407-893-3307 or write to the above address.

Sincerely,



Scott P. Wesson, P.E.
Engineering Support
Submerged Lands and Environmental
Resources Program

Cc: Stanley J. Keely, P.E

100% CONSTRUCTION DRAWINGS
FOR

POND 2 STORM WATER PUMP STATION MODIFICATIONS AND FORCE MAIN TO OUC PROPERTY LINE

Received DEP
MAR 22 2004
Central Dist. ERP

BOARD OF COUNTY COMMISSIONERS

RICHARD T. CROTTY
COUNTY CHAIRMAN

TERESA JACOBS
DISTRICT 1

LINDA STEWART
DISTRICT 4

ROBERT B. "BOB" SINDLER
DISTRICT 2

TED B. EDWARDS
DISTRICT 5

MARY L. JOHNSON
DISTRICT 3

HOMER L. HARTAGE
DISTRICT 6

AJIT LALCHANDANI
COUNTY ADMINISTRATOR

MICHAEL L. CHANDLER
UTILITIES DIRECTOR

JAMES BECKER
SOLID WASTE OFFICER MANAGER

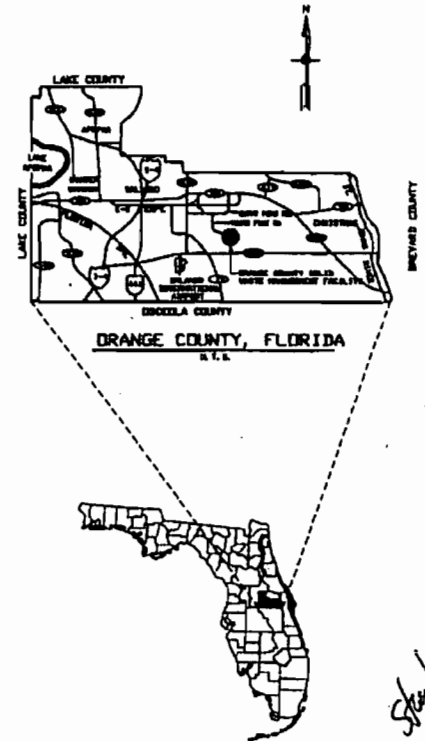


UTILITIES DEPARTMENT
SOLID WASTE DIVISION
ORANGE COUNTY, FLORIDA
SEPTEMBER, 2003

RECEIVED
MAR 22 2004
Central Dist. - DEP



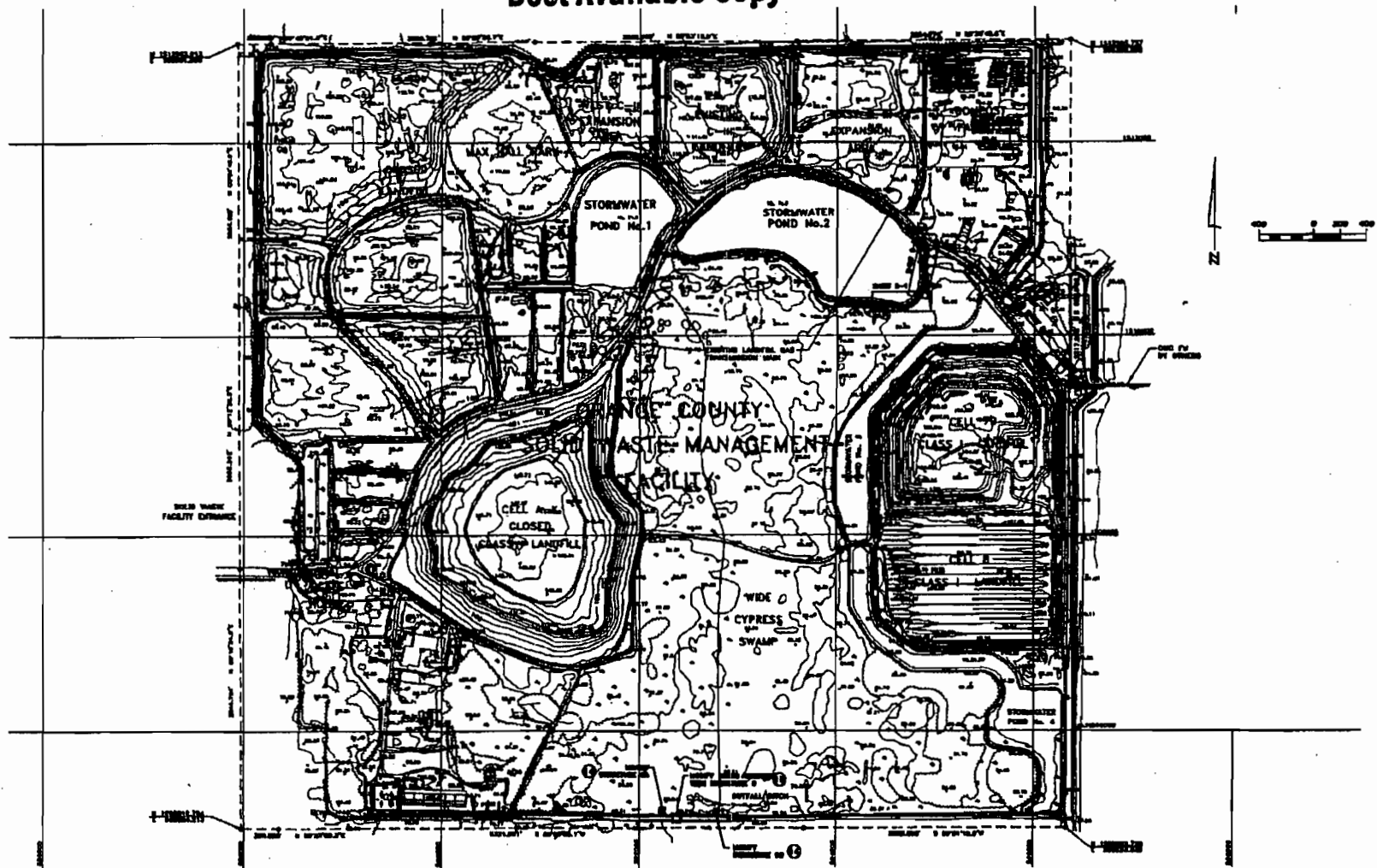
2640 LAKE LUCIEN DRIVE, SUITE 117
MAITLAND FLORIDA 32751



Shawn J. ...
3/18/04

PROJECT LOCATION MAP
PROJECT NO. WN 01374.002

Best Available Copy



*Stuck at Key
2/14*

Orange County Waste Management Facility Pond 2 Pump Station & Force Main

REVISION	DATE	BY	CHKD	DESCRIPTION



PROJECT OVERVIEW/SITE PLAN		G-2
OCL/ POND 2 STORMWATER PUMP STATION MODIFICATIONS AND FORCE MAIN		SCALE: AS SHOWN

Figure 2 of 13

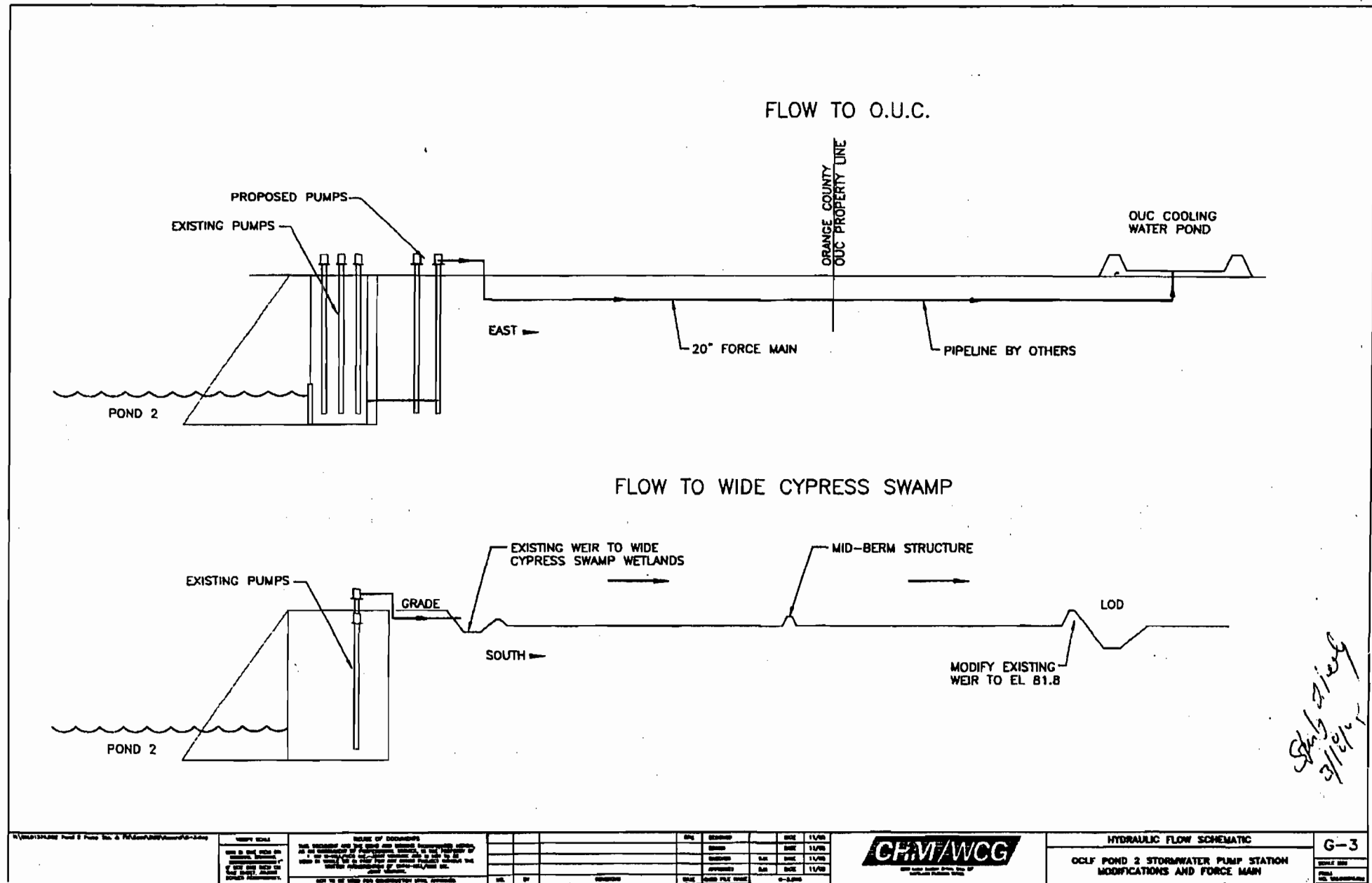
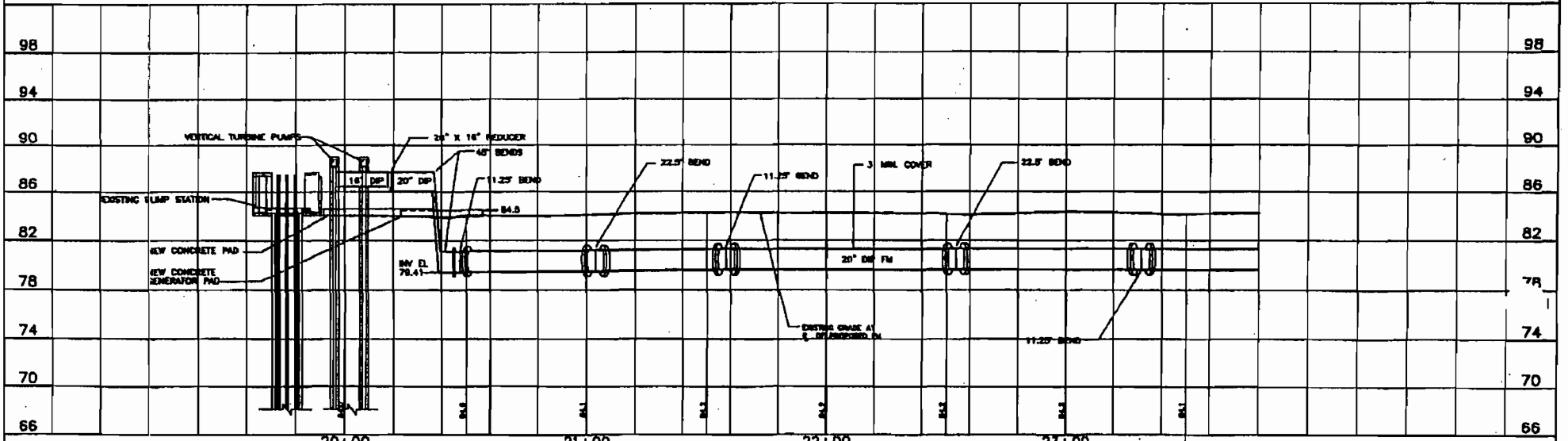
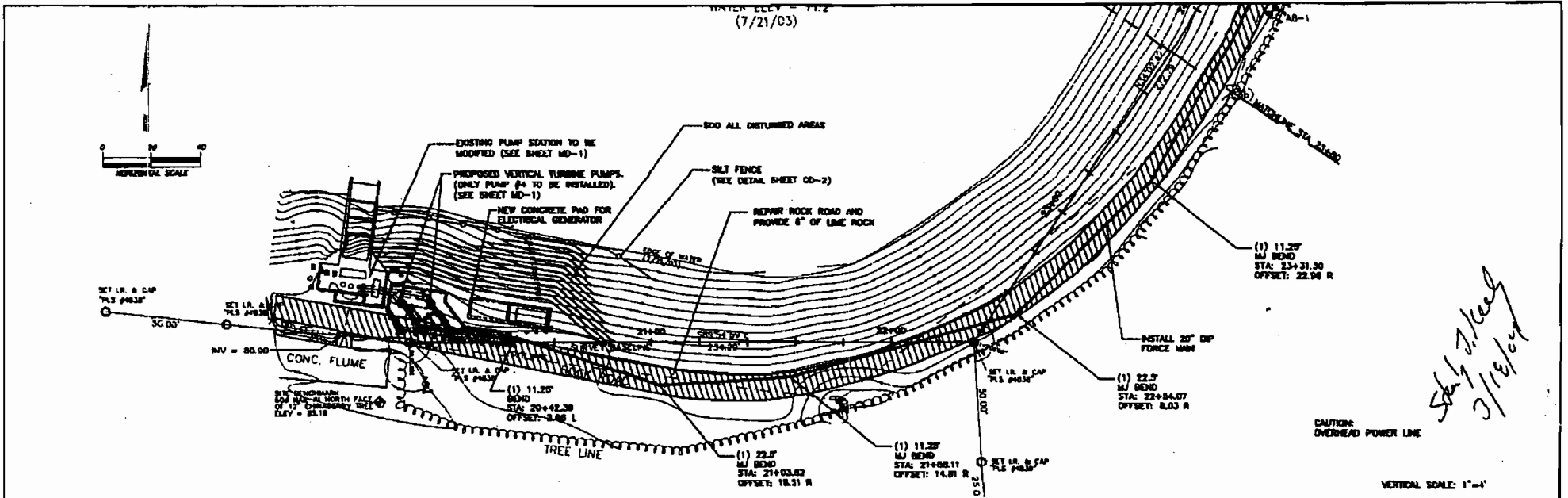


Figure 3 of 13



VEGETATION 1. ALL EXISTING VEGETATION TO BE REMOVED AND THE AREA TO BE RESEEDED WITH GRASS SEED.	SOILS 1. ALL EXISTING SOILS TO BE REMOVED AND THE AREA TO BE RESEEDED WITH GRASS SEED.	CONCRETE 1. ALL CONCRETE TO BE REPAIRED OR REPLACED AS SHOWN.	PIPE 1. ALL PIPE TO BE REPLACED AS SHOWN.	GRASS 1. ALL GRASS TO BE RESEEDED AS SHOWN.	ROCK 1. ALL ROCK TO BE REPAIRED OR REPLACED AS SHOWN.	WOOD 1. ALL WOOD TO BE REMOVED AS SHOWN.	OTHER 1. ALL OTHER WORK TO BE DONE AS SHOWN.

PLAN AND PROFILE STA 20+00 TO STA 23+00

OCFL POND 2 STORMWATER PUMP STATION MODIFICATIONS AND FORCE MAIN

SCALE: AS SHOWN

DATE: 7/21/03

DRAWN BY: [Name]

CHECKED BY: [Name]

Figure 4 of 13

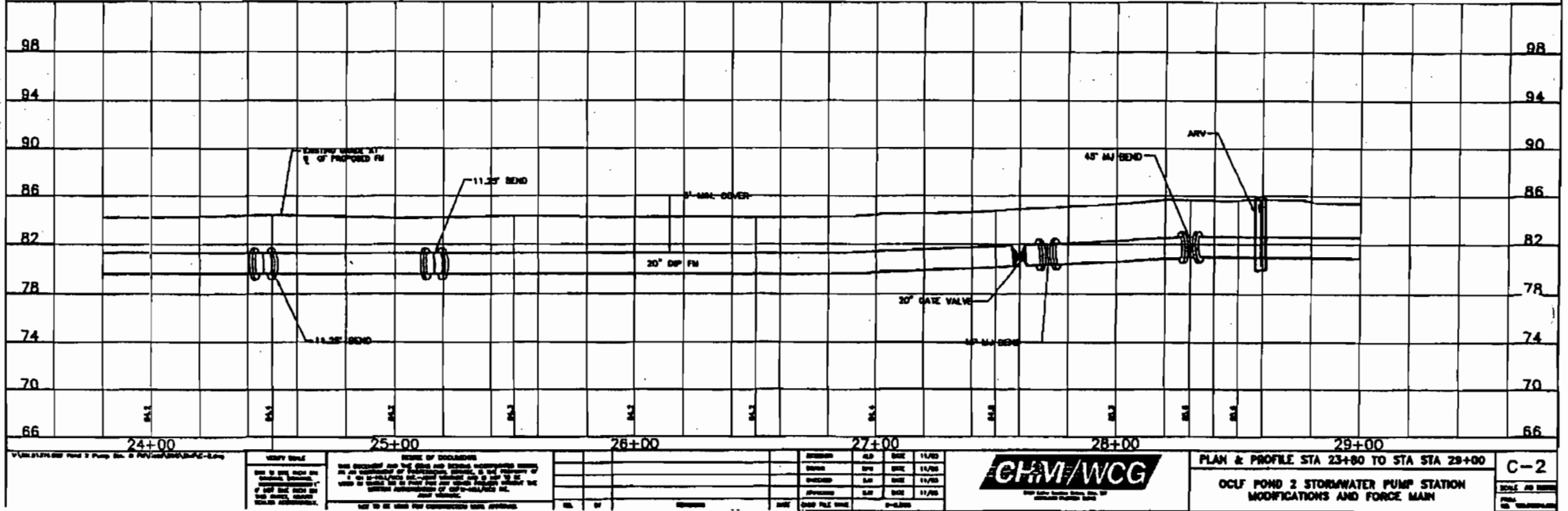
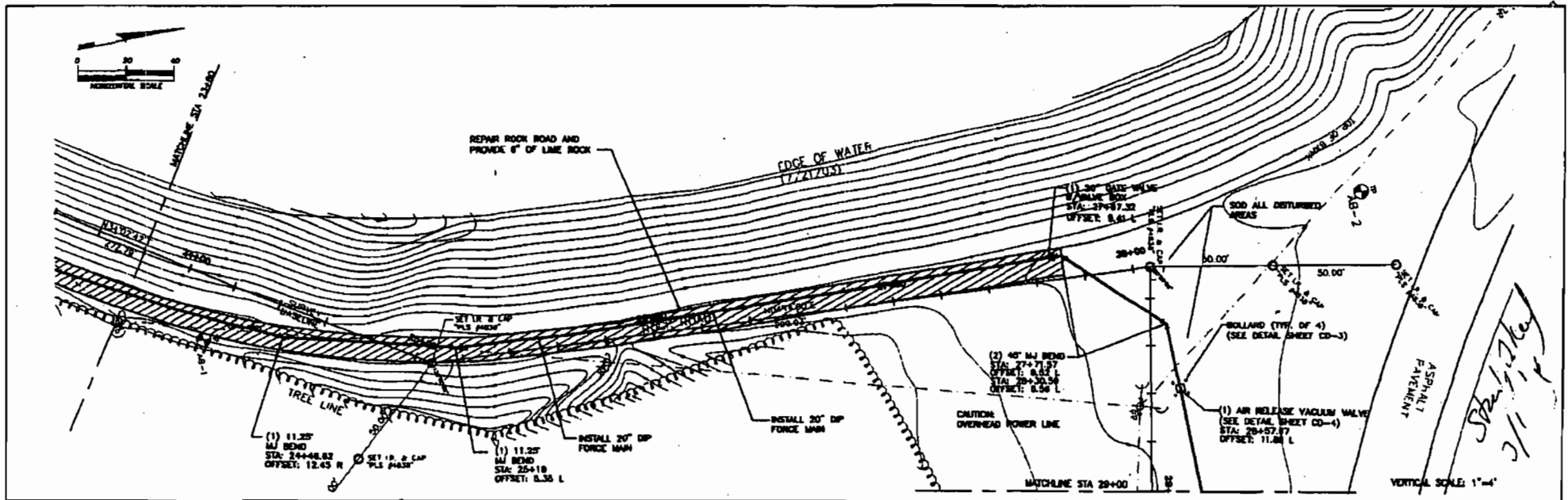
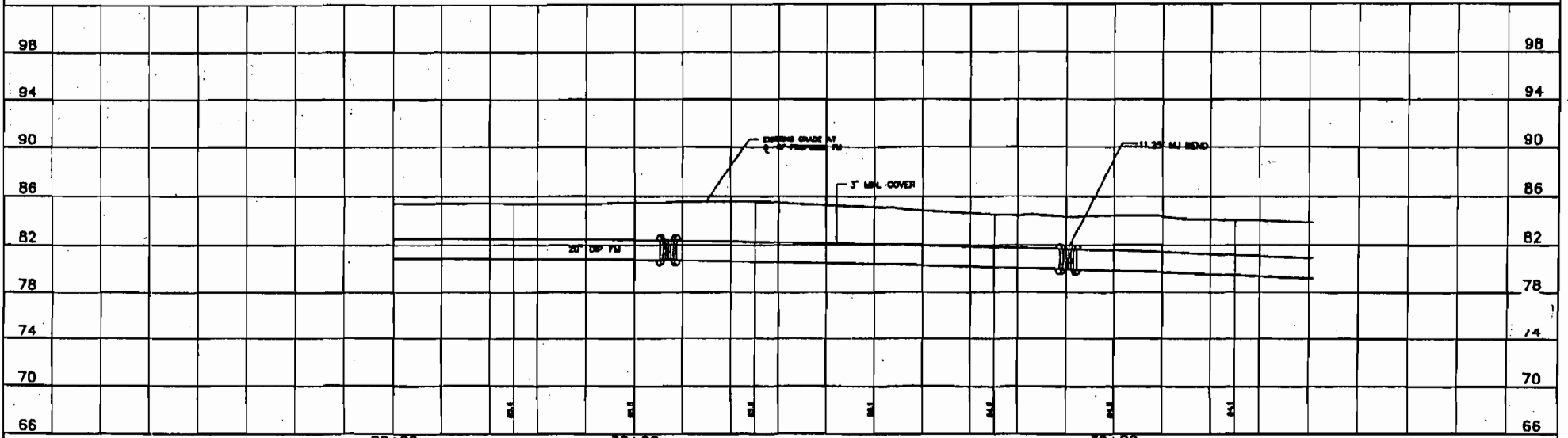
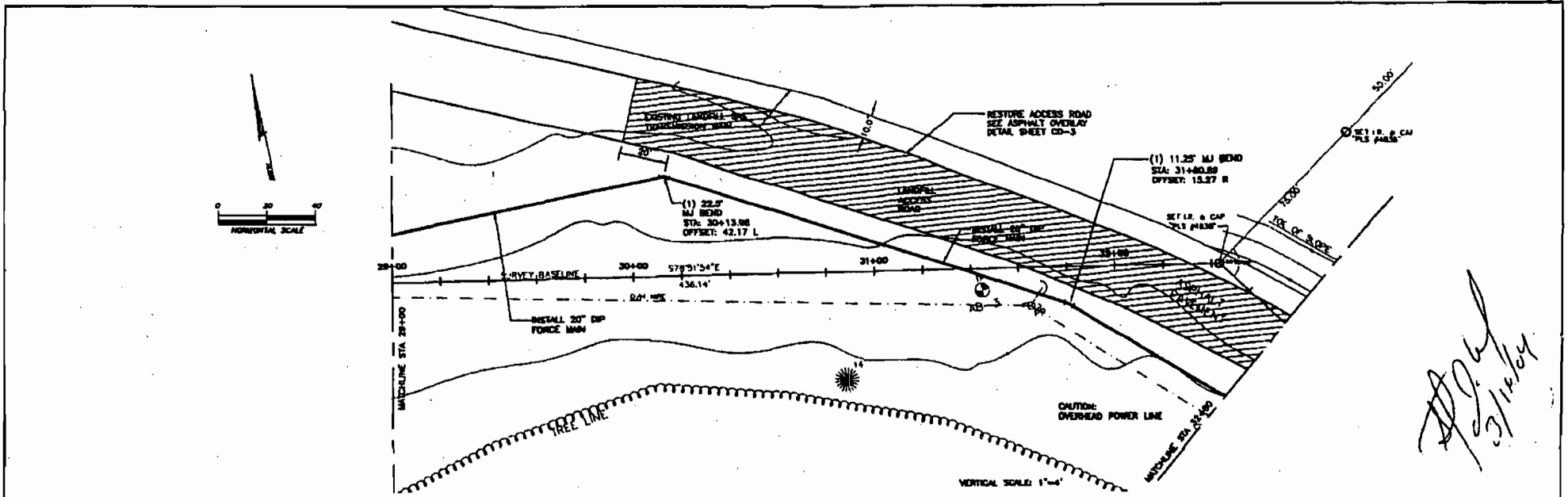


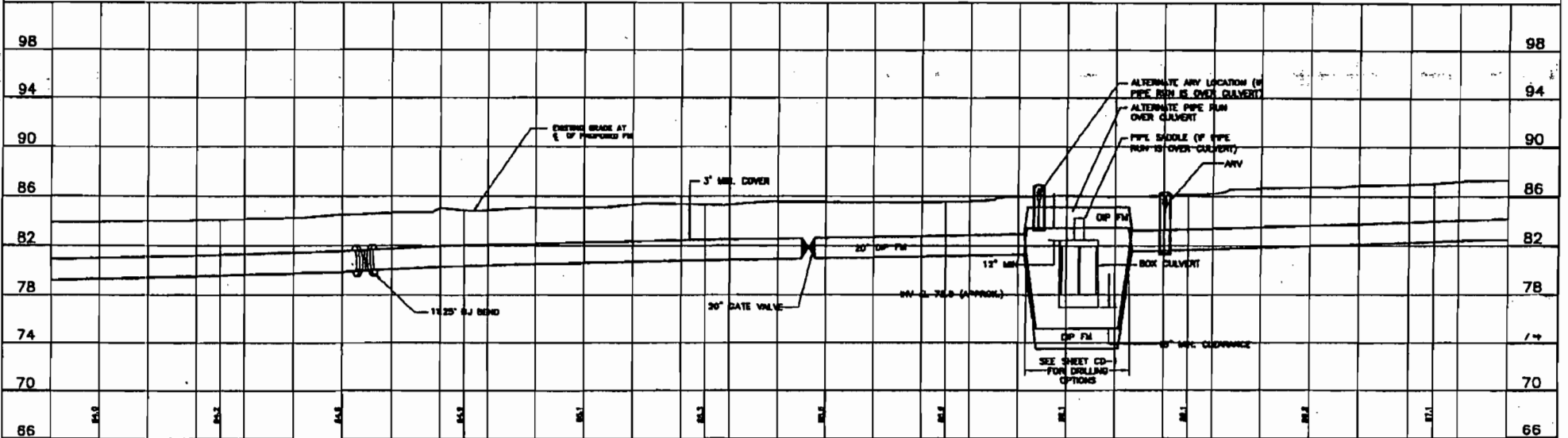
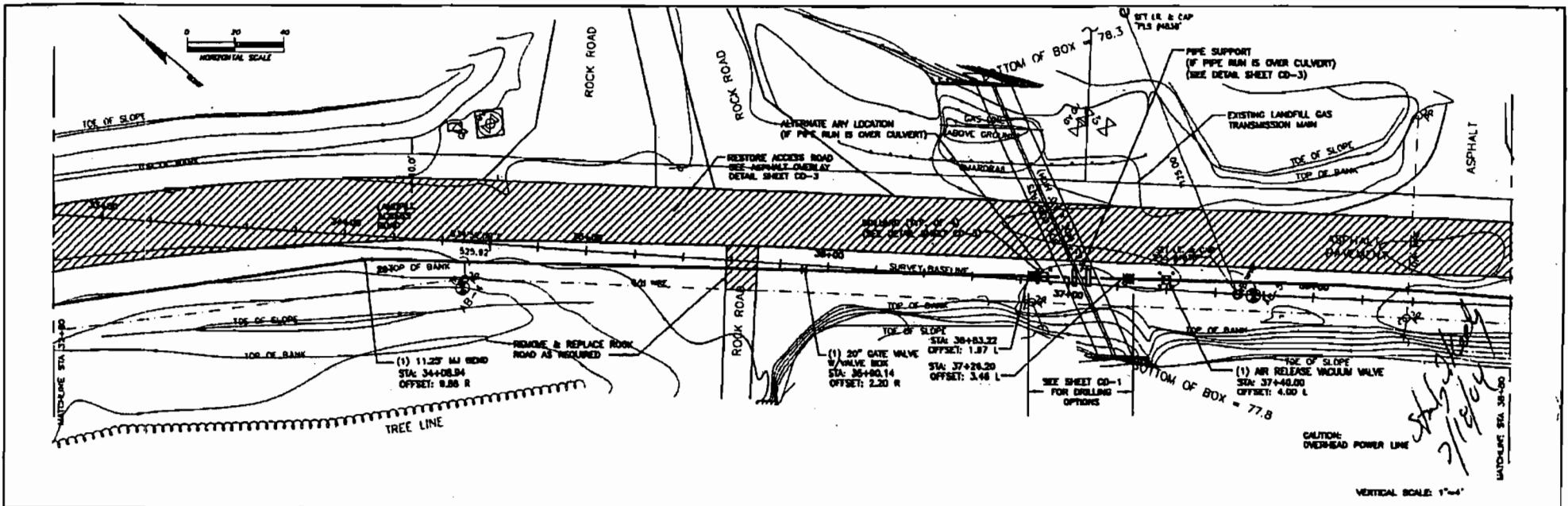
Figure 5 of 13



<p>VERIFY SHEET</p> <p>THIS SHEET IS TO BE USED FOR CONSTRUCTION ONLY. APPROVAL</p>		<p>REVISIONS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		NO.	DATE	DESCRIPTION										<p>DATE 08/11/04</p> <p>SCALE 1"=4'</p>		<p>PLAN & PROFILE STA 29+00 TO STA 32+00</p> <p>OCLF POND 2 STORMWATER PUMP STATION MODIFICATIONS AND FORCE MAIN</p> <p>C-3</p>	
NO.	DATE	DESCRIPTION																	

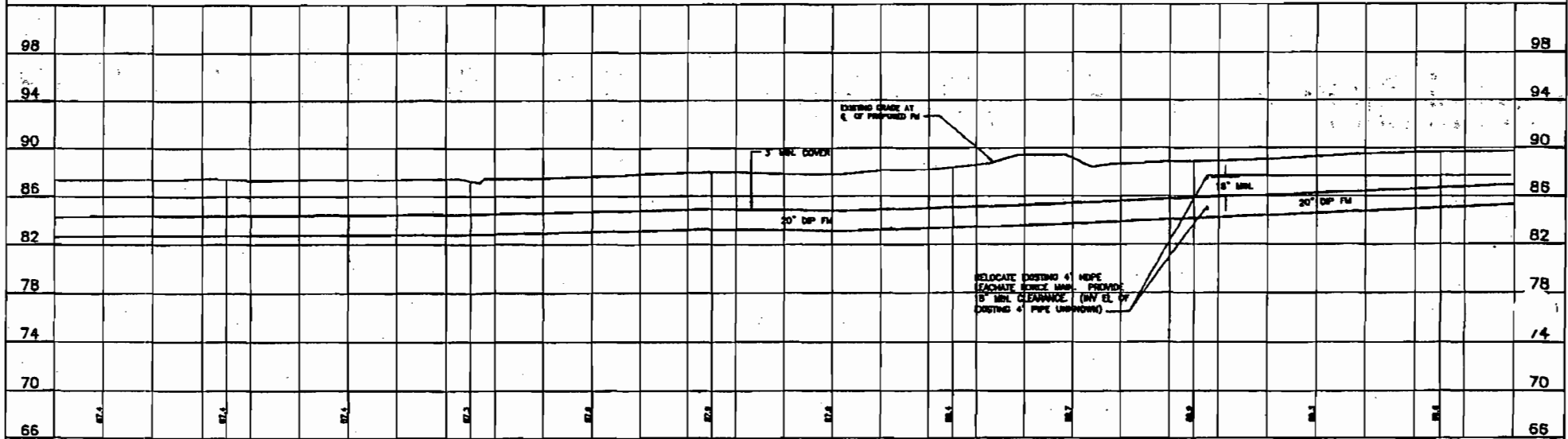
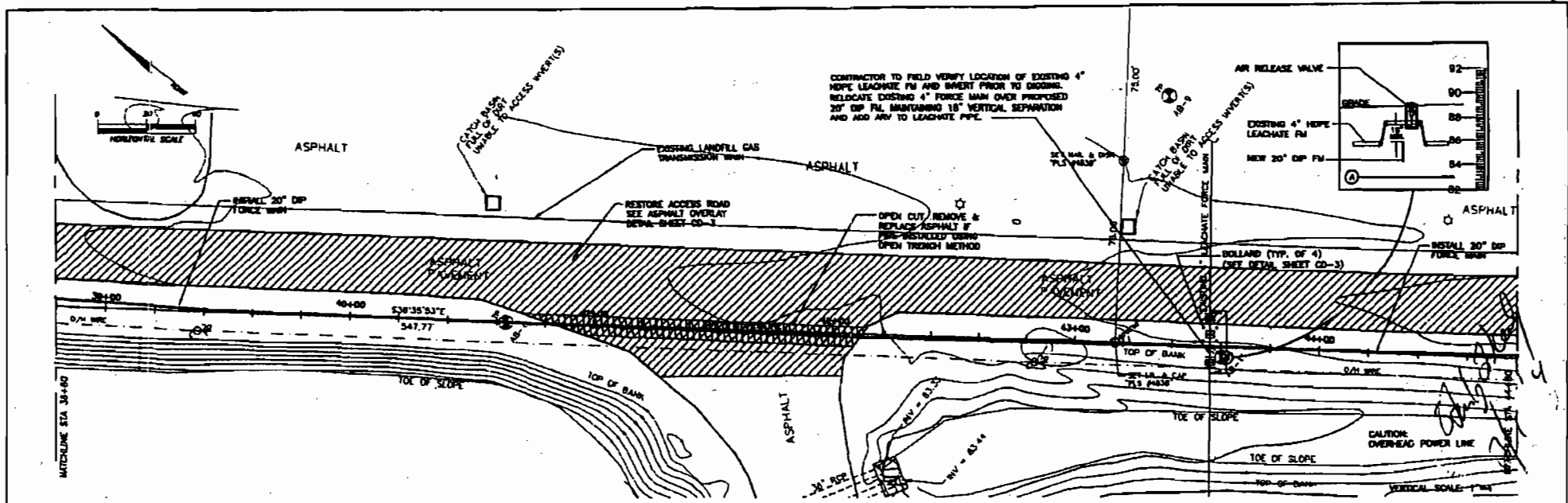
Handwritten signature and date: J. J. [unclear] 8/11/04

Figure 6 of 13



33+00 <small>Vertical Curve Data</small>		34+00 <small>Vertical Curve Data</small>		35+00 <small>Vertical Curve Data</small>		36+00 <small>Vertical Curve Data</small>		37+00 <small>Vertical Curve Data</small>		38+00 <small>Vertical Curve Data</small>	
CH2M/HCC				WCG				PLAN & PROFILE STA 32+80 TO STA 38+80 OCLF POND 2 STORMWATER PUMP STATION MODIFICATIONS AND FORCE MAIN SCALE: AS SHOWN SHEET NO. 20 OF 20			

Figure 7 of 13



39+00	40+00	41+00	42+00	43+00	44+00
ST. 1	ST. 1	ST. 1	ST. 1	ST. 1	ST. 1
66	66	66	66	66	66
70	70	70	70	70	70
74	74	74	74	74	74
78	78	78	78	78	78
82	82	82	82	82	82
86	86	86	86	86	86
90	90	90	90	90	90
94	94	94	94	94	94
98	98	98	98	98	98

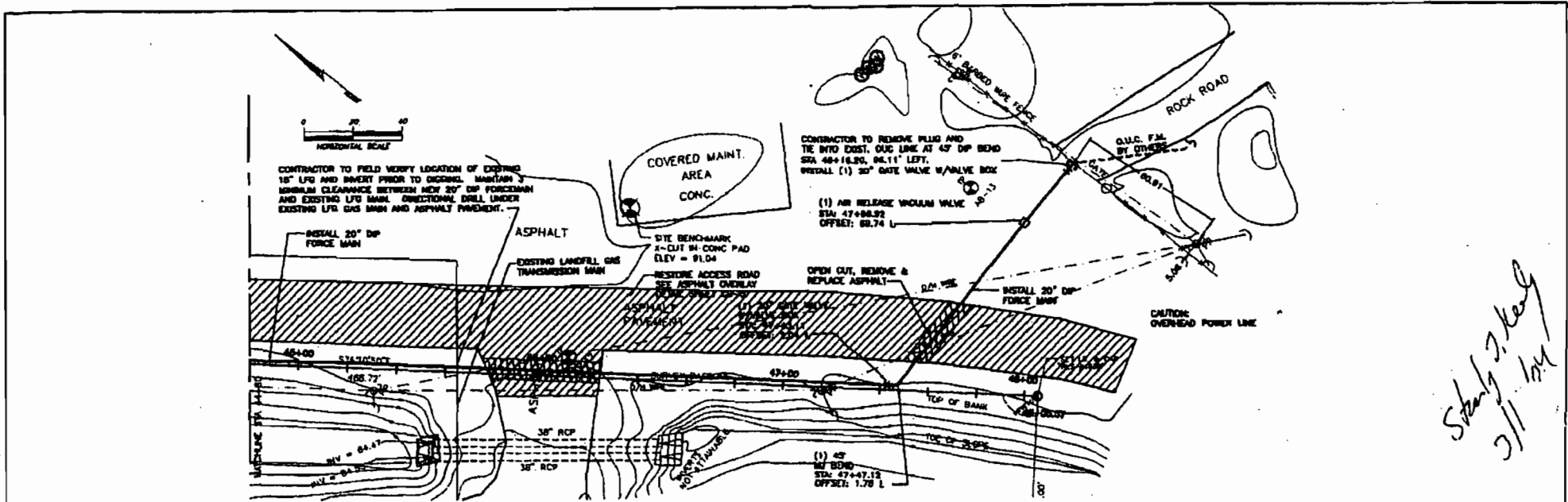
VERIFY SHEET
 1. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
 2. ALL DIMENSIONS ARE TO BE CHECKED AND CORRECTED BEFORE CONSTRUCTION.
 3. ALL DIMENSIONS ARE TO BE CHECKED AND CORRECTED BEFORE CONSTRUCTION.
 4. ALL DIMENSIONS ARE TO BE CHECKED AND CORRECTED BEFORE CONSTRUCTION.

NO.	DESCRIPTION	DATE	BY	CHECKED
1	ISSUED FOR PERMIT	11/20/10	JL	ML
2	ISSUED FOR CONSTRUCTION	11/20/10	JL	ML
3	ISSUED FOR CONSTRUCTION	11/20/10	JL	ML
4	ISSUED FOR CONSTRUCTION	11/20/10	JL	ML

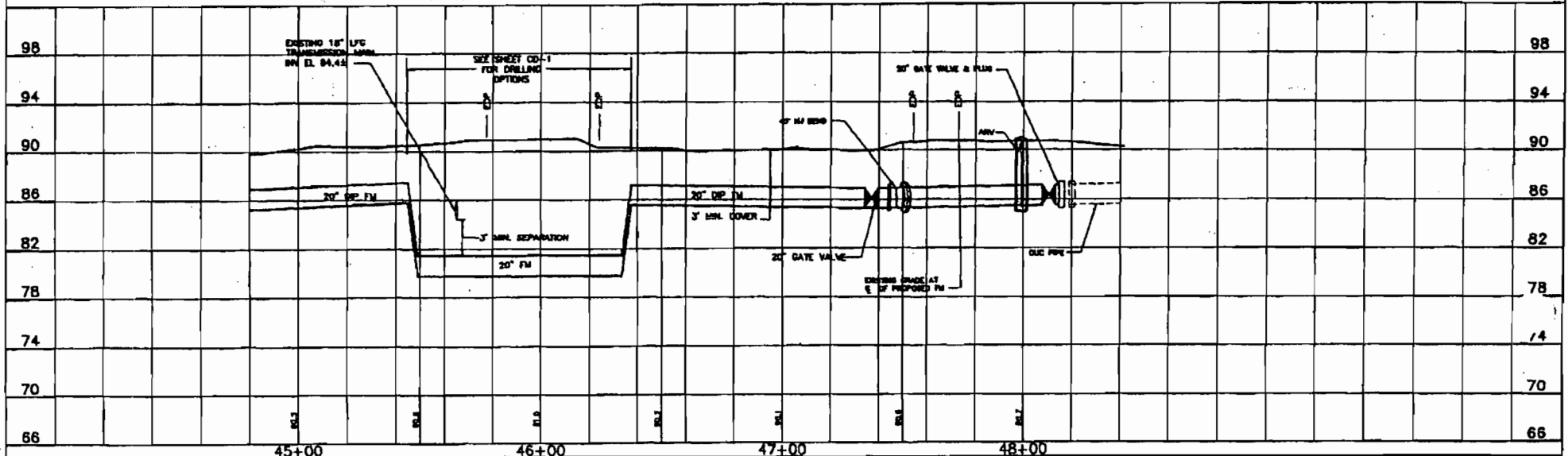


PLAN & PROFILE STA 38+80 TO STA 44+80
OCLF POND 2 STORMWATER PUMP STATION MODIFICATIONS AND FORCE MAIN
 SCALE: AS SHOWN
 C-5

Figure 8 of 13

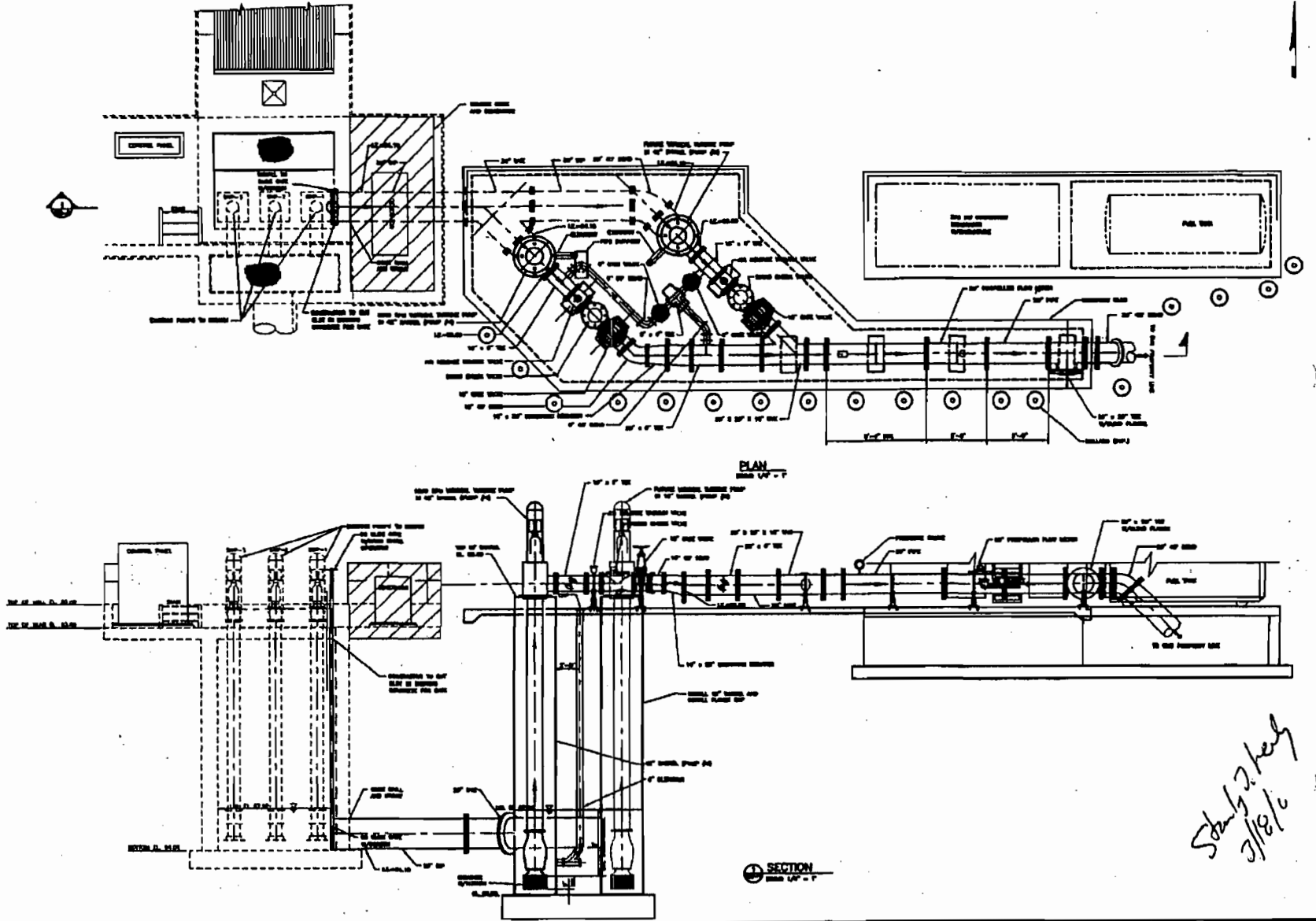


Shirley J. Keady
2/11/04



SHEET NO. 1 DATE: 11/02/03 DRAWN BY: J. K. [unclear] CHECKED BY: J. K. [unclear]		SCALE OF DRAWING 1" = 10'-0"		REVISIONS NO. DATE DESCRIPTION 1 11/02/03 [unclear]		CR/M/WCG CONSULTING ENGINEERS		PLAN & PROFILE STA 44+00 TO STA 48+00 OCLF POND 2 STORMWATER PUMP STATION MODIFICATIONS AND FORCE MAIN		C-6 SCALE: AS SHOWN PER: [unclear]
---	--	---------------------------------	--	---	--	---	--	---	--	---

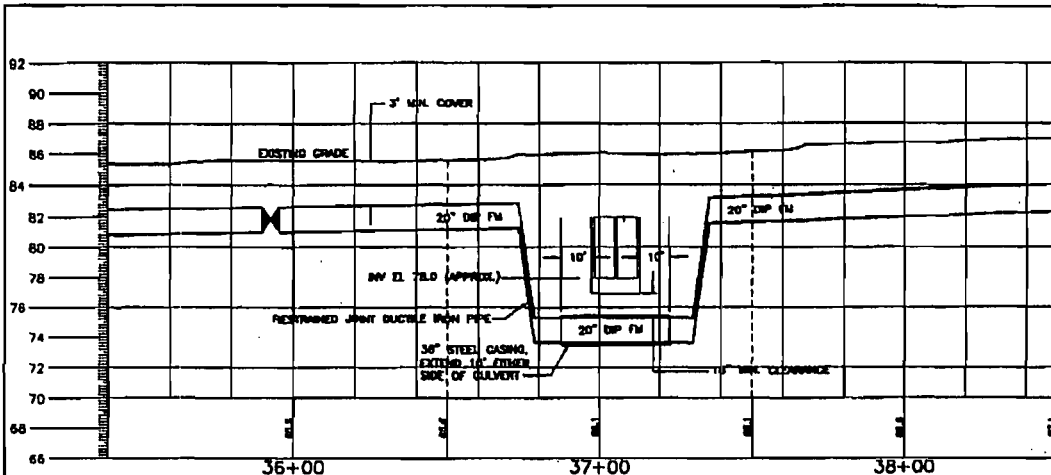
Figure 9 of 13



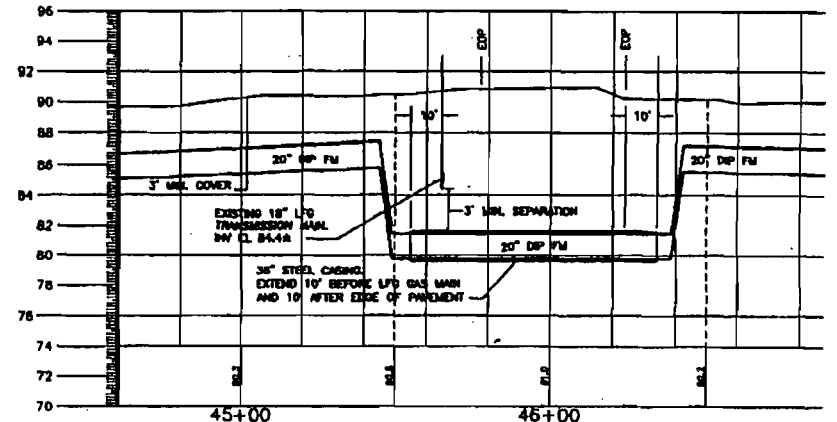
*Study 2, Perry
3/18/16*

MECHANICAL MOD TO EXISTING PUMP STATION OCLF POND 2 STORMWATER PUMP STATION MODIFICATIONS AND FORCE MAIN	MD-1 SCALE AS SHOWN DATE: _____ DRAWN: _____	REVISION NO. OF DATE	CHM/WCG CIVIL ENGINEERING 1000 W. 10TH AVENUE DENVER, CO 80202	MECHANICAL MOD TO EXISTING PUMP STATION OCLF POND 2 STORMWATER PUMP STATION MODIFICATIONS AND FORCE MAIN
		NO. OF DATE	CHM/WCG CIVIL ENGINEERING 1000 W. 10TH AVENUE DENVER, CO 80202	MECHANICAL MOD TO EXISTING PUMP STATION OCLF POND 2 STORMWATER PUMP STATION MODIFICATIONS AND FORCE MAIN

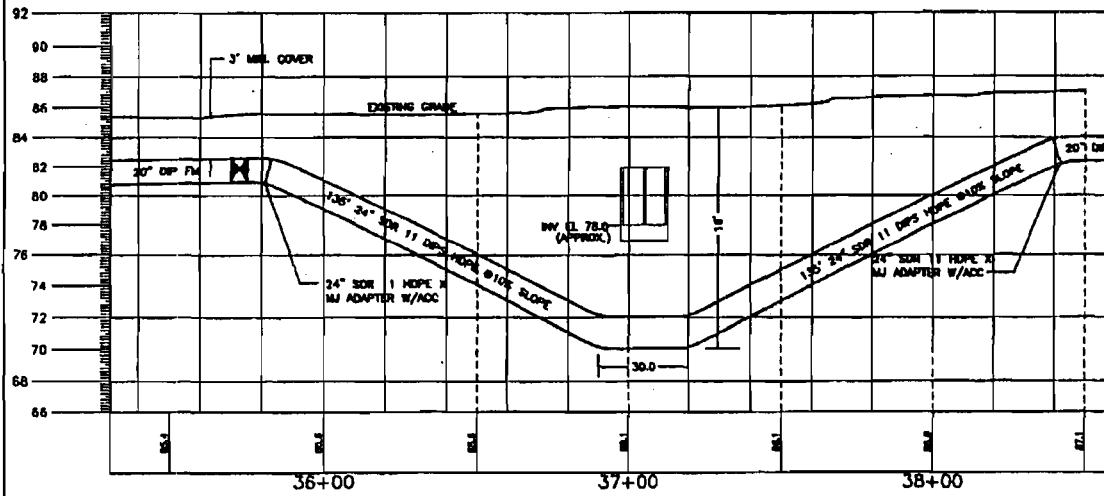
Figure 10 of 13



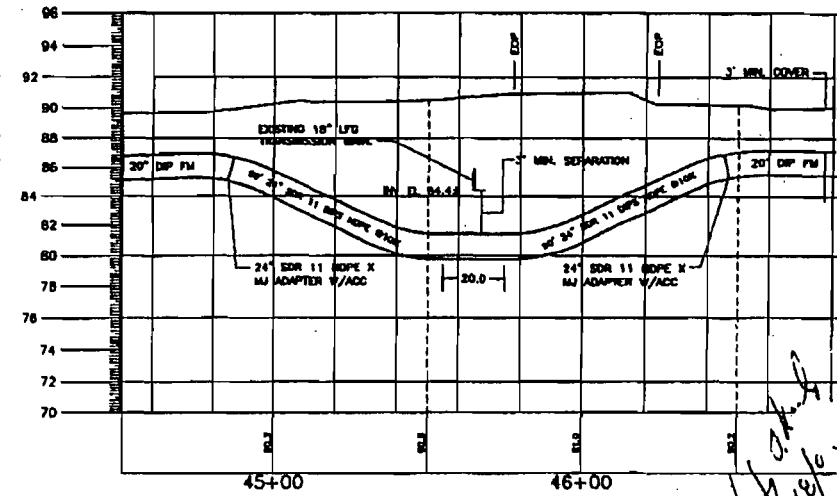
PIPE CROSSING AT BOX CULVERTS
 STA. 36+78 - 37+31
 JACK AND BORE METHOD
 HORIZONTAL SCALE 1"=30'
 VERTICAL SCALE 1"=5'



PIPE CROSSING AT 18" LFG MAIN
 STA. 45+44 - 46+43
 JACK AND BORE METHOD
 HORIZONTAL SCALE 1"=30'
 VERTICAL SCALE 1"=5'



PIPE CROSSING AT BOX CULVERTS
 STA. 35+81 - 38+42
 DIRECTIONAL DRILL METHOD
 HORIZONTAL SCALE 1"=30'
 VERTICAL SCALE 1"=5'



PIPE CROSSING AT 18" LFG MAIN
 STA. 44+85 - 46+53
 DIRECTIONAL DRILL METHOD
 HORIZONTAL SCALE 1"=30'
 VERTICAL SCALE 1"=5'

*Shubert
 2/18/16*

WATERPUMP Pond 1 Pond No. 2 W. Pond (Pond 2) Pond No. 3

NO.	DESCRIPTION	DATE	BY

NO.	DESCRIPTION	DATE	BY

NO.	DESCRIPTION	DATE	BY



DRILLING OPTION DETAILS	

CD-1
 SCALE 1/8"=1'-0"
 DATE 2/18/16



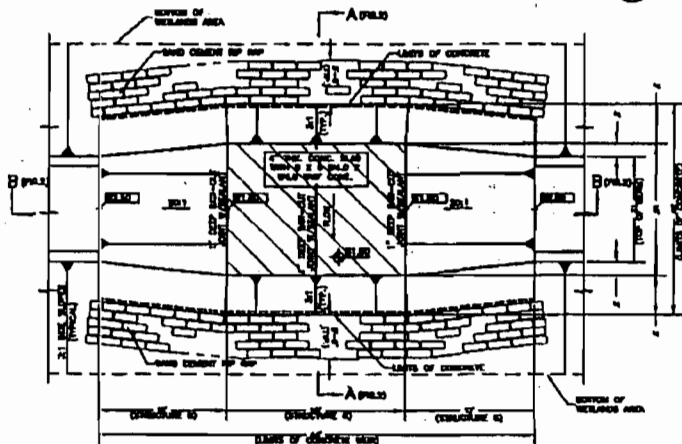
PLAN
SCALE 1/4" = 1'-0"

1. CLEAN SURFACE IN AREA OF CONCRETE FORMER BERM.
2. REMOVE ALL REBAR AND REINFORCING REMAINING APARTS TO EXPOSE BERM SURFACE.
3. FILL ALL HOLES AND REINFORCED SURFACE SET TO FINISH SURFACE WITH PORTLAND CEMENT.
4. STRUCTURE BERM TO FOOT UNDER 22\"/>

REMOVE TEMPORARY BERM FORMWORK CONSOLE OF REINFORCING STRUCTURE AS SHOWN TO PREPARE FOR REINFORCED CONCRETE CONSTRUCTION.



MODIFICATIONS TO STRUCTURES 9A AND 9B ON SOUTH PERIMETER BERM (14)

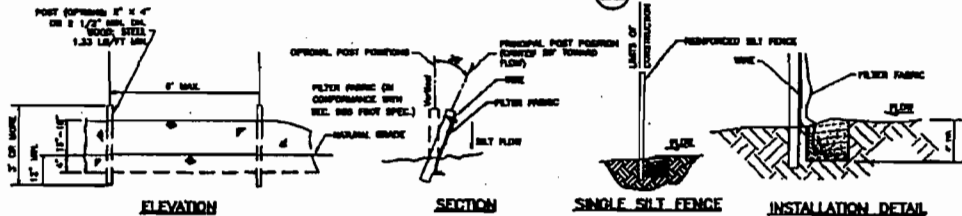


GATE VALVE AND BOX DETAIL (20)

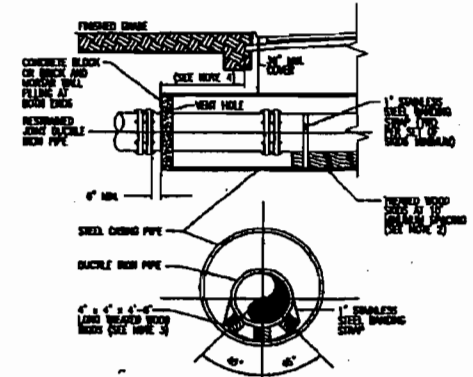
- NOTES:
1. PVC EXTENSION SHALL NOT BE USED ON VALVE BOX INSTALLATION.
 2. THE ACTING TANK HET FOR DEEPER VALVES SHALL BE EXTENDED TO COME UP TO 4 FEET 0\"/>

PIPE SIZE	MINIMUM LENGTH (FT) OF PIPE TO BE RESTRICTED ON EACH SIDE OF STRUCTURE (FORCE MAIN)							
	6"	8"	10"	12"	16"	20"	24"	30"
BY BEND	27	48	69	90	111	132	153	174
45° BEND	16	18	23	28	33	38	43	48
22-1/2° BEND	8	9	11	14	17	20	23	26
11-1/4° BEND	4	5	6	7	8	10	11	13
PLUG OR BRANCH OF TEE	63	79	95	111	146	172	210	242

DUCTILE IRON PIPE RESTRAINED JOINT TABLE (22)



SINGLE SILT FENCE DETAIL (24)



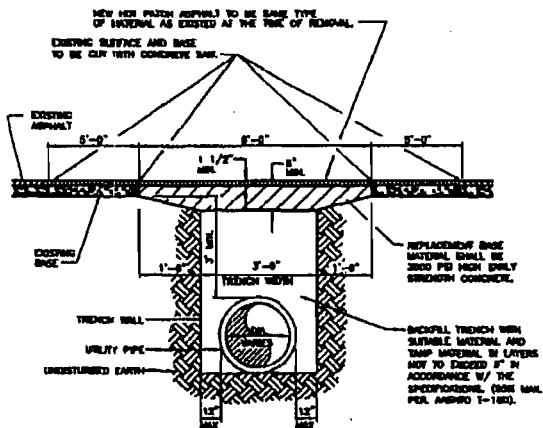
BORING AND JACKING DETAIL (18)

1. WHEN CONSTRUCTION IS WITHIN FOOT JURISDICTION, ADDITIONAL REQUIREMENTS OF THE LOCAL JURISDICTION SHALL BE MET.
2. CHAINS SPACED AS SPECIFIED IN SECTION 3.3.4.4 OF THE MANUAL, MAY BE REPLACED BY THE CHAINS OF ANY BE MANUFACTURED IN LIEU OF WOOD SHIPS AND ANCHORS STRIP.
3. UNDER SHIPS SHALL BE REQUIRED FOR PIPE GREATER THAN 24\"/>

MODIFICATIONS TO BROAD CRESTED WEIR STRUCTURE 8 ON SOUTH PERIMETER BERM (16)

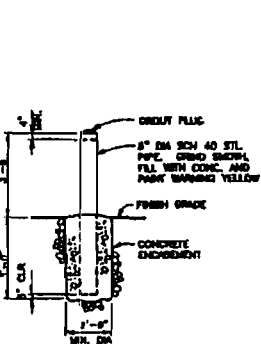
- PLAN
SCALE 1/4" = 1'-0"
1. LIMITS OF CONCRETE TO BE AS SHOWN PLUS ONE FOOT BERM BEYOND BERM.
 2. REFERENCE FRAME 2 FOR SECTION A-A AND B-B.
 3. REINFORCING OF EXISTING SHOULDER STRUCTURE BERM.

<p>REVISIONS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>DATE</th> <th>BY</th> <th>CHK.</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	NO.	DATE	BY	CHK.	DESCRIPTION						<p>APPROVED</p> <p>DATE</p>	<p>SCALE</p>	<p>PROJECT</p>	<p>CD-2</p>
NO.	DATE	BY	CHK.	DESCRIPTION										

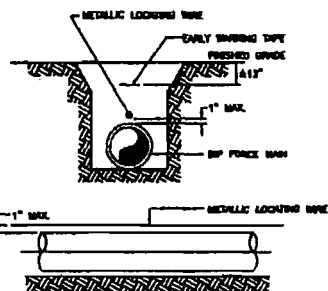


NOTE:
THE CONTRACTOR SHALL PROMPTLY FILL OPEN-CUT TO ALLOW TRAFFIC TO PASS FREELY AND SAFELY. IF PERMANENT RESTORATION IS TO BE DEFERRED, THE CONTRACTOR SHALL MAINTAIN THE TEMPORARY CONDITION TO THE CHARGE COUNTY ENGINEER'S GOVERNMENT SATISFACTION.

ASPHALT ROADWAY OPEN CUT DETAIL (30)

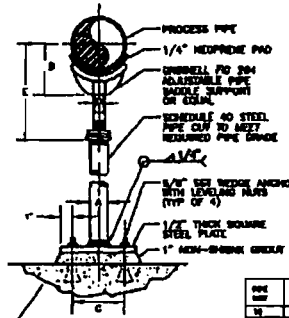


BOLLARD DETAIL (36)



NOTE:
1. PFC BRASS REQUIRE RELIEVED METALLIC LOCKING WIRE (10 GAUGE COPPER) CAPABLE OF DETECTION BY A CHABLE LOCATOR AND SHALL BE INSTALLED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE.
2. LOCKING WIRE SHALL TERMINATE AT THE TOP OF EACH VALVE BOX AND BE CAPABLE OF EXTENDING 12\"/>

PIPE LOCATING WIRE DETAIL (38)

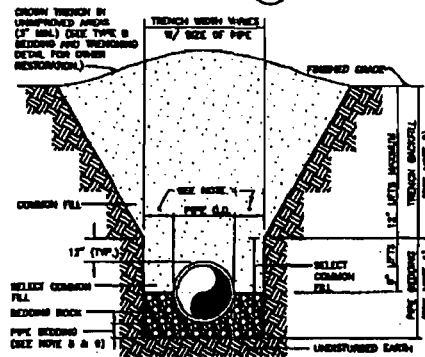


NOTE:
1. NOT-UP OVERLIFT SAMPLE, SCHEDULE 40 STEEL PIPE CLIP TO MEET REQUIRED PIPE GRADE.
2. SEE PLANS AND SPECIFICATIONS FOR PIPE GRADE REGULATION.
3. PROVIDE PROTECTION PROTECTION SHALL BE INSTALLED WHEN PIPE IS RELEASED.

PIPE SIZE	A	B	C	D	MIN. HGT.	MAX. HGT.
18"	2	8 1/2"	7	1 1/2"	13 1/2"	18 1/2"
24"	2	10 3/4"	7	1 1/2"	15	20 1/2"
30"	4	13 1/2"	7	2	17 1/2"	22 1/2"
36"	4	15 1/2"	7	2 1/2"	19 1/2"	24 1/2"
42"	6	18 1/2"	7	3 1/2"	21 1/2"	26 1/2"
48"	8	21 1/2"	8	4	23 1/2"	28 1/2"

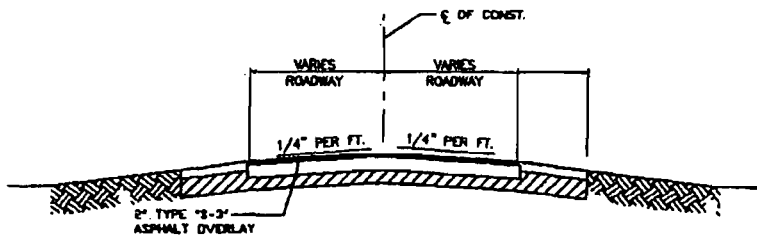
* ALL DIMENSIONS IN INCHES.

PIPE SUPPORT - ADJUSTABLE SADDLE (32)

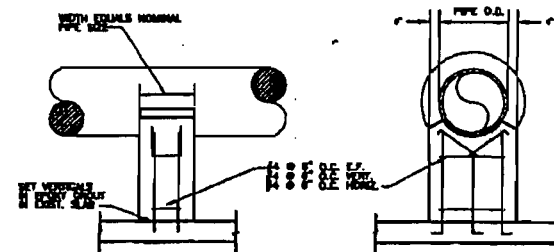


NOTE:
1. PIPE BEDDING SELECT COMMON FILL COMPACTED TO 95% OF THE STANDARD DENSITY AS PER ASTM D-1557 ABOVE PIPE SPRING LINE.
2. TRENCH BEDDING COMMON FILL COMPACTED TO 95% OF THE STANDARD DENSITY AS PER ASTM D-1557.
3. USE TYPE A BEDDING TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE COUNTY.
4. (2) 1\"/>

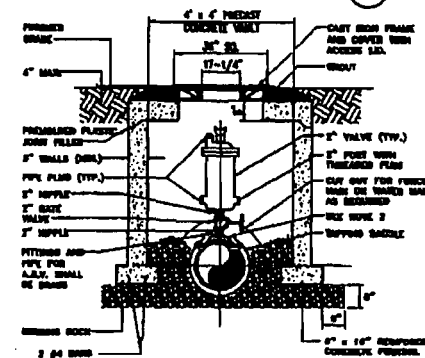
TYPE A BEDDING AND TRENCHING DETAIL (40)



ASPHALT OVERLAY DETAIL



PIPE SUPPORT DETAIL (34)



NOTE:
1. AIR RELEASE VALVE IS BASED ON 12\"/>

AIR RELEASE VALVE DETAIL (42)

APPROVED FOR THE COUNTY OF CALIFORNIA

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.
1	03/18/04	ISSUED FOR BIDDING
2	03/18/04	REVISED FOR BIDDING
3	03/18/04	REVISED FOR BIDDING



MISCELLANEOUS DETAILS	
OCLF POND 2 STORMWATER PUMP STATION MODIFICATIONS AND FORCE MAIN	
CD-3	SCALE: SEE PLAN

Stacy J. King
3/18/04

Appendix B
Vicinity Map, Zoning, Land Use and
Property Owners List

Properties Adjacent to the Original 1500-Acre Orange County Landfill- October 2004

Map ID	Parcel ID	Property Owner	Owner Address				Land Use
			Address	City	State	Zip	
34	10-23-31-0000-00-001	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	COUNTY
47	14-23-31-0000-00-001	City Of Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	MUNICIPAL
48	14-23-31-0000-00-075	City Of Orlando	400 S. Orange Ave	Orlando	FL	32801	MUNICIPAL
49	14-23-31-0000-00-061	City Of Orlando	400 S. Orange Ave	Orlando	FL	32801	VACANT- RESIDENTIAL
54	16-23-31-0000-00-011	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	COUNTY
88	23-23-31-0000-00-001	City Of Orlando	400 S. Orange Ave	Orlando	FL	32801	MUNICIPAL
89	23-23-31-0000-00-003	City of Orlando	400 S. Orange Ave	Orlando	FL	32801	MUNICIPAL
90	23-23-31-0000-00-032	City of Orlando	400 S. Orange Ave	Orlando	FL	32801	MUNICIPAL

Properties Adjacent to the Original 1500-Acre Orange County Landfill- October 2004

Map ID	Parcel ID	Property Owner	Owner Address				Land Use
			Address	City	State	Zip	
91	23-23-31-0000-00-002	City of Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	VACANT-RESIDENTIAL
92	23-23-31-0000-00-004	City of Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	MUNICIPAL
93	23-23-31-0000-00-007	City of Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	VACANT-RESIDENTIAL
94	23-23-31-0000-00-034	City of Orlando	400 S. Orange Ave	Orlando	FL	32801	MUNICIPAL
96	23-23-31-0000-00-005	Orange County BCC	P.O.Box 1393	Orlando	FL	32802	COUNTY

List of Property Owners, Land Use & Zoning for Properties Within a One-mile Radius of the Orange County Landfill Expansion- December 2002

Map ID#	Parcel ED	Property Owner	Owner Address				Land Use	Zoned
			Address	City	State	Zip		
1	08-23-31-0000-00-013	Buttrey Development	P.O. Box 1024	Clarcona	FL	32210	VACATION RESIDENCE & WASTE LAND	A-2
2	08-23-31-0174-00-003	Lake Underhill Joint Venture	1700 S. Bumby Ave	Orlando	FL	32806	WASTE LAND	PD
3	09-23-31-0167-00-003	Andover Lakes Phase 2 HOA	2269 Lee Road	Winter Park	FL	32789	WASTE LAND	PD
4	09-23-31-0167-00-002	Andover Lakes Phase 2 HOA	2269 Lee Road	Winter Park	FL	32790	WASTE LAND	PD
5	09-23-31-0167-00-001	Orange County BCC	a/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	WASTE LAND	PD
6	09-23-31-0167-00-010	Vas, William H & Maria	3186 Erskine Drive, Unit 1	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
7	09-23-31-0167-00-020	Gore, Judith A.	3180 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
8	09-23-31-0167-00-030	Jenkot, Leroy & Donna	3174 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
9	09-23-31-0167-00-040	Brown, Scott & Teresa	3168 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
10	09-23-31-0167-00-960	Martinez, Jorge A & Norma Soto	3167 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
11	09-23-31-0167-00-950	Null, Donald & Veronica	3161 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
12	09-23-31-0167-00-940	Tolentino, L le & Noelle	3155 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
13	09-23-31-0167-00-930	Garcia, Epifanio Jr. & Elizabeth	3149 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
14	09-23-31-0167-00-920	Portugal, Altamirando	8235 Riviera Shore Ct	Orlando	FL	32817	SINGLE FAMILY RESIDENTIAL	PD
15	09-23-31-0167-00-910	Garcia, Neida	3137 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
16	09-23-31-0167-00-900	Williams, Alice	3131 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
17	09-23-31-0167-00-890	Collazos, Martha	3125 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
18	09-23-31-0167-00-880	Kreger, Ronald & Christine Mifsud	3119 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
19	09-23-31-0167-00-870	Azua, Humberto & Rosa	3107 Erskine Drive	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD

List of Property Owners, Land Use & Zoning for Properties Within a One-mile Radius of the Orange County Landfill Expansion- December 2002

Map ID#	Parcel ED	Property Owner	Owner Address				Land Use	Zoned
			Address	City	State	Zip		
20	09-23-31-0167-00-860	Hernandez, Gina & Clara Lopez	11040 Fairhaven Way	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
21	09-23-31-0167-00-850	Rybicki, Jack & Renee	2230 Ridgewind Way	Windermere	FL	34786	SINGLE FAMILY RESIDENTIAL	PD
22	09-23-31-0167-00-840	Hagen, K Jon & Maria	11058 Fairhaven Way	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
23	09-23-31-0167-00-830	Pacheco, Pedro	11064 Fairhaven Way	Orlando	FL	32825	SINGLE FAMILY RESIDENTIAL	PD
24	09-23-31-0167-00-820	Beckman, Matthew	11240 Silver Buckle Way	San Diego	CA	92127	SINGLE FAMILY RESIDENTIAL	PD
25	09-23-31-0000-00-008	Maronda Homes Inc. of Florida	4005 Maronda Way	Sanford	FL	32771	VACATION RESIDENCE & WASTE LAND	PD
26	09-23-31-0000-00-001	Orange Count BPI	445 W. Amelia St.	Orlando	FL	32801	NON AGRICULTURAL	
27	09-23-31-0000-00-009	M/I Scottenstein Homes Inc.	237 S. Westmonte Dr. #111	Altamonte	FL	32714	VACATION RESIDENCE & WASTE LAND	PD
28	09-23-31-0000-00-011	Buttrely Development, LLC	P.O Box 1024	Clarcona	FL	32210	NON AGRICULTURAL & SUBMERGED	A-2
29	09-23-31-0000-00-002	Buttrely Development, LLC	6329 Edgewater Drive	Orlando	FL	32810	GRAZING 4, SUBMERGED, & MKT.VAL.AG	A-2
30	09-23-31-0000-00-004	Buttrely Development, LLC	P.O Box 1024	Clarcona	FL	32210	NON AGRICULTURAL & WASTE LAND	A-2
31	09-23-31-0000-00-003	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	COUNTY & WASTE LAND	A-2
32	08-23-31-0000-00-010	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	NON AGRICULTURAL	
33	08-23-31-0000-00-012	Buttrely Development	6239 Edgewater Drive, Ste D-1	Orlando	FL	32810	NON AGRICULTURAL	A-2
34	10-23-31-0000-00-001	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	COUNTY	A-2

List of Property Owners, Land Use & Zoning for Properties Within a One-mile Radius of the Orange County Landfill Expansion- December 2002

Map ID#	Parcel ED	Property Owner	Owner Address				Land Use	Zoned
			Address	City	State	Zip		
35	11-23-31-0000-00-001	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	COUNTY	A-2
36	02-23-31-0000-00-002	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	COUNTY	A-2
37	12-23-31-0000-00-001	Morgran Co Inc.	2600 Maitland Center Parkway	Maitland,	FL	32751	GRAZING 5, WASTE LAND, & MKT.VAL.AG	A-2
38	12-23-31-0000-00-006	City Of Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	NON AGRICULTURAL	A-2
39	12-23-31-0000-00-004	City Of Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	NON AGRICULTURAL	A-2
40	12-23-31-0000-00-005	Redditt Adeline Ann	710 N Dean Rd.	Orlando	FL	32825	GRAZING 5 & MKT.VAL.AG	A-2
41	12-23-31-0000-00-002	Redditt John Cecil	4414 Calm Water Ct	Orlando	FL	32817	GRAZING 5, WASTE LAND, & MKT.VAL.AG	A-2
42	12-23-31-0000-00-003	City Of Orlando & Orlando Utilities Comm	P.O.Box3193	Orlando	FL	32802	NON AGRICULTURAL	A-2
43	13-23-31-0000-00-003	Florida Municipal Power Agency	7201 Lake Ellenor Dr. Suite 100	Orlando	FL	32809	NON AGRICULTURAL	A-2
44	13-23-31-0000-00-002	City Of Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	NON AGRICULTURAL	A-2
45	13-23-31-0000-00-001	City Of Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	NON AGRICULTURAL	A-2
46	14-23-31-0000-00-008	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	COUNTY	A-2
47	14-23-31-0000-00-001	City Of Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	MUNICIPAL	A-2
48	14-23-31-0000-00-075	City Of Orlando	400 S. Orange Ave	Orlando	FL	32801	MUNICIPAL	A-2
49	14-23-31-0000-00-061	City Of Orlando	400 S. Orange Ave	Orlando	FL	32801	VACANT- RESIDENTIAL	A-2
50	15-23-31-0000-00-001	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	NON AGRICULTURAL	A-2

List of Property Owners, Land Use & Zoning for Properties Within a One-mile Radius of the Orange County Landfill Expansion- December 2002

Map ID#	Parcel ED	Property Owner	Owner Address				Land Use	Zoned
			Address	City	State	Zip		
51	16-23-31-0000-00-005	UDDO Development	c/o Oscar Wind, 855 Ave of Americas, Ste 425	New York	NY	10001	SINGLE FAMILY RESIDENTIAL RURAL	RCE
52	16-23-31-0000-00-012	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	NON AGRICULTURAL	RCE
53	16-23-31-0000-00-001	Orange Count BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	NON AGRICULTURAL	A-2
54	16-23-31-0000-00-011	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	COUNTY	A-2
55	16-23-31-0000-00-002	Ralph Fisch	130 S. Orange Ave, Ste 300	Orlando	FL	32801	NON AGRICULTURAL & SUBMERGED	
56	16-23-31-0000-00-010	Larry Craig	2512 Overlake Ave	Orlando	FL	32806	NON AGRICULTURAL & WASTE LAND	A-2
57	16-23-31-0000-00-006	Harold Smith	5749 Young Pine Road	Orlando	FL	32829	NON AGRICULTURAL	A-2
58	16-23-31-0000-00-007	Huan Chung Chow	9779 Wild Oak Drive	Windermere	FL	34786	NON AGRICULTURAL	A-2
59	16-23 - 31-0000-00-008	Kent, Phillip & Susan	869 Leopold Trail	Winter Springs	FL	32708	WAREHOUSE	I-1/I-5
60	16-23-31-0000-00-009	Michael Martin & Robert Young*	5727 & 5729 Young Pine Road	Orlando	FL	32829	GRAZING 4, MKT.VAL.AG, & SINGLE FAMILY RESIDENTIAL	A-2
61	16-23-31-0000-00-003	Bledsoe John B	5223 Young Pine Road	Orlando	FL	32829	WASTE LAND	A-2
62	16-23-31-0000-00-004	Charles Weber	P.O. Box 8262	Orlando	FL	32806	NON AGRICULTURAL	A-2
63	17-23-31-0000-00-013	Tivoli Woods Assn. Inc.	4800 N. Federal Hwy Ste 203B	Boca Raton	FL	33431	NON AGRICULTURAL	PD
64	17-23-31-0000-00-014	Crown Tree Assn, Inc.	15340 Jog Road Ste 200	Delray Beach	FL	33416	NON AGRICULTURAL	PD
65	17-23-31-0000-00-009	John Siegel	4600 Young Pine Road	Orlando	FL	32829	SINGLE FAMILY RESIDENTIAL	PD

List of Property Owners, Land Use & Zoning for Properties Within a One-mile Radius of the Orange County Landfill Expansion- December 2002

Map ID#	Parcel ED	Property Owner	Owner Address				Land Use	Zoned
			Address	City	State	Zip		
66	17-23-31-0000-00-010	WATERSIDE PLANNED UNIT DEVELOPMENT BY D.R. HORTON SEE LISTINGS 131 – 161 (Common Property and Unsold Lots)	Waterside HOA of Orange County 2180 W S.R. 434, Suite 5000	Longwood	FL	32779	SUBMERGED, & MKT.VAL.AG	PD
67	17-23-31-0000-00-078	H C Buchanan	P.O. Box 2922	Orlando	FL	32802	NON AGRICULTURAL	RCE
68	17-23-31-0000-00-011	UDDO Development	c/o Oscar Wind, 855 Ave of Americas, Ste 425	New York	NY	10001	NON AGRICULTURAL & SUBMERGED	RCE
69	17-23-31-0000-00-016	James A Mart**	5227 Young Pine Road	Orlando	FL	32829	NON AGRICULTURAL	A-1
70	17-23-31-0000-00-003	James A Mart	5225 Young Pine Road	Orlando	FL	32829	NON AGRICULTURAL	A-1
71	17-23-31-0000-00-001	Miguel Rivera	5304 Young Pine Road	Orlando	FL	32829	SINGLE FAMILY RESIDENTIAL	A-1
72	17-23-31-0000-00-005	Ollie Buchanan	8508 Grinstead Ct	Orlando	FL	32825	NON AGRICULTURAL	A-1
73	17-23-31-0000-00-006	Ronald Persaud	86-57 Midland Pkway, Jamaica Estates	Queens	NY	11432	NON AGRICULTURAL	A-1
74	17-23-31-0000-00-007	Malcolm & Gary Satterfield	5339 Young Pine Road	Orlando	FL	32829	NON AGRICULTURAL	A-1
75	17-23-31-0000-00-004	Leo Anderson	5360 Young Pine Road	Orlando	FL	32829	SINGLE FAMILY RESIDENTIAL RURAL, GRAZING 4, &MKT.VAL.AG	A-1
76	17-23-31-0000-00-008	Acorn Land, Inc.	P.O. Box 162645	Altamonte Springs	FL	32716	NON AGRICULTURAL	A-1
77	17-23-31-0000-00-017	Ralph Fisch	130 S. Orange Avenue, Suite 300	Orlando	FL	32801	GRAZING 5 & MKT.VAL.AG	PD
78	17-23-31-0000-00-012	Ralph Fisch	130 S. Orange Avenue, Suite 300	Orlando	FL	32801	GRAZING 5, WASTE LAND, & MKT.VAL.AG	PD
79	17-23-31-0000-00-015	Fisch Ralph Tr	130 S. Orange Ave	Orlando	FL	32801	GRAZING 5, WASTE LAND, & MKT.VAL.AG	PD

List of Property Owners, Land Use & Zoning for Properties Within a One-mile Radius of the Orange County Landfill Expansion- December 2002

Map ID#	Parcel ED	Property Owner	Owner Address				Land Use	Zoned
			Address	City	State	Zip		
80	17-23-31-0000-00-002	Crown Tree Assn, Inc.	15340 Jog Road Ste 200	Delray Beach	FL	33416	GRAZING 6, WASTE LAND, & MKT.VAL.AG	PD
81	18-23-31-0000-00-008	Tivoli Woods Association, Inc	4800 N. Federal Hwy STE 203B	Boca Raton	FL	33431	SINGLE FAMILY RESODENTIAL LOTS – SUBDIVISON- NOT SOLD	PD
82	18-23-31-0000-00-007	Tivoli Woods Association, Inc	4800 N. Federal H STE 203B	Boca Raton	FL	33431	SINGLE FAMILY RESODENTIAL LOTS – SUBDIVISON- NOT SOLD	PD
83	20-23-31-0000-00-003	Fisch Ralph Tr,	130 S. Orange Ave Suite 300	Orlando	FL	32801	GRAZING 5, WASTE LAND, &MKT.VAL.AG	PD
84	19-23-31-0000-00-003	Crown Tree Assn, Inc.	15340 Jog Road Ste 200	Delray Beach	FL	33416	GRAZING 6, WASTE LAND, & MKT.VAL.AG	A-2
85	19-23-31-0000-00-001	Brunetti John J TR	200 RT 9	Old Bride	NJ	8857	GRAZING 5, WASTE LAND, SUBMERGED, & MKT.VAL.AG	A-2
86	21-23-31-0000-00-001	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	COUNTY	A-2
87	22-23-31-0000-00-001	Orange County BCC	c/o Real Estate Mgmt Dept, PO Box 1393	Orlando	FL	32802	COUNTY	A-2
88	23-23-31-0000-00-001	City Of Orlando	400 S. Orange Ave	Orlando	FL	32801	MUNICIPAL	A-2
89	23-23-31-0000-00-003	City of Orlando	400 S. Orange Ave	Orlando	FL	32801	MUNICIPAL	A-2
90	23-23-31-0000-00-032	City of Orlando	400 S. Orange Ave	Orlando	FL	32801	MUNICIPAL	A-2
91	23-23-31-0000-00-002	City OF Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	VACANT- RESIDENTIAL	A-2
92	23-23-31-0000-00-004	City OF Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	MUNICIPAL	A-2
93	23-23-31-0000-00-007	City OF Orlando & Orlando Utilities Comm	P.O.Box 3193	Orlando	FL	32802	VACANT- RESIDENTIAL	A-2
94	23-23-31-0000-00-034	City of Orlando	400 S. Orange Ave	Orlando	FL	32801	MUNICIPAL	A-2

List of Property Owners, Land Use & Zoning for Properties Within a One-mile Radius of the Orange County Landfill Expansion- December 2002

Map ID#	Parcel ED	Property Owner	Owner Address				Land Use	Zoned
			Address	City	State	Zip		
95	23-23-31-0000-00-014	City of Orlando	400 S. Orange Ave	Orlando	FL	32801	MUNICIPAL	A-2
96	23-23-31-0000-00-005	Orange County BCC	P.O.Box 1393	Orlando	FL	32802	COUNTY	A-2
97	24-23-31-0000-00-001	City OF Orlando & Orlando Utilities Comm	P.O.Box3193	Orlando	FL	32802	NON AGRICULTURAL	A-2
98	24-23-31-0000-00-002	Florida Municipal Power Agency	7201 Lake Ellenor Dr. Suite 100	Orlando	FL	32809	NON AGRICULTURAL	A-2
99	25-23-31-0000-00-001	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	FL	33316	TIMBER 1, WASTE LAND, MKT.VAL.AG	PD
100	29-23-31-0000-00-002	Orlando/Orange County Expy Authority	525 S. Magnolia Ave	Orlando	FL	32801	STATE	A-2
101	32-23-31-0000-00-003	Orlando/Orange County Expy Authority	525 S. Magnolia Ave	Orlando	FL	32801	COUNTY	A-2
102	32-23-31-0000-00-004	Moss Park Properties LTD	445 W Oak St	Kissimmee	FL	34741	GRAZING 6 & MKT.VAL.AG	A-2
103	32-23-31-0000-00-001	Randell G T TR	P.O.Box1988	Orlando	FL	32802	GRAZING 5, WASTELAND, MKT.VAL.AG	A-2
104	32-23-31-0000-00-002	Brunetti John J TR	200 RT 9	Old Bridge	NJ	8857	GRAZING 5, WASTELAND, MKT.VAL.AG	A-2
105	32-23-31-0000-00-002	(not used)						
106	33-23-31-0000-00-001	Moss Park Properties LTD	445 W. Oak St	Kissimmee	FL	34741	GRAZING 4, WASTELAND, MKT.VAL.AG	A-2
107	36-23-31-0000-00-002	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	FL	33316	TIMBER 1, WASTE LAND, MKT.VAL.AG	PD
108	36-23-31-0000-00-003	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	FL	33316	TIMBER 1 & MKT.VAL.AG	PD
109	36-23-31-3849-10-000	Orange Count BCC	P.O.Box 1393	Orlando	FL	32802	COUNTY	PD
110	36-23-31-0000-00-005	Orange County BCC	P.O.Box 1393	Orlando	FL	32802	COUNTY	PD

List of Property Owners, Land Use & Zoning for Properties Within a One-mile Radius of the Orange County Landfill Expansion- December 2002

Map ID#	Parcel ED	Property Owner	Owner Address				Land Use	Zoned
			Address	City	State	Zip		
111	36-23-31-0000-00-004	Orlando/Orange County Expy Authority	525 S.Ma olia Ave	Orlando	FL	32801	COUNTY	PD
112	36-23-31-3849-00-060	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	FL	33316	TIMBER 1, WASTE LAND, MKT.VAL.AG	PD
113	36-23-31-3849-00-050	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	FL	33316	TIMBER 1 & MKT.VAL.AG	PD
114	36-23-31-3849-00-040	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	FL	33316	TIMBER 1 & MKT.VAL.AG	PD
115	36-23-31-3849-09-000	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	FL	33316	SUBMERGED	PD
116	36-23-31-3849-08-000	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	FL	33316	SUBMERGED	PD
117	36-23-31-3849-07-000	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	F1	33316	RIGHT OF WAY	*D
118	36-23-31-3849-00-030	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	FL	33316	TIMBER 1, WASTE LAND, MKT.VAL.AG	PD
119	36-23-31-3849-06-000	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	FL	33316	SUBMERGED	PD
120	36-23-31-3849-00-020	Orlando Business Park LLC	1525 S. Andrew Ave Ste 216	Ft. Lauderdale	FL	33316	TIMBER 1, WASTE LAND, MKT.VAL.AG	PD
121	17-23-31-2230-00-007	Waterside Homeowners Association	2180 W. State Road 434 Suite 5000	Longwood	FL	32779	Planned Development	PD
122	17-23-31-2230-00-370	Joanne Stewart	4712 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
123	17-23-31-2230-00-380	David & Angelica Beyer	4718 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
124	17-23-31-2230-00-390	Alice J. Cottom	4724 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
125	17-23-31-2230-00-400	Teresa J. Robertson	4730 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
126	17-23-31-2230-00-410	Luis Cruz, Jr.	4736 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
127	17-23-31-2230-00-420	Stacee Small	4742 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD

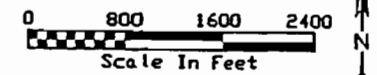
List of Property Owners, Land Use & Zoning for Properties Within a One-mile Radius of the Orange County Landfill Expansion- December 2002

Map ID#	Parcel ED	Property Owner	Owner Address				Land Use	Zoned
			Address	City	State	Zip		
128	17-23-31-2230-00-430	Bernardo A Arce-Maldonado & Damaris Colon	4748 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
129	17-23-31-2230-00-440	Marie Dolores Sabalza	4749 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
130	17-23-31-2230-00-450	Kalya M & Adrienne M. Martin	4743 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
131	17-23-31-2230-00-460	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
132	17-23-31-2232-00-010	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
133	17-23-31-2232-00-020	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
134	17-23-31-2232-00-030	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
135	17-23-31-2232-00-040	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
136	17-23-31-2232-00-050	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
137	17-23-31-2232-00-060	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
138	17-23-31-2232-00-070	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
139	17-23-31-2232-00-080	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
140	17-23-31-2232-00-090	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
141	17-23-31-2232-00-100	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
142	17-23-31-2232-00-110	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
143	17-23-31-2232-00-120	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
144	17-23-31-2232-00-670	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
145	17-23-31-2232-00-680	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
146	17-23-31-2232-00-700	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD

List of Property Owners, Land Use & Zoning for Properties Within a One-mile Radius of the Orange County Landfill Expansion- December 2002

Map ID#	Parcel ED	Property Owner	Owner Address				Land Use	Zoned
			Address	City	State	Zip		
147	17-23-31-2232-00-710	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
148	17-23-31-2232-00-720	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
149	17-23-31-2232-00-730	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
150	17-23-31-2232-00-740	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
151	17-23-31-2230-12-000	Waterside Homeowners Assoc.	2180 W State Road 434 Ste 5000	Long Wood	FL	32779	Planned Development	PD
152	17-23-31-2230-15-000	Elizabeth McLaulin, Lynda Roode, & Scott Rhode	4725 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
153	17-23-31-2230-00-490	Leah Tackett	4719 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
154	17-23-31-2230-00-470	Maritza Rivera	4731 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
155	17-23-31-2230-00-500	Wayne & Valenzuela Wendollyn Berzinskas	4713 Waterside Pointe Circle	Orlando	FL	32829	SINGLE FAMILY, RESIDENTIAL	PD
156	17-23-31-2230-00-510	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
157	17-23-31-2230-00-520	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
158	17-23-31-2230-00-530	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
159	17-23-31-2230-00-540	Evelyn Fragosa & Soel Meler Jr.	1513 S. Kirkman Road #315	Orlando	FL	32811	SINGLE FAMILY, RESIDENTIAL	PD
160	17-23-31-2230-00-550	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD
161	17-23-31-2230-00-560	D. R. Horton	1901 Ascension Blvd. Suite 100	Arlington	TX	76006	Planned Development	PD

G 31 E



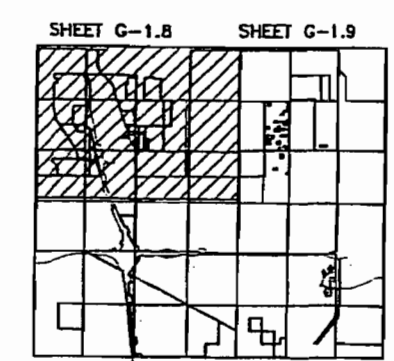
LEGEND:

- MATCH LINE
- PROPERTY LINE
- ONE MILE PERIMETER LINE
- PROPERTY LINE
- 12 SECTION LINE AND NUMBER
(All Sections are in TWP 23 S R9C 31 E)
- 50 PROPERTY OWNER NUMBER
- A-2 ZONING DESIGNATION CODE
- 9 WELL NUMBER

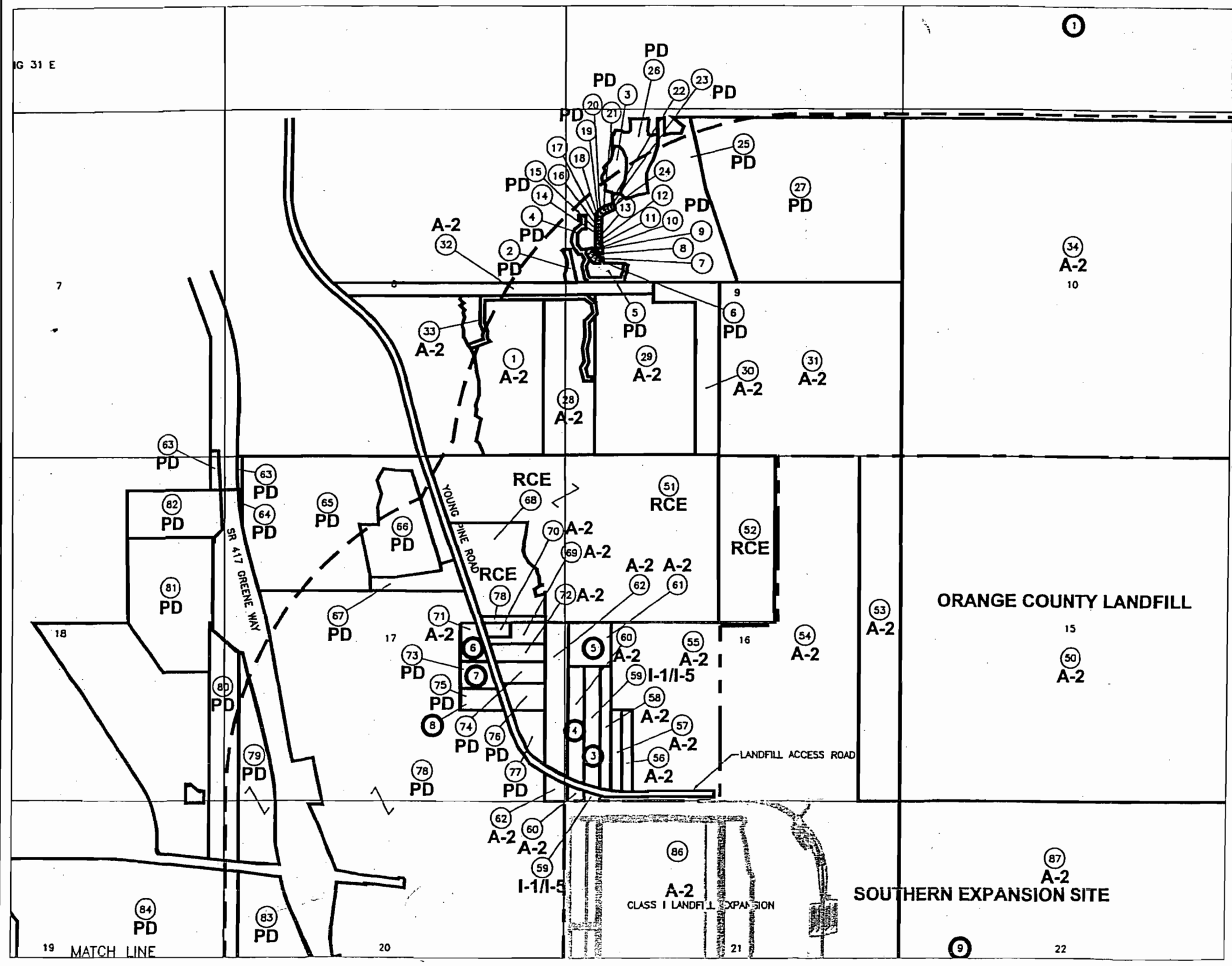
ZONING DESIGNATIONS:

- A-1 AGRICULTURAL
- A-2 AGRICULTURAL
- PD PLANNED DEVELOPMENT
- RCE RURAL COUNTY ESTATES
- I-1/I-5 INDUSTRIAL

ZONING:
 ORANGE CO. PROPERTY APPRAISERS DATA BASE
 SEPTEMBER 2002
 AERIAL IMAGE: SEPTEMBER 1999



KEY PLAN
 SCALE: (N.T.S.)



VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REUSE OF DOCUMENTS
 THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M-HILL/VCG JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M-HILL/VCG JOINT VENTURE.
 NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.

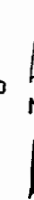
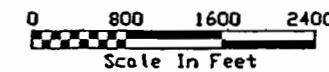
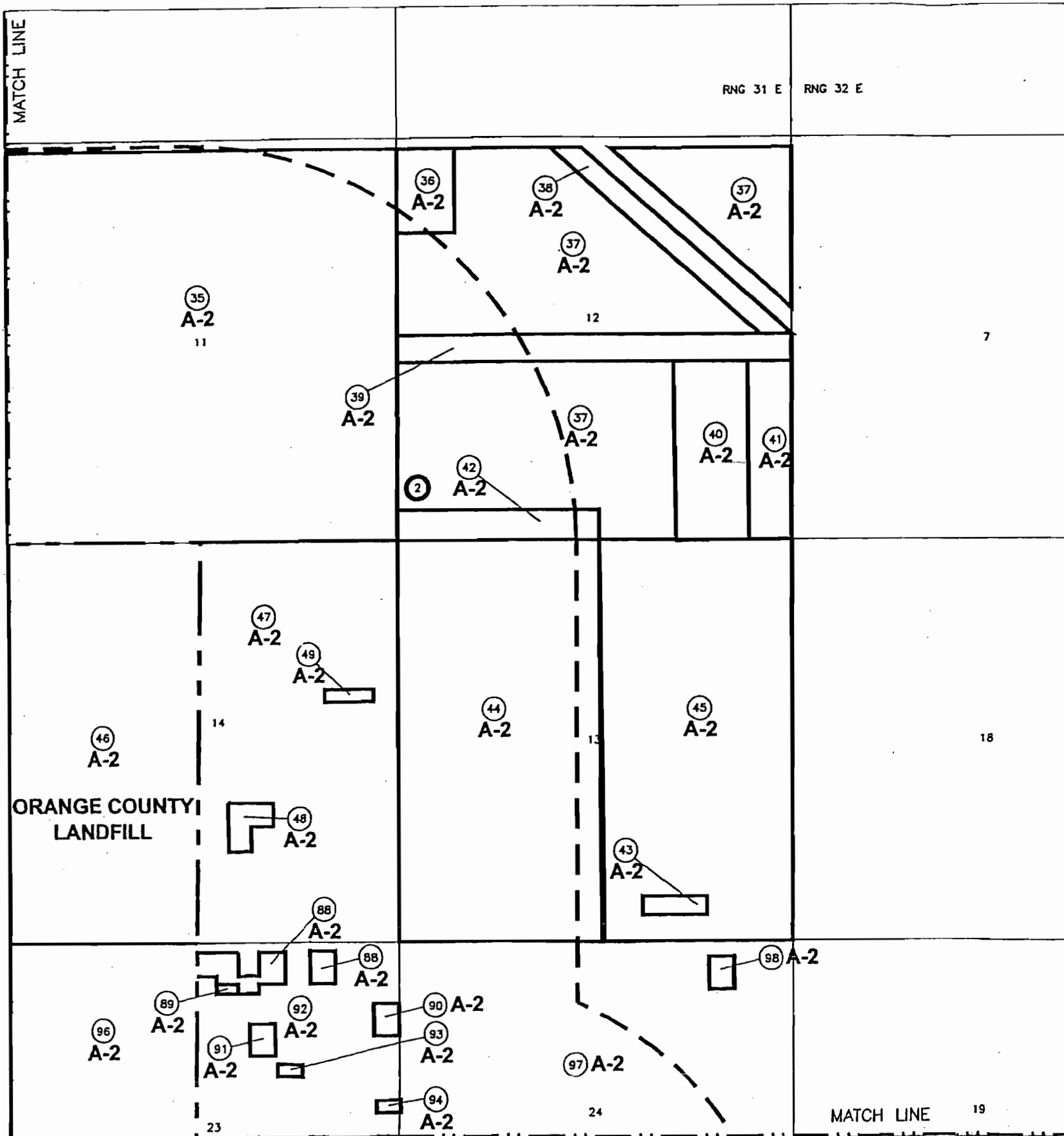
DESIGNED	HEW	DATE	09/02
DRAWN	HEW	DATE	09/02
CHECKED	JML	DATE	09/02
APPROVED	MSB	DATE	09/02
ML	BT	REVISIONS	DATE
			CADD FILE NAME
			G-18.dwg



ORANGE COUNTY, FLORIDA - OPERATION PERMIT RENEWAL

NORTHWEST QUADRANT
 AERIAL VICINITY MAP
 ONE MILE PERIMETER

SHEET - OF -
 DWG NO. G-1.8
 SCALE: 1:800
 PROJ. NO. 001045.11



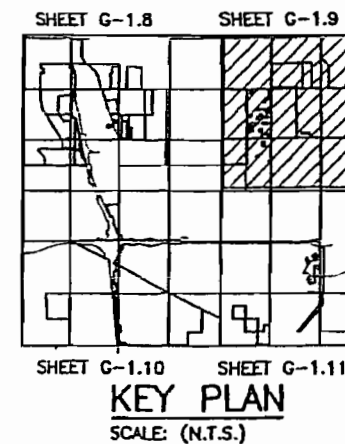
LEGEND:

- MATCH LINE
- PROPERTY LINE
- ONE MILE PERIMETER LINE
- PROPERTY LINE
- 12 SECTION LINE AND NUMBER
(All Sections are in TWP 23 S RANG 31 E)
- 50 PROPERTY OWNER NUMBER
- A-2 ZONING DESIGNATION CODE
- 9 WELL NUMBER

ZONING DESIGNATIONS:

- A-1 AGRICULTURAL
- A-2 AGRICULTURAL
- PD PLANNED DEVELOPMENT
- RCE RURAL COUNTY ESTATES
- I-1/I-5 INDUSTRIAL

ZONING:
 ORANGE CO. PROPERTY APPRAISERS DATA BASE
 SEPTEMBER 2002
 AERIAL IMAGE: SEPTEMBER 1999



VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REUSE OF DOCUMENTS
 THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M-HILL/WCG JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M-HILL/WCG JOINT VENTURE.
 NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.

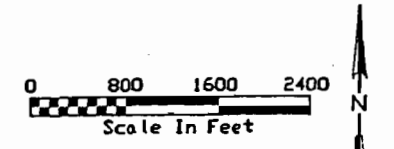
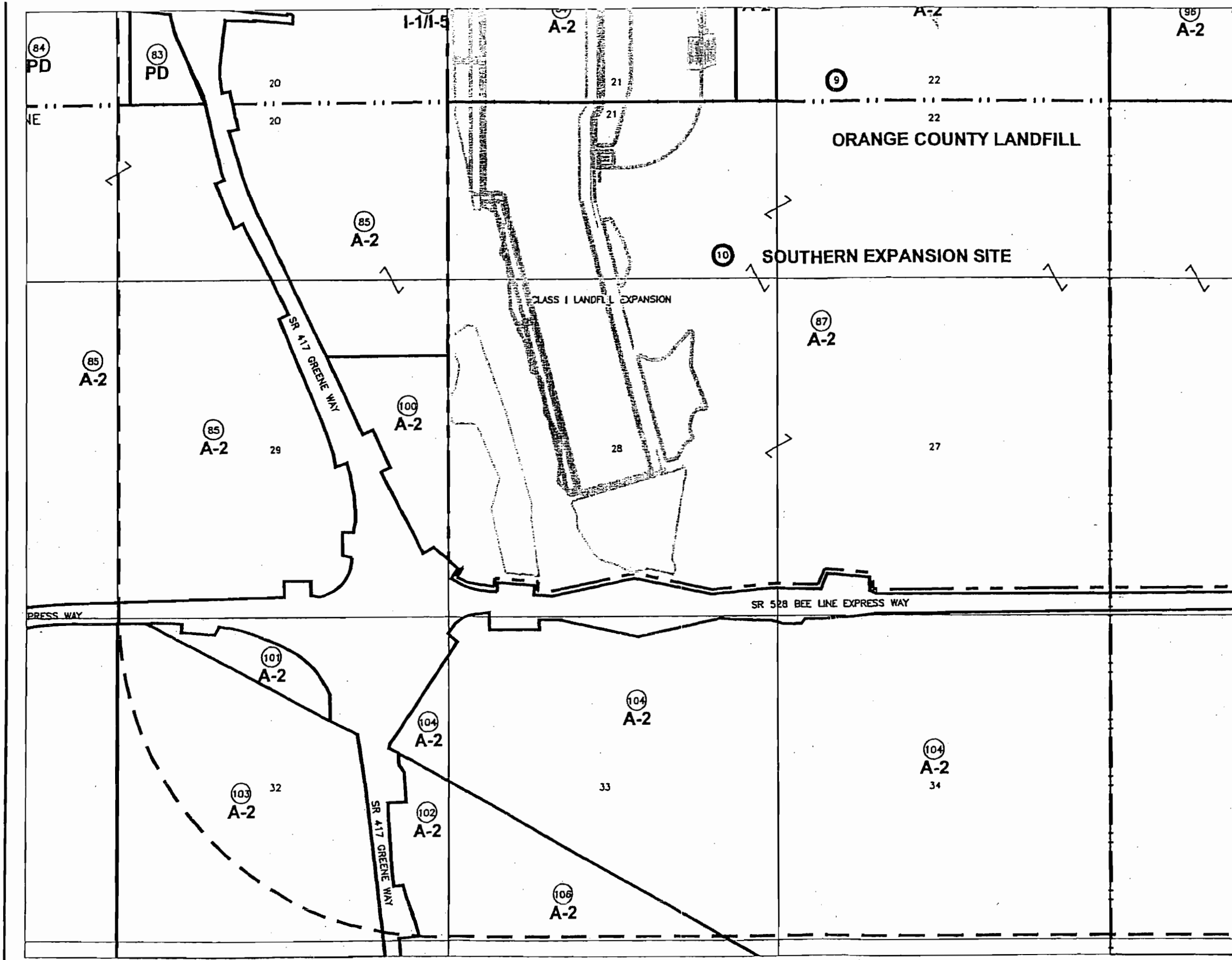
NO.	BY	REVISIONS	DATE	CADD FILE NAME
				g-1.9.dwg



ORANGE COUNTY, FLORIDA—OPERATION PERMIT RENEWAL

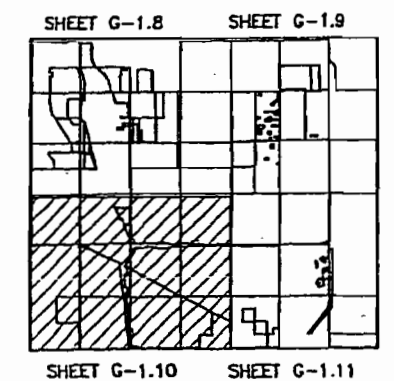
NORTHEAST QUADRANT
 AERIAL VICINITY MAP
 ONE MILE PERIMETER

SHEET - OF -
 DWG NO. G-1.9
 SCALE: 1:800
 PROJ. NO. 001045.11



- LEGEND:**
- MATCH LINE
 - - - - - PROPERTY LINE
 - - - - - ONE MILE PERIMETER LINE
 - PROPERTY LINE
 - 12 SECTION LINE AND NUMBER
(All Sections are in T19P 23 S R14C 31 E)
 - 50 PROPERTY OWNER NUMBER
 - A-2 ZONING DESIGNATION CODE
 - 9 WELL NUMBER
- ZONING DESIGNATIONS:**
- A-1 AGRICULTURAL
 - A-2 AGRICULTURAL
 - PD PLANNED DEVELOPMENT
 - RCE RURAL COUNTY ESTATES
 - I-1/I-5 INDUSTRIAL

ZONING:
 ORANGE CO. PROPERTY APPRAISERS DATA BASE
 SEPTEMBER 2002
 AERIAL IMAGE: SEPTEMBER 1999



KEY PLAN
 SCALE: (N.T.S.)

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REUSE OF DOCUMENTS
 THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M-HILL/VCGC JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M-HILL/VCGC JOINT VENTURE.

NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.

NO.	BY	REVISIONS	DATE	CADD FILE NAME

DESIGNED	MEM	DATE	09/02
DRAWN	MEM	DATE	09/02
CHECKED	JML	DATE	09/02
APPROVED	MSB	DATE	09/02



ORANGE COUNTY, FLORIDA—OPERATION PERMIT RENEWAL

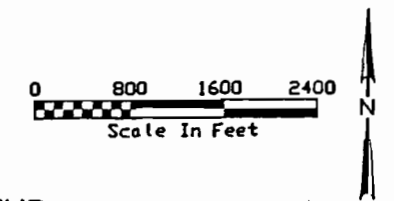
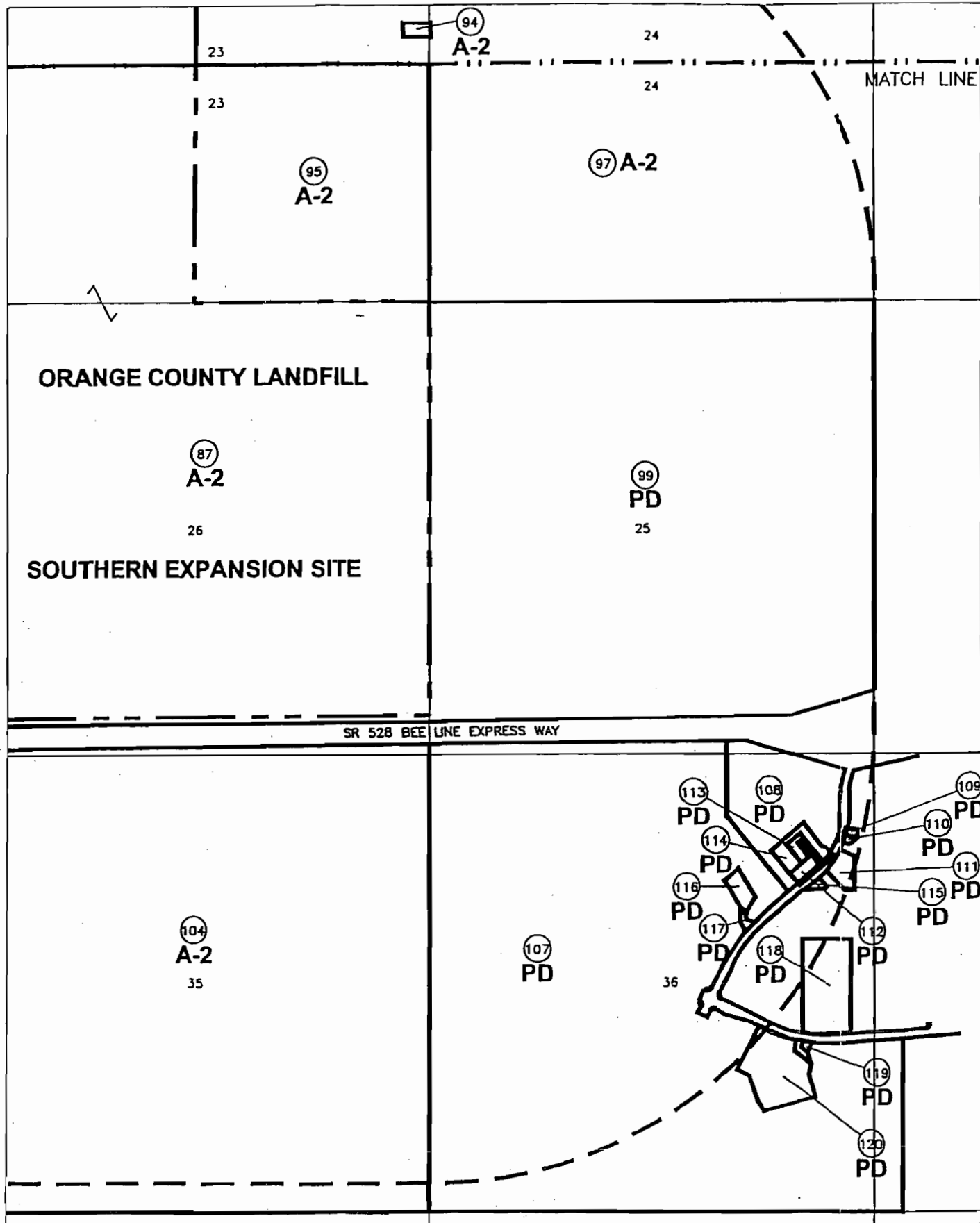
SHEET — OF —

DWG. NO. G-1.10

SCALE: 1:800

PROJ. NO. 001045.11

RNG 31 E RNG 32 E



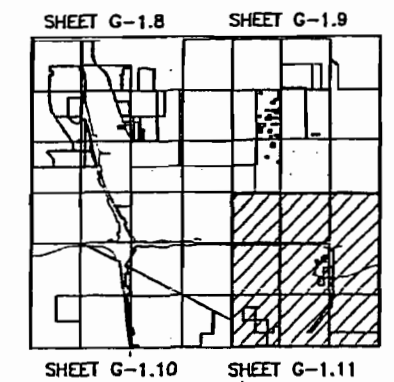
LEGEND:

- MATCH LINE
- - - - - PROPERTY LINE
- - - - - ONE MILE PERIMETER LINE
- _____ PROPERTY LINE
- _____ 12 SECTION LINE AND NUMBER
(All Sections Are In TWP 23 S RNG 31 E)
- ⊙ 50 PROPERTY OWNER NUMBER
- A-2 ZONING DESIGNATION CODE
- ⊙ 9 WELL NUMBER

ZONING DESIGNATIONS:

- A-1 AGRICULTURAL
- A-2 AGRICULTURAL
- PD PLANNED DEVELOPMENT
- RCE RURAL COUNTY ESTATES
- I-1/I-5 INDUSTRIAL

ZONING:
 ORANGE CO. PROPERTY APPRAISERS DATA BASE
 SEPTEMBER 2002
 AERIAL IMAGE: SEPTEMBER 1999



KEY PLAN
 SCALE: (N.T.S.)

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REUSE OF DOCUMENTS
 THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M/HILL/WEG JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M/HILL/WEG JOINT VENTURE.
 NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.

NO.	BY	REVISIONS	DATE	CADD FILE NAME

DESIGNED	MEM	DATE	09/02
DRAWN	MEM	DATE	09/02
CHECKED	JPL	DATE	09/02
APPROVED	KSB	DATE	09/02



ORANGE COUNTY, FLORIDA—OPERATION PERMIT RENEWAL	SHEET — OF —
SOUTHEAST QUADRANT AERIAL VICINITY MAP ONE MILE PERIMETER	DWG. NO. G-1.11
	SCALE: 1:800
	PROJ. NO. 001045.11

September 23, 2002

Mr. Bud Jackman
FAA/ADO
5950 Hazeltine National Drive, Suite 400
Orlando, Florida 32822

Subject: Notice of Landfill Expansion - Orange County Landfill

Dear Mr. Jackman:

The CH2M HILL/WCG Joint Venture is assisting Orange County Utilities in completing an application for permit renewal for continuous operation of its Class I and Class III landfill disposal areas. As part of the Florida Department of Environmental Protection (FDEP) permit application, a vertical expansion of 20 feet is proposed for Class I, Cell 7B/8.

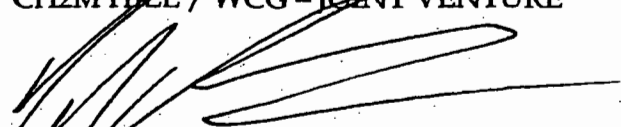
The landfill is a continuous and ongoing project involving the construction and sequential closing of cells as they are filled. Cell 7B/8 had an original ground elevation of ±95 feet mean sea level (msl). The landfill was permitted to have a maximum height of ±129 feet above ground surface, making the maximum permitted elevation ±224 feet msl. With the proposed 20-foot vertical expansion, the maximum elevation will reach ±244 feet msl. No other changes are proposed.

It is our understanding that the FAA requires the notification of construction projects exceeding 200 feet high. Also, per FDEP rules, the FAA shall be notified of expansions occurring within five miles of any licensed and operating airport runway used by a turbine or piston engine aircraft. For this reason, we have attached a completed FAA Form 7460-1, Notice of Proposed Construction or Alteration, for the proposed expansion. Also enclosed is a copy of the previous notices and FAA response.

If there are any questions regarding this notice, please contact me at (352) 335-7991.

Sincerely,

CH2M HILL / WCG - JOINT VENTURE



R. J. Bruner III, P.E.
Project Manager

C: Jim Flynt/OCU
Ron Beladi/WCG

Failure To Provide All Requested Information May Delay Processing of Your Notice

FOR FAA USE ONLY
Aeronautical Study Number

Notice of Proposed Construction or Alteration

Department of Transportation
Federal Aviation Administration

Proposer (person, company, etc. proposing this action):
Orange County Utilities
Michael L. Chandler, Director
109 E. Church Street, Suite 400

9. Latitude: 28 ° 27 ' 30 . 00 "
10. Longitude: 81 ° 13 ' 15 . 00 "

City: Orlando State: FL Zip: 32801
Phone: (407) 836-7231 Fax: (407) 836-7299

11. Datum: NAD 83 NAD 27 Other
12. Nearest City: Orlando State: FL

Proposer's Representative (if other than #1):
H2M Hill / G & R Joint Venture
Stanley J. Keely, P.E.
630 North Wymore Road, Suite 370

13. Nearest Public-use (not private-use) or Military Airport or Heliport:
Orlando International Airport
14. Distance from #13. to Structure: 4.9 miles

City: Maitland State: FL Zip: 32751
Phone: (407) 647-6623 Fax: (407) 539-0575

15. Direction from #13. to Structure: NE
16. Site Elevation (AMSL): 86 ft.

Type of: New Construction Alteration Existing
Duration: Permanent Temporary (___ months, ___ days)

17. Total Structure Height (AGL): 158 ft.
18. Overall Height (#16. + #17.) (AMSL): 244 ft.

Schedule: Beginning 1992 End 2030

19. Previous FAA Aeronautical Study Number (if applicable):
91-ASO-2197 - OE

Antenna Tower Crane Building Power Line
Landfill Water Tank Other

20. Description of Location: (Attach a USGS 7.5 minute
Quadrangle Map with the precise site marked and any certified survey.)
County landfill property is located north of Beeline Expressway, NE of Orlando International Airport, east of Orlando, at the terminus of Young Pine Road in unincorporated Orange County.

Signaling/Painting and/or Lighting Preferred: N/A
Red Lights and Paint Dual - Red and Medium Intensity White
White - Medium Intensity Dual - Red and High Intensity White
White - High Intensity Other

Antenna Structure Registration Number (if applicable):

Complete Description of Proposal:
The continued construction of MSW landfills in approximately 68-acre segments (next cell designated "9" is 68 acres) with a final design height increase from 150 feet AGL to 158 feet AGL. The landfill height of 150 feet AGL was approved by FAA in 1991. Sequential closure of landfill areas will continue until final closure in 2030.

Frequency/Power (kW)	

required by 14 Code of Federal Regulations, part 77 pursuant to 49 U.S.C., Section 44718. Persons who knowingly and willingly violate the notice provisions of part 77 are subject to a civil penalty of \$1,000 per day until the notice is received, pursuant to 49 U.S.C., Section 48301 (a).

I hereby certify that all of the above statements made by me are true, complete, and correct to the best of my knowledge. In addition, I agree to mark and light the structure in accordance with established marking & lighting standards as necessary.

Typed or Printed Name and Title of Person Filing Notice
Stanley J. Keely, P.E.
Environmental Division Director

Signature

DO NOT REMOVE CARBONS

Form Approved OMB No. 2120-0047

NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION

Aeronautical Study Number

Department of Transportation
Federal Aviation Administration

1. Nature of Proposal

A. Type <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Alteration	B. Class <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary (Duration _____ months)	C. Work Schedule Dates
		Beginning <u>7/1992</u> End <u>1/2012</u>

2. Complete Description of Structure

A. Include effective radiated power and assigned frequency of all existing, proposed or modified AM, FM, or TV broadcast stations utilizing this structure.

B. Include size and configuration of power transmission lines and their supporting towers in the vicinity of FAA facilities and public airports.

C. Include information showing site orientation, dimensions, and construction materials of the proposed structure.

Construction in 50 acres segments of above ground class I landfill cells. New cells show in yellow with X-hatching. Cells constructed as needed over 20 years. Cells will receive solid waste, covered with soil daily, and at such time a height of approximately 150' above grade is reached, it will be permanently capped by soil and impermeable liner.

(If more space is required, continue on a separate sheet.)

3A. Name and address of individual, company, corporation, etc. proposing the construction or alteration. (Number, Street, City, State and Zip Code)

407, 836-7200
area code Telephone Number

Orange County Division of Public Utilities
109 E. Church Street, Suite 400
Orlando, FL 32801
ATTN: DIRECTOR

Name, address and telephone number of proponent's representative if different than 3 above.

4. Location of Structure

A. Coordinates (nearest second) 27 30 13 15	B. Nearest City or Town, and State Orlando, Florida	C. Name of nearest airport, heliport, flightpark, or seaplane base Orlando International
(1) Distance to 4B 4.5 Miles	(1) Distance from structure to nearest point of nearest runway (3rd runway) 4.9 miles	(2) Direction from structure to airport Southwest

5. Height and Elevation (Complete to the nearest foot)

A. Elevation of site above mean sea level 86	B. Height of Structure including all appurtenances and lighting (if any) above ground, or water if so situated 150	C. Overall height above mean sea level (A + B) 236
---	---	---

Description of location of site with respect to highways, streets, airports, prominent terrain features, existing structures, etc. Attach a U.S. Geological Survey quadrangle map or equivalent showing the relationship of construction site to nearest airport(s). (If more space is required, continue on a separate sheet of paper and attach to this notice.)
County landfill property north of Beeline Expressway, Northwest of Orlando International Airport and East of the City of Orlando. Property located in unincorporated east Orange County.

Notice is required by Part 77 of the Federal Aviation Regulations (14 C.F.R. Part 77) pursuant to Section 1101 of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1101). Persons who knowingly and willingly violate the Notice requirements of Part 77 are subject to a fine (criminal penalty) of not more than \$500 for the first offense and not more than \$2,000 for subsequent offenses, pursuant to Section 902(a) of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1472(a)).

HEREBY CERTIFY that all of the above statements made by me are true, complete, and correct to the best of my knowledge. In addition, I agree to obstruction mark and/or light the structure in accordance with established marking & lighting standards if necessary.

Typed Name/Title of Person Filing Notice
Stanley J. Keely, P.E., Deputy Director

Signature

FAX USE ONLY

Supplemental Notice of Proposed Construction or Alteration Form 460-2 is required any time the project is abandoned or construction is suspended for more than 180 days.

Do not duplicate this form.

Send completed form to: Aeronautical Studies Division, Federal Aviation Administration, 1418 Capital Circle, SW, Tallahassee, FL 32310.

This form is required for all construction or alteration of structures, towers, or antennas located within the Class I, II, or III airspace.

NOTE: For any extension of the expiration date of this determination, you must submit a request to the FAA before the expiration date.

The authority of the FAA is the authority of the FCC. Any appeal of this determination will be sent to the FCC.

Remarks:

Signature: _____ Date: _____



U.S. Department
of Transportation
Federal Aviation
Administration

ORLANDO AIRPORTS DISTRICT OFFICE
5950 Hazeltine National Dr., Suite 400
Orlando, Florida 32822-5024
Phone: (407) 812-6331 Fax: (407) 812-6978

October 4, 2002

Mr. R. J. Bruner III
CH2M Hill/WCG - Joint Venture
630 N. Wymore Rd., Suite 370
Maitland, FL 32751

Dear Mr. Bruner:

RE: Orange County Landfill Expansion

With regard to your letter dated September 23, 2002, and attached FAA Form 7460-1, concerning a 20' vertical expansion to Cell 7B/8, we have no objection to said 20' vertical expansion.

We are concerned however with the further horizontal expansion of the landfill. The following are excerpts from FAA Advisory Circular 150/5200-33, "Hazardous Wildlife Attractants on or Near Airports":

"Section 1-2. - FAA recommends against land use practices, within the siting criteria stated in Section 1-3 (5 miles from approach or departure airspace), that attract or sustain populations of hazardous wildlife within the vicinity of airports or cause movement of hazardous wildlife onto, into, or across the approach or departure airspace, aircraft movement area, loading ramps, or aircraft parking area of airports."

"Section 2-2. - Putrescible-waste disposal operations are known to attract large numbers of wildlife that are hazardous to aircraft. Because of this, these operations, when located within the separations identified in the siting criteria in 1-3 (5 miles from approach or departure airspace) are considered incompatible with safe airport operations."

Please be aware that 28% of the reported damaging strikes by wildlife groups to civilian aircraft during a study period of 1993 - 1995 were attributed to gulls, which are highly attracted to landfill areas.

We appreciate any and all efforts expended to minimize the attraction of wildlife in the vicinity of the airport.

Sincerely,

Bud Jackman
Program Manager

cc:
Art Devine, GOAA Planning
Jim Wikstrom, FDOT/5

Post-it® Fax Note	7671	Date	# of pages
To	B. Bruner	From	Paul
Co./Dept.		Co.	SCADA
Phone #		Phone #	
Fax #	352 271 4825	Fax #	

Best Available Copy



U.S. Department
of Transportation

Federal Aviation
Administration

Southern Region

P. O. Box 20636
Atlanta, Georgia 30320

ACKNOWLEDGEMENT OF NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION

CITY	STATE	LATITUDE/LONGITUDE	MSL	AGL	AMS
ORLANDO	FL	28-27-05.00 081-13-40.00	86	150	23

ORANGE COUNTY DIV OF PUBLIC UTIL.
DIRECTOR
109 E. CHURCH STREET, SUITE 400
ORLANDO, FL 32801

AERONAUTICAL STUDY
No: 91-ASO-2197-0E

Type Structure: LANDFILL

The Federal Aviation Administration hereby acknowledges receipt of notice dated 11/07/91 concerning the proposed construction or alteration contained herein.

The proposed structure does not require notice to the FAA. ✓

Obstruction marking and lighting are not necessary. ✓

If the structure is subject to the licensing authority of the FCC, a copy of this acknowledgement will be sent to that Agency.

SIGNED Armando Castro
Armando Castro

Specialist, Systems Management Branch
(404) 763-7646.

ISSUED IN: East Point, Georgia

01/07/92

RECEIVED

JAN 13 1991

ORANGE COUNTY
PUBLIC UTILITIES DIVISION

ORANGE COUNTY LANDFILL
CELL 9 LANDFILL EXPANSION

FEDERAL AVIATION ADMINISTRATION
NOTICE of PROPOSED
CONSTRUCTION
or
ALTERATION

September 11, 2000

CH₂M Hill/G&R JV

Best Available Copy

September 11, 2000

Mr. Wade Carpenter, Acting Manager Air Space Branch
Southern Region
Federal Aviation Administration
1701 Columbia Avenue
College Park, GA 30337

**RE: Notice of Landfill Expansion
Orange County Landfill
Orange County, Florida**

Dear Mr. Carpenter:

Attached is a modification of the FAA notice submitted to the Administration in 1991 (notice and approval attached). This proposal is to modify the existing landfill to increase the landfill expansion elevation by eight feet to 158 feet above ground level.

The existing landfill is a continuing ongoing project involving the series construction of 50+ -acre landfill cells while sequentially closing segments as they are filled. The project was initiated in 1992 and continues to this day. In 1991, a FAA notice was submitted and approved based on a projected final closure elevation of 236 feet, NGVD, but the final design for the newest cells has been changed to fill elevation to 244 feet, NGVD. No other changes are proposed. We also understand that FAA requires notification of construction projects exceeding 200 feet high or encroaches within the 100:1 slope within 20,000 feet of a runway. This landfill expansion exceeds neither criterion. The design landfill height is 158 feet and the proposed slope is approximately 160:1.

Although the notice does not appear to be required by FAA, the State of Florida requires FAA be notified of the proposed lateral expansion of the existing Orange County Landfill. Per Florida Department of Environmental Protection rules, the FAA and FDOT shall be notified of lateral landfill expansions within five miles of any licensed and operating airport runway used by a turbine or piston engine aircraft.

Enclosed for your review is the FAA Notice form indicating alteration, plus the prior notice and FAA response.

If there are any questions regarding this notice, please call myself at (407) 647-6623 or David Pelham at (813) 979-7144.

Sincerely,

CH2M/ G & R Joint Venture

Stanley J. Keely, P.E.
Environmental Division Director

Enclosures

Cc: FDOT
Michael L. Chandler

**NOV 14 1991****GREATER ORLANDO AVIATION AUTHORITY**

November 13, 1991

Orlando International Airport
One Airport Boulevard
Orlando, Florida 32827-4399
(407) 825-2001

Mr. Carlos Maeda, P.E.
Plans & Programs Metro Area Manager
Federal Aviation Administration
Orlando Airports District Office
9677 Tradeport Drive, Suite 130
Orlando, Florida 32827

Re: 7460 for Orange County Landfill Expansion

Dear Mr. Maeda:

Attached for FAA review and comment is a completed 7460 Form and a map (Exhibit "A") identifying the proposed landfill expansion for Orange County.

The Authority's Staff has reviewed the proposed expansion in accordance with FAA Order 5200.5. As indicated by the attached map (Exhibit "B") there will be no effect within the 10,000 foot critical limit. The proposed expansion will, however, fall just within the five mile distance from the third and proposed fourth runways.

Please note that northern departures for Orlando International Airport are utilized approximately 10 percent out of the year and 20 percent of that time would account for easterly departures. Given the location of the existing landfill and proposed expansion, it is our opinion that aircraft departing on a 060 degree heading would be at an altitude of approximately 3000 feet along the northern boundaries of the site. Most bird strikes occur below 3000 feet, with a vast majority occurring from 500 feet to the ground. Therefore, our conclusion indicates that the proposed expansion would not contribute any new impacts or bird related problems. It should also be noted that there have been no reported problems involving birds within the existing landfill.

If you should have any questions or comments, please contact this office accordingly.

Sincerely,

Steve Gardner, P.E.
Director of Engineering

1w
Attachment

cc: Stanley J. Keely, P.E. - Orange County
Alan B. Ispass, P.E. - Orange County

Appendix D
Gas Management System Design
Data / NSPS Permit

Segment 1

Landfill Gas Pipe Sizing Program Version 1.0

Pipe Description

General Design Assumptions:

- 1. Design flow from each well head is 47 cfm
- 2. Length of Pipe 100 feet
- 3. Absolute roughness for HDPE 0.00007 feet
- 4. Number of wells contributing flow Varies
- 5. Vacuum available @ downstream point 10 in w.c.
- 6. SDR 11 HDPE
- 7. Absolute Roughness 0.00007 feet

General LFG Assumptions:

- 1. Absolute viscosity of LFG 8.14E-06 lbm/foot-second
- 2. Specific Gravity of LFG=Air 1
- 3. MW of LFG =Air 28.9625
- 4. Vapor Density 0.065 lb/ft³

Project Specific Assumptions:

- 1. Maximum LFG Design Flow = MMcfd
- 0 cfm
- 2. Design Vacuum @ plant inlet 20 in w.c. Normal operating range is 18-25 inches of vacuum

Calculations for Phase III Gas System Design- Non-Routing Chart for SDR 11 Pipe
 Maximum pipe velocity = 20 feet/ second

Connected Wells	SDR	Pipe Dia. Nominal	Pipe ID	Flow cfm	Velocity ft/sec	Reynolds Number	Darcy Fric. Fact	Delta P Dar-Wels	E/d	Mueller
1	17	3	2.864	47	17.52	33386.75	0.0158	0.4	0.000293	0.62
1	11	4	3.682	47	10.60	25969.49	0.0149	0.1	0.000228	0.19
2 to 4	11	6	5.421	188	19.56	70554.99	0.0135	0.2	0.000155	0.34
5 to 6	11	8	7.057	282	17.31	81297.7	0.0128	0.1	0.000119	0.20
7 to 10	11	10	8.796	470	18.57	108708.1	0.0125	0.1	0.000095	0.17
11 to 14	11	12	10.432	658	18.49	128323.9	0.0124	0.1	0.000081	0.13
15-18	11	14	11.454	846	19.72	150266.6	0.0128	0.1	0.000073	0.13
19-23	11	16	13.09	1081	19.29	168010.1	0.0129	0.1	0.000064	0.11
24-30	11	18	14.728	1410	19.87	194771.1	0.0129	0.1	0.000057	0.10
30-37	11	20	16.364	1739	19.85	216201.8	0.0130	0.1	0.000051	0.09
38-53	11	24	19.636	2491	19.75	258089.3	0.0130	0.1	0.000043	0.07
54-72	11	28	22.91	3384	19.71	300507	0.0131	0.1	0.000037	0.06

Landfill Gas Pipe Sizing Program Version 1.0

Pipe Description

General Design Assumptions:

- | | |
|--|--------------|
| 1. Design flow from each well head is | 47 cfm |
| 2. Length of Pipe | 100 feet |
| 3. Absolute roughness for HDPE | 0.00007 feet |
| 4. Number of wells contributing flow | 3 |
| 5. Vacuum available @ downstream point | in w.c. |
| 6. SDR 17 HDPE | |
| 7. Absolute Roughness | 0.00007 feet |

General LFG Assumptions:

- | | |
|--------------------------------|--------------------------|
| 1. Absolute viscosity of LFG | 8.14E-06 lbm/foot-second |
| 2. Specific Gravity of LFG=Air | 1 |
| 3. MW of LFG =Air | 28.9625 |
| 4. Vapor Density | 0.065 lb/ft ³ |

Project Specific Assumptions:

- | | |
|--------------------------------|------------|
| 1. Maximum LFG Design Flow = | MMcfd |
| | 0 cfm |
| 2. Design Vacuum @ plant inlet | 40 in w.c. |

Calculations for Phase III Gas System Design- Non-Routing Chart for SDR 11 Pipe

Maximum Pipe Velocity= 25 feet/second

Connected Wells	SDR	Pipe Dia. Nominal	Pipe ID	Flow cfm	Velocity ft/sec	Reynolds Number	Darcy Fric. Fact	Delta P Dar-Weis	E/d	Mueller
1	17	3	2.864	47	17.52	33386.75	0.0158	0.4	0.000293	0.62
2	11	4	3.682	94	21.20	51938.97	0.0149	0.4	0.000228	0.63
3 to 5	11	6	5.421	235	24.45	88193.74	0.0135	0.3	0.000155	0.50
6 to 8	11	8	7.057	376	23.08	108396.9	0.0128	0.2	0.000119	0.32
9 to 13	11	10	8.796	611	24.14	141320.5	0.0125	0.2	0.000095	0.26
14 to 19	11	12	10.432	893	25.09	174153.9	0.0124	0.2	0.000081	0.23
20-22	11	14	11.454	1034	24.10	183659.2	0.0128	0.2	0.000073	0.19
23-30	11	16	13.09	1363	24.32	211838.8	0.0129	0.1	0.000064	0.16
31-36	11	18	14.728	1410	19.87	194771.1	0.0129	0.1	0.000057	0.10
30-37	11	20	16.364	1739	19.85	216201.8	0.0130	0.1	0.000051	0.09
38-53	11	24	19.636	2491	19.75	258089.3	0.0130	0.1	0.000043	0.07
54-72	11	28	22.91	3384	19.71	300507	0.0131	0.1	0.000037	0.06



Jeb Bush
Governor

Department of Environmental Protection

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

David B. Struhs
Secretary

NOTICE OF FINAL TITLE V AIR OPERATION PERMIT REVISION

E-CORRESPONDENCE

jim.becker@ocfl.net

In the Matter of an
Application for Permit Revision:

James W. Becker, Division Manager
Orange County Solid Waste Division
Orange County Board of County Commissioners
5901 Young Pine Road
Orlando, Florida 32829

FINAL Permit Project No.: 0950113-003-AV
Orange County Solid Waste Management Facility
Orange County

Enclosed is the FINAL Permit, No. 0950113-003-AV for the revision of the Title V Air Operation Permit, No. 0950113-002-AV. The purpose of the revision was to incorporate the requirements of 40 CFR Part 63, Subpart AAAAA. The facility is located in Orange County. This permit revision is issued pursuant to Chapter 403, Florida Statutes (F.S.). There were no comments received from Region 4, U.S. EPA, regarding the PROPOSED Permit.

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; 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 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

Executed in Orlando, Florida.

Sincerely,

L.T. Kozloy, P.E.
Program Administrator
Air Resources Management

2-6-04

Date

ab
LTK/jc jf1

"More Protection, Less Process"

Printed on recycled paper.

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL TITLE V AIR OPERATION PERMIT (including the FINAL Permit) was sent before the close of business on 2/9/04 to the person(s) listed or as otherwise noted:

James W. Becker, Division Manager
Orange County Solid Waste Division
5901 Young Pine Road
Orlando, Florida 32829

The undersigned duly designated deputy agency clerk hereby certifies that a copy of this NOTICE OF FINAL TITLE V AIR OPERATION PERMIT was sent by U.S. Mail before the close of business on 2/9/04 to the person(s) listed or as otherwise noted:

David M. Pelham, P.E., (dpelham@wq1.com)
Marie Driscoll, OCEPD (marie.driscoll@ocfl.net)
Alvero Linero, P.E., BAR (Linero_A@dep.state.fl.us)
Mr. Gregg Worley - USEPA Region 4

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED,
on this date, pursuant to §120.52(7), Florida
Statutes, with the designated Department Clerk,
receipt of which is hereby acknowledged.

Asia Jones 2/6/04
(Clerk) (Date)

FINAL Determination

Title V Air Operation Permit Revision

FINAL Permit No.: 0950113-003-AV

Revision to Title V Air Operation Permit No.: 0950113-002-AV

Orange County Solid Waste Division

Orange County Solid Waste Management Facility

Page 1 of 1

I. Comment(s).

No comments were received from the USEPA during their 45 day review period of the PROPOSED Permit.

II. Conclusion.

In conclusion, the permitting authority hereby issues the FINAL Permit.

Orange County Board of County Commissioners
Orange County Solid Waste Management Facility
Facility ID No.: 0950113
Orange County

Title V Air Operation Permit Revision

FINAL Permit No.: 0950113-003-AV
Revision to Title V Air Operation Permit No.: 0950113-002-AV

Permitting Authority:

DEP Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

Telephone: 407/894-7555
Fax: 407/897-5963

Compliance Authority:

DEP Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

Telephone: 407/894-7555
Fax: 407/897-5963

Title V Air Operation Permit Revision

FINAL Permit No.: 0950113-003-AV

Revision to Title V Air Operation Permit No.: 0950113-002-AV

Table of Contents

<u>Section</u>	<u>Page Number</u>
Placard Page	1
I Facility Information	2
A. Facility Description.	
B. Summary of Emissions Unit ID No(s). and Brief Description(s).	
C. Relevant Documents.	
II. Facility-wide Conditions	3 - 4
III. Emissions Unit(s) and Conditions	
A. Emissions Unit 001	
Municipal Solid Waste Landfill with Candlestick Flare	5



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

Permittee:
Orange County
Board of County Commissioners
5901 Young Pine Road
Orlando, Florida 32829

FINAL Permit No.: 0950113-003-AV
Facility ID No.: 0950113
SIC No(s): 24, 2421
Project: Title V Air Operation Permit Revision

This permit revision is being issued for the purpose of incorporating the requirements of 40 CFR, Part 63, Subpart AAAA. This facility is located at 5901 Young Pine Road; UTM Coordinates: Zone 17, 481.20 km East and 3150.30 km North; and, Latitude: 28° 28' 52" North and Longitude: 81° 11' 30" West.

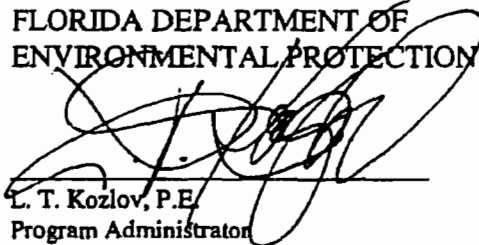
This Title V Air Operation Permit Revision is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210 and 62-213. The above named permittee is hereby authorized to operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the permitting authority, in accordance with the terms and conditions of this permit.

Referenced attachments made a part of this permit:

Appendix B, 40 CFR 60, Subpart WWW and 40 CFR 60, Subpart AAAA, Combined General Provisions
Appendix C, 40 CFR 60, Subpart WWW and 40 CFR 63, Subpart AAAA, Combined Standard Conditions
Appendix D-1, Definitions for Subpart WWW – Municipal Solid Waste Landfills
Appendix I-1, List of Insignificant Emissions Units and/or Activities
APPENDIX TV-4, TITLE V CONDITIONS version dated 02/12/02
Table 1, Summary of Monitoring Requirements for Municipal Solid Waste Landfills
Table 2, Summary of Recordkeeping Requirements for Municipal Solid Waste Landfills
Table 3, Summary of Compliance Requirements for Municipal Solid Waste Landfills

Initial Effective Date: April 16, 1998
Revision Effective Date: February 4, 2004
Renewal Application Due Date: August 28, 2006
Expiration Date: February 28, 2007

FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION


L. T. Kozlov, P.E.
Program Administrator
Air Resources Management


LTK/jt

"More Protection, Less Process"

Printed on recycled paper.

Section I. Facility Information.

Subsection A. Facility Description.

This facility consists of an active, Class I municipal solid waste disposal facility (landfill) that has been in operation since 1974. The design capacity of the landfill is greater than 2.5 million megagrams by mass or 2.5 million cubic meters by volume. It is an active asbestos waste disposal site. There is no bioreactor at the landfill. Non-methane organic compound (NMOC) emissions are calculated to be equal to or greater than 50 megagrams per year. Landfill gas emissions are collected and controlled by a flare.

Based on the Title V Air Operation Permit Renewal application received August 28, 2001, the landfill is not a major source of HAPs.

This facility is subject to 40 CFR 60 Subparts WWW and A and 40 CFR 63 Subparts AAAA and A.

Also included in this permit are miscellaneous unregulated/insignificant emissions units and/or activities.

Subsection B. Summary of Emissions Unit ID No(s). and Brief Description(s).

<u>E.U. ID No.</u>	<u>Brief Description</u>
-001	Municipal solid waste landfill with candlestick flare

Please reference the Permit No., Facility ID No., and appropriate Emissions Unit(s) ID No(s). on all correspondence, test report submittals, applications, etc.

Subsection C. Relevant Documents.

The documents listed below are not a part of this permit; however, they are specifically related to this permitting action.

These documents are provided to the permittee for information purposes only:
Appendix A-1: Abbreviations, Acronyms, Citations, and Identification Numbers
Appendix H-1: Permit History

These documents are on file with the permitting authority:
Application for Initial Title V Air Operation Permit received June 14, 1996
Additional information request dated September 17, 1997
Additional information received September 29, 1997
Initial Title V Air Operation Permit issued April 15, 1998
Application for a Title V Air Operation Permit Renewal received August 28, 2001
Additional information request dated October 26, 2001
Letter requesting PSD evaluation dated December 3, 2001
Additional information and evaluation received January 23, 2002
Open for Cause Letter dated July 2, 2003

Section II. Facility-wide Conditions.

The following conditions apply facility-wide:

1. APPENDIX TV-4, TITLE V CONDITIONS, is a part of this permit.

(Permitting note: APPENDIX TV-4, TITLE V CONDITIONS, is distributed to the permittee only. Other persons requesting copies of these conditions shall be provided a copy when requested or otherwise appropriate.)

2. General Pollutant Emission Limiting Standards. Objectionable Odor Prohibited. No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

[Rule 62-296.320(2), F.A.C.]

3. General Particulate Emission Limiting Standards. General Visible Emissions Standard.

Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity). EPA Method 9 is the method of compliance pursuant to Chapter 62-297, F.A.C.

[Rules 62-296.320(4)(b)1. & 4., F.A.C.]

4. Prevention of Accidental Releases (Section 112(r) of CAA).

a. The permittee shall submit its Risk Management Plan (RMP) to the Chemical Emergency Preparedness and Prevention Office (CEPPO) RMP Reporting Center when, and if, such requirement becomes applicable. Any Risk Management Plans, original submittals, revisions or updates to submittals, should be sent to:

RMP Reporting Center
Post Office Box 3346
Merrifield, VA 22116-3346
Telephone: 703/816-4434

and,

b. The permittee shall submit to the permitting authority Title V certification forms or a compliance schedule in accordance with Rule 62-213.440(2), F.A.C.

[40 CFR 68]

5. Insignificant Emissions Units and/or Activities. Appendix I-1, List of Insignificant Emissions Units and/or Activities, is a part of this permit.

[Rules 62-213.440(1), 62-213.430(6) and 62-4.040(1)(b), F.A.C.]

6. General Pollutant Emission Limiting Standards. Volatile Organic Compounds (VOC) Emissions or Organic Solvents (OS) Emissions. The permittee shall allow no person to store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds (VOC) or organic solvents (OS) without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. Nothing was deemed necessary and ordered at this time.

[Rule 62-296.320(1)(a), F.A.C.]

7. Emissions of Unconfined Particulate Matter. Pursuant to Rules 62-296.320(4)(c)1., 3. & 4., F.A.C., reasonable precautions to prevent emissions of unconfined particulate matter at this facility include the following requirements (see Condition 57. of APPENDIX TV-4, TITLE V CONDITIONS):

- a. Application of asphalt, water, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities;
- b. Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne;
- c. Landscaping or planting of vegetation; and,
- d. Other techniques, as necessary.

8. When appropriate, any recording, monitoring, or reporting requirements that are time-specific shall be in accordance with the effective date of the permit, which defines day one.
[Rule 62-213.440, F.A.C.]

9. Statement of Compliance. The annual statement of compliance pursuant to Rule 62-213.440(3)(a)2., F.A.C., shall be submitted to the Department and EPA within 60 (sixty) days after the end of the calendar year using DEP Form No. 62-213.900(7), F.A.C.
[Rules 62-213.440(3) and 62-213.900, F.A.C.]

(Permitting Note: This condition implements the requirements of Rules 62-213.440(3)(a)2. & 3., F.A.C. (see Condition 51. of APPENDIX TV-4, TITLE V CONDITIONS))

10. The permittee shall submit all compliance related notifications and reports required of this permit to the Department's Central District office.

Department of Environmental Protection
Central District Office
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803
Telephone: 407/894-7555; Fax: 407/897-5963

11. Any reports, data, notifications, certifications, and requests required to be sent to the United States Environmental Protection Agency, Region 4, should be sent to:

United States Environmental Protection Agency, Region 4
Air, Pesticides & Toxics Management Division
Air and EPCRA Enforcement Branch
Air Enforcement Section
61 Forsyth Street
Atlanta, Georgia 30303-8960
Telephone: 404/562-9155; Fax: 404/562-9163

12. Certification by Responsible Official (RO). In addition to the professional engineering certification required for applications by Rule 62-4.050(3), F.A.C., any application form, report, compliance statement, compliance plan and compliance schedule submitted pursuant to Chapter 62-213, F.A.C., shall contain a certification signed by a responsible official that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Any responsible official who fails to submit any required information or who has submitted incorrect information shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary information or correct information.

[Rule 62-213.420(4), F.A.C.]

Section III. Emissions Unit(s) and Conditions.

Subsection A. This section addresses the following emissions unit(s).

<u>E.U. ID No.</u>	<u>Brief Description</u>
-001	Municipal solid waste landfill with a candlestick flare

[Permitting note: This emissions unit is regulated under: NSPS - 40 CFR 60, Subpart A, General Provisions, 40 CFR 60 Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills; NESHAP - 40 CFR Part 63, Subpart A, General Provisions and 40 CFR Part 63, Subpart AAAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills adopted and incorporated by reference in Rule 62-204.800, F.A.C.]

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

A1. Hours of Operation. This emissions unit is allowed to operate continuously, i.e., 8,760 hours per year.
[Rule 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

A2. The flare control system shall be designed for and operated with no visible emissions except for periods not to exceed a total of five minutes during any two consecutive hours.
[Rule 40 CFR 60.18(c)(1)]

A3. The flare control system shall be operated with a flame present at all times, as determined by a thermocouple or any other equivalent device to detect the presence of a flame.
[40 CFR 60.18(c)(2)]

Test Methods and Procedures

[Permitting note: Table 3, Summary of Compliance Requirements for Municipal Solid Waste Landfills, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.]

A4. The flare must be tested for visible emissions in accordance with EPA Method 22. The observation period is 2 hours and shall be conducted annually.
[40 CFR 60.8]

A5. The permittee shall notify the Central District Office of the Department of Environmental Protection, in writing, at least 15 days prior to the date on which each formal compliance test is to begin. Said notification shall include the date, time and place of each such test, as well as the name of the contact person who will be responsible for coordinating and having such tests conducted for the owner.
[Rule 62-297.310(7)(a)9., F.A.C.]

40 CFR 60 Subpart WWW and 40 CFR 63 Subpart AAAA (7/10/03)

TABLE 1. SUMMARY OF MONITORING REQUIREMENTS FOR MSW LANDFILLS

Equipment	Monitoring Action	Schedule	Reference
Gas Collection System	Monitor gauge pressure within each gas extraction well. A negative value indicates a well is operating with a sufficient gas extraction rate.	Monthly	§60.756(a)(1)
	Monitor nitrogen concentration using Method 3C or oxygen concentration using Method 3A. Nitrogen concentration values <20 percent or oxygen concentration values < 5 percent indicate well extraction rates are not causing excessive air infiltration into the landfill.	Monthly	§60.756(a)(2)
	Monitor LFG temperature in extraction well; should be <55°C (131°F), unless otherwise demonstrated that a higher temperature is appropriate. An elevated LFG temperature is an indicator of subsurface fires and aerobic conditions within the landfill.	Monthly	§60.756(a)(3)
	Monitor methane concentration at the landfill surface. Values <500 ppm above background indicate well extraction rates are sufficient to minimize the amount of LFG seeping out of the landfill.	Quarterly OR Skip Method ^a	§60.755(c) and §60.756(f)
	For an alternative gas collection system design, the owner/operator must submit appropriate monitoring requirements to the implementing agency for approval.	To Be Determined	§60.756(e)
	Gas Control System	Record gas flow from collection system to enclosed combustion device (unless bypass line valves are secured in a closed position with car-seal or lock-and-key type configuration). This requirement identifies periods when gas flow has been diverted from the control device.	At least once every 15 minutes OR Monthly inspections of bypass line seals
Monitor gas flow from collection system to open flare (unless bypass line valves are secured in a closed position with car-seal or lock-and-key type configuration). This requirement identifies periods when gas flow has been diverted from the control device.		At least once every 15 minutes OR Monthly inspections of bypass line seals	§60.756(c)(2)
Monitor combustion temperature of the enclosed combustion device with a temperature monitoring device equipped with a continuous recorder. (Temperature monitoring is not required for a boiler or process heater >44 megawatts) This requirement identifies operational and performance status of control device.		Continuous	§60.756(b)(1)
Monitor the continuous presence of a pilot flame or the flare flame for an open flare. This requirement confirms operational status of control device.		Continuous	§60.756(c)(1)
For an alternative control device, the owner/operator must submit appropriate monitoring requirements to the implementing agency for approval.		To Be Determined	§60.756(d)

^a When monitoring of methane concentration for a closed landfill shows no exceedances for three consecutive quarterly monitoring periods, then monitoring can be "skipped" to annual monitoring. Any exceedance of the 500 ppm methane standard returns the landfill to quarterly monitoring.

40 CFR 60 Subpart WWW and 40 CFR 63 Subpart AAAA (7/10/03)

TABLE 2. SUMMARY OF RECORDKEEPING REQUIREMENTS FOR MSW LANDFILLS

Operation	Recordkeeping Item	Reference
Landfill Design Capacity	If Design Capacity was converted from mass to volume or volume to mass to demonstrate that design capacity is <2.5 million Mg or 2.5 million m ³ , records of annual recalculation of site-specific density, design capacity, and supporting documentation.	§60.758(f)
Landfill and Control System Design	Current maximum design capacity, current amount of refuse-in-place, and year-by-year refuse accumulation rates	§60.758(a)
	Plot map showing each existing and planned well in the gas collection system. Provide unique identifying labels for each well. Installation date and location of all newly installed wells per §60.755(b). Description, location, amount, and placement date of all nondegradable refuse including asbestos and demolition refuse placed in landfill areas which are excluded from LFG collection and control.	§60.758(d) §60.758(d)(1) §60.758(d)(2)
Monitored Operating Parameters for Gas Collection and Control Systems	(1) Gauge pressure in each extraction well, (2) Nitrogen or oxygen concentration in extracted LFG. (3) Temperature of extracted LFG. (4) Methane concentrations along landfill surface. (5) Gas flow from collection system to the BDT control device (or seal bypass lines and inspect seals). (6) Combustion temperature of an enclosed combustion device or the continuous presence of a pilot flame for an open flare. (7) Operating parameters for alternative collection and control system designs, which are specified by the landfill and approved by the implementing agency.	§60.756(a)(1) §60.756(a)(2) §60.756(a)(3) §60.756(f) §60.756(b)(2)(i) &(ii) §60.756(c) §60.756(e)
Collection and Control System Design and Measurements From Initial Performance Test	Maximum expected gas generation flow rate Density of wells, horizontal collectors, surface collectors, or other gas extraction devices.	§60.758(b)(1)(i) §60.758(b)(1)(ii)
	For open flares: (1) Type of flare (steam-, air-, or non-assisted), (2) All visible emission readings, (3) Heat content determination, (4) Gas flow rate or bypass measurements, (5) Exit velocity determinations, (6) Continuous pilot flame or flare flame monitoring, and (7) All periods when pilot flame or flare flame is absent.	§60.758(b)(4)
	For enclosed combustion devices (except for boilers/process heaters with a heat input ≥ 44 Megawatts [150 million Btu/hr]) (1) Average combustion temperature measured at least every 15 minutes and averaged over the performance test duration (2) Percent reduction of NMOC's by the control device.	§60.758(b)(2)(1) §60.758(b)(2)
	For boilers/process heaters (of any size) Describe Location where LFG is introduced into the boiler flame zone.	§60.758(b)(3)
Gas Control System: Periods When Operating Parameters Exceeded Limits Set by Most Recent Performance Test	For an open flare: Record all pilot flame or flare flame monitoring data and all periods when pilot flame or flare flame was absent.	§60.758(c)(1)
	For enclosed combustion devices (except for boilers/process heaters with a heat input ≥ 44 Megawatts [150 million Btu/hr]) Record all 3-hour periods in which the average combustion temperature was more than 28degrees C (50 degrees F) below the average combustion temperature measured during the most recent performance test.	§60.758(c)(1)(i)
	For boilers/process heaters with a heat input ≥44 Megawatts (150 Million Btu/hr) Document all periods of operation by recording parameters, such as steam use, fuel use, Or other specified parameters required by other regulatory agencies.	§60.758(c)(1)(ii)
	For boilers/process heaters Document any changes to the location where collected LFG is introduced in the boiler Flame zone.	§60.758(c)(1)(iii)
	Records of continuous flow to the control device or the indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines.	§60.758(c)(1)(iv)
Gas Collection and Control System: Exceedances of operational standards	Record all values which exceed the operational standards specified in §60.753. Also include the operating value from the next monitoring period and the location of each exceedance: (1) New well installation, (2) Pressure in each extraction well, (3) Nitrogen concentration or oxygen concentration in extracted LFG, (4) Temperature of extracted LFG, (5) Methane concentrations along landfill surface, (6) Collected LFG is routed to control device at all times, note periods when the collection system and/or control device were not operational.	§60.758(e)
	Startup Shutdown and Malfunction	Occurrence and duration of each SSM of operation (i.e. process equipment) Occurrence and duration of each SSM of required air pollution control and monitoring equipment

40 CFR 60 Subpart WWW and 40 CFR 63 Subpart AAAA (7/10/03)

	All required maintenance performed on the air pollution control and monitoring equipment Actions taken when procedures are different than specified in §63.6(e)(3) All information necessary to demonstrate conformance with the affected source's SSM plan	§63.10(d)(2)(iii) §63.10(d)(2)(iv) §63.10(d)(2)(v)
Bioreactors	General Recordkeeping Requirements	§63.1980(b), (g)-(h)

40 CFR 60 Subpart WWW and 40 CFR 63 Subpart AAAA (7/10/03)

TABLE 3. SUMMARY OF COMPLIANCE REPORTING REQUIREMENTS FOR MSW LANDFILLS

Report or Action	Schedule	Reference
Initial Design Capacity Report	Submit report no later than (1) June 10, 1996 for landfills that commenced construction, modification, or reconstruction on or after May 30, 1991 but before March 12, 1996, or (2) 90 days after the date the landfill commenced construction, modification, or reconstruction on or after March 12, 1996.	§60.757(a)(1) §60.757(a)(2)
Amended Design Capacity Report	If design capacity is increased to a value that equals or exceeds 2.5 million Mg, the landfill must submit an Amended Design Capacity Report. Submit report 90 days of an increase in the maximum design capacity of the landfill to or above the 2.5 million Mg and 2.5 million m ³ size exemption	§60.757(a)(3)
Annual OR Five-Year ^a NMOC Emission Rate Report (Tier 1)	Submit initial report no later than: (1) June 10, 1996 for landfills that commenced construction, modification, or reconstruction on or after May 30, 1991 but before March 12, 1996, or (2) 90 days after the date the landfill commenced construction, modification, or reconstruction on or after March 12, 1996. May submit with Initial Design Capacity Report. Repeat either once a year OR once every 5 years.	§60.757(b)
Revised NMOC Emission Rate Report (Tier 2)	If Tier 1 analysis results in NMOC emissions ≥50 Mg/yr, a revised NMOC emission rate report using data gathered from Tier 2 analysis can be submitted within 180 days of the initial calculated exceedance.	§60.757(c)(1)
Revised NMOC Emission Rate Report (Tier 3)	If Tier 2 analysis results in NMOC emissions ≥50 Mg/yr, a revised NMOC Emission Rate Report using data gathered from Tier 3 analysis can be submitted within 1 year of the initial calculated exceedance.	§60.757(c)(2)
Collection and Control System Design Plan	Within 1 year after submitting NMOC Emission Report with a value ≥ 50 Mg/yr. Plans must gain Agency approval prior to installation.	§60.757(c)
Emission Control System Start-up	Control system based on approved design will startup within 30 months after submitting NMOC Emission Rate Report with a value ≥50 Mg/yr.	§60.752(b)(2)(ii)
Initial Control System Performance Test Report	Submit report within 180 days of emission collection and control system start-up per §60.8. Results can be included in the initial Annual Report.	§60.757(g)
Annual Compliance Report	Submit initial report within 180 days of emission collection and control system start-up. Report once every 6 months. [Required semi-annually by 40 CFR 63 Subpart AAAA.]	§60.757(f) §63.1980(a)
Landfill Closure Report	When landfill is no longer accepting refuse and the landfill is considered closed. Submit report within 30 days of refuse acceptance cessation.	§60.757(d)
Control Equipment Removal Report	Submit report within 30 days prior to removal or cessation of control system operations. Controls can be removed after meeting all of these criteria: (1) Landfill Closure Report has been submitted, (2) Control system was operated for at least 15 years, and (3) Three consecutive NMOC Emission Rate Reports with values <50 Mg/yr achieved.	§60.757(e)
Startup, Shutdown, and Malfunction Plan	Plan shall be developed by the owner or operator and submitted by January 16, 2004.	§63.6(e)(3)
	General Report Requirements	§63.10(d)(5)(i) & (ii)
Bioreactors	General report Requirements	§63.1980(b)-(f)

Appendix E
Closure System Stability Analysis



March 31, 1997
Project No. 95-G-0223.2

TO: CH₂M HILL/GLACE & RADCLIFFE JOINT VENTURE
3011 S.W. Williston Road
Gainesville, Florida 32608-3928

Attn: Mr. Kou-Roung Chang, Ph.D, P.E.
Lead Closure Design Engineer

RE: Geomembrane Testing
Cell 7 Phase 2 Sequential Closure, Orange County Landfill
Orange County, Florida

Dear Mr. Chang:

L.J. Nodarse & Associates, Inc. (LJN) is pleased to present this report of the geomembrane testing for the above-referenced project. The actual membrane testing was performed for us by Geosyntec Consultants. LJN performed two (2) grain size analysis in our laboratory to evaluate the sand to be used as a liner cover at the site.

Attached to this report is a copy of the report of Interface Direct Shear Testing dated March 13, 1997, submitted to LJN by Geosyntec Consultants. This report contains thorough descriptions of the testing performed, the materials tested, and the test results. In general two (2) interface tests were performed: One (1) test between the fine sand and a 40-mil NSC textured LLDPE geomembrane and the other between the fine sand and a 40-mil NSC textured COEX geomembrane. Both tests were performed under wetted conditions. The LLDPE liner had peak and residual strength friction angles of 29° and the COEX liner had peak and residual strength friction angles of 28°. Normal stress for these tests varied from 2 to 8 psi. The fine sand was compacted to 90% of its maximum modified Proctor density for this testing. Further information on the testing methods and results can be obtained by reviewing the attached report.

The geomembrane samples for these tests were provided by you on January 30, 1997, and were subsequently forwarded to Geosyntec. The fine sand cover soil was obtained by LJN from a borrow pit at the Orange County Landfill and also forwarded to Geosyntec. LJN performed two (2) grain size analysis on the fine sand obtained. The results of that testing are shown in **Table 1** of the **Appendix** of this report. The percent fines passing the No. 200 sieve in these tests varied from 1.7 percent to 1.6

Geotechnical, Environmental, & Materials Engineers

807 South Orlando Avenue ♦ Suite A ♦ Winter Park, Florida 32789 ♦ Telephone 407.740.6110 ♦ Facsimile 407.740.6112
e-mail nodarse@nodarse.com

CH₂M Hill/Glance & Radcliffe Joint Venture
Project No. 95-G-0223.2
Page 2



percent. This conforms to the proposed project specification for this soil which is less than 10 percent passing the No. 200 sieve.

LJN appreciates the opportunity to provide continuing services for you on this project. If you have any questions concerning this report or if we can be of further service, please call at your convenience.

Sincerely,

L.J. NODARSE & ASSOCIATES, INC.

A handwritten signature in cursive script that reads 'a h a r n o l d'.

Anne Marie Arnold, E.I.
Project Engineer

A handwritten signature in cursive script that reads 'Michael J. Preim'.

Michael J. Preim, P.E. 3/31/97
Chief Engineer/Vice President
FL Registration No. 24041

A:\95-2232.RPT:AMA7/kc

Attachment - Geosyntec Consultants Liner Testing Report
cc: Ron Beladi, G & R

APPENDIX

TABLE 1
GRAIN SIZE ANALYSIS RESULTS
BORROW MATERIAL FROM ORANGE COUNTY LANDFILL

SAMPLE NO.	Percent Passing					SOIL DESCRIPTION	SOIL CLASSIFICATION
	10	40	60	100	200		
1	100	96.9	78.9	16.4	1.7	Grayish-brown fine sand	SP
2	100	96.8	79.0	15.9	1.6	Grayish-brown fine sand	SP

Prepared for

L.J. Nodarse & Associates, Inc.
807 South Orlando Avenue, Suite A
Winter Park, Florida 32789

**FINAL REPORT
SOIL COMPACTION AND
INTERFACE DIRECT SHEAR TESTING**

**CELL 7, PHASE 2 SEQUENTIAL CLOSURE
ORANGE COUNTY LANDFILL
LJN PROJECT NO. 95-G-0223-2**

Prepared by



GEOSYNTEC CONSULTANTS

Soil-Geosynthetic Interaction Testing Laboratory

5775 Peachtree Dunwoody Road, Suite 11 D
Atlanta, Georgia 30342

Project Number GLI0219

13 March 1997

1. INTRODUCTION

This report was prepared by Mr. Robert H. Swan, Jr. and Mr. Edward L. Fajardo, both of GeoSyntec Consultants (GeoSyntec), Atlanta, Georgia. The report was reviewed by Dr. Gary R. Schmertmann, P.E. (Georgia), also of GeoSyntec, in accordance with the internal peer review policy of the firm. The laboratory testing program described in this report was performed at the request and authorization of Ms. Anne Marie Arnold of L.J. Nodarse & Associates, Inc. (LJN), Winter Park, Florida.

LJN authorized GeoSyntec to undertake a laboratory testing program to evaluate: (i) the compaction characteristics of a site soil (i.e., fine sand) and (ii) the interface shearing resistance between the site soil and two different geomembrane materials proposed for use in the construction of the closure system during the Phase 2 sequential closure of Cell 7 of the Orange County Landfill. GeoSyntec understands that the sample preparation procedures and testing conditions used in the testing program were selected by Ms. Arnold of LJN in accordance with the project specifications. The soil compaction testing was conducted at GeoSyntec's Geomechanics and Environmental Laboratory located in Alpharetta, Georgia. The interface direct shear testing was conducted at GeoSyntec's Soil-Geosynthetic Interaction Testing Laboratory located in Atlanta, Georgia.

2. TESTING PROGRAM

2.1 Scope

The testing program consisted of a soil compaction test and two interface direct shear test series. Each interface direct shear test series consisted of two tests.

2.2 Testing Method

Two types of tests (i.e., soil compaction and interface direct shear) were conducted in this testing program. Each type of test was conducted in accordance with a specific American Society for Testing and Materials (ASTM) Standard Test Method as described below:

- *Modified Proctor Compaction Testing*: conducted in accordance with the ASTM Standard Test Method D 1557, "Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft² (2,700 kN-m/m²))"; and
- *Interface Direct Shear Testing*: conducted in accordance with the ASTM Standard Test Method D 5321, "Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method". The tests were conducted in a large direct shear device containing an upper and lower shear box. The upper shear box measured 12 in. by 12 in. (300 mm by 300 mm) in plan and 3 in. (75 mm) in depth. The lower shear box measured 12 in. by 14 in. (300 mm by 350 mm) in plan and 3 in. (75 mm) in depth.

2.3 Geosynthetic and Soil Materials

The geomembrane and soil materials used in the testing program are presented in Appendix A. All of the materials were obtained from the project site by LNJ and shipped directly to GeoSyntec for testing. A concrete sand was provided by GeoSyntec to fill the lower shear box and serve as a bedding layer below each test interface.

2.4 Test Configuration and Procedures for Interface Direct Shear Tests

The configuration of the test specimens and the specific test procedures used to conduct each of the interface direct shear tests are presented in Appendix B. GeoSyntec understands that the test procedures and test conditions were selected by LNJ in accordance with the project specifications.

3. TEST RESULTS

3.1 Soil Property Test

The compaction curve for the fine sand is presented in Figure C-1. The maximum dry unit weight and optimum moisture content for the fine sand are also indicated on Figure C-1.

3.2 Interface Direct Shear Tests

For each interface direct shear test, the total-stress shearing resistance was evaluated for each applied normal stress. The test data were plotted on a graph of shear force versus horizontal displacement. The resulting plots are presented in Appendix C. The peak value of shear force was used to calculate the peak shear strength. For this report, the large displacement shear strength (τ_{LD}) was calculated using the post-peak shear force measured at the end of each test. No area correction was used when computing normal and shear stresses because each test was performed using a constant effective sample area (i.e., the area of the geomembrane specimens and the lower shear box were larger than that of the upper shear box).

The calculated shear strengths were plotted on a graph of shear stress versus normal stress and the results were used to evaluate total-stress peak and large displacement shear strength envelopes. A best-fit straight line was drawn through the data points from each test series to obtain total-stress peak and large displacement shear strength friction angles and adhesions. The coefficient of correlation (R^2), a standard statistical indicator of how well the best-fit line matches the test data, was obtained for each best-fit line. The summary plots of shear stress versus normal stress for each test series are also presented in Appendix C. The friction angles, adhesions, and R^2 values derived from the plotted test results are presented in Table 1.

For each test series, it is noted that the reported total-stress shear strength parameters of friction angle and adhesion were determined based on the best-fit straight line drawn through the test data on a plot of shear stress versus normal stress. Caution should be exercised in using these shear strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.

4. CLOSURE

The reported results apply only to the materials and test conditions used in the laboratory testing program. The results do not necessarily apply to other materials or test conditions. The test results should not be used in engineering analyses unless the test conditions model the anticipated field conditions. The testing was performed in accordance with general engineering testing standards and requirements. This testing report is submitted for the exclusive use of LJN.

TABLE 1

INTERFACE DIRECT SHEAR TEST RESULTS
 MEASURED TOTAL STRESS SHEAR STRENGTH PARAMETERS
 L.J. NODARSE & ASSOCIATES, INC.
 CELL 7, PHASE 2 SEQUENTIAL CLOSURE
 ORANGE COUNTY LANDFILL
 L/JN PROJECT NUMBER 95-G-0223-2

Test Series Number	Interfaces Tested ⁽¹⁾	Normal Stress (psi)	Peak Strength ⁽²⁾			Residual Strength ⁽²⁾			Reference Appendix Figure Numbers
			Friction Angle	Adhesion (psf)	R ²	Friction Angle	Adhesion (psf)	R ²	
1	Fine Sand/40-mil NSC Textured LLDPE Geomembrane Under Wetted Conditions	2 to 8	29°	33	1.000	29°	21	1.000	C-2 and C-3
2	Fine Sand/40-mil NSC Textured COEX Geomembrane Under Wetted Conditions	2 to 8	28°	26	1.000	28°	14	1.000	C-4 and C-5

Notes: (1) See Appendix B for detailed test conditions and procedures.

(2) The reported total-stress shear strength parameters for each test series were determined from a best-fit line drawn through the test data. Caution should be exercised in using these shear strength parameters for applications involving normal stresses outside the range of stresses covered by the test series. The value of R², the coefficient of correlation, provides an indication of how well the best-fit shear strength parameters match the test data.

(3) The large displacement shear strength (τ_{LD}) was calculated using the post-peak shear force measured at the end of each test.

APPENDIX A

GEOSYNTHETIC AND SOIL MATERIALS

Geosynthetic Materials

Two geomembranes were used in the testing program. These geomembranes are referenced by name in this report, and include:

- 40-mil (1.0-mm) thick National Seal Company (NSC) textured linear low density polyethylene (LLDPE) geomembrane, referred to as 40-mil NSC textured LLDPE geomembrane; and
- 40-mil (1.0-mm) thick NSC textured co-extruded (COEX) geomembrane, referred to as 40-mil NSC textured COEX geomembrane.

Bulk samples of the two geomembrane materials were obtained by LNJ and shipped directly to GeoSyntec for testing.

Soil Materials

A site soil (i.e., fine sand) was used in the testing program. A bulk sample of the site soil was obtained from the project site by LNJ and shipped directly to GeoSyntec for testing. A concrete sand was provided by GeoSyntec to fill the lower shear box and serve as a bedding layer below each test interface.

APPENDIX B

TEST PROCEDURES AND CONDITIONS

TEST PROCEDURES AND CONDITIONS TEST SERIES NUMBERS: 1 and 2

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: fine sand initially placed at a dry unit weight of 94.8 to 95.6 pcf and a moisture content of 14.5 to 15.5%. Final moisture content ranged from 20.1 to 21.7% for each test series;
- 40-mil NSC Textured LLDPE Geomembrane for Test Series 1 and 40-mil NSC COEX geomembrane for Test Series 2;
- lower shear box: bedding layer of concrete sand

Test Interface: upper soil against geomembrane

Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower box by hand tamping to a relatively dense state under dry conditions forming a 3-in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from one of the bulk samples and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of the upper soil was compacted directly on top of the geomembrane specimen. The initial target compaction conditions (i.e., dry unit weight and moisture content) corresponded to 90 percent of the maximum dry unit weight and optimum moisture content based on the results of the modified Proctor compaction test conducted by GeoSyntec.
- Wetting conditions: the upper soil and geomembrane were wetted prior to being sheared, by pouring tap water on top of the upper soil and allowing the tap water to drain at the soil-geomembrane interface.
- Test normal stresses: 2 and 8 psi.
- Constant shear displacement rate: 0.04 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of each of the geomembrane samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

APPENDIX C
TEST RESULTS



GEO SYNTEC CONSULTANTS

Geomechanics and Environmental Laboratory
Atlanta, Georgia

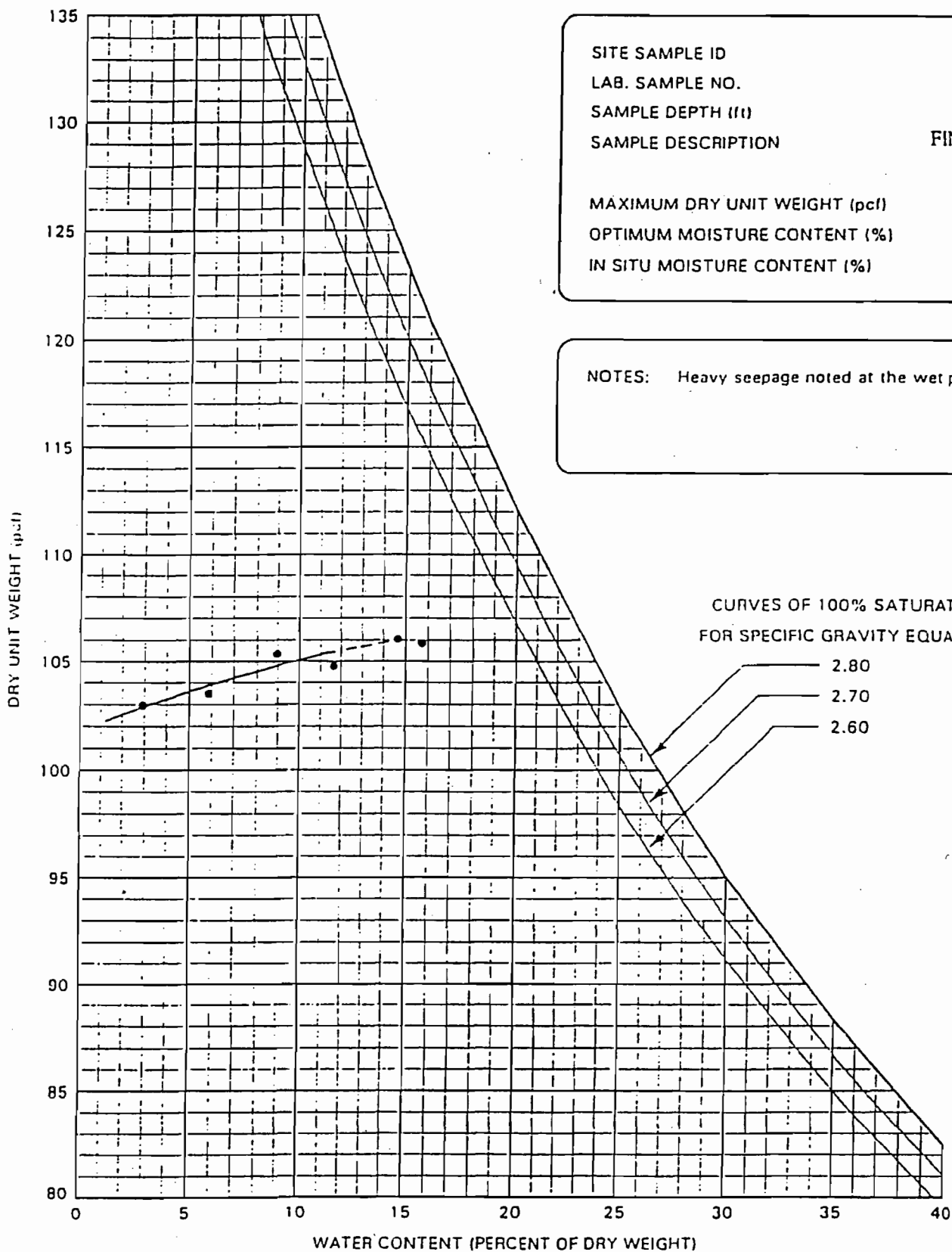
FIGURE C-1

PROJECT: ORANGE CO. LANDFILL
PROJECT NO.: GLI0219
DOCUMENT NO.: SGI97033

GS FORM:
-IMD 1 02/18/97

MOISTURE-DENSITY RELATIONSHIP, COMPACTION TESTING

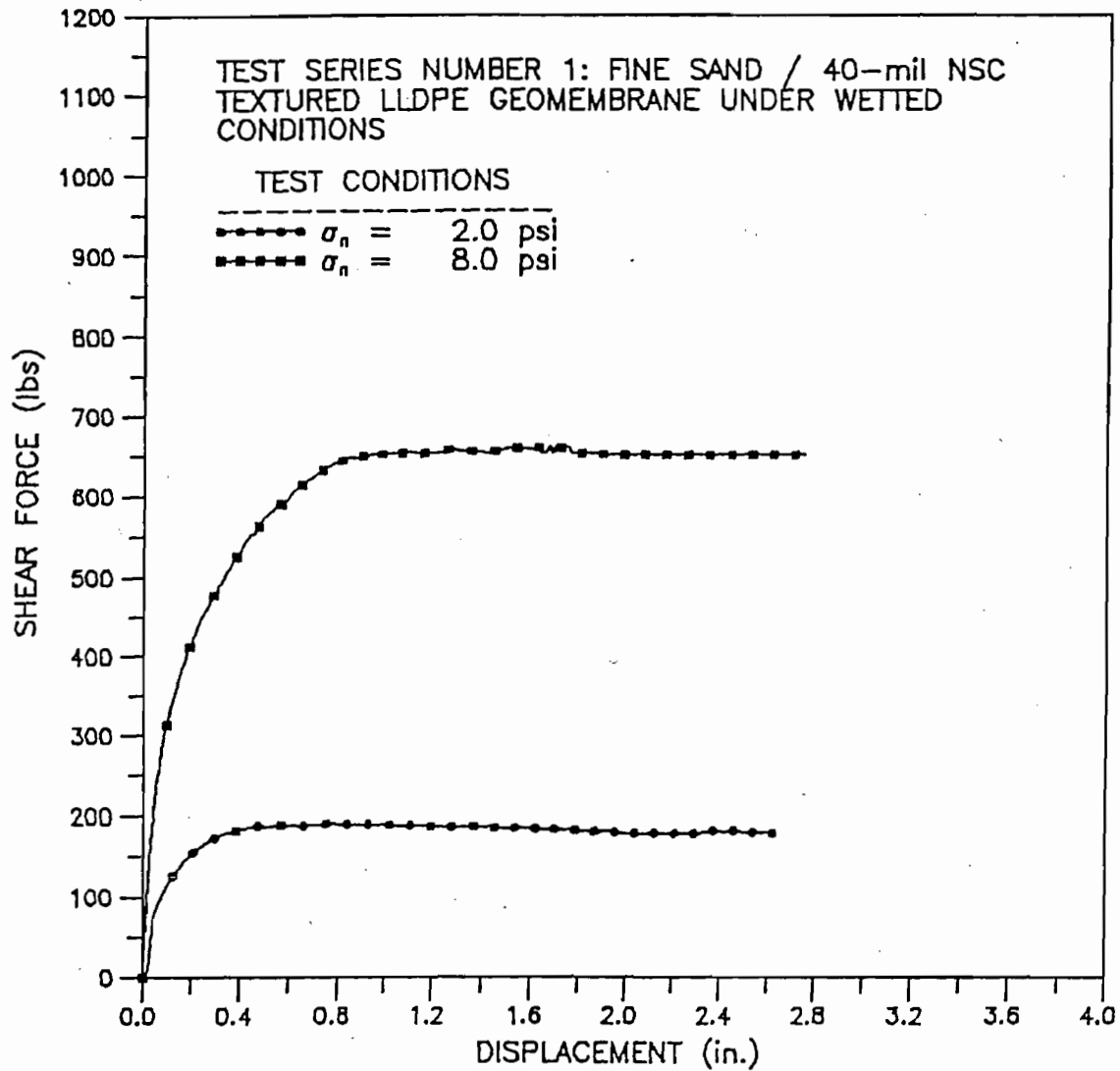
ASTM D 1557 A



SITE SAMPLE ID	AL5965
LAB. SAMPLE NO.	97B112
SAMPLE DEPTH (ft)	
SAMPLE DESCRIPTION	FINE SAND
MAXIMUM DRY UNIT WEIGHT (pcf)	106.0
OPTIMUM MOISTURE CONTENT (%)	15.0
IN SITU MOISTURE CONTENT (%)	

NOTES: Heavy seepage noted at the wet point.

L.J. NODARSE & ASSOCIATES, INC.
INTERFACE DIRECT SHEAR TESTING



NOTE: The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

DATE TESTED: 18 AND 21 FEBRUARY 1997

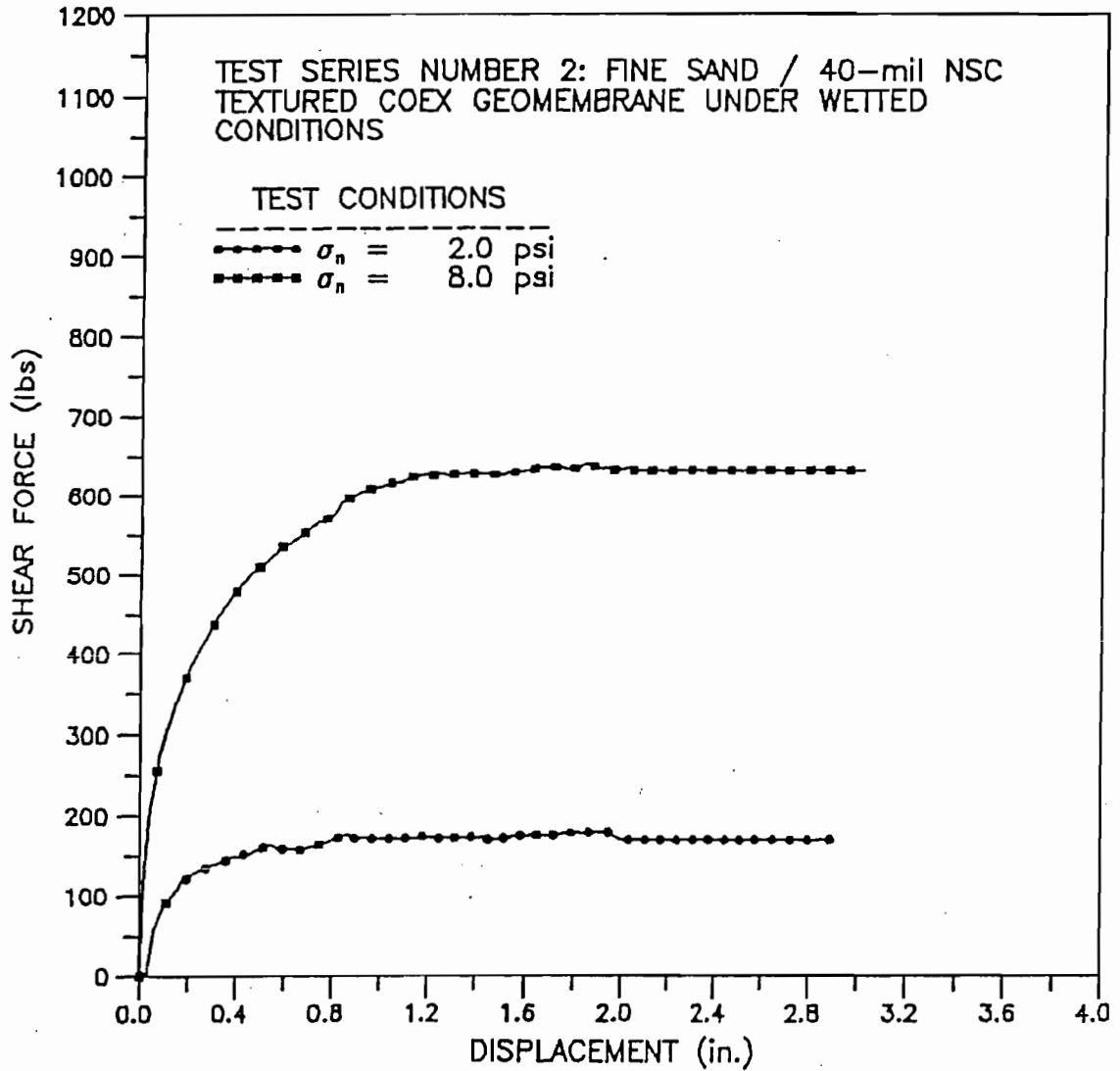


GEO SYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GLI0219
DOCUMENT NO.	SGI97033

L.J. NODARSE & ASSOCIATES, INC.
 INTERFACE DIRECT SHEAR TESTING



NOTE: The shear box size was 12 in. by 12 in.(300 mm by 300 mm), and the contact area remained constant throughout the entire test.

DATE TESTED: 18 AND 21 FEBRUARY 1997

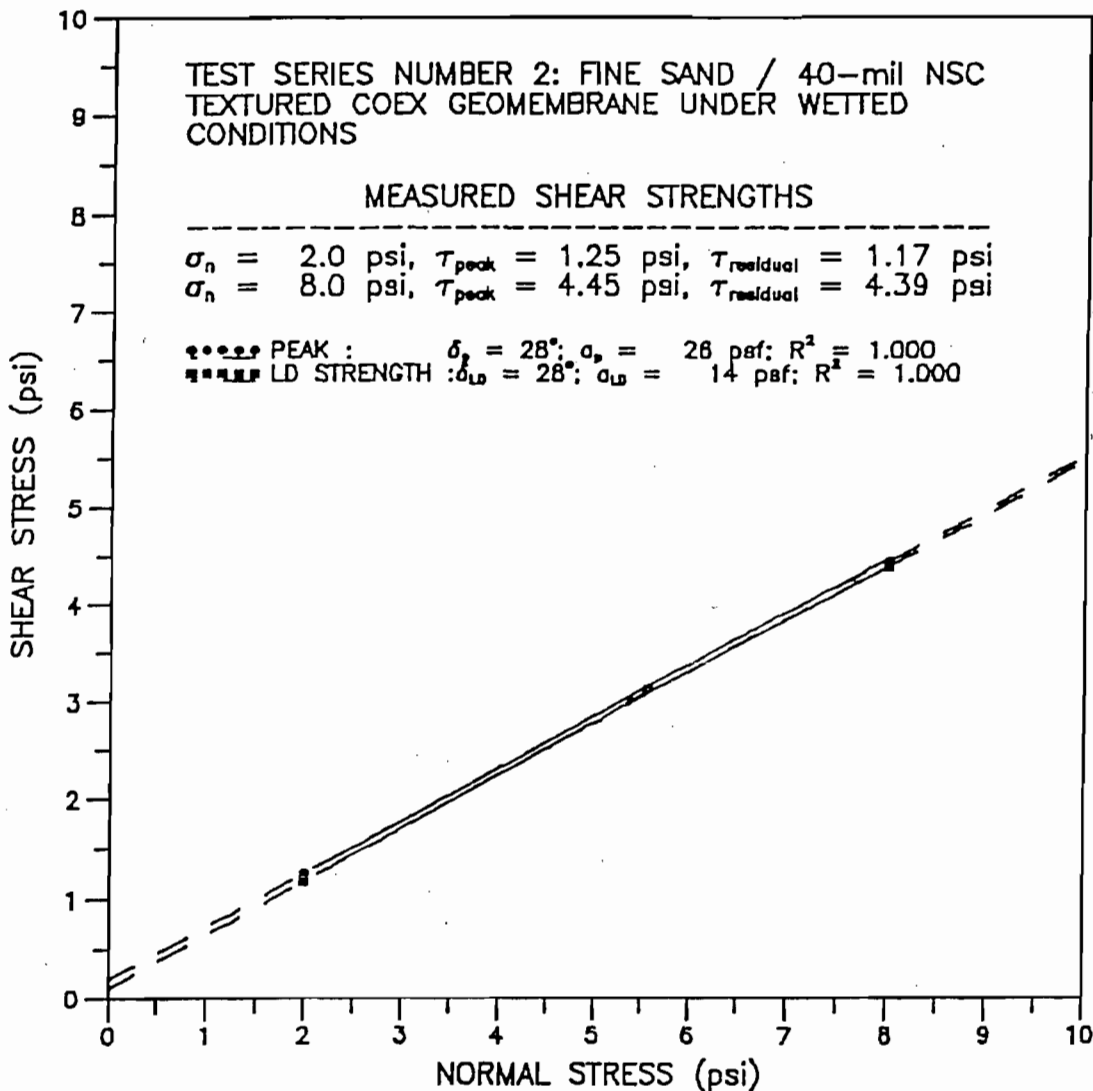


GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GLI0219
DOCUMENT NO.	SGI97033

L.J. NODARSE & ASSOCIATES, INC.
INTERFACE DIRECT SHEAR TESTING



- NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using these shear strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
- (2) The large displacement shear strength (τ_{LD}) was calculated using the post-peak shear force measured at the end of each test.

DATE TESTED: 18 AND 21 FEBRUARY 1997



GEOSYNTEC CONSULTANTS

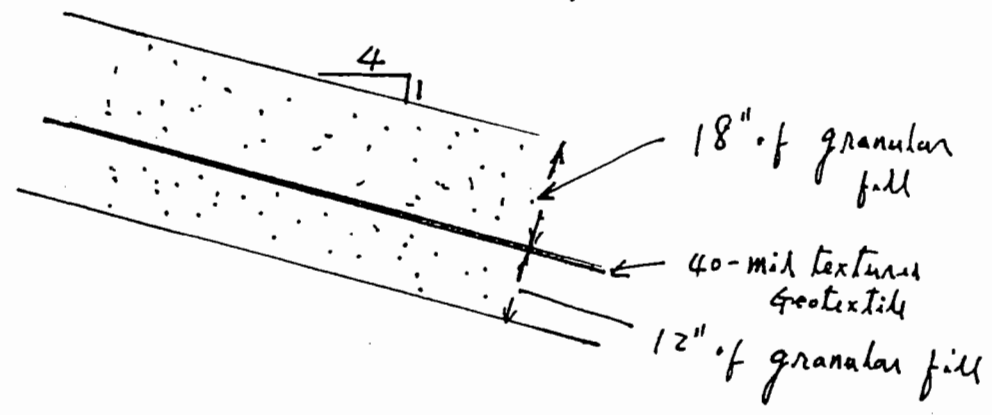
SOIL GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-5
PROJECT NO.	GLI0219
DOCUMENT NO.	SGI97033

Cell 7B Geomembrane Stability Analysis
 Orange Co. Landfill

K. K. Chang
 1 1 4/3/97
 136210.6K.FD

Purpose = To analyze the stability of 40-mil textured liner low density polyethylene geomembrane (LLDPE)



Laboratory shearing test results using granular fill obtained from borrow pit near the landfill and 40-mil LLDPE indicate that the friction (ϕ) between granular fill and LLDPE $\phi = 29^\circ$

In Section 2775. Polyethylene Geomembrane, LLDPE
 The minimum ϕ between granular fill and textured LLDPE is 26° .

$$F.S = \frac{\tan \phi}{\tan \theta}$$

θ - slope angle
 for 4H:1V slope $\theta = 14^\circ$

$$F.S = \frac{\tan 26^\circ}{\tan 14^\circ} = 1.95 > 1.5 \quad \text{O.K.}$$


```

*****
*****
**
**
**          HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE          **
**          HELP MODEL VERSION 3.01  (14 OCTOBER 1994)              **
**          DEVELOPED BY ENVIRONMENTAL LABORATORY                  **
**          USAE WATERWAYS EXPERIMENT STATION                     **
**          FOR USEPA RISK REDUCTION ENGINEERING LABORATORY       **
**
**
*****
*****

```

```

PRECIPITATION DATA FILE:  C:\HELP3\PRECIP.D4
TEMPERATURE DATA FILE:   C:\HELP3\TEMP.D7
SOLAR RADIATION DATA FILE: C:\HELP3\SOLAR.D13
EVAPOTRANSPIRATION DATA: C:\HELP3\ET1.D11
SOIL AND DESIGN DATA FILE: C:\HELP3\CELL7B.D10
OUTPUT DATA FILE:        C:\HELP3\cell7b.OUT

```

TIME: 17:20 DATE: 2/28/1997

```

*****
TITLE:  Cell 7B Closed Landfill  (with Geomembrane)
*****

```

NOTE: INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.

LAYER 1

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 6

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4530	VOL/VOL
FIELD CAPACITY	=	0.1900	VOL/VOL
WILTING POINT	=	0.0850	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1440	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.720000011000E-03	CM/SEC
SLOPE	=	25.00	PERCENT
DRAINAGE LENGTH	=	100.0	FEET

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 4.48
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 36

THICKNESS	=	0.04	INCHES
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.399999993000E-12	CM/SEC
FML PINHOLE DENSITY	=	5.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	1.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3	- GOOD

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 7

THICKNESS	=	12.00	INCHES
POROSITY	=	0.4730	VOL/VOL
FIELD CAPACITY	=	0.2220	VOL/VOL
WILTING POINT	=	0.1040	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2220	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.520000001000E-03	CM/SEC

LAYER 4

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 18

THICKNESS	=	720.00	INCHES
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2920	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 5

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 5

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4570	VOL/VOL
FIELD CAPACITY	=	0.1310	VOL/VOL
WILTING POINT	=	0.0580	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1340	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	50.0	FEET

LAYER 6

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS = 12.00 INCHES
 POROSITY = 0.0000 VOL/VOL
 FIELD CAPACITY = 0.0000 VOL/VOL
 WILTING POINT = 0.0000 VOL/VOL
 INITIAL SOIL WATER CONTENT = 0.0000 VOL/VOL
 EFFECTIVE SAT. HYD. COND. = 0.100000001000E-06 CM/SEC
 FML PINHOLE DENSITY = 3.00 HOLES/ACRE
 FML INSTALLATION DEFECTS = 1.00 HOLES/ACRE
 FML PLACEMENT QUALITY = 3 - GOOD

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 6 WITH A FAIR STAND OF GRASS, A SURFACE SLOPE OF 25.% AND A SLOPE LENGTH OF 100. FEET.

SCS RUNOFF CURVE NUMBER = 73.30
 FRACTION OF AREA ALLOWING RUNOFF = 100.0 PERCENT
 AREA PROJECTED ON HORIZONTAL PLANE = 1.000 ACRES
 EVAPORATIVE ZONE DEPTH = 24.0 INCHES
 INITIAL WATER IN EVAPORATIVE ZONE = 3.455 INCHES
 UPPER LIMIT OF EVAPORATIVE STORAGE = 10.872 INCHES
 LOWER LIMIT OF EVAPORATIVE STORAGE = 2.040 INCHES
 INITIAL SNOW WATER = 0.000 INCHES
 INITIAL WATER IN LAYER MATERIALS = 219.575 INCHES
 TOTAL INITIAL WATER = 219.575 INCHES
 TOTAL SUBSURFACE INFLOW = 0.00 INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM ORLANDO FLORIDA

MAXIMUM LEAF AREA INDEX = 3.30
 START OF GROWING SEASON (JULIAN DATE) = 0
 END OF GROWING SEASON (JULIAN DATE) = 367
 AVERAGE ANNUAL WIND SPEED = 8.60 MPH
 AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 72.00 %
 AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 72.00 %
 AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 80.00 %
 AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 76.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR TAMPA FLORIDA

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
2.10	2.83	3.20	2.19	3.96	7.39
7.78	6.32	5.62	2.82	1.78	1.83

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ORLANDO FLORIDA

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
60.50	61.50	66.80	72.00	77.30	80.90
82.40	82.50	81.10	74.90	67.50	62.00

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ORLANDO FLORIDA

STATION LATITUDE = 27.80 DEGREES

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 20

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	2.03 8.31	2.41 6.30	2.58 5.05	2.00 3.83	3.50 1.61	6.87 1.73
STD. DEVIATIONS	1.24 3.80	1.52 2.23	1.83 2.43	1.67 2.26	2.43 1.16	4.30 0.99
RUNOFF						
TOTALS	0.002 0.068	0.002 0.008	0.003 0.029	0.004 0.020	0.055 0.012	0.189 0.000
STD. DEVIATIONS	0.006 0.124	0.008 0.018	0.011 0.108	0.020 0.074	0.144 0.052	0.395 0.000
EVAPOTRANSPIRATION						
TOTALS	1.965 5.917	2.130 5.838	2.706 4.325	2.439 3.044	2.970 2.065	5.100 2.079
STD. DEVIATIONS	0.861 1.673	0.867 0.965	1.219 1.099	1.460 0.710	1.865 0.813	1.694 0.530
LATERAL DRAINAGE COLLECTED FROM LAYER 1						
TOTALS	0.0169 1.0871	0.0160 0.9286	0.0406 0.7479	0.0813 0.8574	0.0458 0.5085	0.5520 0.1823
STD. DEVIATIONS	0.0663 1.0534	0.0463 1.0705	0.1062 0.9289	0.2109 0.8866	0.1174 0.4460	0.9596 0.2814
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.0006 0.0257	0.0006 0.0232	0.0014 0.0192	0.0024 0.0225	0.0014 0.0153	0.0116 0.0059
STD. DEVIATIONS	0.0022 0.0214	0.0018 0.0217	0.0036 0.0212	0.0060 0.0194	0.0035 0.0116	0.0162 0.0082

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 6

TOTALS	0.0162	0.0129	0.0125	0.0112	0.0111	0.0079
	0.0046	0.0048	0.0064	0.0058	0.0080	0.0153
STD. DEVIATIONS	0.0065	0.0047	0.0047	0.0042	0.0039	0.0042
	0.0046	0.0060	0.0066	0.0066	0.0065	0.0089

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 2

AVERAGES	0.0569	0.0596	0.1363	0.2822	0.1540	1.6093
	3.4175	2.9559	2.5382	2.7927	1.7648	0.6124
STD. DEVIATIONS	0.2229	0.1723	0.3566	0.7325	0.3946	2.3933
	3.0580	3.0959	3.0821	2.7443	1.5479	0.9452

DAILY AVERAGE HEAD ACROSS LAYER 6

AVERAGES	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002
STD. DEVIATIONS	0.0001	0.0001	0.0001	0.0001	0.0000	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	INCHES	CU. FEET	PERCENT
PRECIPITATION	46.23 (8.344)	167800.4	100.00
RUNOFF	0.391 (0.3787)	1420.58	0.847
EVAPOTRANSPIRATION	40.579 (5.6310)	147300.34	87.783
LATERAL DRAINAGE COLLECTED FROM LAYER 1	5.06441 (3.14594)	18383.809	10.95576
PERCOLATION/LEAKAGE THROUGH FROM LAYER 2	0.12990 (0.06756)	471.526	0.28100
AVERAGE HEAD ACROSS TOP OF LAYER 2	1.365 (0.777)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.00003 (0.00002)	0.110	0.00007
PERCOLATION/LEAKAGE THROUGH FROM LAYER 6	0.11668 (0.03679)	423.536	0.25240
AVERAGE HEAD ACROSS TOP OF LAYER 6	0.000 (0.000)		
CHANGE IN WATER STORAGE	0.075 (0.8257)	272.03	0.162

PEAK DAILY VALUES FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)
PRECIPITATION	5.52	20037.600
RUNOFF	1.319	4787.1348
DRAINAGE COLLECTED FROM LAYER 1	0.49721	1804.88135
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.004277	15.52529
AVERAGE HEAD ACROSS LAYER 2	20.882	
DRAINAGE COLLECTED FROM LAYER 5	0.00000	0.00238
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.001132	4.10925
AVERAGE HEAD ACROSS LAYER 6	0.000	
SNOW WATER	0.00	0.0000
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4209
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0727

FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	4.6902	0.1954
2	0.0000	0.0000
3	2.6640	0.2220
4	210.2400	0.2920
5	3.4794	0.1450
6	0.0000	0.0000
SNOW WATER	0.000	

Appendix F
Stormwater Management System
Data and Information

Contents

Transmittal Letter

Section	Page
1 Secondary Surface Water Management System Design Report	
1 Introduction	1-1
2 Basins and Network Description	1-1
3 Method of Analysis	1-1
4 Design Features	1-2
2 Construction, Operation, and Maintenance	2-1
1 Erosion and Sediment Control During Construction	2-1
2 Operation and Maintenance	2-1
Exhibits	
A Computer Input and Output Data	
B Secondary Drainage System Dropdown Design	

Secondary System Design and Analysis

1 Introduction

This section report includes the design of the runoff collection system on the surface of the landfill, including the overland flow on the side slopes and crown of the landfill, and the flows in the terrace swales, the swale inlet structures, and the dropdown piping.

Closure of Cell 8 includes thirteen dropdown systems and four partial dropdown systems in Cell 7B, as shown on the drainage plan. Details of a typical dropdown structure are shown on the enclosed plans. The analysis includes the design of Dropdown "T", representative of the largest, and therefore most critical dropdown of the closure of Cell 8. The analysis for the secondary drainage system was performed in three separate steps, swale analysis, inlet analysis, and dropdown piping analysis.

2 Basins and Network Description

For the purpose of generating hydrographs for the secondary design analysis, the contributing area for each inlet structure was considered to be two sub-basin, one contributing runoff from the left and one from the right side of the inlet structure. Each sub-basin consists of up to three types of hydraulic components; the more-shallow overland slopes located at the top of the landfill; the high-gradient slope located along the side slopes of the landfill; and the swales located along the inside of the terraces. Each dropdown system receives runoff from up to 8 swales, located between elevations 116 feet and 236 feet NGVG.

3 Method of Analysis

The modeling was performed in three phases. The runoff hydrographs to each inlet, including peak discharge, were generated using the computer based model CHAN, Version 2 for Windows. Discharge hydrographs for the basins were calculated using the rainfall duration, depth, distribution, hydrograph shape, drainage area, time of concentration, and imperviousness of the sub-basin. The times of concentration for both sheet flow down the slopes of the landfill and channel flow in the terrace swales were calculated within the model. The 100-year return frequency, 1-hour duration storm with a rainfall depth of 4.5 inches was used in this analysis, closely simulating actual rainfall measurements at the landfill. The SCS Unit Hydrograph Method was used to generate

the runoff hydrographs, using a SCS standard non-dimensional unit hydrograph based on a shape factor of 484. A curve number of 90 was used to compute sub-basin discharges in the secondary design. Exhibit A contains the input data and the basin summaries for the secondary drainage basin hydrographs.

In the second phase of the modeling, the required heads for both the swale hydraulics and the inlet hydraulics were calculated. The swale head was calculated from the geometry of the swale cross-section, the swale slope, and the swale discharge. The inlet head was calculated using the sub-basin discharge and the geometry of the inlet grate. Both the swale head and the inlet head were calculated using a search, or optimization, routine. The objective function involved is the minimization of the sub-basin discharge and the discharge calculated by the hydraulic equation, either the orifice equation for the inlet or the Manning's equation for the swale. Finally, the two heads, swale head and inlet head, were added together to estimate the total head required at the inlet section of the swale. One foot of freeboard is available in all terrace swales. Results of the analysis are included in Exhibit B.

In the third phase, the dropdown structure was modeled using StormCAD, version 1.0 by Haestad Methods, Inc. This procedure uses the upstream and downstream rim elevations and invert elevations, inlet flow, and pipe lengths. StormCAD calculates the resultant hydraulic grade line elevations, pipe size, and the average velocity for each segment of pipe. Minimum pipe size utilized was 18 inches. Calculations for the design are included in Exhibit B. Manholes and U-endwall structures are incorporated in the design for energy dissipation.

4 Design Features

The design of the secondary drainage system involved the analysis of the swales, inlets, and the dropdown piping. Swale geometry is trapezoidal-shaped with a 6-foot bottom width. All swales have a depth of 2.5 feet and a side slope of 2:1 at the inlet and a depth of 1.5 feet and side slopes of 3.3:1 at the high points. Swale slope is a function of the length of the swale. Grates of 48 inches in diameter transfer the discharge from the swale to the dropdown structure. The minimum dropdown pipe diameter is 18 inches for most of the top four pipe segments and then may increase to 24 inches or 30 inches based on the flows contributing to the inlet structures. For energy dissipation manholes and U-endwalls were incorporated in the design.

SECTION 2

Construction, Operation and Maintenance

1 Erosion and Sediment Control During Construction

Prior to commencing construction of the closure of Cell 7B/8 applicable sediment-control and erosion-control features shall be implemented. The erosion control features shall include turbidity barriers in all channels and swales, silt fences along ponds, protection of drainage structures with hay bales and stones, and other BMP's as shown on the construction plans.

During construction of additional terraces and structures, filter fabric barriers shall be placed transverse to water flow in existing channels and swales, and around the inlets to the dropdown structures. In addition, the drainage structures will be protected during construction with hay bales and stones to form a coffer dam. This will minimize soil erosion impacts to the drainage facilities by removing suspended solids from the runoff. The fabric and dams will be inspected periodically and will be replaced when necessary. After the barriers are secured, the construction of the next upgradient structure may be started. Excavated and/or stripped areas shall be re-seeded and mulched and/or re-sodded immediately to prevent erosion damage of exposed soils.

After completion of construction, silt and organic deposits will be removed from the channels and swales. Prior to placing the drainage system in operation, the ponds, channels, structures and pipes will be inspected and cleaned if necessary.

2 Operation and Maintenance

The Operation and Maintenance of the existing and the proposed surface water management facilities is provided by Orange County. The solid waste facility operation personnel are responsible for constructing and maintaining shallow swales, berms and/or culverts as appropriate, to control runoff on and around the disposal areas of the landfill. The weekly solid-waste area and cover will be graded and maintained by operation personnel so that ponding of water on the surface is minimized. The solid waste areas and intermediate cover will also be maintained by repairing the interior or exterior berms as needed, and grading the surfaces and application of additional cover soil in areas of potential ponding.

The stormwater system will be maintained and visually inspected on a periodic basis, and will be cleaned as necessary to maintain proper operation in accordance with the following sediment and erosion control measures:

- Stormwater collection facilities and adjoining ponds and wetlands will be protected from sediment laden runoff until the completion of construction operation.
- Terraces, swales, channels and detention ponds will be sodded or seeded as required immediately after excavation.
- Temporary erosion and siltation control devices will be cleaned or repaired as required during construction; and will be removed after the construction has been completed. Erosion and siltation control features damaged by this removal will be restored.
- No excavated material will be stockpiled in such a manner as to direct runoff away from the project site and into any adjacent stormwater collection facilities.
- Stormwater inlets and discharge structures will be inspected periodically, and cleaned or repaired if needed. Manholes will be visually inspected periodically for any sedimentation, and cleaned if needed.
- During periodic mowing, care should be taken not to disturb or damage the stormwater management system structures. Further, maintenance workers (including mower operators) will be instructed to report all observations of damage to the structures, including pipes, inlets and grates, landfill slopes, terraces, and channels (erosion or deposition).

Exhibit A

Computer Input and Output Data

**DROPDOWN "T" Secondary Drainage: 100-Year, 1-Hour
Basin Summary Listing**

Basin ID	Basin Area acres	Total Rainfall inches	Total Runoff inches	Time to Peak hours	Peak Runoff cfs
T-10L	0.90	4.50	3.81	0.60	7.66
T-10R	0.50	4.50	3.82	0.60	4.25
T-9L	0.60	4.50	3.80	0.50	5.45
T-9R	0.35	4.50	3.84	0.50	3.23
T-8L	0.60	4.50	3.80	0.50	5.45
T-8R	0.40	4.50	3.82	0.50	3.67
T-7L	0.60	4.50	3.80	0.50	5.44
T-7R	0.40	4.50	3.82	0.50	3.67
T-6L	0.60	4.50	3.80	0.50	5.44
T-6R	0.60	4.50	3.82	0.50	5.51
T-5L	0.60	4.50	3.80	0.50	5.44
T-5R	0.40	4.50	3.82	0.50	3.67
T-4L	0.50	4.50	3.82	0.50	4.58
T-4R	0.20	4.50	3.87	0.50	1.86
T-3L	0.60	4.50	3.84	0.50	5.54

DROPDOWN "T" Secondary Drainage: 100-Year, 1-Hour

Basin Topology

<u>Basin ID</u>	<u>Node ID</u>
T-10L	20
T-10R	20
T-9L	20
T-9R	20
T-8L	20
T-8R	20
T-7L	20
T-7R	20
T-6L	20
T-6R	20
T-5L	20
T-5R	20
T-4L	20
T-4R	20
T-3L	20

DROPDOWN "T" Secondary Drainage: 100-Year, 1-Hour

Basin Element Data

T-10L	<u>Destination</u> 20	<u>Hydrograph Laq (hr)</u> 0.	<u>Comput Increment (min)</u> auto
Rainfall :			
Vol (in)	4.5	Dur (hr)	1. Dist Fdot_1h.rai
Excess :			
Initial Abs	0.2	SCS Curve Number	
CN Perv	94.	% NDCIA	0. % DCIA 0.
		CN NDCIA	100. CN DCIA 100.
Runoff :			
Area (ac)	0.9	SCS Unit Hydrograph	Tabular U.H.
		Tc (min)	10.14 scs484.uhg

Travel Time Segment Data

ID Over-top	Type Sheet Flow	Travel Time (min):	7.9
short grass pra	n: .15 l: 150.	p: 4.5 s: .05	
ID Swale	TypeChannel Flow	Travel Time (min):	2.2
b: 6.	ss: 3.5 d: 1.	s: .0062 n: .05 l: 250.	

T-10R	<u>Destination</u> 20	<u>Hydrograph Laq (hr)</u> 0.	<u>Comput Increment (min)</u> auto
Rainfall :			
Vol (in)	4.5	Dur (hr)	1. Dist Fdot_1h.rai
Excess :			
Initial Abs	0.2	SCS Curve Number	
CN Perv	94.	% NDCIA	0. % DCIA 0.
		CN NDCIA	100. CN DCIA 100.
Runoff :			
Area (ac)	0.5	SCS Unit Hydrograph	Tabular U.H.
		Tc (min)	10.21 scs484.uhg

Travel Time Segment Data

ID Overland	Type Sheet Flow	Travel Time (min):	9.2
short grass pra	n: .15 l: 180.	p: 4.5 s: .05	
ID Swale	TypeChannel Flow	Travel Time (min):	1
b: 6.	ss: 3.5 d: 1.	s: .01 n: .05 l: 150.	

T-9L	<u>Destination</u> 20	<u>Hydrograph Laq (hr)</u> 0.	<u>Comput Increment (min)</u> auto
Rainfall :			
Vol (in)	4.5	Dur (hr)	1. Dist Fdot_1h.rai
Excess :			
Initial Abs	0.2	SCS Curve Number	
CN Perv	94.	% NDCIA	0. % DCIA 0.
		CN NDCIA	100. CN DCIA 100.
Runoff :			
		SCS Unit Hydrograph	Tabular U.H.

DROPDOWN "T" Secondary Drainage: 100-Year, 1-Hour

Basin Element Data

Area (ac) 0.6 Tc (min) 4.74 scs484.uhg

Travel Time Segment Data

ID Overland Type Sheet Flow Travel Time (min): 2.5
 short grass pra n: .15 l: 80. p: 4.5 s: .25
 ID Swale Type Channel Flow Travel Time (min): 2.2
 b: 6. ss: 3.5 d: 1. s: .0062 n: .05 l: 250.

T-9R Destination 20 Hydrograph Laq (hr) 0. Comput Increment (min) auto

Rainfall :
 Vol (in) 4.5 Dur (hr) 1. Dist Fdot_1h.ra

Excess : SCS Curve Number
 Initial Abs 0.2 % NDCIA 0. % DCIA 0.
 CN Perv 94. CN NDCIA 100. CN DCIA 100.

Runoff : SCS Unit Hydrograph Tabular U.H.
 Area (ac) 0.35 Tc (min) 3.57 scs484.uhg

Travel Time Segment Data

ID overland Type Sheet Flow Travel Time (min): 2.5
 short grass pra n: .15 l: 80. p: 4.5 s: .25
 ID swale Type Channel Flow Travel Time (min): 1
 b: 6. ss: 3.5 d: 1. s: .01 n: .05 l: 150.

T-8L Destination 20 Hydrograph Laq (hr) 0. Comput Increment (min) auto

Rainfall :
 Vol (in) 4.5 Dur (hr) 1. Dist Fdot_1h.ra

Excess : SCS Curve Number
 Initial Abs 0.2 % NDCIA 0. % DCIA 0.
 CN Perv 94. CN NDCIA 100. CN DCIA 100.

Runoff : SCS Unit Hydrograph Tabular U.H.
 Area (ac) 0.6 Tc (min) 4.74 scs484.uhg

Travel Time Segment Data

ID overland Type Sheet Flow Travel Time (min): 2.5
 short grass pra n: .15 l: 80. p: 4.5 s: .25
 ID swale Type Channel Flow Travel Time (min): 2.2
 b: 6. ss: 3.5 d: 1. s: .0062 n: .05 l: 250.

T-8R Destination 20 Hydrograph Laq (hr) 0. Comput Increment (min) auto

DROPDOWN "T" Secondary Drainage: 100-Year, 1-Hour

Basin Element Data

Rainfall :					
Vol (in)	4.5	Dur (hr)	1.	Dist	Fdot_1h.ra
Excess :		SCS Curve Number			
Initial Abs	0.2	% NDCIA	0.	% DCIA	0.
CN Perv	94.	CN NDCIA	100.	CN DCIA	100.
Runoff :		SCS Unit Hydrograph		Tabular U.H.	
Area (ac)	0.4	Tc (min)	3.92	scs484.uhg	

Travel Time Segment Data

ID overlnd	Type Sheet Flow	Travel Time (min):	2.5
short grass pra	n: .15 l: 80.	p: 4.5 s: .25	
ID swale	TypeChannel Flow	Travel Time (min):	1.4
b: 6.	ss: 3.5 d: 1.	s: .008 n: .05 l: 180.	

	<u>Destination</u>	<u>Hydrograph Lag (hr)</u>	<u>Comput Increment (min)</u>
T-7L	20	0.	auto

Rainfall :					
Vol (in)	4.5	Dur (hr)	1.	Dist	Fdot_1h.ra
Excess :		SCS Curve Number			
Initial Abs	0.2	% NDCIA	0.	% DCIA	0.
CN Perv	94.	CN NDCIA	100.	CN DCIA	100.
Runoff :		SCS Unit Hydrograph		Tabular U.H.	
Area (ac)	0.6	Tc (min)	4.77	scs484.uhg	

Travel Time Segment Data

ID overlnd	Type Sheet Flow	Travel Time (min):	2.5
short grass pra	n: .15 l: 80.	p: 4.5 s: .25	
ID swale	TypeChannel Flow	Travel Time (min):	2.3
b: 6.	ss: 3.5 d: 1.	s: .006 n: .05 l: 250.	

	<u>Destination</u>	<u>Hydrograph Lag (hr)</u>	<u>Comput Increment (min)</u>
T-7R	20	0.	auto

Rainfall :					
Vol (in)	4.5	Dur (hr)	1.	Dist	Fdot_1h.ra
Excess :		SCS Curve Number			
Initial Abs	0.2	% NDCIA	0.	% DCIA	0.
CN Perv	94.	CN NDCIA	100.	CN DCIA	100.
Runoff :		SCS Unit Hydrograph		Tabular U.H.	
Area (ac)	0.4	Tc (min)	3.92	scs484.uhg	

DROPDOWN "T" Secondary Drainage: 100-Year, 1-Hour

Basin Element Data

Travel Time Segment Data

<i>ID overland</i>	<i>Type Sheet Flow</i>	<i>Travel Time (min): 2.5</i>
<i>short grass pra</i>	<i>n: .15 l: 80. p: 4.5 s: .25</i>	
<i>ID swale</i>	<i>TypeChannel Flow</i>	<i>Travel Time (min): 1.4</i>
<i>b: 6.</i>	<i>ss: 3.5 d: 1. s: .008 n: .05 l: 180.</i>	

T-6L	<u>Destination</u>	<u>Hydrograph Lag (hr)</u>	<u>Comput Increment (min)</u>
	20	0.	auto
Rainfall :			
Vol (in) 4.5	Dur (hr) 1.	Dist	Fdot_1h.rai
Excess :	SCS Curve Number		
Initial Abs 0.2	% NDCIA 0.	% DCIA	0.
CN Perv 94.	CN NDCIA 100.	CN DCIA	100.
Runoff :	SCS Unit Hydrograph	Tabular U.H.	
Area (ac) 0.6	Tc (min) 4.77	scs484.uhg	

Travel Time Segment Data

<i>ID overland</i>	<i>Type Sheet Flow</i>	<i>Travel Time (min): 2.5</i>
<i>short grass pra</i>	<i>n: .15 l: 80. p: 4.5 s: .25</i>	
<i>ID swale</i>	<i>TypeChannel Flow</i>	<i>Travel Time (min): 2.3</i>
<i>b: 6.</i>	<i>ss: 3.5 d: 1. s: .006 n: .05 l: 250.</i>	

T-6R	<u>Destination</u>	<u>Hydrograph Lag (hr)</u>	<u>Comput Increment (min)</u>
	20	0.	auto
Rainfall :			
Vol (in) 4.5	Dur (hr) 1.	Dist	Fdot_1h.rai
Excess :	SCS Curve Number		
Initial Abs 0.2	% NDCIA 0.	% DCIA	0.
CN Perv 94.	CN NDCIA 100.	CN DCIA	100.
Runoff :	SCS Unit Hydrograph	Tabular U.H.	
Area (ac) 0.6	Tc (min) 3.92	scs484.uhg	

Travel Time Segment Data

<i>ID overland</i>	<i>Type Sheet Flow</i>	<i>Travel Time (min): 2.5</i>
<i>short grass pra</i>	<i>n: .15 l: 80. p: 4.5 s: .25</i>	
<i>ID swale</i>	<i>TypeChannel Flow</i>	<i>Travel Time (min): 1.4</i>
<i>b: 6.</i>	<i>ss: 3.5 d: 1. s: .008 n: .05 l: 180.</i>	

T-5L	<u>Destination</u>	<u>Hydrograph Lag (hr)</u>	<u>Comput Increment (min)</u>
	20	0.	auto
Rainfall :			

DROPDOWN "T" Secondary Drainage: 100-Year, 1-Hour

Basin Element Data

Vol (in)	4.5	Dur (hr)	1.	Dist	Fdot_1h.rai
Excess :		SCS Curve Number			
Initial Abs	0.2	% NDCIA	0.	% DCIA	0.
CN Perv	94.	CN NDCIA	100.	CN DCIA	100.
Runoff :		SCS Unit Hydrograph		Tabular U.H.	
Area (ac)	0.6	Tc (min)	4.77	scs484.uhg	

Travel Time Segment Data

ID overland	Type Sheet Flow	Travel Time (min):	2.5
short grass pra	n: .15 l: 80. p: 4.5 s: .25		
ID swale	TypeChannel Flow	Travel Time (min):	2.3
b: 6.	ss: 3.5 d: 1. s: .006 n: .05 l: 250.		

	<u>Destination</u>	<u>Hydrograph Lag (hr)</u>	<u>Comput Increment (min)</u>
T-5R	20	0.	auto

Rainfall :					
Vol (in)	4.5	Dur (hr)	1.	Dist	Fdot_1h.rai
Excess :		SCS Curve Number			
Initial Abs	0.2	% NDCIA	0.	% DCIA	0.
CN Perv	94.	CN NDCIA	100.	CN DCIA	100.
Runoff :		SCS Unit Hydrograph		Tabular U.H.	
Area (ac)	0.4	Tc (min)	3.92	scs484.uhg	

Travel Time Segment Data

ID overland	Type Sheet Flow	Travel Time (min):	2.5
short grass pra	n: .15 l: 80. p: 4.5 s: .25		
ID swale	TypeChannel Flow	Travel Time (min):	1.4
b: 6.	ss: 3.5 d: 1. s: .008 n: .05 l: 180.		

	<u>Destination</u>	<u>Hydrograph Lag (hr)</u>	<u>Comput Increment (min)</u>
T-4L	20	0.	auto

Rainfall :					
Vol (in)	4.5	Dur (hr)	1.	Dist	Fdot_1h.rai
Excess :		SCS Curve Number			
Initial Abs	0.2	% NDCIA	0.	% DCIA	0.
CN Perv	94.	CN NDCIA	100.	CN DCIA	100.
Runoff :		SCS Unit Hydrograph		Tabular U.H.	
Area (ac)	0.5	Tc (min)	4.13	scs484.uhg	

Travel Time Segment Data

DROPDOWN "T" Secondary Drainage: 100-Year, 1-Hour

Basin Element Data

ID	Overland	Type	Sheet Flow	Travel Time (min):	2.5
	short grass pra	n: .15	l: 80.	p: 4.5	s: .25
ID	Swale	Type	Channel Flow	Travel Time (min):	1.6
b: 6.		ss: 3.5	d: 1.	s: .0075	n: .05 l: 200.

T-4R	<u>Destination</u>	<u>Hydrograph Laq (hr)</u>	<u>Comput Increment (min)</u>
	20	0.	auto

Rainfall :					
Vol (in)	4.5	Dur (hr)	1.	Dist	Fdot_1h.ra

Excess :		SCS Curve Number			
Initial Abs	0.2	% NDCIA	0.	% DCIA	0.
CN Perv	94.	CN NDCIA	100.	CN DCIA	100.

Runoff :		SCS Unit Hydrograph		Tabular U.H.	
Area (ac)	0.2	Tc (min)	2.78	scs484.uhg	

Travel Time Segment Data

ID	overland	Type	Sheet Flow	Travel Time (min):	2.5
	short grass pra	n: .15	l: 80.	p: 4.5	s: .25
ID	swale	Type	Channel Flow	Travel Time (min):	0.3
b: 6.		ss: 3.5	d: 1.	s: .025	n: .05 l: 60.

T-3L	<u>Destination</u>	<u>Hydrograph Laq (hr)</u>	<u>Comput Increment (min)</u>
	20	0.	auto

Rainfall :					
Vol (in)	4.5	Dur (hr)	1.	Dist	Fdot_1h.ra

Excess :		SCS Curve Number			
Initial Abs	0.2	% NDCIA	0.	% DCIA	0.
CN Perv	94.	CN NDCIA	100.	CN DCIA	100.

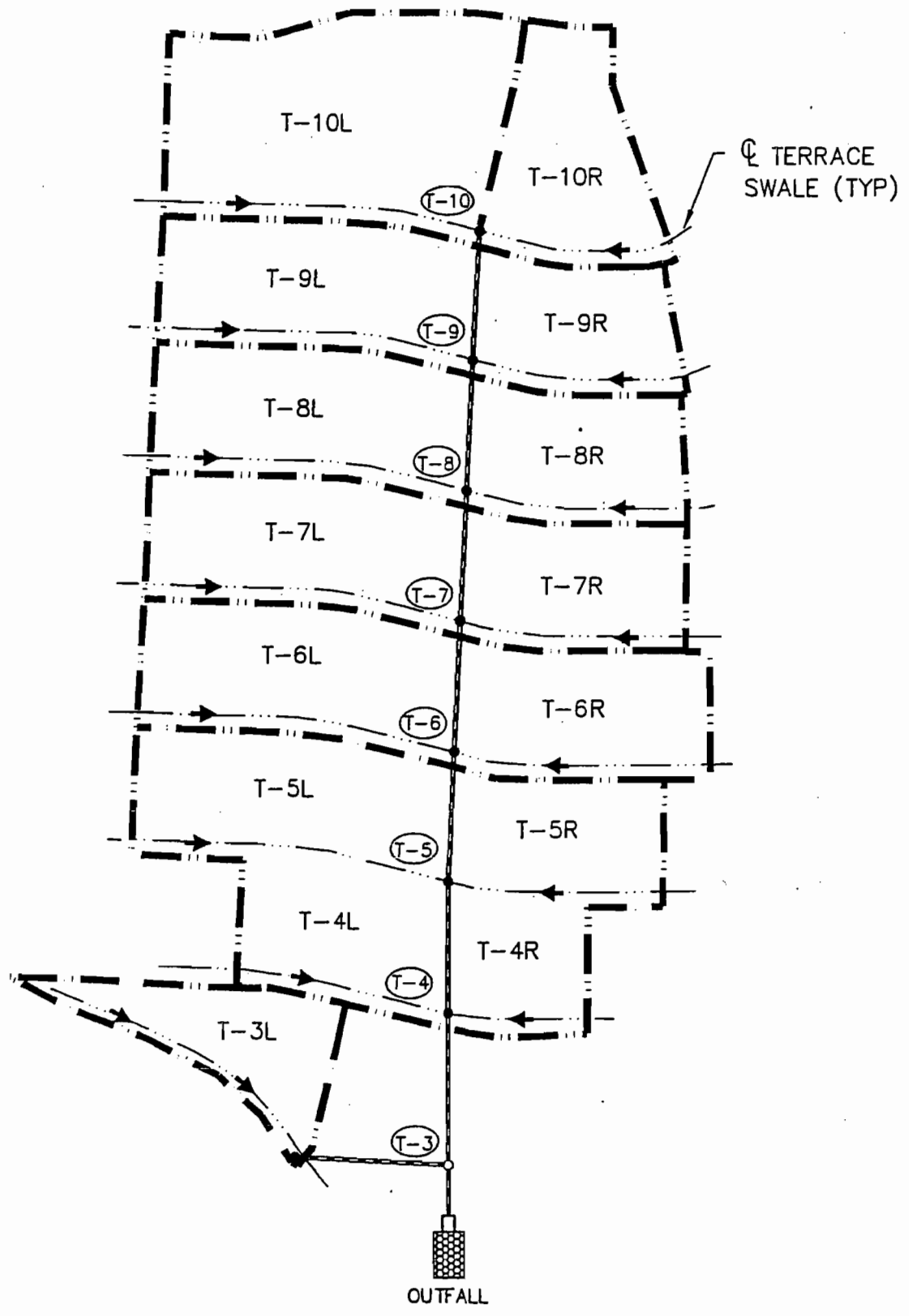
Runoff :		SCS Unit Hydrograph		Tabular U.H.	
Area (ac)	0.6	Tc (min)	3.48	scs484.uhg	

Travel Time Segment Data

ID	overland	Type	Sheet Flow	Travel Time (min):	3.5
	short grass pra	n: .15	l: 120.	p: 4.5	s: .25

Exhibit B

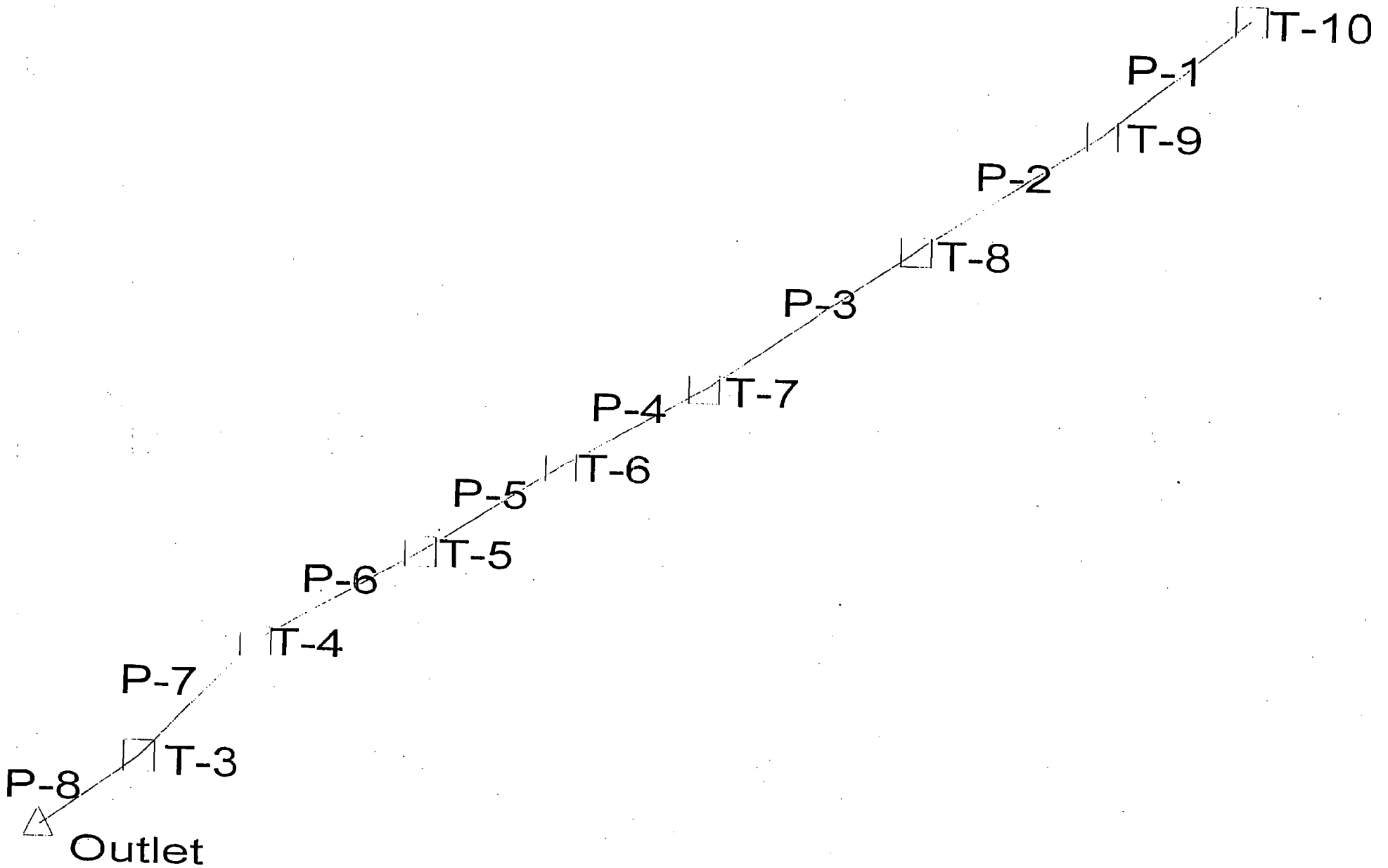
**Secondary Drainage System
Dropdown Design**



DROPDOWN "T"

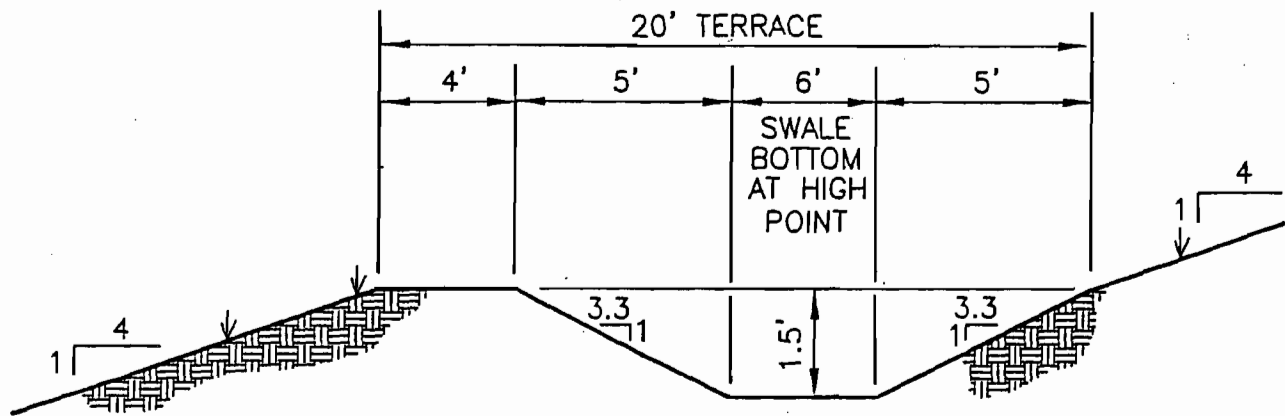
NTS





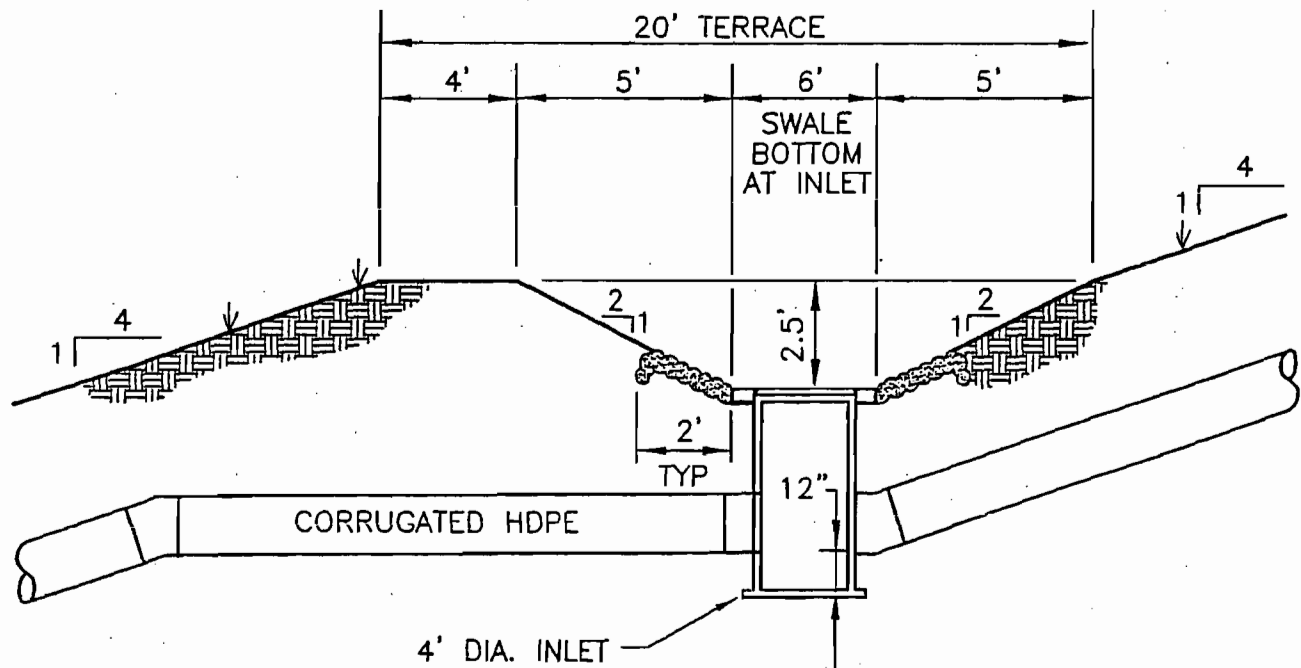
DROPDOWN "T" Modeling Summary

Pipe	Upstrm Node	Dnstrm Node	Length (ft)	Section Size	Addl Flow (cfs)	Discharge (cfs)	Capacity (cfs)	Ave Velocity (ft/s)	Upstrm Rim Elev (ft)	Dnstrm Rim Elev (ft)	Upstream Inv Elev (ft)	Dnstrm Inv Elev (ft)	Upstrm HGL (ft)	Dnstrm HGL (ft)	Constr Slope (ft/ft)
P-1	T-10	T-9	102	18 inch	11.91	11.91	44.12	7.01	233.50	215.50	229.00	211.00	230.31	213.54	0.176471
P-2	T-9	T-8	102	18 inch	8.68	20.59	46.51	11.68	215.50	195.50	211.00	191.00	212.47	194.69	0.196078
P-3	T-8	T-7	102	18 inch	9.12	29.71	46.51	16.82	195.50	175.50	191.00	171.00	192.49	175.50	0.106078
P-4	T-7	T-6	102	18 inch	9.11	38.82	44.12	21.97	175.50	157.50	171.00	153.00	172.50	156.94	0.176471
P-5	T-6	T-5	102	24 inch	10.95	49.77	100.17	15.86	157.50	137.50	153.00	133.00	154.98	137.50	0.196078
P-6	T-5	T-4	102	24 inch	9.11	58.88	100.17	18.75	137.50	117.50	133.00	113.00	134.99	116.82	0.196078
P-7	T-4	T-3	120	30 inch	6.44	65.32	147.55	13.37	117.50	101.00	113.00	91.00	115.42	95.08	0.129412
P-8	T-3	Outlet	50	30 inch	5.54	70.86	100.47	16.49	101.00	94.00	91.00	88.00	93.44	89.83	0.060000



TYPICAL 20' WIDE TERRACE SWALE AT HIGH POINT

N.T.S.



TYPICAL 20' WIDE TERRACE SWALE AT INLET

N.T.S.

ORIFICE & SWALE CALCULATIONS

Dropdown "T"

STORM: 100-yr, 1-hr
Rainfall Depth = 4.5 inches

ORIFICE CALCULATIONS						SWALE CALCULATIONS											
$Q=C*(2gh)^{.5}*A$ C 0.67 Diameter 48.0 (in) Area 5.97 (sq ft) Allow. Head 1.5 (ft) Clogging 50 (%) MH Recess 0.00 (ft)						$Q=(1.49/n)*A*R^{2/3}*S^{1/2}$ Trapezoidal Channel SS Hor 2.7 Bot Width 6 (ft) Manning's n 0.05											
CATCH-BASIN	TOTAL PEAK DISCH	GRATE FLOW AREA	DRIVING HEAD	ORIFICE DISCH	HEAD ABOVE SWALE	LENGTH	SWALE Q	WATER SURFACE		TOP WID	AREA	WP	HY RAD	MANN Q	TOTAL HEAD		
	(cfs)	(sq ft)	(ft)	(cfs)	(ft)			SLOPE	DEPTH						(ft)	(sq)	(ft)
								(ft/ft)	(ft)	(ft)					(ft)	(ft)	
T-10	11.9	2.99	0.55	11.90	0.55	250	7.66	0.0031	0.77	10.16	6.22	10.43	0.60	7.28	1.32	1.32	OK
T-9	8.68	2.99	0.29	8.68	0.29	250	5.45	0.0027	0.67	9.59	5.19	9.83	0.53	5.21	0.96	0.96	OK
T-8	9.12	2.99	0.32	9.12	0.32	250	5.45	0.0027	0.67	9.59	5.19	9.83	0.53	5.21	0.99	0.99	OK
T-7	9.11	2.99	0.32	9.11	0.32	250	5.44	0.0027	0.67	9.59	5.19	9.83	0.53	5.20	0.99	0.99	OK
T-6	11.0	2.99	0.47	11.00	0.47	180	5.51	0.0035	0.62	9.37	4.79	9.59	0.50	5.28	1.09	1.09	OK
T-5	9.11	2.99	0.32	9.11	0.32	250	5.44	0.0027	0.67	9.59	5.19	9.83	0.53	5.20	0.99	0.99	OK
T-4	6.44	2.99	0.16	6.44	0.16	200	4.58	0.0029	0.59	9.18	4.47	9.39	0.48	4.40	0.75	0.75	OK
T-3	5.54	2.99	0.12	5.54	0.12	270	5.54	0.0025	0.68	9.68	5.34	9.92	0.54	5.29	0.80	0.80	OK

Appendix G
Portions of FDEP Financial Assurance Report
For Fiscal Year Ending September 30, 2004

Regulatory Financial Responsibility Cost Estimates Orange County Landfill

As of September 30, 2004

Final Report
October 2004

Prepared for:



Orange County, Florida

Prepared by:



The Joint Venture
Orlando, Florida



Contents

Section	Page
1.0 Executive Summary.....	1
2.0 Regulatory Requirements.....	2
3.0 Methodology	4
4.0 Figures and Tables	6
5.0 Sources.....	30

Attachment

- A Annualized Unit Cost Summary by Detailed Activity Number
- B Quantification of Ditch and Roadway Long-Term Care Areas

SECTION 1.0

Executive Summary

This report was prepared to provide an estimate of closing and long-term costs for the various portions of the Orange County Landfill for use by the County in providing assurance of Financial Responsibility as required by the Florida Administrative Code, Section 62-701.630 (FAC 62-701.630):

The following definitions for the words closing and closure are used in this report.

“Closing”: the physical act of installing a low permeability barrier layer over a landfill according to current regulations and installing other equipment and facilities as necessary to meet regulations

“Closure”: the act of closing a landfill plus long-term care

This report was prepared assuming financial responsibility for FY 2005 will be demonstrated using the Corporate Guarantee (financial test) method as defined in FAC 62-701.630. The closing cost estimates were prepared assuming that the Class I and Class III landfill areas will be closed using synthetic barrier layers.

Since last year's report:

- Construction for expansion of Class I landfilling operations onto the Southern Expansion Site continued and Substantial Completion is expected in December 2004.
- Additional horizontal and vertical extraction wells have been added to the landfill gas collection system in Cells 7B and 8.
- Final closure plan for Cells 7B and 8 has been developed and a closure permit application has been prepared. The closure permit application will be filed with the Florida Department of Environmental Protection (FDEP) during the first quarter of FY 2005.

This report includes:

- Closing and long-term care cost estimates for Cell 7B, Cell 8, Cells 9-12 and Cell 1
- LFG improvement cost estimates for Cell 7B, Cell 8, Cells 9-12 and Cell 1
- Long-term care cost estimate for Cells A-K
- Closing cost estimate for the waste tire processing area

The corporate guarantee, or financial test, must provide for financial responsibility in the amount of \$101,425,501.

Regulatory Requirements

FAC 62-701.630 addresses financial responsibility requirements for landfills and other solid waste management facilities. Government-owned landfills can demonstrate financial responsibility in several ways. Mechanisms available include establishment of an escrow account, use of the corporate guarantee (financial test), surety bonds, certificates of deposit, securities, letters of credit, trust fund agreements, and closure insurance.

Orange County has used the Corporate Guarantee mechanism in the past to prove financial responsibility. As a practical matter, however, the County has escrowed funds to pay for closing and long-term care of landfill areas as needed.

When the Corporate Guarantee or financial test is used, it must fully cover all anticipated closing costs and all anticipated long-term care costs for the periods defined in the rule. FAC 62-701.630 exempts government-owned landfills closed on or before October 1, 1988 from compliance with the financial responsibility rule. Therefore, long-term care for that portion of the landfill closed prior to 1985 (Subbasins 2B, 3, 4, and 5) has not been included in this report.

The U.S. Environmental Protection Agency (EPA) promulgated *Standards of Performance, Emission Guidelines and Compliance Times*, and *New Source Performance Standards* for municipal solid waste (MSW) landfills in March 1996. These regulations bring MSW landfills under the direct control of the Clean Air Act (CAA) and require the installation of landfill gas (LFG) emissions controls at the Orange County Landfill. Cost estimates for LFG improvements for Cell 7B, Cell 8, Cells 9-12 and Cell 1 have been included in the closure cost estimates.

Prior to FY 2002, passive venting was used to control LFG emissions from Cell 1. Based on the quantity of LFG being emitted from Cell 1, CAA regulations require that LFG be actively collected and flared. The initial phase of the active LFG collection system was installed in Cell 1 during FY 2002 and subsequent phases will be required during future phases of closing. The cost of active LFG collection and flaring is included in the Cell 1 closing and long-term care cost estimates.

FDEP establishes the method for estimating closing and long-term care costs for financial responsibility in FAC 62-701.630 by referencing and adopting 40 CFR, Part 264, Subpart H. These federal regulations specify that closing and long-term care cost estimates may be made by:

- Recalculating the maximum costs of closing and long-term care in current dollars
- Using an inflation factor derived from the most recent Implicit Price Deflator for Gross Domestic Product published by the U.S. Department of Commerce in its *Economic Report of the President* to inflate cost estimates from the prior year

Cell 7B, Cell 8, Cells 9-12 and Cell 1 are required to have long-term care for 30 years after closing. Based on FAC 62-701.600(1)(a)3, Cells A-K are only required to have a 20 year long-

term care period, since no waste was accepted in this area after January 6, 1993 and a closure permit has been issued by the FDEP. The Official Closing Date for Cells A-K cannot be established until Cell 1 is closed since Cells A-K cannot be "monitored and maintained separately from the rest of the landfill" as required by FAC 62-701.610(6).

SECTION 3.0

Methodology

All tables prepared for this report are grouped together in Section 4.0 to allow the reader to follow the calculations more easily. Landfill areas including drainage basins and subbasins and disposal cells are shown on Figure 1 in Section 4.0. Projections of the amount of waste delivered to the Orange County Landfill for disposal annually are shown in Table 1. Fill progression and projected fill date for Cells 7B and 8 are presented in Figure 2 and Table 2 and fill progression and projected fill date for Cell 1 are presented in Figure 3 and Table 3. Projected fill dates for Cells 9-12 are presented in Figure 4.

Closing costs were estimated based on information from Orange County and other experience. Unit prices used in these cost estimates have been adjusted for inflation where necessary. An annual inflation rate of 1.30 percent was used in accordance with FAC 62-701.630. FAC 62-701.630 adopts 40 CFR, Part 264, Subpart H, which sets forth the method of annual adjustment for cost estimates used for establishing financial responsibility. These federal regulations specify that an inflation factor derived from the most recent Implicit Price Deflator for Gross Domestic Product published by the U.S. Department of Commerce in its *Economic Report of the President* shall be used as the inflation factor when estimating closing and long-term care costs. The source of each unit price used in the closing cost estimates is indicated in Table 5.

Long-term care costs were completely re-evaluated during FY 1998 based on information from Orange County and other experience. During this re-evaluation, unit prices were developed for 55 specific long-term care activities falling into the following categories:

- Final Cover Repair
- Mowing and Grounds Keeping
- Groundwater, Surface Water, Leachate, and LFG Monitoring
- Stormwater Pond Maintenance
- Ditch Maintenance
- Road Maintenance
- Wetlands Monitoring
- Leachate Treatment, Transmission, and Disposal
- LFG System Operation and Maintenance

Detailed cost sheets were prepared for each long-term care activity. The detailed cost sheets define the labor, equipment, and materials necessary to perform each activity, and the frequency at which the activity is expected to be performed. Annualized unit costs are shown in Table 12. These unit costs have been consolidated from 55 detailed activities into 20 items based on the commonality of the activity being performed and landfill area involved. A summary of the annualized unit costs for the detailed long-term care activities is presented in Attachment A.

A cost estimate for closing the waste tire processing facility, listed in Table 10, was calculated by multiplying the expected maximum quantity of tires at the facility (1,000 tons) by the cost of hauling and disposal of the tires by a third party contractor (\$73.75 per ton)

(1). This facility is anticipated to remain in operation as long as other solid waste activities take place on the property. Since this length of time is not now defined, it is assumed that the closing date will be the same as the closing date for the Cell 12.

SECTION 4.0

Figures and Tables

The figures and tables are organized as follows:

Figure

Numbers

Function

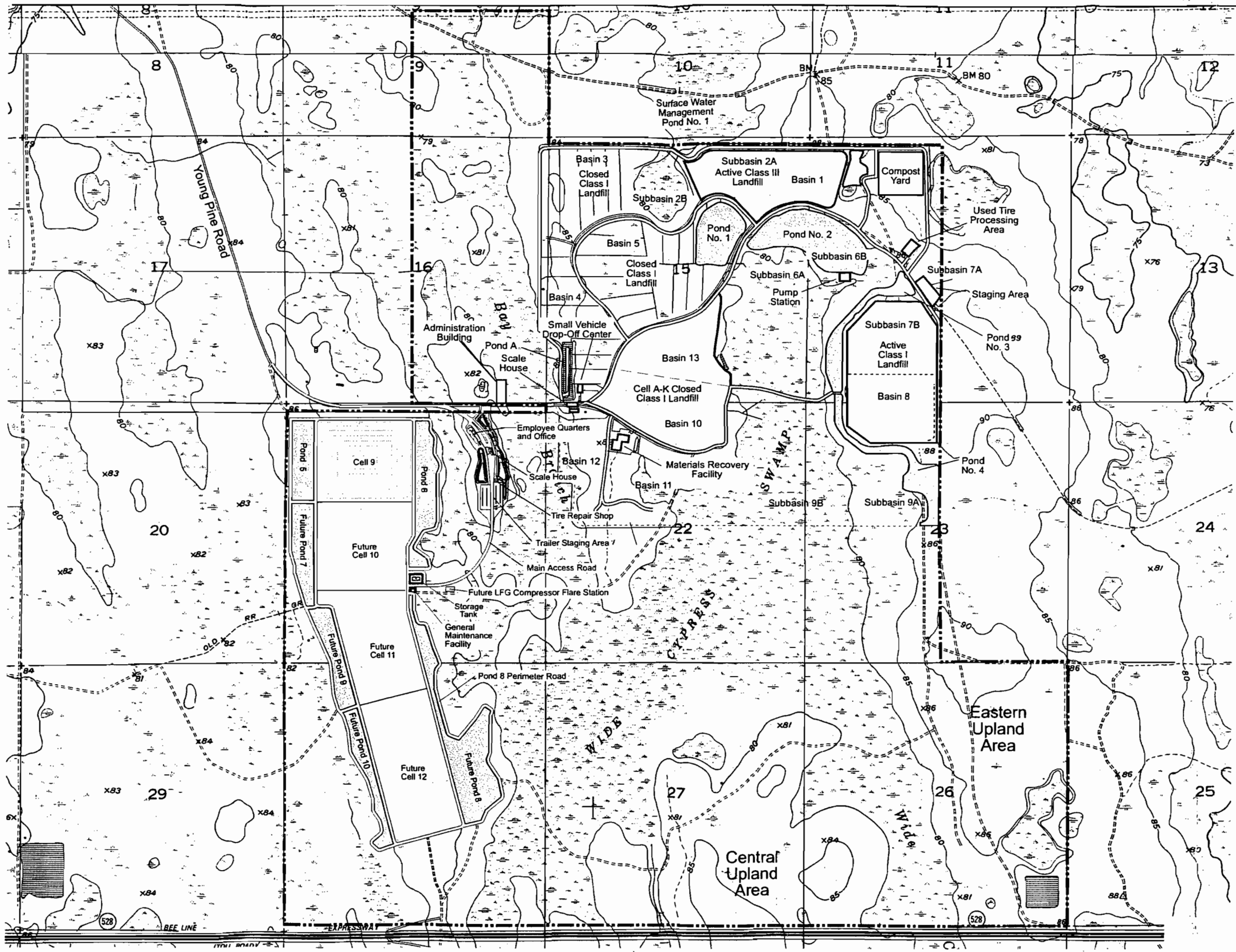
- | | |
|---|---|
| 1 | Shows locations of drainage basin and landfill cell |
| 2 | Cross-Section of Cells 7B and 8 showing progression of solid waste filling |
| 3 | Cross-Section of Class III, Cell 1 showing progression of solid waste filling |
| 4 | Projected Fill Dates for Cells 9-12 |

Table

Numbers

Function

- | | |
|-------|---|
| 1-4 | Provide basic information concerning the landfill facility |
| 5 | Provides estimated costs of individual materials or activities used in landfill closing |
| 6 | Provides the cost to close Cell 7B in compliance with FAC 62-701 |
| 7 | Provides the cost to close Cell 8 in compliance with FAC 62-701 |
| 8 | Provides the cost to close Cells 9-12 in compliance with FAC 62-701 |
| 9 | Provides the cost to close Class III, Cell 1 in compliance with FAC 62-701 |
| 10 | Calculates the present value of landfill closing cost estimates |
| 11 | Provides a summary of estimated closing cost expenditures |
| 12 | Provides estimated costs of individual materials or activities used in landfill long-term care cost estimates |
| 13-17 | Provide estimated annual costs for long-term care of various landfill areas |
| 18 | Provides a summary of estimated long-term care costs of various landfill areas |
| 19 | Summarizes estimated closing and long-term care costs for all facilities |



Approximate
Scale in Feet
0 1000 2000

Legend

- Boundary of Acquisition Properties
- 32 Section Number

Base Map: USGS 7.5 Minutes
Series Oveido SW Quadrangle,
photo revised 1980, and
Narcoosee NW Quadrangle,
photo revised 1980.

Figure 1
Landfill Cell Locations and Drainage Basin Map
Orange County Financial Responsibility Costs Estimates



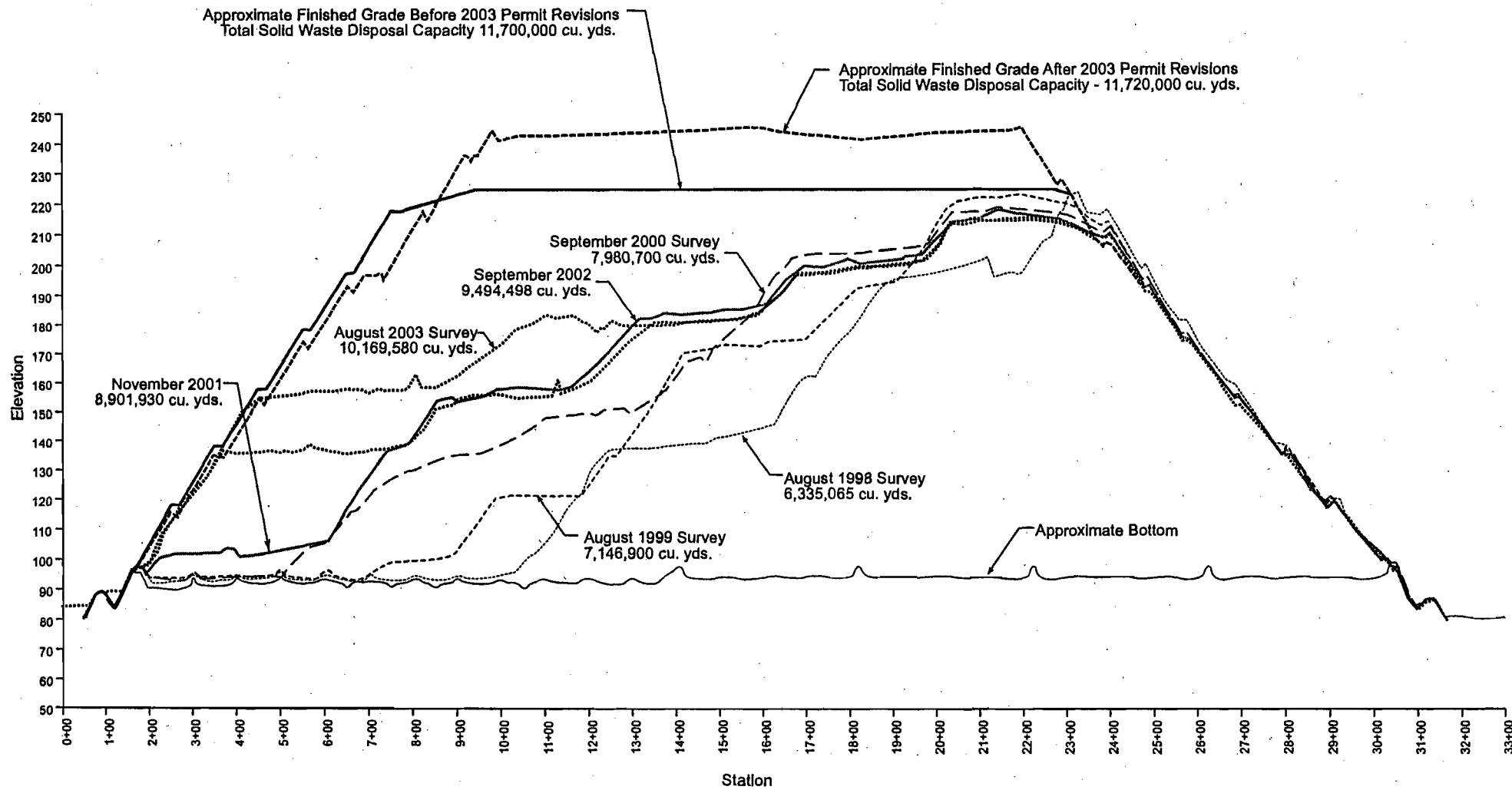


Figure 2
Cross-Section of Cells 7B and Cell 8 Showing Progress of Waste Fill
Orange County Financial Responsibility Costs Estimates



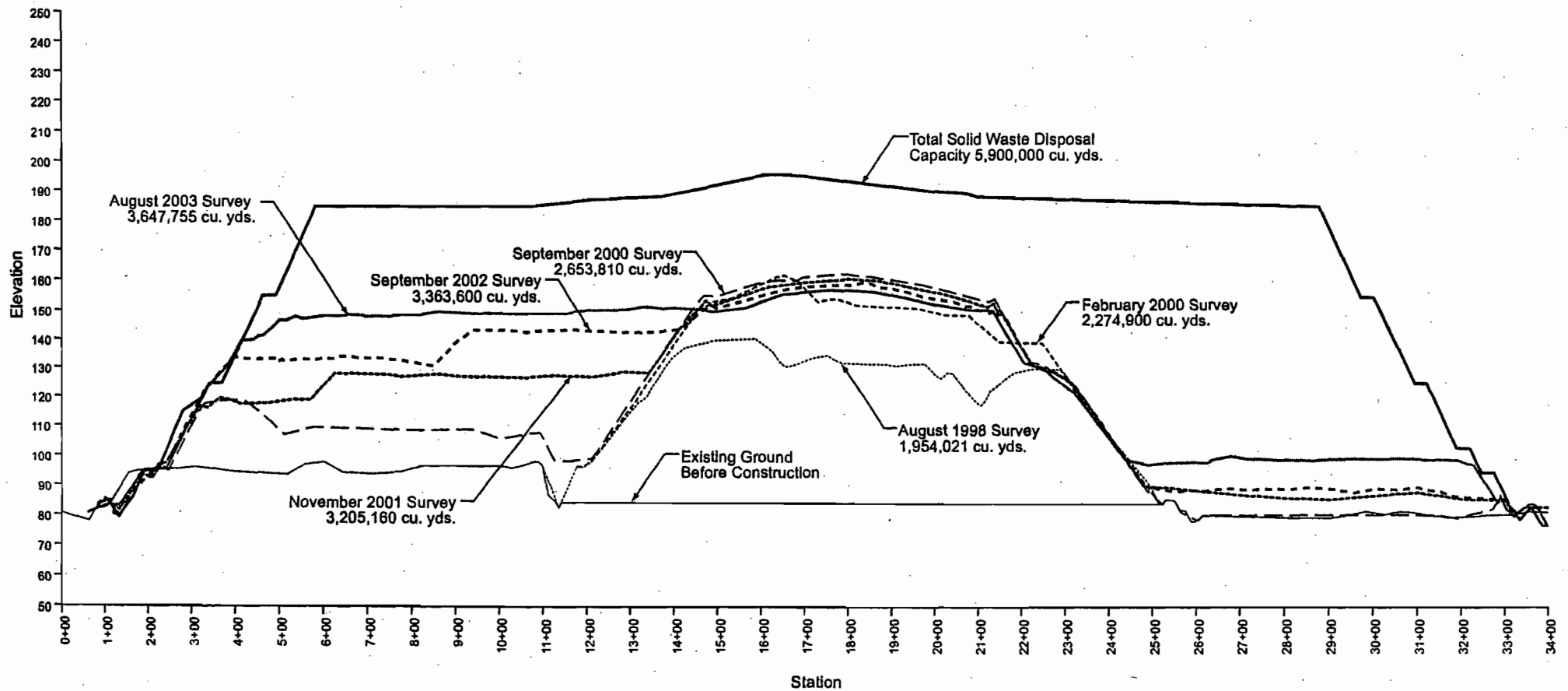


Figure 3
 Cross-Section of Class III, Cell 1 Showing Progress of Waste Fill
 Orange County Financial Responsibility Costs Estimates



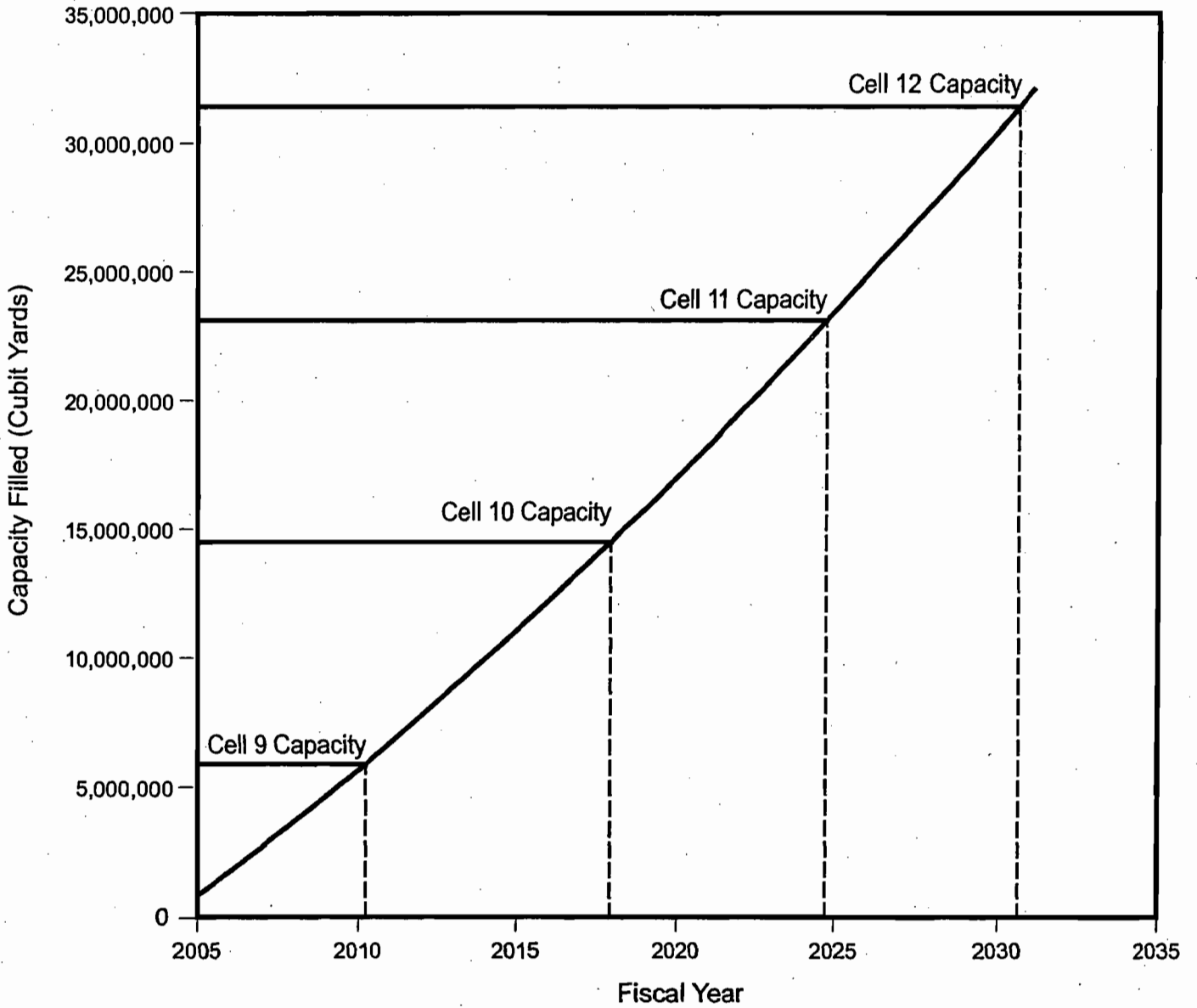


FIGURE 4
 Cells 9-12 Utilization Projections
 Orange County Financial Responsibility Costs Estimates



Table 1
Solid Waste Tonnage Projections Based on Medium Population Growth
Orange County Solid Waste System

Year	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 15	FY 20	FY 25
Waste Projections (in Tons)												
Projected Growth Rate ¹				4.17%	3.70%	2.39%	2.39%	2.39%	2.39%	2.09%	1.89%	1.65%
Landfill - Class I												
Residential	142,510	155,216	171,443	162,907	168,932	172,963	177,091	181,317	185,643	205,894	226,065	245,361
Commercial	107,208	118,824	148,468	130,036	134,845	138,063	141,358	144,731	148,184	164,349	180,450	195,852
Blue Bag Received	8,719	6,489	50	5,298	5,494	5,625	5,759	5,897	6,037	6,696	7,352	7,979
McLeod Transfer												
Residential	57,905	58,628	55,500	59,734	61,944	63,422	64,935	66,485	68,071	75,496	82,893	89,968
Commercial	118,292	125,171	119,581	126,058	130,720	133,840	137,034	140,303	143,651	159,321	174,930	189,861
Blue Bag Received	1,395	1,770	159	1,154	1,197	1,226	1,255	1,285	1,315	1,459	1,602	1,738
Porter Transfer												
Residential	99,705	98,228	104,454	104,997	108,880	111,478	114,138	116,862	119,650	132,702	145,703	158,139
Commercial	44,513	46,329	50,878	49,209	51,029	52,246	53,493	54,770	56,077	62,194	68,287	74,115
Blue Bag Received	0	0	0	0	0	0	0	0	0	0	0	0
Total Class I												
Residential	300,120	312,071	331,397	327,638	339,755	347,863	356,164	364,663	373,365	414,092	454,660	493,468
Commercial	270,014	290,324	318,927	305,303	316,594	324,149	331,884	339,804	347,912	385,864	423,666	459,829
Blue Bag Received	10,113	8,259	210	6,452	6,691	6,850	7,014	7,181	7,353	8,155	8,954	9,718
Landfill - Other Categories												
Other Class I	70	47	55	60	62	64	65	67	68	76	83	90
Sludge	38,395	41,006	4,359	29,084	30,159	30,879	31,616	32,370	33,143	36,758	40,359	43,804
Yard Waste (LF+Compost)	75,354	97,031	145,749	110,464	114,550	117,283	120,082	122,947	125,881	139,613	153,290	166,375
Class III	164,202	226,587	278,905	232,535	241,135	246,889	252,781	258,813	264,989	293,894	322,687	350,230
Asbestos	35	38	53	44	45	46	47	49	50	55	61	66
Tires	1,447	1,721	1,863	1,747	1,812	1,855	1,899	1,944	1,991	2,208	2,424	2,631
Total Waste Processed by Category												
Class I	579,546	609,890	650,107	638,937	662,568	678,379	694,566	711,141	728,110	807,535	886,647	962,328
Sludge	38,395	41,006	4,359	29,084	30,159	30,879	31,616	32,370	33,143	36,758	40,359	43,804
Yard Waste - Class III Landfill	14,737	26,978	40,818	28,658	29,717	30,427	31,153	31,896	32,657	36,219	39,768	43,162
Yard Waste - Compost	60,617	70,054	104,931	81,807	84,832	86,857	88,929	91,051	93,224	103,393	113,523	123,212
Class III	164,202	226,587	278,905	232,535	241,135	246,889	252,781	258,813	264,989	293,894	322,687	350,230
Clean Debris	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Asbestos	35	38	53	44	45	46	47	49	50	55	61	66
Tires	1,447	1,721	1,863	1,747	1,812	1,855	1,899	1,944	1,991	2,208	2,424	2,631
White Goods Recycled	450	554	481	516	535	548	561	574	588	652	716	777
Blue Bag Recycled	322	257	0	0	0	0	0	0	0	0	0	0
Total Processed	859,751	977,085	1,081,518	1,013,327	1,050,804	1,075,879	1,101,552	1,127,838	1,154,751	1,280,715	1,406,184	1,526,211
Total Waste Processed by End Use												
Class I Landfill - Cells A-K	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Class I Landfill - Cells 7B & 8	617,941	650,896	654,467	260,582	NA	NA	NA	NA	NA	NA	NA	NA
Class I Landfill - Cell 9				407,439	692,727	709,258	726,182	743,511	761,253	844,293	927,006	1,006,132
Class III Landfill	178,939	253,565	319,724	261,193	270,853	277,316	283,933	290,709	297,646	330,114	362,454	393,392
Waste Tire Processing Area	1,447	1,721	1,863	1,747	1,812	1,855	1,899	1,944	1,991	2,208	2,424	2,631
Asbestos Disposal Area	35	38	53	44	45	46	47	49	50	55	61	66
Clean Debris	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yardwaste Compost	60,617	70,054	104,931	81,807	84,832	86,857	88,929	91,051	93,224	103,393	113,523	123,212
White Goods Recycled	450	554	481	516	535	548	561	574	588	652	716	777
Blue Bag Recycled	322	257	0	0	0	0	0	0	0	0	0	0
Total Processed	859,751	977,085	1,081,518	1,013,327	1,050,804	1,075,879	1,101,552	1,127,838	1,154,751	1,280,715	1,406,184	1,526,211

Note: Recycling tonnages for the Recovered Material Processing Facility, and public and private recycling programs are not accounted for in this table.

1. The "Projected Growth Rate" is based on the medium growth population projection from *Florida Population Studies*, Bureau of Economic and Business Research, University of Florida, February 2004.

**Table 2
Cell 7B and Cell 8 Utilization Projections
Orange County Solid Waste System**

FY	Total Class I Waste Tonnage	Cumulative Class I Tonnage	Cell 7B				Cell 8				Cell 7B&8 Combined			
			Annual Waste Tonnage	Cumulative Waste Tonnage	Cumulative Waste Volume ¹	Percent of Capacity Used	Annual Waste Tonnage	Cumulative Waste Tonnage	Cumulative Waste Volume ¹	Percent of Capacity Used	Annual Waste Tonnage	Cumulative Waste Tonnage	Cumulative Waste Volume	Percent of Capacity Used
1991	239,093	239,093	239,093	239,093	312,632	6.1%					239,093	239,093	312,632	2.7%
1992	618,761	857,854	618,761	857,854	1,121,709	22.0%					818,761	857,854	1,121,709	9.6%
1993	625,564	1,483,419	625,564	1,483,419	1,939,681	38.0%					625,564	1,483,419	1,939,681	16.6%
1994	673,629	2,157,048	673,629	2,157,048	2,820,502	55.3%					673,629	2,157,048	2,820,502	24.1%
1995	728,113	2,885,161	728,113	2,885,161	3,772,565	74.0%					728,113	2,885,161	3,772,565	32.2%
1996	711,058	3,596,219	711,058	3,596,219	4,702,326	92.2%					711,058	3,596,219	4,702,326	40.1%
1997	875,376	4,271,595	304,131	3,900,349	5,100,000	100.0%	371,245	374,359	489,502	7.4%	675,376	4,271,595	5,589,502	47.7%
1998	625,365	4,896,959					625,365	999,723	1,314,070	19.9%	625,365	4,896,959	6,414,070	54.7%
1999	631,096	5,528,055					631,096	1,630,819	2,146,196	32.4%	631,096	5,528,055	7,246,196	61.8%
2000	550,251	6,078,307					550,251	2,181,071	2,871,724	43.4%	550,251	6,078,307	7,971,724	68.0%
2001	603,158	6,681,464					603,158	2,784,228	3,670,869	55.5%	603,158	6,681,464	8,770,869	74.8%
2002	617,941	7,299,405					617,941	3,402,169	4,425,333	68.8%	617,941	7,299,405	9,525,333	81.3%
2003	650,896	7,950,301					650,896	4,053,065	5,239,230	79.1%	650,896	7,950,301	10,339,230	88.2%
2004	654,467	8,604,767					654,467	4,707,531	8,272,558	94.8%	654,467	8,604,767	11,372,558	97.0%
2005	668,021	9,272,789					260,582	4,988,113	6,620,000	100.0%	260,582	8,865,349	11,720,000	100.0%

Projected Fill Date² = Feb-05

Apparent Density for Projections¹ = 1,500 lbs./CY
 Volume Available Cell 7B = 5,100,000 CY
 Volume Available Cell 8 = 6,620,000 CY
 Volume Available Total = 11,720,000 CY

1. Density for FY 91 through FY 03 are actual density achieved based on topographic surveys conducted on August 1995, July 1996, August 1998, August 1999, September 2000, November 2001, September 2002, and August 2003. Projected volumes for FY 04 and beyond are based on the "Apparent Density for Projections" stated above.
 2. "Projected Fill Date" is based on the assumption that all Class I waste from the Porter and McLeod Transfer Stations will be disposed of in Cell 9 beginning in January 2005, that the remaining waste will be disposed of in Cell 7B/8, and that this disposal procedure will continue until Cell 7B/8 reaches capacity.

Table 3
Class III, Cell 1 Utilization Projections
Orange County Solid Waste System

FY	Total Class III Waste Tonnage	Class III Tonnage to Cell 1	Cumulative Class III Tonnage	Cumulative Class III Volume	Percent of Capacity Used
1989	27,416	27,416	27,416	57,460	1.0%
1990	39,311	39,311	66,727	139,849	2.4%
1991	45,828	45,828	112,555	235,897	4.0%
1992	111,434	111,434	223,989	469,444	8.0%
1993	142,205	142,205	366,194	767,482	13.0%
1994	138,000	138,000	504,194	1,056,707	17.9%
1995	120,428	120,428	624,622	1,309,104	22.2%
1996	110,749	110,749	735,372	1,541,216	26.1%
1997	84,050	84,050	819,422	1,717,371	29.1%
1998	116,452	116,452	935,874	1,961,435	33.2%
1999	134,510	134,510	1,070,384	2,243,345	38.0%
2000	205,415	205,415	1,275,799	2,673,861	45.3%
2001	201,573	201,573	1,477,372	3,105,049	52.6%
2002	178,939	178,939	1,656,310	3,468,864	58.8%
2003	253,565	253,565	1,909,875	3,962,130	67.2%
2004	319,724	319,724	2,229,599	4,672,628	79.2%
2005	261,193	261,193	2,490,792	5,253,056	89.0%
2006	270,853	270,853	2,761,644	5,854,950	99.2%
2007	277,316	20,272	2,781,917	5,900,000	100.0%

Projected Fill Date¹ = Oct-2006

Apparent Density for Projections =	900 lbs./CY
Volume Available Sequence 1 =	3,100,000 CY
Volume Available Sequence 2 =	3,600,000 CY
Volume Available Sequence 3 =	4,900,000 CY
Volume Available Sequence 4 =	5,900,000 CY

1. Density for FY 91 through FY 03 are actual density achieved based on topographic surveys conducted on August 1995, July 1996, August 1998, September 2000, November 2001, September 2002, and August 2003. Projected volumes for FY 04 and beyond are based on the "Apparent Density for Projections" stated above.

Best Available Copy

**Table 4
Orange County Landfill
Closing and Long Term Care Schedule Summary**

Drainage Basin or Subbasin	Closure Status	Closing Date	Long Term Care Period	
Pre-1985 Area	Closed prior to closure and long-term care financial assurance requirements.	2007	2008	2027
Cells A-K	Cell A-K closure was completed during FY 95. Its 20 year long term care period will not start until closure of Class III disposal area.	2007	2008	2027
Class III, Cell 1	Vertical and horizontal expansion of Class III disposal area was permitted in FY 97. See Table 3.	2007	2008	2037
Cell 7B	Active landfill disposal area. Phase 1 sequential closure was completed in FY 95 and Phase 2 sequential closure was completed in FY 99. See Table 2.	2006	2007	2036
Cell 8	Active landfill disposal area. See Table 2.	2006	2007	2036
Cells 9-12	Future landfill disposal area schedule to begin operation in early FY 2005. See Figure 4.	2031	2032	2061

Note: The official closure dates for the Pre-1985 Area and Cells A-K are linked to the closure date of the Class III Disposal Area because of shared monitoring and leachate management facilities. The County plans to permit additional Class III landfill capacity that will extend the life of the Class III facility and change the closing and long-term care dates for the Pre-1985 Area and Cells A-K. The closing and long-term care dates for the Pre-1985 Area and Cells A-K will be adjusted once the additional Class III capacity is permitted and the life expectancy is estimated.

Table 5
Orange County Landfill
Estimated Unit Costs and Sources of Information for Landfill Closings

Item Number	Material or Activity	Material or Activity Description	Unit	Unit Cost 9/30/03	Source
1.	Contractor Mobilization	Cost to a contractor to move equipment and prepare to begin work	AC	\$4,800	2
2.	Initial Site Preparation	Clearing and Grading	AC	\$2,300	3
3.	Excavating Waste	Excavation for structures or drainage	CY	\$6.50	3
4.	Regrading Ditches	Regrading for proper drainage	LF	\$2.90	4
5.	Protective Layer Beneath Geomembrane	Clean local borrow	CY	\$7.30	3
6.	Composite Drainage Net	Double-sided composite drainage net	SF	\$0.50	3
7.	Textured Geomembrane	40 mil linear low density polyethylene	SF	\$0.47	5
8.	Leachate Underdrain System	Perforated underdrain piping surrounded by river gravel and wrapped with geotextile.	SF	\$6,600	6
9.	Granular Fill Above Barrier Layer	Clean local borrow	CY	\$7.30	3
10.	Horizontal Gas Vent	Installation of one horizontal landfill gas vent in Class III disposal area	LF	\$73.00	7
11.	Top Soil	Soil containing or amended with humus to sustain plant growth	CY	\$7.70	3
12.	Seeding	Seeding and mulching	SF	\$0.03	3
13.	Sodding	Bahia sod	SF	\$0.20	3
14.	Surface Drainage Structures	HDPE downslope piping & inlets, drainage swales & concrete outfall structures	AC	\$13,500	8
15.	Third Party Quality Control for Synthetic Barrier Layer	Includes soil densities and thickness, Atterberg Limits, synthetic peel and shear, welding and seam test observation, concrete testing	AC	\$2,600	9
16.	Low Permeability Soil Cover	Clay	CY	\$17	3
17.	Third Party Quality Control for Soil Barrier Layer	Includes soil densities and thickness, Atterberg Limits, and concrete testing	AC	\$3,600	10
18.	Well Header System	HDPE LFG collection header piping and valves	AC	\$3,300	11
19.	LFG Extraction Wells	Includes LFG extraction well boring and casing.	LF	\$150	13
20.	Lateral Vent Connections	Includes wellhead and piping needed to connect wellhead to header system.	AC	\$5,800	11
21.	Gas Collection Main	HDPE LFG perimeter piping system and valves	AC	\$11,000	11
22.	Condensate Collection System	HDPE condensate collection piping, valves, sumps & pumps.	AC	\$3,400	11

NOTES:
See Section 5.0 for numbered list of sources

Table 6
Orange County Landfill
Estimated Closing Cost - Cell 7B
As of September 30, 2004

Activity/Item Number	Closure Activity Description	Base		Total		Unit Cost	Per Acre Cost
		Quantity	Units	Quantity	Units		
1.	Contractor Mobilization	1	AC	1	AC	4,800.00	4,800.00
2.	Initial Site Preparation	1	AC	1	AC	2,300.00	2,300.00
3.	Excavating Waste	1	AC	2,420	CY	6.50	15,730.00
4.	Regrading Ditches	1	AC	75	LF	2.90	217.50
5.	Protective Layer Beneath Geomembrane	0.5	FT	807	CY	7.30	5,888.67
7.	Textured Geomembrane	1	AC	43,560	SF	0.47	20,473.20
8.	Leachate Underdrain System	1	AC	1	AC	6,600.00	6,600.00
9.	Protective Layer Above Geomembrane	1.5	FT	2,420	CY	7.30	17,666.00
11.	Top Soil	0.5	FT	807	CY	7.70	6,211.33
12.	Seeding	0.25	AC	10,890	SF	0.03	326.70
13.	Sodding	0.75	AC	32,670	SF	0.20	6,534.00
14.	Surface Drainage Structures	1	AC	1	AC	13,500.00	13,500.00
15.	Third Party Quality Control for Class I Closure	1	AC	1	AC	2,600.00	2,600.00
18.	Well Header System ²	1	AC	1	AC	3,300.00	3,300.00
19.	LFG Extraction Wells ¹	60	LF	60	AC	150.00	9,000.00
20.	Lateral Vent Connections ²	1	AC	1	AC	5,800.00	5,800.00
TOTAL FINAL CLOSURE COST PER ACRE							120,947.40
CELL 7B REMAINING ACREAGE TO CLOSE							2.60
ESTIMATED CONSTRUCTION COST							314,463.24
ENGINEERING (PERMITTING, DESIGN, CONSTRUCTION SUPERVISION)							62,892.65
SUBTOTAL							377,355.89
CONTINGENCY							10%
							37,735.59
							\$415,091.48
COST TO CLOSE CELL 7B							

See Table 5 for unit cost sources.

Note:

1. Gas extraction wells were installed in Cell 7B during Phase 1 and Phase 2 sequential closure. Additional wells will be installed during subsequent phases of sequential closure of Cells 7B and 8.
2. The LFG collection system for Cells A-K, 7B and 8 was installed in FY 1998. Additional LFG collection piping will be added during each phase of sequential closure of Cells 7B and 8.

Table 7
Orange County Landfill
Estimated Closing Cost - Cell 8
As of September 30, 2004

Activity/Item Number	Closure Activity Description	Base		Total		Unit Cost	Per Acre Cost
		Quantity	Units	Quantity	Units		
1.	Contractor Mobilization	1	AC	1	AC	4,800.00	4,800.00
2.	Initial Site Preparation	1	AC	1	AC	2,300.00	2,300.00
3.	Excavating Waste	1	AC	2,420	CY	6.50	15,730.00
4.	Regrading Ditches	1	AC	75	LF	2.90	217.50
5.	Protective Layer Beneath Geomembrane	0.5	FT	807	CY	7.30	5,888.67
7.	Textured Geomembrane	1	AC	43,560	SF	0.47	20,473.20
8.	Leachate Underdrain System	1	AC	1	AC	6,600.00	6,600.00
9.	Protective Layer Above Geomembrane	1.5	FT	2,420	CY	7.30	17,666.00
11.	Top Soil	0.5	FT	807	CY	7.70	6,211.33
12.	Seeding	0.25	AC	10,890	SF	0.03	326.70
13.	Sodding	0.75	AC	32,670	SF	0.20	6,534.00
14.	Surface Drainage Structures	1	AC	1	AC	13,500.00	13,500.00
15.	Third Party Quality Control for Class I Closure	1	AC	1	AC	2,600.00	2,600.00
18.	Well Header System	1	AC	1	AC	3,300.00	3,300.00
19.	LFG Extraction Well	60	LF	60	LF	150.00	9,000.00
20.	Well Header System ²	1	AC	1	AC	5,800.00	5,800.00
21.	LFG Extraction Wells ¹	0.33	AC	0.33	AC	11,000.00	3,630.00
22.	Lateral Vent Connections ²	1	AC	1	AC	3,400.00	3,400.00
TOTAL FINAL CLOSURE COST PER ACRE							127,977.40
CELL 8 ACREAGE TO CLOSE							58.00
ESTIMATED CONSTRUCTION COST							7,422,689.20
ENGINEERING (PERMITTING, DESIGN, CONSTRUCTION SUPERVISION)							1,484,537.84
SUBTOTAL							8,907,227.04
CONTINGENCY							10%
							890,722.70
							<u>\$9,797,949.74</u>
COST TO CLOSE CELL 8							\$9,797,949.74

See Table 5 for unit cost sources.

Note:

1. The eastern portion of the LFG collection main for Cell 8 was installed during FY 1998 and the western portion is being installed as horizontal extraction wells are installed during operations. The southern leg of the collection main will be installed in conjunction with final closure.
2. The LFG collection system for Cells A-K, 7B and 8 was installed in FY 1998. Additional LFG collection piping will be added during each phase of sequential closure of Cells 7B and 8.

Table 8
Orange County Landfill
Estimated Closing Cost - Cells 9 through 12
As of September 30, 2004

Activity/Item Number	Closure Activity Description	Base		Total		Unit Cost	Per Acre Cost
		Quantity	Units	Quantity	Units		
1	Contractor Mobilization	1	AC	1	AC	4,800.00	4,800.00
2	Initial Site Preparation	1	AC	1	AC	2,300.00	2,300.00
3	Excavating Waste	1	AC	2420	CY	6.50	15,730.00
4	Regrading Ditches	1	AC	75	LF	2.90	217.50
5	Protective Layer Beneath Geomembrane	0.5	FT	807	CY	7.30	5,888.67
7	Textured Geomembrane	1	AC	43,560	SF	0.47	20,473.20
8	Leachate Underdrain System	1	AC	1	AC	6,600.00	6,600.00
9	Protective Layer Above Geomembrane	1.5	FT	2,420	CY	7.30	17,666.00
11	Top Soil	0.5	FT	807	CY	7.70	6,211.33
12	Seeding	0.25	AC	10,890	SF	0.03	326.70
13	Sodding	0.75	AC	32,670	SF	0.20	6,534.00
14	Surface Drainage Structures	1	AC	1	AC	13,500.00	13,500.00
15	Third Party Quality Control for Class I Closure	1	AC	1	AC	2,600.00	2,600.00
18	Well Header System	1	AC	1	AC	3,300.00	3,300.00
19	Well Header System	80	LF	80	LF	150.00	12,000.00
20	Lateral Vent Connections	1	AC	1	AC	5,800.00	5,800.00
21	Gas Collection Main	0	AC	0	AC	11,000.00	0.00
22	Condensate Collection System	0	AC	0	AC	3,400.00	0.00
TOTAL FINAL CLOSURE COST PER ACRE							123,947.40
CELL 9 ACREAGE TO CLOSE							45.1
ESTIMATED CONSTRUCTION COST							5,590,027.74
ENGINEERING (PERMITTING, DESIGN, CONSTRUCTION SUPERVISION)							1,118,005.55
SUBTOTAL							6,708,033.29
CONTINGENCY 10%							670,803.33
							\$7,378,836.62
COST TO CLOSE CELL 9							\$7,378,836.62
TOTAL FINAL CLOSURE COST PER ACRE							123,947.40
CELL 10 ACREAGE TO CLOSE							68.3
ESTIMATED CONSTRUCTION COST							8,465,607.42
ENGINEERING (PERMITTING, DESIGN, CONSTRUCTION SUPERVISION)							1,693,121.48
SUBTOTAL							10,158,728.90
CONTINGENCY 10%							1,015,872.89
							\$11,174,601.79
COST TO CLOSE CELL 10							\$11,174,601.79
TOTAL FINAL CLOSURE COST PER ACRE							123,947.40
CELL 11 ACREAGE TO CLOSE							85.4
ESTIMATED CONSTRUCTION COST							10,585,107.96
ENGINEERING (PERMITTING, DESIGN, CONSTRUCTION SUPERVISION)							2,117,021.59
SUBTOTAL							12,702,129.55
CONTINGENCY 10%							1,270,212.96
							\$13,972,342.51
COST TO CLOSE CELL 11							\$13,972,342.51
TOTAL FINAL CLOSURE COST PER ACRE							123,947.40
CELL 12 ACREAGE TO CLOSE							94.7
ESTIMATED CONSTRUCTION COST							11,737,818.78
ENGINEERING (PERMITTING, DESIGN, CONSTRUCTION SUPERVISION)							2,347,563.76
SUBTOTAL							14,085,382.54
CONTINGENCY 10%							1,408,538.25
							\$15,493,920.79
COST TO CLOSE CELL 12							\$15,493,920.79
TOTAL COST TO CLOSE CELLS 9-12							\$46,947,359.10

See Table 5 for unit prices.

Note: The closing cost for the LFG system does not include the cost of a compressor/flare station, gas collection piping, condensate collection system, nor a transmission pipe from Cells 9-12 to the compressor/flare station. It has been assumed that these costs will be incurred during disposal area construction activities and not charged to closure.

Table 9
Orange County Landfill
Estimated Closing Cost - Class III, Cell 1 - Synthetic Barrier Layer
As of September 30, 2004

Activity/Item Number	Closure Activity Description	Base		Total		Unit Cost	Per Acre Cost
		Quantity	Units	Quantity	Units		
1.	Contractor Mobilization	1	AC	1	AC	\$4,800.00	4,800.00
2.	Initial Site Preparation	1	AC	1	AC	2,300.00	2,300.00
3.	Excavating Waste	1	AC	35	CY	6.50	227.50
5.	Protective Layer Beneath Geomembrane	0.5	FT	807	CY	7.30	5,888.67
6.	Composite Drainage Net	1	AC	43,560	SF	0.50	21,780.00
7.	Rough Geomembrane	1	AC	43,560	SF	0.47	20,473.20
9.	Protective Layer Above Geomembrane	1.5	FT	2,420	CY	7.30	17,666.00
10.	Horizontal Gas Vent	1	FT	175	FT	73.00	12,775.00
11.	Top Soil	0.5	FT	807	CY	7.70	6,211.33
12.	Seeding	0.25	AC	10,890	SF	0.03	326.70
13.	Sodding	0.75	AC	32,670	SF	0.20	6,534.00
14.	Surface Drainage Structures	1.00	AC	1	Each	13,500.00	13,500.00
15.	Third Party Quality Control for Synthetic Barrier Layer	1	AC	1	AC	2,600.00	2,600.00
18.	Well Header System ¹	0.33	AC	0	AC	3,300.00	1,089.00
19.	LFG Extraction Vents ²	13.2	LF	13	LF	150.00	1,980.00
20.	Lateral Vent Connections ¹	0.33	AC	0	AC	5,800.00	1,914.00
21.	Gas Collection Main ¹	0.25	AC	0	AC	11,000.00	2,750.00
22.	Condensate Collection System ¹	0.25	AC	0	AC	3,400.00	850.00
TOTAL FINAL CLOSURE COST PER ACRE							123,665.40
CLASS III LANDFILL ACREAGE TO CLOSE							49.5
SUBTOTAL							6,121,437.30
ENGINEERING (PERMITTING, DESIGN, CONSTRUCTION SUPERVISION)							1,224,287.46
SUBTOTAL							7,345,724.76
CONTINGENCY							10%
							734,572.48
							\$8,080,297.24
COST TO CLOSE CLASS III AREA							\$8,080,297.24

See Table 5 for unit cost sources.

Note:

- The western, southern and 2/3 of the northern LFG collection mains for Cell 1 were installed during FY 2002. The remainder of the northern leg of the collection main will be installed in conjunction with closing the eastern portion of Cell 1.
- The landfill gas extraction wells for the western and central portion of Cell 1 were installed during FY 2002. The landfill gas extraction wells for eastern portion of Cell 1 will be installed at the time of closing.

**Table 10
Orange County Landfill
Closing Cost Calculation
As of September 30, 2004**

Fiscal Years	Acres	Closure Cost per Acre ³	Closure Cost Per Year	Horizontal LFG Vents & Flare Expansion ^{4,5}	Total Closure Cost
Cell 7B					
2005		159,651			
2006	2.6	159,651	415,091		\$415,091
TOTAL¹	51.5		\$415,091		\$415,091
Cell 8					
2005		168,930		194,491	\$194,491
2006	58.0	168,930	9,797,950	133,169	\$9,931,119
TOTAL	58.0		\$9,797,950	\$327,660	\$10,125,609
Cells 9-12					
2005		163,611		209,000	\$209,000
2006		163,611		209,000	\$209,000
2007		163,611		209,000	\$209,000
2008		163,611		209,000	\$209,000
2009		163,611		209,000	\$209,000
2010		163,611		209,000	\$209,000
2011	45.1	163,611	7,378,837	209,000	\$7,587,837
2012		163,611		209,000	\$209,000
2013		163,611		209,000	\$209,000
2014		163,611		209,000	\$209,000
2015		163,611		209,000	\$209,000
2016		163,611		209,000	\$209,000
2017		163,611		209,000	\$209,000
2018		163,611		209,000	\$209,000
2019	68.3	163,611	11,174,602	209,000	\$11,383,602
2020		163,611		209,000	\$209,000
2021		163,611		209,000	\$209,000
2022		163,611		209,000	\$209,000
2023		163,611		209,000	\$209,000
2024		163,611		209,000	\$209,000
2025	85.4	163,611	13,972,343	209,000	\$14,181,343
2026		163,611		209,000	\$209,000
2027		163,611		209,000	\$209,000
2028		163,611		209,000	\$209,000
2029		163,611		209,000	\$209,000
2030		163,611		209,000	\$209,000
2031	94.7	163,611	15,493,921	209,000	\$15,493,921
TOTAL	293.5		\$48,019,703	\$5,434,000	\$53,453,703
Class III, Cell 1					
2005		163,238			
2006		163,238			
2007	49.5	163,238	8,080,297		\$8,080,297
TOTAL²	72.1		\$8,080,297		\$8,080,297
Waste Tire Facility					
2029					
2030					
2031			73,800		\$73,800
TOTAL			\$73,800		\$73,800

NOTES:

- 26.4 acres and 22.5 acres of Cell 7B were closed in FY 95 and FY 98, respectively. This acreage is not shown in the table, but is included in the total.
- 22.6 acres of Class III, Cell 1 were closed in FY 00. This acreage is not shown in the table, but is included in the total.
- Engineering costs for permitting, design and construction supervision are included in the closure cost estimates.
- Horizontal landfill gas vents will be installed during landfill operations in FY 2005. Cost from Source 14.
- The initial landfill gas compressor flare station for Cells A-K, 7B and 8 was installed in FY 1998. The compressor flare station will be expanded in conjunction with final closure of Cell 8 in FY 2006.

Table 11
Orange County Landfill
Summary of Estimated Closing Expenditures
As of September 30, 2004

Fiscal Year Ending 9/30	Cells A-K	Cell 7B	Cell 8	Cells 9-12	Class III Area	Waste Tire Facility	Total
1993							
1994							
1995							
1996							
1997							
1998							
1999							
2000							
2001							
2002							
2003							
2004							
2005			194,491	209,000			\$403,491
2006		415,091	9,931,119	209,000			\$10,555,210
2007				209,000	8,080,297		\$8,289,297
2008				209,000			\$209,000
2009				209,000			\$209,000
2010				209,000			\$209,000
2011				7,587,837			\$7,587,837
2012				209,000			\$209,000
2013				209,000			\$209,000
2014				209,000			\$209,000
2015				209,000			\$209,000
2016				209,000			\$209,000
2017				209,000			\$209,000
2018				209,000			\$209,000
2019				11,383,602			\$11,383,602
2020				209,000			\$209,000
2021				209,000			\$209,000
2022				209,000			\$209,000
2023				209,000			\$209,000
2024				209,000			\$209,000
2025				14,181,343			\$14,181,343
2026				209,000			\$209,000
2027				209,000			\$209,000
2028				209,000			\$209,000
2029				209,000			\$209,000
2030				209,000			\$209,000
2031				15,493,921		73,800	\$15,567,721
TOTALS		\$415,091	\$10,125,609	\$53,453,703	\$8,080,297	\$73,800	\$72,148,501

Table 12
Orange County Landfill
Estimated Unit Costs and Sources of Information for Landfill Long-Term Care

Item Number	Material or Activity	Units	Unit Costs 9/30/04			Detailed Activity No.
			Regulatory	Reality		
			Contractor	Contractor	County	
1	Final Cover Repair	AC	\$ 160	\$ 160	\$ 150	2A-D
2	Mowing & Groundskeeping	AC	\$ 120	\$ 120	\$ 100	3
3	Groundwater, Surface Water, and Leachate Monitoring	AC	\$ 330	\$ 330	\$ 280	4A-B
4	Landfill Gas Migration Monitoring	AC	\$ 4.00	\$ 4.00	\$ 3.00	5A
5	Landfill Gas Flux Monitoring	AC	\$ 27	\$ 27	\$ 23	5B
6	Stormwater Pond Maintenance, Pond 3 & 4	AC	\$ 90	\$ 90	\$ 90	6B-D
7	Ditches Maintained by Trackhoe	LF	\$ 1.00	\$ 1.00	\$ 0.80	7A
8	Ditches Maintained by Extended Arm Trackhoe	LF	\$ 2.10	\$ 2.10	\$ 1.80	7B
9	Ditches Maintained by Dragline	LF	\$ 0.75	\$ 0.75	\$ 0.75	7C
10	Stormwater Ditch and Culvert Inspections	LF	\$ 0.10	\$ 0.09	\$ 0.07	7D
11	Ditch and Letdown Structure Maintenance	AC	\$ 26	\$ 26	\$ 26	7E-G
12	Berm Maintenance, Pond 2	AC	\$ 8.00	\$ 3.20	\$ 2.80	8A
13	Berm Road Maintenance, Asphalt Roads	LF	\$ 0.42	\$ 0.42	\$ 0.36	8B
14	Berm Road Maintenance, Dirt Roads	LF	\$ 0.34	\$ 0.34	\$ 0.29	8D
15	Berm Road Maintenance, Limerock Roads	LF	\$ 0.28	\$ 0.28	\$ 0.24	8E-F
16	Treatment Wetlands Monitoring	AC	\$ 11	\$ 4.40	\$ 4.40	11
17	Leachate Treatment, Transmission & Disposal	AC	\$ 430	\$ 430	\$ 430	13A-N
18	Active Landfill Gas System Maintenance & Operation	AC	\$ 310	\$ 310	\$ 310	14, 15A-C, 17A-B
19	Stormwater Pump Station, Pond 2	AC	\$ 120	\$ 50	\$ 40	18A-H
20	Miscellaneous Equipment, Supplies and Labor	AC	\$ 62	\$ 31	\$ 27	19A-B, 20

See Attachment A for Annualized Unit Cost Summary by Detailed Activity Number and Attachment B for Quantification of Ditch and Roadway Areas.

Source: See Section 5.0, Source No. 12.

Table 13
Orange County Landfill
Estimated Annual Cost for Long-Term Care Activities - Cell A-K
Contracted Labor
As of September 30, 2004

Activity Number	Post Closure Activity Description	Quantity	Units	Cost per unit (\$/unit)	Annual Cost
1	Final Cover Repair	129	AC	160.00	20,640.00
2	Mowing & Groundskeeping	129	AC	120.00	15,480.00
3	Groundwater, Surface Water, and Leachate Monitoring	129	AC	330.00	42,570.00
4	Landfill Gas Migration Monitoring	129	AC	4.00	516.00
5	Landfill Gas Flux Monitoring	129	AC	27.00	3,483.00
6	Stormwater Pond Maintenance, Pond 3 & 4	0	AC	90.00	0.00
7	Ditches Maintained by Trackhoe	6,650	LF	1.00	6,650.00
8	Ditches Maintained by Extended Arm Trackhoe	3,225	LF	2.10	6,772.50
9	Ditches Maintained by Dragline	0	LF	0.75	0.00
10	Stormwater Ditch and Culvert Inspections	9,875	LF	0.10	987.50
11	Ditch and Letdown Structure Maintenance	129	AC	26.00	3,354.00
12	Berm Maintenance, Pond 2	129	AC	8.00	1,032.00
13	Berm Road Maintenance, Asphalt Roads	2,650	LF	0.42	1,113.00
14	Berm Road Maintenance, Dirt Roads	5,600	LF	0.34	1,904.00
15	Berm Road Maintenance, Limerock Roads	5,300	LF	0.28	1,484.00
16	Treatment Wetlands Monitoring	129	AC	11.00	1,419.00
17	Leachate Treatment, Transmission & Disposal	0	AC	430.00	0.00
18	Active Landfill Gas System Maintenance & Operation	129	AC	310.00	39,990.00
19	Stormwater Pump Station, Pond 2	129	AC	120.00	15,480.00
20	Miscellaneous Equipement, Supplies and Labor	129	AC	62.00	7,998.00
SUBTOTAL					170,873.00
CONTINGENCY 5%					8,543.65
TOTAL					\$179,416.65
TOTAL ANNUAL COST					\$179,416.65

Table 19
Orange County Landfill
Summary of Estimated Closing and Long-Term Care Expenditures
As of September 30, 2004

Area	Activity	Table to See for Detail	Estimated Cost (\$)	First Year of Long-Term Care	Last Year of Long-Term Care
Pre-1985 Areas ¹	Long Term Care		NOT REQUIRED		
Cells A-K	Long Term Care	13,18	\$3,588,000	2008	2027
Cells A-K	Closing	11	\$0		
Cell 7B	Closing	6,10,11	\$415,091		
Cell 7B	Long Term Care	14,18	\$2,919,000	2007	2036
Cell 8	Closing	7,10,11	\$10,125,609		
Cell 8	Long Term Care	15,18	\$3,213,000	2007	2036
Cell 9-12	Closing	8,10,11	\$53,453,703		
Cell 9-12	Long Term Care	16,18	\$15,819,000	2032	2061
Class III, Cell 1	Closing	9,10,11	\$8,080,297		
Class III, Cell 1	Long Term Care	16,18	\$3,738,000	2008	2037
Waste Tire Facility	Closing	10,11	\$73,800		
TOTAL AMOUNT OF FINANCIAL RESPONSIBILITY REQUIRED					\$101,425,501

NOTES:

1. The financial responsibility rule, FAC 62-701.630, exempts government owned landfills closed prior to October 1, 1988 from financial responsibility requirements.

SECTION 5.0

Sources

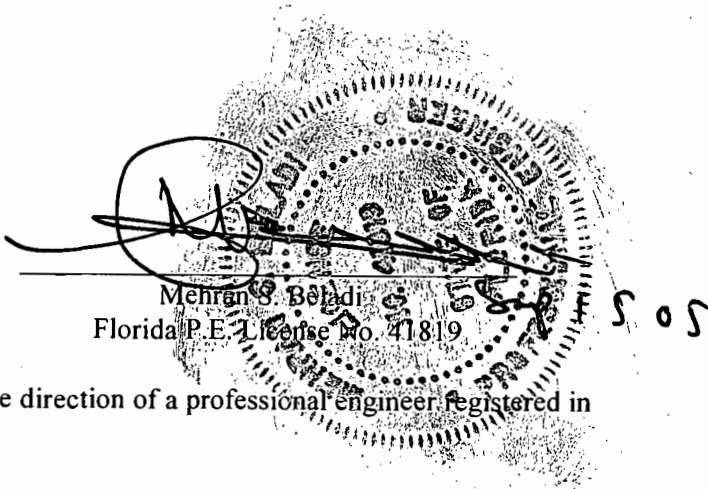
1. Wheelabrater Ridge Energy, Inc. Term Contract with Orange County for Removal/Shredding of Waste Tires.(Contract No. Y2-1020) effective May 11, 2002 through May 10, 2005.
2. CH2M HILL Historical Cost Data, October 1995.
3. C. J. Langenfelder & Sons, Inc. Agreement with Orange County for *Expansion and Partial Sideslope Closure of Class III Landfill – Cell No. 1*, August 30, 1999.
4. HDR Engineering, Inc., Regulatory Financial Responsibility Cost Estimates, Orange County Landfill, October 1994.
5. James Industrial Constructors, LLC Agreement with Ash Grove Cement, Foreman, AR for Construction of *Module A of New Landfill and Closure of Existing Landfill* May 2002.
6. CH2M HILL Cost Estimate, September 1999.
7. CH2M HILL Cost Estimate, May 1997.
8. *Landfill Gas Management System and Cell 7B Phase 2 Sequential Closure, Definitive Cost Estimate*, PMA Consultants LLC, September 25, 1997.
9. Nodarse & Associates, Inc. Proposal to CH2M/G&R Joint Venture for Construction Quality Control Services on Cells A-K and 7B, September 4, 1997.
10. Nodarse & Associates, Inc. Proposal to CH2M/G&R Joint Venture for Construction Quality Control Services for the Horizontal and Vertical Expansion of the Class III Landfill, January 13, 1999.
11. Grubbs Construction Co. Agreement with Orange County for Construction of the *Landfill Gas Management System and Cell 7B Phase 2 Sequential Closure*, December 10, 1997.
12. CH2M HILL Cost Estimate, October 1998
13. ERC Agreement with Orange County for Construction of the Cell 7B & 8 Landfill Gas Management System Expansion, (Contract No. Y0-787), Bid Date August 31, 2000.
14. SCS Field Services, Agreement with Orange County for the *Orange County Landfill Gas (LFG) Collection System Ongoing Expansion*, (Contract No. Y2-1079-TE), August 5, 2002.

Construction Quality Assurance Plan for LLDPE
Geomembrane and Geonet for Cell 7B/8
Class I Landfill Final Closure

Prepared For:
Orange County Utilities Solid Waste Division
Orange County, Florida

Prepared By:
Neel-Schaffer, Inc.
2700 Lake Lucien Drive, Suite 117
Maitland, Florida 32571

June 2005

A circular professional engineer seal for Mehran S. Beladi, Florida P.E. License No. 41819. The seal is partially obscured by a handwritten signature and the number '505'.

This quality assurance plan has been prepared under the direction of a professional engineer registered in the State of Florida.

TABLE OF CONTENTS

Section	Page
1.0 Introduction.....	1-1
1.1 Cover System	1-1
2.0 Definitions and Responsibilities (62-701.400(3)(e), FAC)	2-1
2.1 Quality Assurance and Quality Control	2-1
2.2 Lining Materials.....	2-1
2.3 Scope of Quality Assurance and Quality Control	2-1
2.4 References.....	2-1
2.5 Definitions, Qualifications, and Responsibilities of Parties (62-701.400(3)(e)(1) FAC)	2-2
2.5.1 Contractor	2-2
2.5.2 Contractor's Representative	2-2
2.5.3 Designer	2-3
2.5.4 Designer's Field Representative.....	2-3
2.5.5 Installer	2-5
2.5.6 Field Installation Manager	2-7
2.5.7 Installation Supervisor	2-8
2.5.8 Master Seamer	2-8
2.5.9 Manufacturer	2-9
2.5.10 Quality Control Consultant Laboratory	2-10
2.5.11 Quality Control Technician.....	2-11
3.0 Coordination and Scheduling.....	3-1
3.1 Coordination Meetings.....	3-1
3.2 Delivery, Storage, and Handling.....	3-1
3.3 Environmental Requirements.....	3-1
3.4 Sequencing and Scheduling	3-1
4.0 Material Specifications (62-701.400(3)(e)(2) FAC)	4-1
4.1 LLDPE Geomembrane.....	4-1
4.2 Geonet.....	4-2
4.3 Geotextile.....	4-2
4.4 Sealant Caulking	4-3
4.5 Epoxy Anchor System	4-3
4.6 Neoprene Rubber Pad	4-3
4.7 Polyurethane Foam	4-3
4.8 Cast-In-Place HDPE Anchor	4-3
4.9 Factory Testing	4-4

Table of Contents, Continued

Section	Page
5.0 Installation Specifications (62-701.400(3)(e)(4) FAC)	5-1
5.1 LLDPE Geomembrane.....	5-1
5.1.1 Welding Units.....	5-1
5.1.2 Tensiometer for Field Testing.....	5-1
5.1.3 Vacuum Box for Weld Testing.....	5-1
5.1.4 High Voltage Spark Detector.....	5-1
5.1.5 Preparation	5-1
5.1.6 Geomembrane Installation	5-2
5.1.7 Field Seams.....	5-3
5.1.8 Geomembrane Attachment to Flat Concrete Surfaces.....	5-3
5.1.9 Manufacturer's Services.....	5-3
5.1.10 Protection of Work.....	5-3
5.1.11 Field Quality Control	5-4
5.1.12 Placing Products over Geomembrane.....	5-6
5.1.13 Repairing Geomembrane	5-6
5.1.14 Record Data	5-6
5.1.15 Cleanup.....	5-6
5.2 Geonet	
5.2.1 Installation of Geonet.....	5-6
5.2.3 Field Quality Control of Geonet	5-7

Introduction

1.1 Cover System

The cover system for the Cell 7B/8 Class I landfill will consist of 6 inches of topsoil and 18 inches of granular fill overlying a 40-mil linear low-density polyethylene (LLDPE) geomembrane. The geomembrane will overly a 12-inch granular-fill leveling layer that will protect the geomembrane from the underlying refuse. A composite geonet will be used in the swale terraces and under the letdown pipe areas to enhance drainage.

The purpose of this Construction Quality Assurance (CQA) Plan is to provide procedures and guidelines for construction management and operating personnel to ensure that the LLDPE geomembrane is constructed in compliance with the Florida Department of Environmental Protection (FDEP) technical requirements outlined in Chapter 62-701, FAC, for solid waste facilities. Included in the CQA plan are specifications, construction methods, quality control testing procedures, and sampling frequencies to be followed while constructing the geomembrane and geonet. Sampling and testing will be conducted by a qualified designer's field representative under the direction of a designer registered as a professional engineer to ensure that the geomembrane and geonet are installed in accordance with the specified performance standards.

Definitions and Responsibilities

2.1 Quality Assurance and Quality Control

In the context of this CQA Plan, quality assurance and quality control are defined as follows:

Quality Assurance - A planned and systematic pattern of all means and actions designed to provide adequate confidence that items or services meet contractual and regulatory requirements and will perform satisfactorily in service.

Quality Control - Those actions which provide a means to measure and regulate the characteristics of an item or service to contractual and regulatory requirements.

In the context of liner production and installation:

Quality assurance refers to means and actions employed by the geomembrane Manufacturer to assure conformity of the lining system, production, and installation in accordance with the CQA Plan drawings and specifications.

Quality control refers to those actions taken by the Manufacturer, Fabricator and Installer to ensure that the materials and workmanship meet the requirements of the plans and specifications.

2.2 Lining Materials

For the purposes of this document, the term "geomembrane" is applied to flexible membrane liners. More specifically, "geomembrane" refers to synthetic liners having either smooth, or textured surfaces. These geomembranes include VLDPE, LLDPE and HDPE membranes.

The quality assurance of the geomembrane is addressed herein in its entirety, including all stages from manufacture to installation.

2.3 Scope of Quality Assurance and Quality Control

The scope of this CQA Plan includes the quality assurance applicable to manufacturing, shipment, handling, onsite storage, and installation of all geomembranes.

2.4 References

The CQA Plan was prepared in accordance with EPA Technical Guidance Document EPA/600/R-93/182, Quality Assurance and Quality Control for Waste Containment Facilities.

2.5 Definitions, Qualifications, and Responsibilities of Parties (62-701.400(3)(e)(1), FAC)

The parties discussed in this section are associated with the ownership, design, manufacture, transportation, installation, and quality assurance of the liner system. The definitions, qualifications, and responsibilities of these parties are outlined in the following subsections.

2.5.1 Contractor

2.5.1.1 Definition

The Contractor is the firm(s) or corporation(s) with which the Owner has entered into agreement to construct the project.

2.5.1.2 Responsibilities

The Contractor is responsible for all submittals by the Manufacturer and the Installer, and for scheduling and coordinating the required work with the Manufacturer and the Installer to complete the project. The Contractor shall have a representative present at all times during any construction activity on site. The Contractor is responsible for furnishing as-built drawings and a copy of complete documentation for the construction of the liner and cover systems. The Contractor is also responsible for updating all design drawings, incorporating all deviations from the contract drawings. All deviations must be initialed and approved daily by the responsible Designer's Field Representative on site. Initiating, updating, and approving must take place daily.

2.5.1.3 Qualifications

The Contractor shall be qualified to perform all aspects of work required to successfully construct the project. The Contractor shall be registered in the State of Florida and shall demonstrate prior related experience.

2.5.2 Contractor's Representative

2.5.2.1 Definition

The Contractor's Representative is a qualified individual assigned by the Contractor to represent him/her on site at all times during all construction activity.

2.5.2.2 Responsibilities

The Contractor's Representative is responsible for coordinating and supervising the Contractor's crew and subcontractors' work on site. The Contractor's Representative is responsible for making sure that construction activities are conducted in accordance with the plans and specifications. The Contractor's Representative is responsible for pointing out to the Designer's Field Representative any discrepancies between the plans and specifications and the field conditions. The Contractor's Representative is responsible for attending all meetings held regarding the project. The Contractor's Representative is responsible for keeping a daily log of all onsite construction activities. The Contractor's Representative is responsible for proposing alternative methods, where necessary, to the

Designer's Field Representative for approval and signature as required per the specifications.

2.5.2.3 Qualifications

The Contractor's Representative shall be a qualified individual who is able to perform all the tasks associated with the construction activities. The Contractor's Representative shall demonstrate prior and similar experience to the Designer's Field Representative. The Contractor's Field Representative shall have the authority to direct and instruct the crew and subcontractors.

2.5.3 Designer

2.5.3.1 Definition

The Designer is the individual and/or firm responsible for the preparation of the design, including plans and specifications for the lining system. The designer shall be registered as a professional engineer with the State of Florida.

2.5.3.2 Responsibilities

The Designer is responsible for performing the engineering design and preparing the associated drawings and specifications for the lining system. The Designer is responsible for approving all design and specification changes and making any necessary design clarifications during construction of the lining system. The Designer is responsible for reviewing and approving shop drawings submitted by the Contractor. Deviations from the plans and specifications approved by the agency that substantially modify the intent of the design will be discussed with the agency prior to approval by the Designer. The Designer will attend the pre-construction and progress meetings outlined in this plan. The Designer will supervise the Designer's Field Representative. The Designer is responsible for issuing a final sealed certification report that will be submitted to FDEP.

2.5.3.3 Qualifications

The Designer shall be qualified, certified, or licensed as required by Florida Department of Professional Regulation. The Designer shall be familiar with geomembranes (including detailed geomembrane design methods and procedures) and all applicable regulatory requirements.

2.5.4 Designer's Field Representative

2.5.4.1 Definition

The Designer's Field Representative is an individual under the direction and supervision of the Designer.

2.5.4.2 Responsibilities

The Designer's Field Representative is responsible for observing and documenting activities related to the quality control of the production, handling, storage, and installation of the liner system. The Designer's Field Representative is responsible for implementation of this CQA Plan and coordination of the quality control laboratory.

The specific duties of the Designer's Field Representative are as follows:

- a. Reviews all design drawing and specifications
- b. Reviews other site-specific documentation, including proposed layouts, and manufacturer's and installer's literature
- c. Develops a site-specific addendum for quality control of geomembranes (if necessary) with the assistance of the Owner's Representative
- d. Reviews all changes to design drawings and specifications as issued by the Designer
- e. Acts as the onsite (resident) representative of the Owner
- f. Attends all quality control related meetings, e.g., resolution, pre-construction, daily, weekly
- g. Reviews all Manufacturer and Installer certifications and documentation and makes appropriate recommendations
- h. Reviews the Installer's personnel qualifications for conformance with those qualifications pre-approved for onsite work.
- i. Reviews the calibration certification of the onsite tensiometer, if applicable
- j. Reviews all daily reports, logs, and photographs
- k. Notes and documents any onsite activities that could result in damage to the liner system
- l. Reports to the Owner's Representative and logs in the daily report any relevant observations
- m. Prepares a personal daily report
- n. Prepares a daily summary of the quantities of geomembranes installed that day
- o. Prepares the weekly summary of the liner system quality control activities
- p. Oversees the marking, packaging, and shipping of all laboratory test samples
- q. Reviews the results of laboratory testing and makes appropriate recommendations
- r. Reports any approved and unapproved deviations from the CQA Plan to the Owner's Representative
- s. Prepares the final certification report
- t. Monitors, logs, photographs, and/or documents all geomembrane installation operations. Takes routine photographs in critical areas during the installation sequence
- u. Monitors the following operations for all lining system materials:

- 1) Material delivery
 - 2) Onsite unloading, transportation, and storage
 - 3) Sampling for conformance testing
 - 4) Deployment operations
 - 5) Joining and/or seaming operations
 - 6) Condition of panels as placed
 - 7) Visual inspection by walkover
 - 8) Repair operations
- v. Monitors and documents the geomembrane seaming operations, including:
- 1) Trial seams
 - 2) Seam preparation
 - 3) Seaming
 - 4) Nondestructive seam testing
 - 5) Sampling for destructive seam testing
 - 6) Photographs of all destructive seam testing with clear identification marks
 - 7) Appropriate log for seaming and patching destructive testing
 - 8) Field tensiometer testing
 - 9) Laboratory sample marking
 - 10) Repair operations

2.5.4.3 Qualifications

Designer's Field Representative shall be experienced in the implementation and preparation of quality control documentation including quality control forms, reports, certifications, and manuals.

The Designer's Field Representative shall hold a Bachelor of Science (Engineering) degree, be registered in the State of Florida as a Professional Engineer, and have at least 3 years of experience in geomembrane installation.

2.5.5 Installer

2.5.5.1 Definition

The Installer is the firm responsible for installation of the geomembrane. In the context of this plan, the Installer is the Manufacturer or an approved Installer trained and certified to install the Manufacturer's geomembrane.

2.5.5.2 Responsibilities

The Installer shall be responsible for the field handling, storing, deploying, seaming, and temporary restraining of the geomembranes, as well as other aspects of installation.

2.5.5.3 Qualifications

The Installer shall be certified to install the Manufacturer's geomembrane material. The Installer shall be pre-qualified and approved by the Owner's Representative. The Installer shall be able to provide qualified personnel to meet the demands of the project. The Installer shall be required to provide a Field Installation Manager, Installation Supervisor, and a Master Seamer as described below.

2.5.5.4 Submittal

Pre-qualification. To be considered for pre-qualification, the Installer shall submit the following information:

- a. Corporate background and information
- b. Description of installation capabilities:
 - 1) Information on equipment (numbers and types) and personnel (number of site managers, number of crews)
 - 2) Average daily production anticipated
 - 3) Samples of field geomembrane seams and a list of minimum values for geomembrane seam properties
- c. A list of at least five completed facilities, totalling a minimum of 2,000,000 SF for which the Installer has installed geomembranes. For each installation, the following information shall be provided:
 - 1) Name and purpose of facility, its location, and date of installation
 - 2) Name of owner, project manager, designer, manufacturer, fabricator (if any), and name of contact at the facility who can discuss the project
 - 3) Name and qualifications of the Supervisor(s) of the Installer's crew(s)
 - 4) Type of geomembrane and surface area installed
 - 5) Type of seaming and type of seaming apparatus used
 - 6) Time required for installation
 - 7) Available information on the performance of the lining system and the facility
- d. The Installer's quality control manual
- e. A copy of a letter of recommendation supplied by the geomembrane manufacturer

Pre-installation. Prior to commencement of the installation, the Installer must submit to the Designer's Field Representative:

- a. Resumé of the Supervisor to be assigned to this project, including dates and duration of employment.
- b. Resumé of the Field Installation Manager and Master Seamer to be assigned to this project, including dates and duration of employment.
- c. A panel layout drawing showing the installation layout identifying field seams as well as any variance or additional details which deviate from the engineering drawings. The layout shall be adequate for use as a construction plan and shall include dimensions, details, etc.
- d. Installation schedule.
- e. A list of personnel performing field seaming operations along with pertinent experience information.
- f. All geomembrane quality control certificates as required by this CQA Plan (unless submitted directly to the Designer's Field Representative by the Manufacturer).
- g. Certification that extrudate to be used is composed of the same resin as the geomembrane to be used.

Installation. During the installation, the Installation Supervisor shall sign, and be responsible for the submission of subgrade surface acceptance certificates for each area to be covered by the lining system. (Sample appears in Section 6 of this plan.)

Completion. Upon completion of the installation, the Installer shall submit:

- a. The warranty obtained from the Manufacturer.
- b. The installation warranty.

2.5.6 Field Installation Manager

2.5.6.1 Definition

The Field Installation Manager is the individual provided and assigned by the Installer to be the Field Representative. Depending on the size and type of the job, the Field Installation Manager's and the Installation Supervisor's positions can be held by the same individual.

2.5.6.2 Responsibilities

The Field Installation Manager is responsible for providing guidance and supervision to the installation crew to ensure that the geomembrane is installed in accordance with the manufacturer's guidelines and the project plans and specifications. The Field Installation Manager is responsible for conducting all the required field testing and coordinating, and reporting all conflicts to the Contractor's Representative and the Designer's Field Representative. The Field Installation Manager is responsible for attending all related project meetings.

2.5.6.3 Qualifications

The Field Installation Manager must possess related experience, management ability, and authority. The Field Installation Manager's experience shall include managing the installation of at least 2,000,000 square feet (ft²) of geomembrane using the same type of seaming apparatus to be used at the site.

2.5.7 Installation Supervisor

2.5.7.1 Definition

The Installation Supervisor is the individual provided and assigned by the Installer to be the Installer's Field Representative.

2.5.7.2 Responsibilities

The Installation Supervisor is responsible for coordinating the seaming and installation of the geomembrane and for providing supervision and guidance to the installation crew. The Installation Supervisor shall obtain samples for field testing and coordinate testing activities with the Contractor's Representative, Field Installation Manager, and Designer's Field Representative. The Installation Supervisor should keep a daily log of all activities related to geomembrane installation and testing, and attend all related project meetings.

2.5.7.3 Qualifications

The Installation Supervisor must possess related experience, management ability, and authority. The Installation Supervisor's experience shall include supervising the installation of at least 2,000,000 ft² of geomembrane using the same type of seaming apparatus to be used at the site.

2.5.8 Master Seamer

2.5.8.1 Definition

The Master Seamer is the individual assigned by the Installer to conduct seaming operations of the geomembrane.

2.5.8.2 Responsibilities

The Master Seamer is responsible for seaming the geomembrane in accordance with the Manufacturer's guidelines and the project plans and specifications. The Master Seamer is responsible for maintaining a top-quality seaming product free from defects and irregularities. The Master Seamer is responsible for reporting seaming problems and defects to the Field Installation Manager and Installation Supervisor.

2.5.8.3 Qualifications

The Master Seamer shall be a qualified individual who has previous experience in seaming geomembranes. The Master Seamer shall provide documentation of experience seaming a minimum of 500,000 SF of geomembranes using the same type of seaming apparatus to be used at the site.

2.5.9 Manufacturer

2.5.9.1 Definition

The Manufacturer is the firm or corporation responsible for production of the geomembrane material to be used in the project.

2.5.9.2 Responsibilities

Each Manufacturer is responsible for the production of its geomembrane. In addition, each Manufacturer is responsible for the condition of the geomembrane until the material is accepted by the Owner or Designer's Field Representative upon delivery. Each Manufacturer shall produce a consistent product meeting the project specifications and shall provide quality control documentation for the project and its product as specified in this CQA Plan.

2.5.9.3 Qualifications

Prior to shipment of any material, each Manufacturer shall be pre-qualified by the Owner's Representative. Each Manufacturer shall provide sufficient production capacity and qualified personnel to meet the demands of the project. Each Manufacturer shall have internal quality assurance and control programs for its product that meets the specified requirements.

Pre-qualifications. Each Manufacturer shall meet the following requirements and submit the following information to be considered for pre-qualification:

- a. Corporate background and information.
- b. Manufacturing capabilities:
 - 1) Information on plant size, equipment, personnel, number of shifts per day, and capacity per shift.
 - 2) A list of material properties including certified test results, to which are attached geomembrane samples.
 - 3) A list of at least 10 completed landfill or surface impoundment facilities totaling a minimum of 3,000,000 ft² for which the Manufacturer has manufactured the geomembrane. For each facility, the following information shall be provided:
 - a) Name and purpose of facility, its location and date of installation
 - b) Name of owner, project manager, designer, fabricator (if any) and installer
 - c) Type of geomembrane and the surface area of installed geomembrane
 - d) Available information on the performance of the lining system and the facility

- c. The Manufacturer's quality control manual, including a description of the quality control laboratory facilities.
- d. The Manufacturer's field installation quality control manual. As a minimum, the manual shall contain procedures and recommendations for the following:
 - 1) Geomembrane deployment
 - 2) Field panel placement
 - 3) Geomembrane field seaming
 - 4) Seam testing (destructive, non-destructive for field and laboratory settings)
 - 5) Repair of defects
- e. The origin (supplier's name and production plant) and identification (brand name and number) of resin used to manufacture the product.

Pre-installation. Prior to the installation of any geomembrane, each Manufacturer must submit to the Designer's Representative all quality control documentation required by the appropriate section of this CQA Plan. This documentation shall be reviewed and approved by the Designer's Representative before installation can begin.

2.5.10 Quality Control Consultant Laboratory

2.5.10.1 Definition

The Quality Control Laboratory is a firm, independent from the Owner's Representative, Contractor, Manufacturer, and Installer, responsible for conducting tests on samples of geomembranes taken from the site.

2.5.10.2 Responsibilities

The Quality Control Laboratory shall be responsible for conducting the appropriate laboratory tests as directed by the Designer's Field Representative and the project plans and specifications. The test procedures shall be done in accordance with the test methods outlined in this CQA Plan. The Quality Control Laboratory shall be responsible for providing tests results as outlined in the Plan.

2.5.10.3 Qualifications

The Quality Control Laboratory shall have at least 10 years of experience in testing geomembranes and be familiar with American Society for Testing and Materials (ASTM), Federal Test Method Standards (FTMS), National Sanitation Foundation (NSF) and other applicable test standards. The Quality Control Laboratory shall be capable of providing verbal results of destructive seam tests within 24 hours of receipt of test samples and shall maintain that schedule throughout the installation.

2.5.10.4 Submittals

The Quality Control Laboratory shall submit all destructive seam test results to the Designer's Field Representative in written form within 48 hours of receipt of test samples

unless otherwise specified by the Owner. Geomembrane destructive test results shall be provided verbally to the Designer's Field Representative within 24 hours of receipt of test samples. Written test results shall be in an easily readable format and include references to the standard test methods used.

2.5.11 Quality Control Technician

2.5.11.1 Definition

The Quality Control Technician is a qualified individual provided by the Quality Control Laboratory. The Quality Control Technician shall be present on site throughout the duration of construction.

2.5.11.2 Responsibilities

The Quality Control Technician is responsible for obtaining all necessary samples that require field and/or lab testing. The Quality Control Technician is responsible for conducting, observing, and recording all of the required field testing. The Quality Control Technician shall supervise the installation and sampling procedures conducted by the Contractor and report all activities to the Designer's Field Representative. The Quality Control Technician shall not deviate or allow the Contractor to deviate from the plans and specifications without the approval of the Designer's Field Representative.

2.5.11.3 Qualifications

The Quality Control Technician shall have at least 5 years of similar previous experience in the construction and installation of geomembranes including experience with the type of geomembrane used at the site.

Coordination and Scheduling

3.1 Coordination Meetings

A meeting should take place at least once prior to commencing each of the following activities: submission of submittals, fabrication of panels and boots, and installation of geomembranes. Attendees should include the Contractor's designated quality control representative, the Engineer, representatives of the geomembrane Installer, and others requested by the Engineer.

The topics that should be addressed include specifications and drawings; submittal requirements and procedures; schedules for beginning and completing geomembrane installation; training for installation personnel; installation crew size; and the establishment of a geomembrane marking system to be used throughout the project, which includes sheet identification, defects, and satisfactory repairs.

The meetings should include a seam installation demonstration performed by the geomembrane Installer, for each type of seam required.

3.2 Delivery, Storage, and Handling

The procedures should conform to the following requirements: each sheet of geomembrane should be individually packaged and protected from damage during shipment; mark each package with identification of material type, size and weight.

3.3 Environmental Requirements

Do not install geomembrane or perform seaming when the air temperature is less than 35°F and decreasing, or more than 90°F; the relative humidity is more than 90 percent; when it is raining or snowing; when frost is on the ground; or when the wind is excessive. Do not place granular materials on geomembrane when ambient temperature is less than 35 degrees F or more than 104 degrees F.

3.4 Sequencing and Scheduling

Factory test results must be acceptable to the Engineer prior to shipping the geomembrane. Before placing the geomembrane on soil surfaces, prepare subgrade as specified. Do not attach geomembrane to new concrete surfaces until after concrete has attained 2/3 of the design compressive strength specified. Do not place geomembrane over concrete surfaces until finish of concrete surfaces is acceptable to Engineer.

SECTION 4.0

Material Specifications (62-701.400(3)(e)(2) FAC

4.1 Linear Low Density Polyethylene (LLDPE) Geomembrane

The composition of the LLDPE membrane must contain no plasticizers, fillers, extenders, reclaimed polymers, or chemical additives, except approximately 2 percent by weight carbon black to resin for ultraviolet resistance. Antioxidants and heat stabilizers, not to exceed 1.5 percent total by weight, may be added as required for manufacturing.

The geomembrane shall be furnished in rolled, single-ply continuous sheets with no factory seams. The sheets shall have a thickness of 40 mils and a minimum width of 22 feet. The rolls shall be as long as possible without affecting manageability or adding field seams. The geomembrane must meet manufacturer's most recent published specifications and required minimum values in this table.

Property	Required Value	Test Method
Color	Black, standard	None
Thickness, mils.	40 mil \pm 5%	ASTM D5199-91
Specific Gravity, max.	0.9356, g/cc	ASTM D1505-
Environmental Stress Crack, min.	1,500 hours	ASTM D1693-70, Condition C (1000 C)
Low Brittleness Temperature	Minus 760 F, pass	ASTM D746-79 (Proc. B)
Tensile Strength, min.	3.10 lb/in-width/mil	ASTM D638-90, Type IV, 2-inch min.
Ultimate Elongation, min.	800%	ASTM D638-90, Type IV, 2-inch min.
Tear Resistance	0.45 lbs/mil	ASTM D1004-90, Die C
Dimensional stability, linear change, max.	plus/minus 3%	ASTM D1204-84, 2120 F, 1-hour
Coefficient of Linear Expansion	1.8×10^{-4} inches/inches/degree C Minus 300 C to plus 300 C	ASTM D1204-84
Maximum Water Vapor Transmission Rate	0.24 g/(m ² x day)	ASTM E96-60

The geomembrane shall have a maximum water vapor transmission rate of 0.24 g/(m² x day).

4.2 Geonet

The geonet shall have the following minimum properties when measured in accordance with the referenced standard:

Property	Required Value	Test Method
Roll Length (typical)	300 ft.	
Roll Width (typical)	14 ft.	
Roll Weight (typical)	840 lbs.	
Specific Gravity (g/cm ³ minimum)	.94	ASTM D1505
Melt Flow Index (g/10 minutes) (maximum)	0.3	ASTM D1238 Condition E
Thickness (minimum)	5.0-6.5 mm 200 mil-265 mil .200-.265 in.	ASTM D374 at Strand Intersection
Percent Carbon Black (minimum)	2%	ASTM D1603
Transmissivity (minimum)	10 cm/sec	ASTM D4716, under 10,000 psf compressive load between two layers of 60-mil HDPE geomembranes and between 2 feet of drainage sand and one layer HDPE geomembrane at 0.25 Gradient.

4.3 Geotextile

Geotextile shall be a pervious sheet of polyester, polyethylene, nylon, or polypropylene filaments, woven or nonwoven, and formed into a uniform patten. The geotextile shall have the following minimum properties when measured in accordance with the referenced standard:

Property	Test Method	Value
Grab Tensile, lbs/, (minimum)	ASTM D4632	280
Mullen Burst, psi (minimum)	ASTM D3786	150
Puncture, lbs., (minimum)	ASTM D3787	35
Permittivity, l/sec (minimum)	ASTM D4491	0.5
Apparent Opening Size, mm (maximum)	ASTM D4751	0.45
Weight oz/yd ²	ASTM D3776	5.6

4.4 Sealant Caulking

One-component sealant formulated of butyl rubber: Butylgrip Sealant, manufactured by Biddle Co., St. Louis, MO, or equal.

4.5 Epoxy Anchor System

The anchor rod shall conform to ASTM A193-90a, Type 316: stainless steel threaded rod free of grease, oil, and other deleterious material. The nuts must be stainless steel and conform to ASTM A194-90, Type 316. The washers shall be flat, stainless steel and conform to ASTM A194-90, Type 316.

The epoxy adhesive shall be a two-component, 100 percent solids, nonsag, paste epoxy, insensitive to moisture, designed to be used in hot environments, and shall conform to ASTM C881-90, Type 1, Grade 3, Class A, B, or C:

- Cure Temperature, Pot Life, and Workability: Compatible for intended use and environmental conditions.
- Storage Temperature:
 - Control temperature above 60 degree-F and dispose of cartridges if shelf life has expired.
 - If stored at temperatures below 60degree-F, test adhesive prior to use to determine if adhesive meets specified requirements.
- Manufacturers and Products:
 - Adhesives Technology Corp., 21850 88th Place South, Kent, WA 98031.
 - Anchor-It Fastening Systems; HS 200 Epoxy Resin.

4.6 Neoprene Rubber Pad

The neoprene rubber pad shall measure 2-inch wide by 1/4-inch thick; 35 to 45 durometer, in accordance with ASTM D2240-86 hardness; manufactured by Aero Rubber Co., Inc., Bridgeview, IL. Use contact cement as recommended by the neoprene rubber pad manufacturer.

4.7 Polyurethane Foam

This material shall be high density rigid board, manufactured by General Plastics Manufacturing Co., Tacoma, WA.

4.8 Cast-In-Place HDPE Anchor

The material shall be compatible for attaching HDPE geomembrane materials by extrusion welding to provide a watertight seal.

- Manufacturers and Products:
 - GSE Lining Systems, Inc., Houston, TX; GUNDLOCK.
 - Atlas Minerals & Chemicals, Mertztown, PA; BECKAPLAST.

4.9 Factory Testing

When using a rough-surface geomembrane, the following procedure must be followed: Perform coefficient of friction tests between the geomembrane and the actual materials that will be in contact with it, using samples of similar length and width. Soil at geomembrane interface should be consolidated-undrained material.

SECTION 5.0

Installation Specifications (62-701.400(3)(e)(4) FAC

5.1 LLDPE Geomembrane

5.1.1 Welding Units

Single or double hot-wedge fusion seam welding is acceptable. Hot-air welding is not acceptable. Extrusion welding is acceptable only in locations where hot wedge fusion is impossible.

5.1.2 Tensionmeter for Field Testing

The tensionmeter for field testing must be: motor-driven with jaws capable of traveling at measured rate of 2 inches per minute; equipped with a gauge which measures force in unit pounds exerted between the jaws. The Force Tech 5002 DPR portable tensile tester as furnished by Columbine International, Ltd., Placerville, CA, is recommended.

5.1.3 Vacuum Box for Weld Testing

The housing shall be rigid with a transparent viewing window on top; a soft, close-cell neoprene gasket attached to bottom; and a bleed valve. The vacuum source must be separate and connected to the vacuum box so negative pressure can be applied and maintained inside box.

- Manufacturer and Product: American Parts and Service Co., Alhambra, CA; American Vacuum Seam Tester, Series A100.

5.1.4 High Voltage Spark Detector

The preferred model is the Tinker and Razor Holiday Detector, Model AP-W, set at 20,000 volts.

5.1.5 Preparation

Do not place geomembrane until condition of previously installed underlying materials has been formally accepted by Designer. Maintain subgrade in smooth, uniform, and compacted condition during installation of geomembrane.

Concrete surfaces in contact with geomembrane shall be smooth, free of projections, rough spots, voids, honeycombs, or other irregularities. Uneven concrete surfaces to which geomembrane is to be attached should be ground until flat and smooth. Round edges

should have a minimum 1/2-inch radius. Surfaces should be sandblasted clean and be free of dirt, dust, oil, curing compounds, and other coatings.

Prior to starting geomembrane installation, and daily thereafter for installation on subgrade, geomembrane installer shall certify in duplicate that the surface(s) upon which geomembrane shall be installed is acceptable, on form located in Section 6 of this plan.

5.1.6 Geomembrane Installation

When geomembrane is being unwrapped, it should be visually inspected and each imperfection marked for repair. To protect the geomembrane during installation, its surfaces should not be used as work areas for preparing patches, storing tools and supplies, or other uses. Use the protective cover as work surface, if necessary.

Workers shall be instructed about requirements for protection of the geomembrane, such as handling geomembrane material in high winds, handling equipment, and walking on geomembrane surfaces. The shoes of personnel walking on geomembrane shall have smooth-bonded soles or be covered with a smooth type of overboot. Smoking, eating, or drinking in vicinity of geomembrane, placing heated equipment directly on geomembrane, or other activities that may damage geomembrane shall be strictly prohibited.

Equipment lacking spark arrestors shall not be operated in the vicinity of geomembrane material, nor shall generators or containers of flammable liquids be placed on geomembranes.

The geomembranes shall be protected from vehicle traffic and other hazards, and kept clean and free of debris during placement. Care should be taken to prevent uplift, displacement, and/or damage by wind.

Each miscellaneous product required for completion of geomembrane installation shall be of the recommended types and sizes, and installed in strict accordance with geomembrane Manufacturer's recommendations. Field seaming should be kept to a minimum. Horizontal seams on slopes will not be acceptable. Seams parallel to toe shall be at least 5 feet from toe. Rough-sided sheets shall be aligned in a manner that maximizes their frictional capabilities along slope.

Care must be taken to prevent wrinkles, folds, or other distress that can result in damage or prevent satisfactory alignment or seaming; and to provide for factors such as expansion, contraction, overlap at seams, anchorage requirements, seaming progress, and drainage. Sheets should be temporarily weighted with sandbags as necessary to anchor or hold them in position during installation. Continuous holddowns along edges will reduce wind flow under sheet.

Sandbag fabric shall be sufficiently close knit to preclude fines from working through bags. Bags shall contain not less than 40 nor more than 60 pounds of sand having 100 percent passing No. 8 screen and shall be securely closed after filling to prevent sand loss. Burlap bags, if used, shall be lined with plastic. Tires and paper bags, even those lined with plastic, shall not be used. Damaged or improperly sealed bags must be removed immediately from work area; spills must be cleaned up immediately.

The perimeter of the geomembrane shall be anchored as instructed, or as otherwise approved in writing by Designer. Geomembrane shall be anchored and sealed to structures, pipes, and other types of penetrations. Overlying soil cover shall be placed immediately following completion of geomembrane installation and field testing as acceptable to Designer.

5.1.7 Field Seams

Sheet contact surfaces shall be wiped clean to remove dirt, dust, moisture, and other foreign materials, and prepared in accordance with seaming method accepted by Designer.

Sheet edges must be lapped to form seams to join geomembrane sheets together. Edges to be seamed should be adjusted and temporarily anchored to prevent wrinkling and shrinkage. Seams shall not go through a boot. Locate seams a minimum of 2 feet from boot. Seam intersections involving more than three thicknesses of geomembrane material should be avoided. Offset seam intersections at least 2 feet. Extend seams through anchor trench to sheet edges.

For boots and seams on HDPE membranes that cannot be otherwise tested, insert copper wire for spark test at edge of overlapping sheet in extrudate of weld prior to fillet welding. Position to within 1/8 inch of sheet edge. Seam sheets together, using fusion-extrusion or hot-wedge welding system, equipment, and techniques.

In areas where field seams have to be capped, cap field seams using 8-inch wide (minimum) cover strip of same thickness as geomembrane (and from same roll, if available). Position strip over center of field seam and weld to geomembrane using fillet weld each side, including copper wire as described above for spark testing.

5.1.8 Geomembrane Attachment to Flat Concrete Surfaces

Install concrete anchors in accordance with anchor manufacturer's written instructions, and using manufacturer's drills and equipment. Position and fit geomembrane to be free of wrinkles at locations of attachment. Tighten anchor bolt nuts to uniformly deform rubber pad beneath battens 12 to 15 percent of total thickness of rubber pad to obtain watertight connection of geomembrane to concrete surface.

5.1.9 Manufacturer's Services

A representative of the geomembrane Manufacturer shall be on site for technical assistance during installation of geomembrane system, during inspection of geomembrane prior to installation, during preparation and inspection of surfaces on which geomembrane is to be placed, and during placement of soil cover or other products over installed geomembrane.

5.1.10 Protection of Work

Any part of the geomembrane surface showing injury due to scuffing, penetration by foreign objects, or distress from rough subgrade shall be replaced or covered and sealed with an additional layer of geomembrane material of proper size.

5.1.11 Field Quality Control

Field seam sampling shall be performed to verify that seaming equipment and operators are performing adequately. Samples should be taken at beginning of each shift for each seaming crew. In addition, if seaming has been suspended for more than 1/2 hour, or if breakdown of seaming equipment occurs, take test seam samples prior to resuming seaming. Sample sizes shall be 12 inches wide plus seam width, and 30 inches long.

Nondestructive sampling should also take place at the following frequency: a minimum of one sample per 500 feet of field seam, and a minimum of one sample per seaming crew per 4-hour work period. Produce samples using same materials, equipment, personnel, and procedures as field seams made at time of work in progress and under the same conditions.

Destructive sampling frequency should be determined by Designer. Samples should be removed from field seams at locations selected by Designer. Repair field seams in accordance with repair procedures outlined in the specifications.

Each sample shall be numbered, dated, and identified as to the personnel making seam and location of sample or location of field seam work in progress at time the sample is taken. Location of the sample, or location of the field seam in progress should be marked, at the time sample is made, on panel/sheet layout drawing.

In general, sampling should conform to ASTM D4437 and the specifications. Seam testing includes strength tests, vacuum box testing, high voltage spark tests, air channel pressure tests, and probing.

Specifically, field seam strength sample testing should include:

- Testing each sample for seam peel and tensile strength
- Saving test samples, including specimens tested, until notified by Designer regarding their disposal
- Shipping to the Designer, by express delivery, each sample that fails testing in order to determine the corrective measures required.

An acceptable field seam criterion is seam strength equal to 90 percent of that of parent material. Parent material shall be tested in accordance with ASTM D638-90.

The bonded shear strength of HPDE should be measured accordingly:

- In shear: Minimum 2 pounds/inch width/mil thickness as determined in accordance with ASTM D4437-84/D882-90, Method A (Modified).
- In peel: Minimum 1.2 pounds/inch width/mil thickness as determined in accordance with ASTM D4437-84/D413-82, Method A.

If a sample fails, the entire field seam from which it was taken shall be considered a failure and shall be rejected due to nonconformance with specification requirements. The following corrective measures should be implemented:

- For nondestructive sample failure, rerun the field weld test using the same sample. If that test passes, the Designer may assume an error was made in first test and accept the

field seam. If the second test fails, cap each field seam represented by failed sample and submit a new test sample made during capping procedure.

- For destructive sample failure, rerun field weld test using new sample from same seam. If that test passes, the Designer may assume an error was made in first test and accept field seam. If the second test fails, either cap the field seam between any two previous passed seam test locations that include the failed seam or take another sample on each side of failed seam location (10-foot minimum), and test both. If both pass, cap field seam between the two locations. If either fails, repeat the process of taking test samples. Each field seam shall be bounded by two passed test locations prior to acceptance.

For in-place observation and testing, geomembrane sheets, seams, anchors, seals, and repairs shall be visually inspected for defects as installation progresses, and again on completion. Depending on the seam welding equipment used, test all seams and repaired seams using a vacuum testing device, spark testing device, and/or air channel pressure test for double-wedge welded seams. Defective and questionable areas should be clearly marked and repaired to the Designer's satisfaction. All areas showing injury due to scuffing, penetration by foreign objects, or distress from rough subsurface shall be replaced or covered with an additional layer of geomembrane material. Testing must be performed in the presence of the Designer.

Vacuum box testing (HDPE and VLDPE welds) includes a test of fillet, extrusion lap, and single hot-wedge fusion lap welds. Testing procedures should conform to ASTM D4437-84.

During high voltage spark testing of fillet welds, provide each seam to be tested with copper wires properly embedded in seam and with provisions for electrical grounding to test equipment. Test procedures should conform to ASTM D4437-84.

Air channel pressure testing of double hot-wedge seam should be performed accordingly:

- Insert needle with gauge in air space between welds. Pump air into space to 30 psi and hold for 5 minutes.
- At end of 5 minutes, depressurize seam by placing needle hole in air space between welds at opposite end of seam and observe gauge.
- If seam maintains at least 27 psi during 5-minute hold and pressure drops within 30 second of puncture, seam is acceptable.
- If pressure drops below 27 psi during test period, or does not drop during 30-second depressurization period, repair needle holes with extruded HDPE and retest segments by same procedure. If seam maintains a minimum of 27 psi, seam is acceptable.
- If second air pressure test fails, cap the seam and test the capped seams using vacuum box.
- If leak is judged to be in bottom seam, cap strip length of seam tested will be accepted.
- Mark and repair needle holes.

5.1.12 Repairing Geomembrane

Repair damage or rejected seams with pieces of flat and unwrinkled geomembrane material free from defects and seams. Patches shall be tightly bonded on completion of repair work. Patch shall be neat in appearance and 6 inches larger in all directions than areas to be repaired. Round corners of each patch to minimum 1-inch radius. Prepare contact surfaces and seam patch in accordance with field seams:

- Gently pull and hold flat receiving surface in area to be patched.
- Fully bond patches less than 12 inches in narrowest plan dimension across their entire width.
- Seam each patch more than 12 inches across in narrowest dimension with minimum bonded width of 6 inches along edge, with no free edge remaining.

5.1.13 Record Data

At minimum, identify each test by date of sample, date of test, sample location, name of individual who performed test, standard test method used, and departures from standard test methods. Include identification and location of repairs, cap strips, penetrations, and areas selected for destructive test samples on record drawings.

5.1.14 Cleanup

Areas should be cleaned as work proceeds, taking particular care to ensure that no trash, tools, and other unwanted materials are trapped beneath geomembrane, and that scraps of geomembrane material are removed from work area prior to completion of installation.

5.1.15 Placing Products Over Geomembrane

Notify the Designer prior to placing material over geomembrane. Do not cover installed geomembrane until after Designer provides authorization to proceed. If tears, punctures, or other geomembrane damage occurs during placement of overlying products, remove overlying products as necessary to expose damaged geomembrane, and repair damage as specified. Geomembrane Installer shall remain available during placement of overlying products to repair geomembrane if damaged.

5.2 Geonet

5.2.1 Installation of Geonet

Care shall be taken to keep the geonet clean and free from debris prior to installation. If the geonet is not clean, it should be washed prior to installation.

The geonet in such a manner as to ensure that it is not damaged in any way, and the following shall be compiled with during installation:

- On slopes, the geonet shall be secured and rolled down the slope in such a manner as to continually keep the geonet sheet in tension. If necessary, the geonet shall be positioned by hand after being unrolled to minimize wrinkles.
- In the presence of wind, all geonet shall be weighted with sandbags or by other means. Such sandbags shall be installed during placement and shall remain until replaced with cover material.
- Geonet shall be welded to geomembrane.
- Geonet shall only be cut using scissors or other cutting tools approved by the manufacturer.
- During placement of geonet, care shall be taken not to entrap in the geonet dirt or excessive dust that could cause clogging of the geonet system.
- Adjacent rolls shall be overlapped by at least 4 inches.
- Overlaps shall be secured by tying. Tying can be achieved by plastic fasteners or polymer braid. Tying devices shall be white or yellow for easy inspection. Metallic devices are not allowed.
- No horizontal seams shall be allowed on side slopes.
- In the corners of the side slopes where overlaps between perpendicular geonet strips are required, an extra layer of geonet shall be unrolled along the slope, on top of the previously installed geonet from top to bottom of the slope.
- When more than one layer of geonet is installed, joints shall be staggered.

5.2.2 Field Quality Control of Geonet

Two duplicate documentation files for panel placement shall be maintained. One shall be maintained by the Installer and the other by the Designer. At the end of each work week, the files shall be updated and checked to assure that all copies of pertinent project information are included in each file. The Installer shall submit daily copies of the documentation to the Designer.

Any holes or tears in the geonet shall be repaired by placing a patch extending 1-ft beyond the edges of the hole or tear. The patch shall be secured to the original geonet by placing ties every 6 inches.

Appendix I
Reduced Size Drawings

PERMIT PLANS
FOR

CELL 7B/8 CLASS I LANDFILL FINAL CLOSURE ORANGE COUNTY SOLID WASTE MANAGEMENT FACILITY

BOARD OF COUNTY COMMISSIONERS

RICHARD T. CROTTY
COUNTY MAYOR

TERESA JACOBS
DISTRICT 1

LINDA STEWART
DISTRICT 4

ROBERT B. "BOB" SINDLER
DISTRICT 2

BILL SEGAL
DISTRICT 5

MILDRED FERNANDEZ
DISTRICT 3

HOMER L. HARTAGE
DISTRICT 6



AJIT LALCHANDANI
COUNTY ADMINISTRATOR

MICHAEL L. CHANDLER
DIRECTOR, ORANGE COUNTY UTILITIES DEPARTMENT

JAMES W. BECKER
MANAGER, SOLID WASTE DIVISION

UTILITIES DEPARTMENT SOLID WASTE DIVISION ORANGE COUNTY, FLORIDA



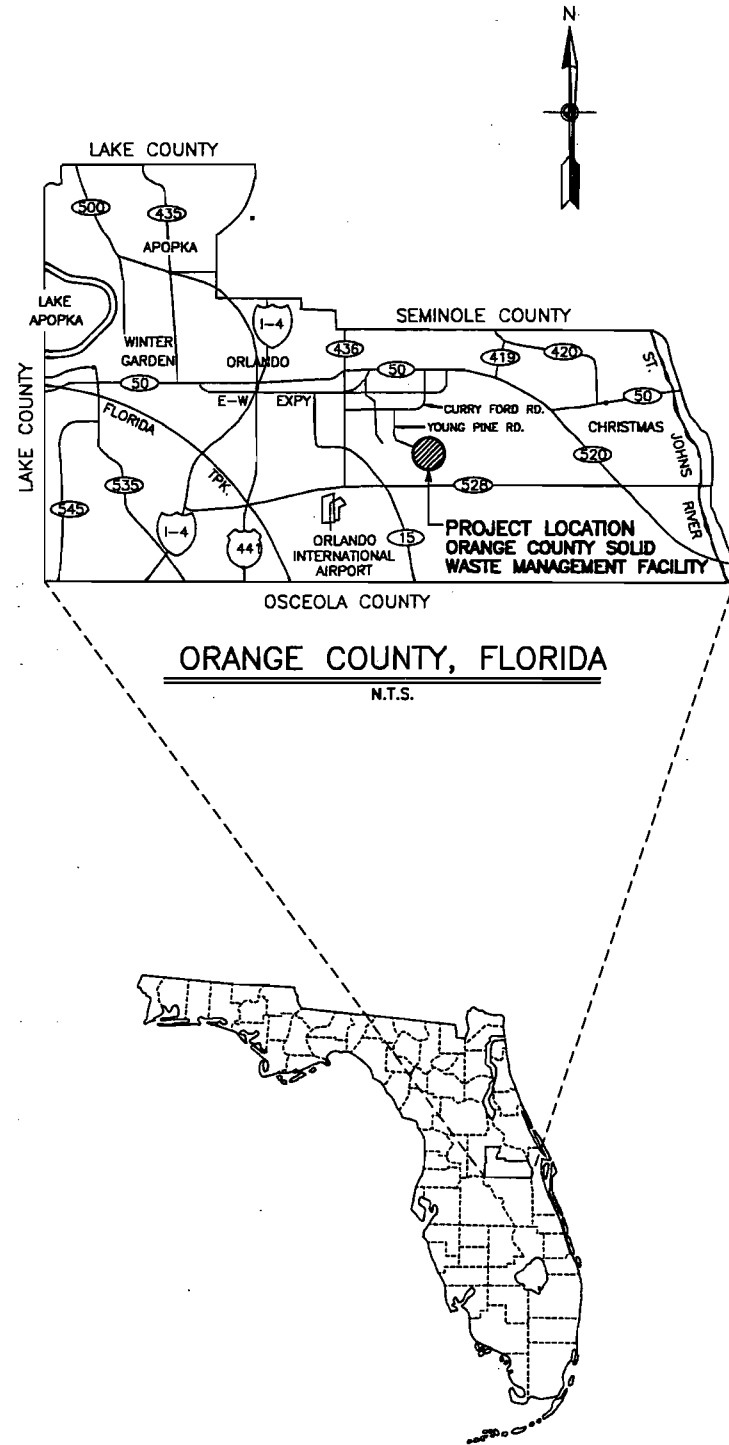
WCG | NEEL-SCHAFFER, Inc.
2600 Lake Lucien Drive, Ste. 117
Maitland, Florida 32751-7235
407-647-6623 (fax) 407-539-0575
WWW.WCG1.COM
CA9582

Project No. WN.01111.001

O:\1111\instru\May-2000\gener\007ER.dwg

ABBREVIATIONS

A.B.	ANCHOR BOLT	I.R.	IRON ROD
ADF	AVERAGE DAILY FLOW	J.B.	JUNCTION BOX
ADJ	ADJUST	JUNC	JUNCTION
ADMIN.	ADMINISTRATION	LAT.	LATERAL
A.R.V.	AIR RELEASE VALVE	LF	LINEAR FEET
A.R.V.V.	AIR RELEASE VACUUM VALVE	LS.	LIFT STATION
ADD'L	ADDITIONAL	LT.	LEFT
ALUM.	ALUMINUM	L.W.L.	LOW WATER LEVEL
APPROX.	APPROXIMATELY	MAINT.	MAINTENANCE
ARCH.	ARCHITECT	MAX.	MAXIMUM
ASPH.	ASPHALT	MATL	MATERIAL
ASSEM.	ASSEMBLY	M.E.S.	MITERED END SECTION
BE	BURIED ELECTRIC	MFR.	MANUFACTURER
BL	BASELINE	M.H.	MANHOLE
BLDG.	BUILDING	M.H.	MINIMUM
BLK.	BLOCK	MOD.	MODIFIED
B.M.	BENCH MARK	M.J.	MECHANICAL JOINT
B.V.	BALL VALVE	N.G.	NATURAL GROUND
B.F.V.	BUTTERFLY VALVE	N.G.V.D.	NATIONAL GEODETIC VERTICAL DATUM
C.F.	CUBIC FEET	N.I.C.	NOT IN CONTRACT
C.F.S.	CUBIC FEET PER SECOND	NO.	NUMBER
CL	CENTERLINE	NOM.	NOMINAL
C.M.	CONCRETE MONUMENT	N.T.S.	NOT TO SCALE
C.M.P.	CORRUGATED METAL PIPE	N.V.	NEEDLE VALVE
CONC.	CONCRETE	O.C.	ON CENTER
CONN.	CONNECTION	O.D.	OUTSIDE DIAMETER
CONST.	CONSTRUCT	O/E	OVERHEAD ELECTRIC
CONT.	CONTINUOUS	O/E	OR EQUAL
CORP.	CORPORATION	PAVT.	PAVEMENT
C.V.	CHECK VALVE	P.B.	PULL BOX
C.Y.	CUBIC YARD	P.E.	PLAIN END
DBI	DITCH BOTTOM INLET	PG	PAGE
DBL	DOUBLE	P.I.	POINT OF INTERSECTION
DHW	DESIGN HIGH WATER	P/L	PROPERTY LINE
DIA	DIAMETER	POLY.	POLYETHYLENE
DIP	DUCTILE IRON PIPE	PP	POLYPROPYLENE
DWG.	DRAWING	PR	PAIR
ELEC	ELECTRIC	PROP.	PROPOSED
EA	EACH	PS	PUMP STATION
E.F.	EACH FACE	P.S.I.	POUNDS PER SQUARE INCH
EL.	ELEVATION	PV	PLUG VALVE
ELEC.	ELECTRICAL	PVC	POLYVINYL CHLORIDE
EMB	EMBED OR EMBEDDED	PW	POTABLE WATER
E/P	EDGE OF PAVEMENT	RAD.PT.	RADIUS POINT
ESMT.	EASEMENT	R	RADIUS
E.W.	EACH WAY	RCP	REINFORCED CONCRETE PIPE
EXIST.	EXISTING	RED.	REDUCER
EXP.JT.	EXPANSION JOINT	REINF.	REINFORCEMENT
F.D.E.P.	FLORIDA DEPT. OF ENVIRONMENTAL PROTECTION	REQ.	REQUIRED
F.D.O.T.	FLORIDA DEPT. OF TRANSPORTATION	RJ	RESTRAINED JOINT
F.F.	FINISHED FLOOR	RT	RIGHT
F.F.C.R.S.	FABRIC FORMED CONCRETE REVETEMENT SYSTEM	R/W	RIGHT-OF-WAY
F.H.	FIRE HYDRANT	SAN.	SANITARY SEWER
FIN.	FINISH	SCH.	SCHEDULE
FLG.	FLANGE	S.D.	STORM DRAIN
FL	FLOW LINE	S.F.	SQUARE FEET
FM	FORCE MAIN	SHT.	SHEET
FT.	FEET	SOL.	SOLUTION
FTG.	FOOTING	SPECS.	SPECIFICATIONS
GA	GALVE	SQ.	SQUARE
GAL.	GALLONS	SS	STAINLESS STEEL
GALV.	GALVANIZED	STA	STATION
GEN.	GENERATOR	STD.	STANDARD
GR.	GRADE	STL.	STEEL
GRD.	GROUND	T&B	TOP AND BOTTOM
G.S.P.	GALVANIZED STEEL PIPE	TBM	TEMPORARY BENCH MARK
GM	GAS MAIN	TCE	TEMPORARY CONSTRUCTION EASEMENT
GPM	GALLONS PER MINUTE	TD	TOE DRAIN
GV	GATE VALVE	TEMP.	TEMPORARY OR TEMPERATURE
HB	HOSE BIBB	THD.	THREADED
HDWL.	HEAD WALL	THK.	THICK
HGL	HYDRAULIC GRADE LINE	TYP.	TYPICAL
HT.	HEIGHT	U.G.	UNDERGROUND
HP	HIGH POINT	VERT.	VERTICAL
HORIZ.	HORIZONTAL	V.V.H.	VERIFIED VERTICALLY & HORIZONTALLY
H.W.L.	HIGH WATER LEVEL	W/	WITH
I.D.	INSIDE DIAMETER	WM	WATER MAIN
IN.	INCHES	W/M	WATER METER
INV.	INVERT	W/O	WITHOUT
I.P.	IRON PIPE	WP	WALL PIPE
		WS	WATER SERVICE
		W.S.	WATER SURFACE
		WWF	WELDED WIRE FABRIC



PROJECT LOCATION MAP

SHEET LIST

SHEET NO.	DESCRIPTION
	COVER SHEET
G-1	LOCATION MAP, LIST OF SHEETS, LEGEND AND ABBREVIATIONS
G-2	ORANGE COUNTY LANDFILL FACILITY MAP
G-3	AERIAL PHOTOGRAPH OF CELL 7B/8
G-4	OVERALL FINAL CLOSURE GRADING, STORMWATER AND LANDFILL GAS PLAN
G-5	FINAL CLOSURE GRADING, STORMWATER AND LANDFILL GAS PLAN - NORTH
G-6	FINAL CLOSURE GRADING, STORMWATER AND LANDFILL GAS PLAN - SOUTH
C-1	FINAL CLOSURE GRADING PLAN
C-2	FINAL CLOSURE GRADING PLAN - NORTH
C-3	FINAL CLOSURE GRADING PLAN - SOUTH
C-4	FINAL GRADING CROSS SECTIONS (1 AND 2)
C-4A	FINAL GRADING CROSS SECTIONS (3)
C-5	OVERALL STORMWATER MANAGEMENT PLAN
C-6	STORMWATER MANAGEMENT PLAN - NORTH
C-7	STORMWATER MANAGEMENT PLAN - SOUTH
C-8	STORMWATER STRUCTURE AND TERRACE SWALE SCHEDULES
C-9	OVERALL LFG COLLECTION SYSTEM PLAN
C-10	PROPOSED LFG COLLECTION SYSTEM PLAN - NORTH
C-11	PROPOSED LFG COLLECTION SYSTEM PLAN - SOUTH
CD-1	CLOSURE/CIVIL DETAILS
CD-2	STORMWATER MANAGEMENT DETAILS
CD-3	STORMWATER MANAGEMENT DETAILS
CD-4	STORMWATER MANAGEMENT DETAILS
CD-5	GAS MANAGEMENT SYSTEM DETAILS
CD-6	GAS MANAGEMENT SYSTEM DETAILS
CD-7	GAS MANAGEMENT SYSTEM DETAILS

LEGEND

	EXISTING CONTOUR		EXIST. AIR SUPPLY/LEACHATE DEWATERING LINE
	PROPOSED CONTOUR		AIR SUPPLY/LEACHATE DEWATERING LINE
	SLOPE BREAK		TOE DRAIN
	FLOW DIRECTION		LETDOWN PIPE (HDPE) & SIZE
	STORMWATER MANHOLE		BOTTOM LINER ANCHOR TRENCH
	STORMWATER TERRACE INLET		LFG PIPING - THICKNESS AND SIZE
	STORMWATER DISCHARGE STRUCTURE		TERRACE SWALE DESIGNATION (LT = LEFT; RT = RIGHT VIEWED FROM BOTTOM)
	PROPOSED LANDFILL GAS WELL		SECTION CUT
	EXISTING LANDFILL GAS WELL		SOLID WASTE
	EXISTING MONITORING WELL CLUSTER		NON-LIMESTONE RIVER ROCK
	LFG MONITORING PROBE		FILTER SAND
	LANDFILL GAS WELL DESIGNATION		FABRIC FORMED CONCRETE REVETMENT SYSTEM (FFCRS)
	STORMWATER STRUCTURE DESIGNATION		HIGH POINT OF SWALE
	LIMIT OF EXISTING BOTTOM LINER		DIRECTION OF FLOW
	LIMIT OF CONSTRUCTION		AREA OF CLOSURE
	LIMIT OF CLOSURE (G-3)		SOD
	INTERFACE LINE		TOP SOIL
	TERRACE BASELINE		PROTECTIVE COVER SOIL (GRANULAR FILL)
	BOTTOM LINER LOCATION MONUMENTS		LEVELING COURSE SOIL (GRANULAR FILL)
	EXISTING STORMWATER LETDOWN PIPE		GEOMEMBRANE
	PROPOSED STORMWATER LETDOWN PIPE		COMPOSITE DRAINAGE NET
	UNDERDRAIN LINE		UNDISTURBED EARTH
	TERMINAL MANHOLE (CONCRETE)		
	ENERGY DISSIPATOR		

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	REUSE OF DOCUMENTS THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL-SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL-SCHAFFER INC.		DESIGNED	JML	DATE	08/05
			DRAWN	DPK	DATE	08/05
			CHECKED	JML	DATE	08/05
			APPROVED	MSB	DATE	08/05
NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.		NO.	BY	REVISIONS	DATE	CADD FILE NAME
						G-1.DWG

WCG/NEEL-SCHAFFER, Inc.
2600 Lake Lucien Drive, Ste. 117
Maitland, Florida 32751-4219
407-647-8822 (Fax) 407-538-8876
WWW.WCG1.COM
C06822

ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE

LOCATION MAP, LIST OF SHEETS, LEGEND AND ABBREVIATIONS

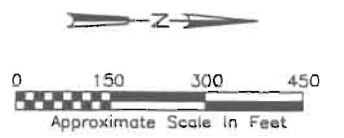
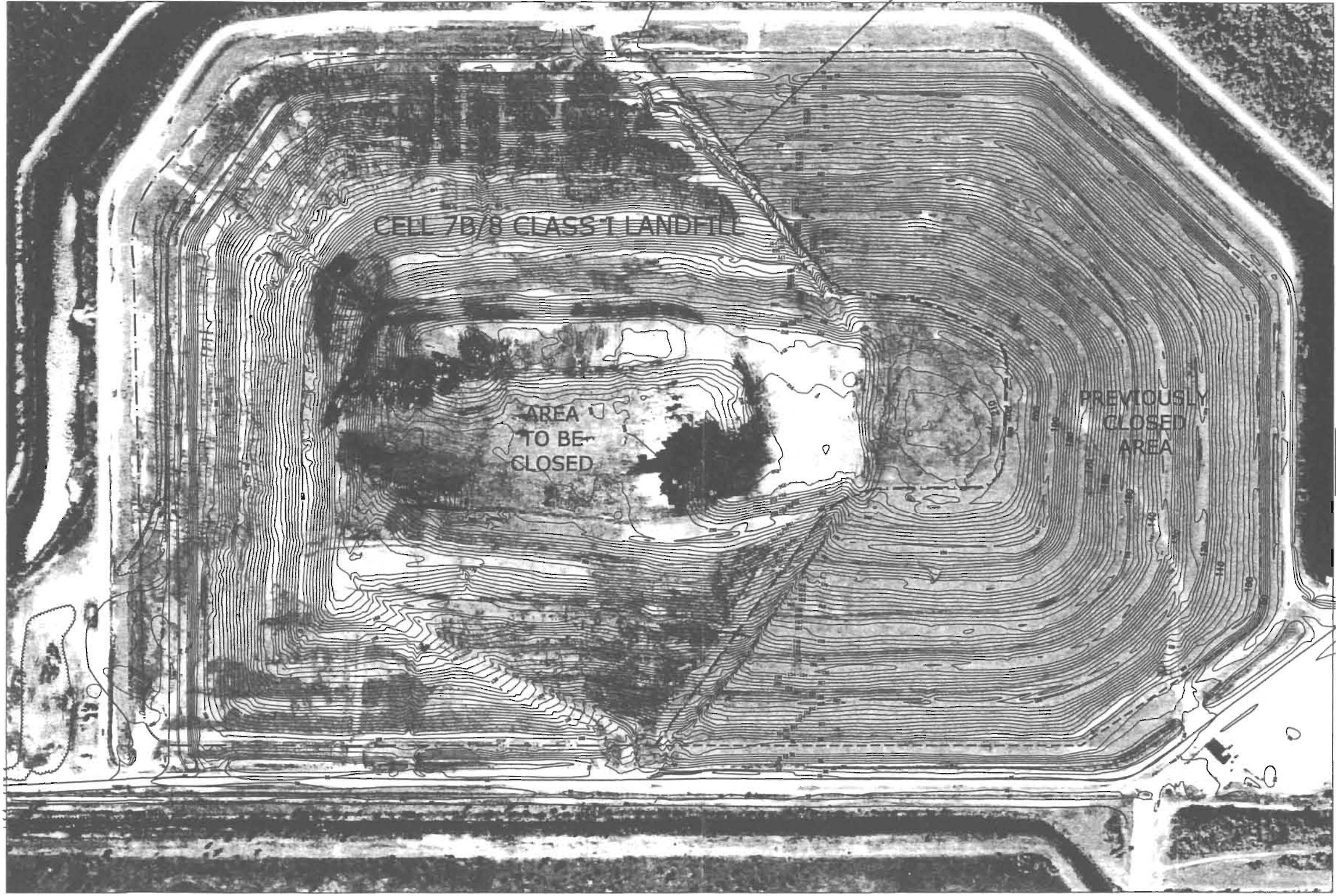
SHEET NO.

G-1

SCALE: N.A.

PROJ. NO. WN.01111.001

INTERFACE OF PREVIOUSLY
CLOSED AREA WITH THIS
CLOSURE PROJECT



DATE OF AERIAL PHOTOGRAPHY:
OCTOBER 2004 BY DEMAPS, INC.
FEATURES SHOWN ON THIS AERIAL
REFLECT THE EXISTING CONDITIONS ON
THE DATE OF PHOTOGRAPHY. ORANGE
COUNTY HAS BEEN ACTIVELY FILLING THE
DISPOSAL AREA, SO EXISTING CONDITIONS
WILL VARY FROM THE PHOTOGRAPH.

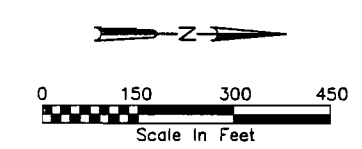
LEGEND

-----	PREVIOUSLY CLOSED AREA
-----	AREA TO BE CLOSED

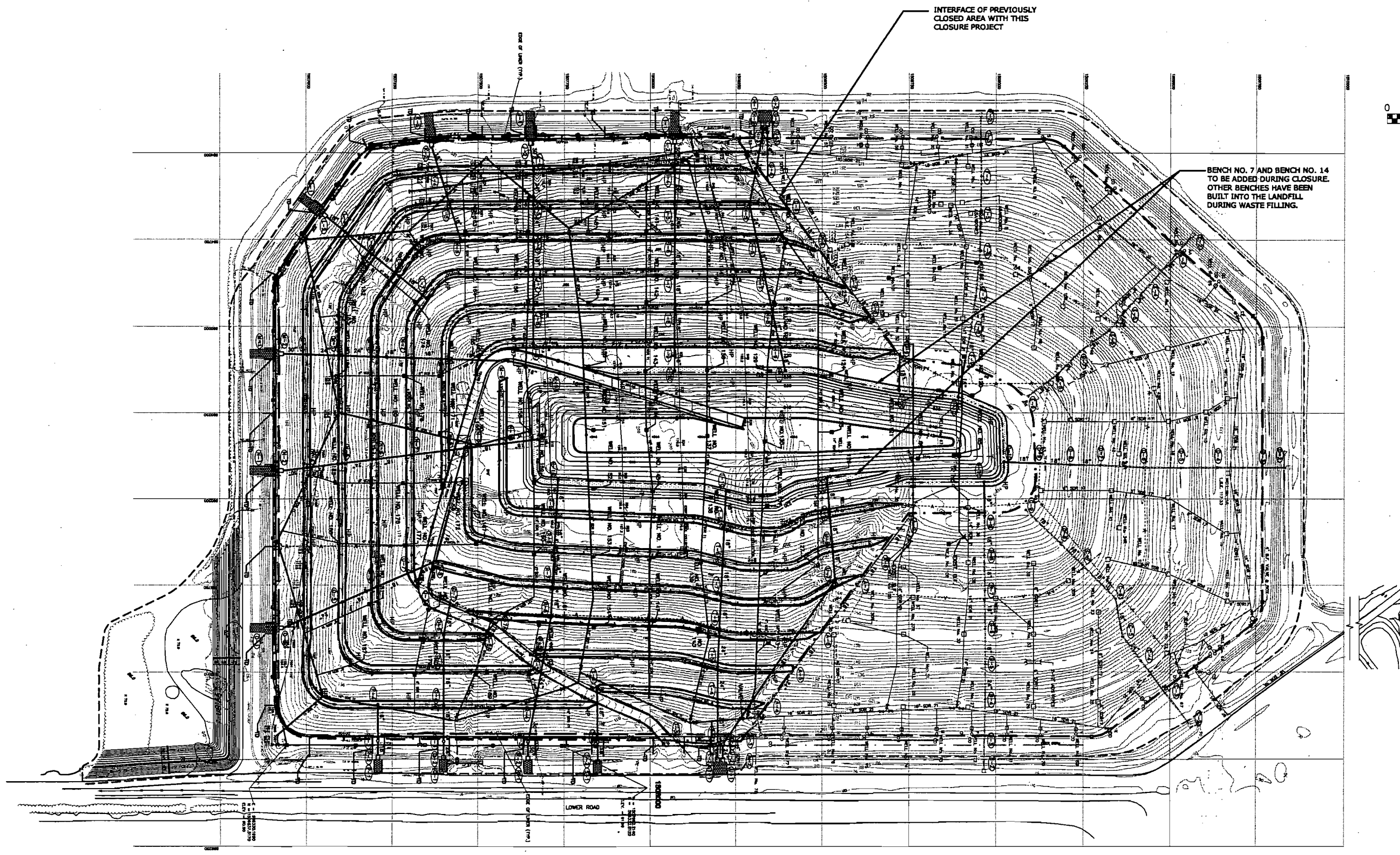
O:\1111\instru\1111\genera\1111.dwg

VERIFY SCALE				DESIGNED	JML	DATE	08/05	<p>WCG (NEEL-SCHAFER), INC. 2800 Lake Lucien Drive, Ste. 117 Maitland, Florida 32751-4218 407-847-4623 Fax 407-538-0675 WWW.WCG.COM C4882</p>	ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE	SHEET NO.
BAR IS ONE INCH ON ORIGINAL DRAWING.				DRAWN	DPK	DATE	08/05		G-3	
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.				CHECKED	JML	DATE	08/05		SCALE: AS NOTED	
				APPROVED	MSB	DATE	08/05		PROJ. NO. WN.01111.001	
NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.	NO.	BY	REVISIONS	DATE	CADD FILE NAME	G-3.DWG				

INTERFACE OF PREVIOUSLY
CLOSED AREA WITH THIS
CLOSURE PROJECT



BENCH NO. 7 AND BENCH NO. 14
TO BE ADDED DURING CLOSURE.
OTHER BENCHES HAVE BEEN
BUILT INTO THE LANDFILL
DURING WASTE FILLING.



O:\proj\01111\001\rebuild\01111-2005\General\G-5_G-01.dwg

VERIFY SCALE
BAR IS ONE INCH ON
ORIGINAL DRAWING.
SCALE IS 1" = 150'
IF NOT ONE INCH ON
THIS SHEET, ADJUST
SCALES ACCORDINGLY.

NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.

NO.	BY	REVISIONS	DATE	CADD FILE NAME

DESIGNED	JML	DATE	08/05
DRAWN	DPK	DATE	08/05
CHECKED	JML	DATE	08/05
APPROVED	MSB	DATE	08/05

G-4-5-8.DWG



WCG | NEEL-SCHAFFER, Inc.
2800 Latta Luster Drive, Ste. 117
Melbourne, Florida 32971-4212
407-847-9222 (local) 407-539-0575
www.wcg1.com
CADD

ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE

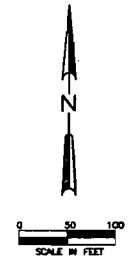
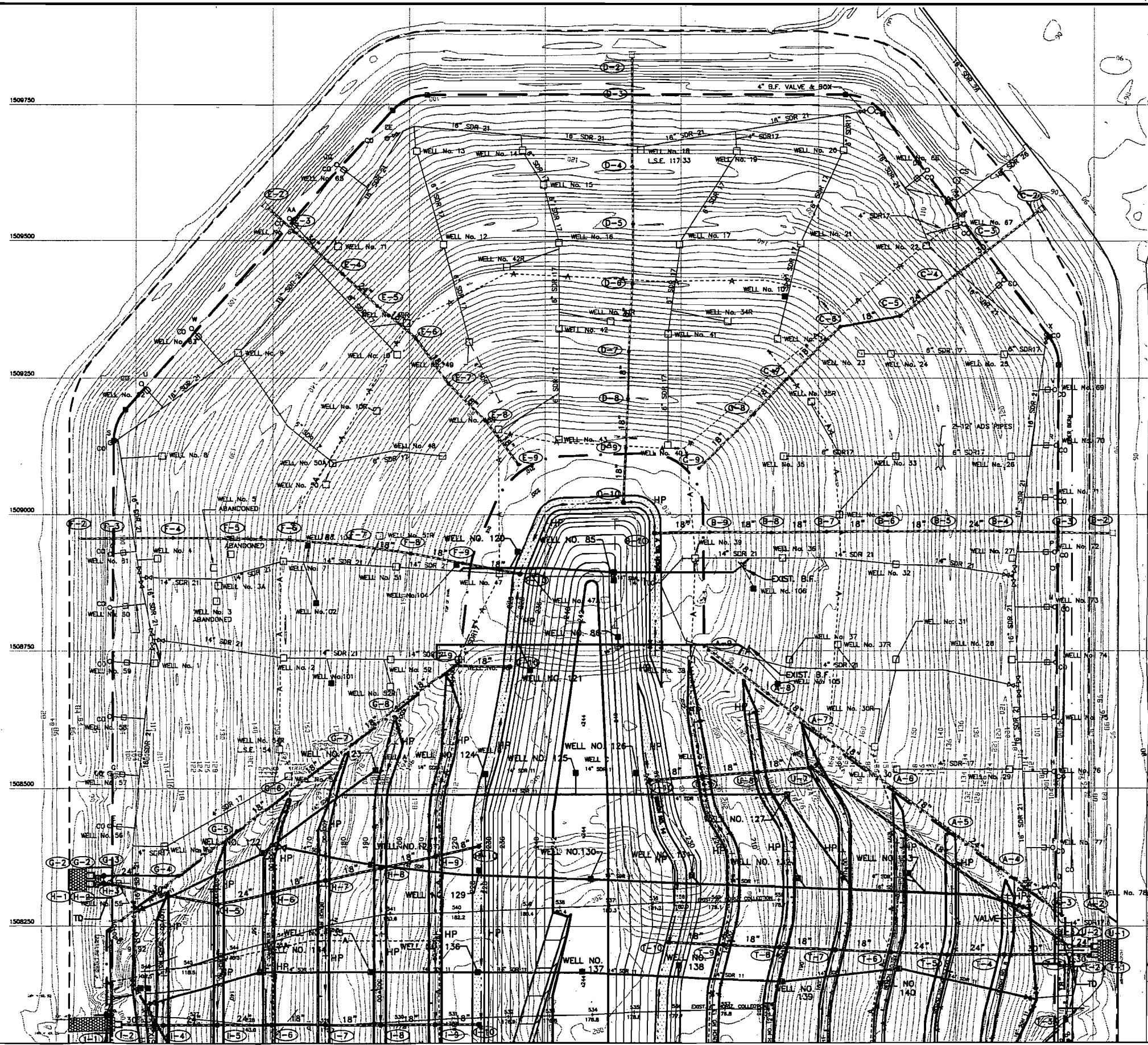
OVERALL FINAL CLOSURE GRADING,
STORMWATER AND LANDFILL GAS PLAN

SHEET NO.

G-4

SCALE: AS NOTED

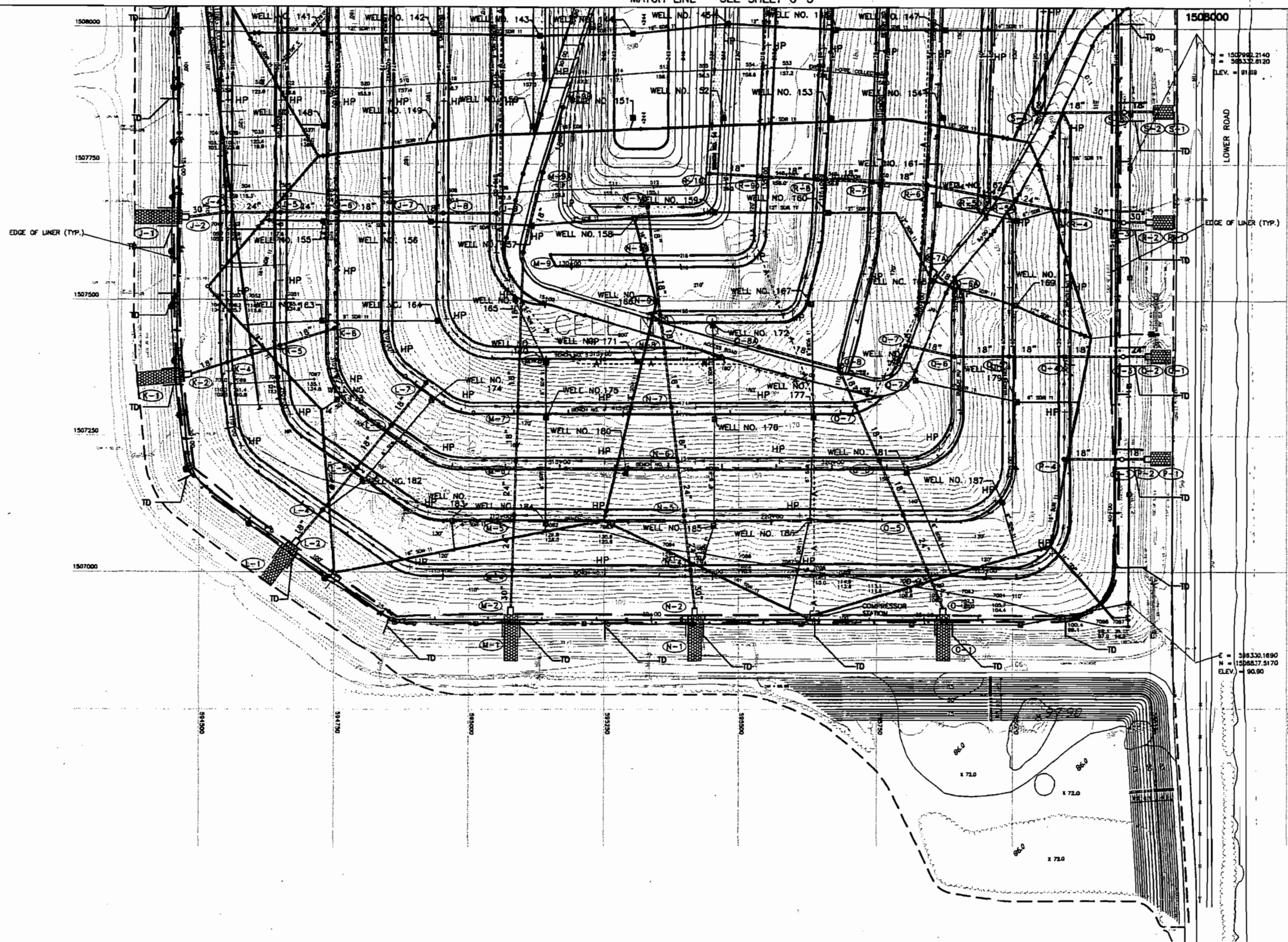
PROJ. NO. WN.01111.001



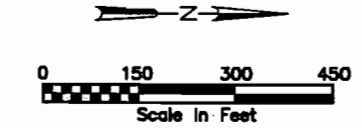
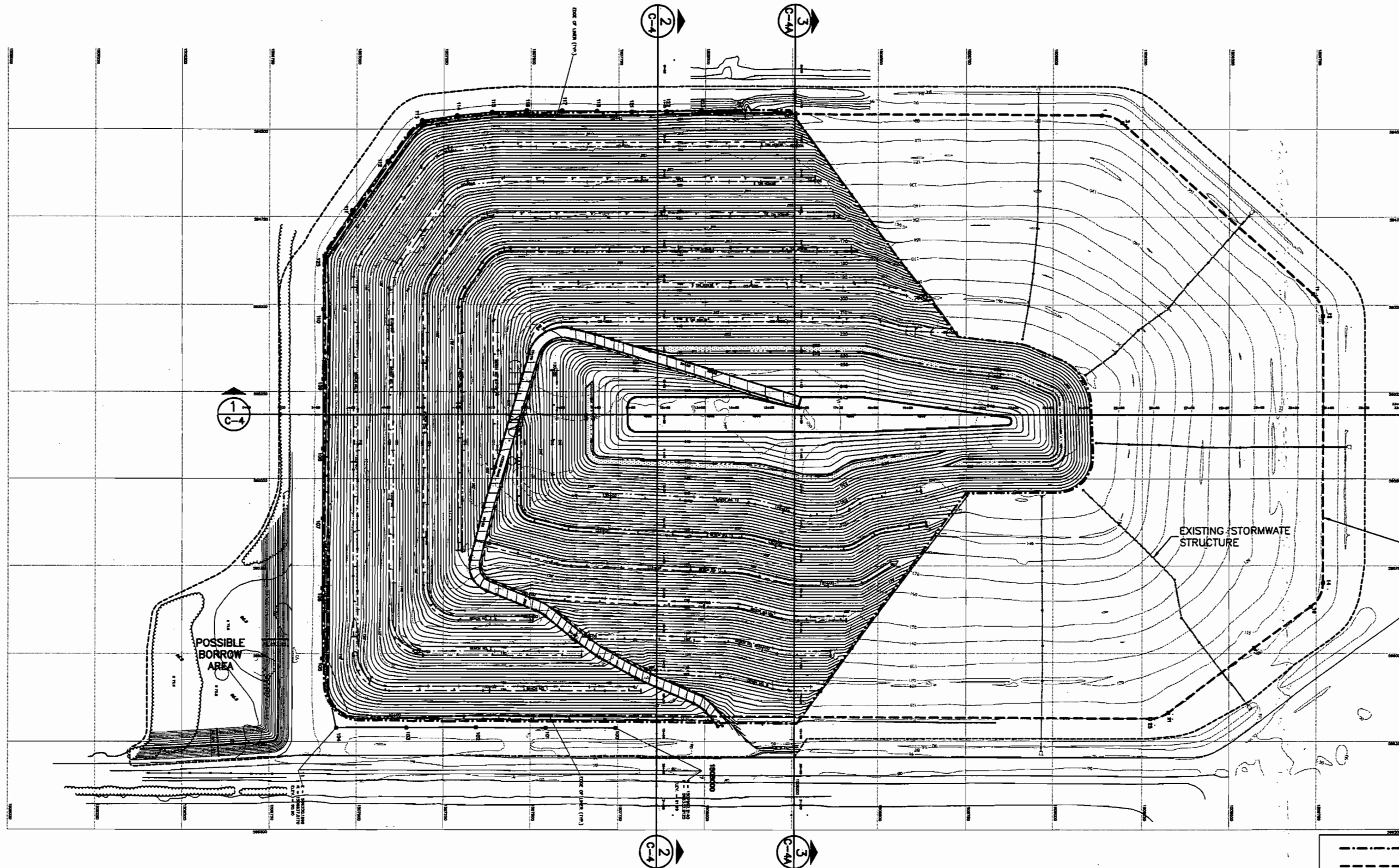
MATCH LINE - SEE SHEET G-6

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	REUSE OF DOCUMENTS THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH M-HILL/GLACE & RADCLIFFE-JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH M-HILL/GLACE & RADCLIFFE JOINT VENTURE.			DESIGNED JML DATE 08/05		ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE FINAL CLOSURE GRADING, STORMWATER AND LANDFILL GAS PLAN - NORTH	SHEET NO. G-5
	NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.	DRAWN DPK DATE 08/05	CHECKED JML DATE 08/05	APPROVED MSB DATE 08/05			SCALE: AS NOTED PROJ. NO. WN.01111.001
	NO.	BY	REVISIONS	DATE	CADD FILE NAME		
					G-4-5-6.DWG		

MATCH LINE - SEE SHEET G-5



<p>VERIFY SCALE</p> <p>BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.</p>	<p>REUSE OF DOCUMENTS</p> <p>THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH HILL/GLACE & RADCLIFFE - JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH HILL/GLACE & RADCLIFFE JOINT VENTURE.</p>		DESIGNED	JML	DATE	08/05	<p>WCG</p> <p>NEEL-SCHAFFER</p> <p>WCG/NEEL-SCHAFFER, Inc. 2820 Lake Lucerne Drive, Ste. 117 Maitland, Florida 32751-0218 407-647-6623 (204)407-638-0575 www.wcg31.com CADSW</p>	<p>ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE</p> <p>FINAL CLOSURE GRADING, STORMWATER AND LANDFILL GAS PLAN - SOUTH</p>	SHEET NO.	G-6
	<p>NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.</p>	NO.	BY	REVISIONS	DATE	CADD FILE NAME			G-4-5-6.DWG	SCALE: AS NOTED

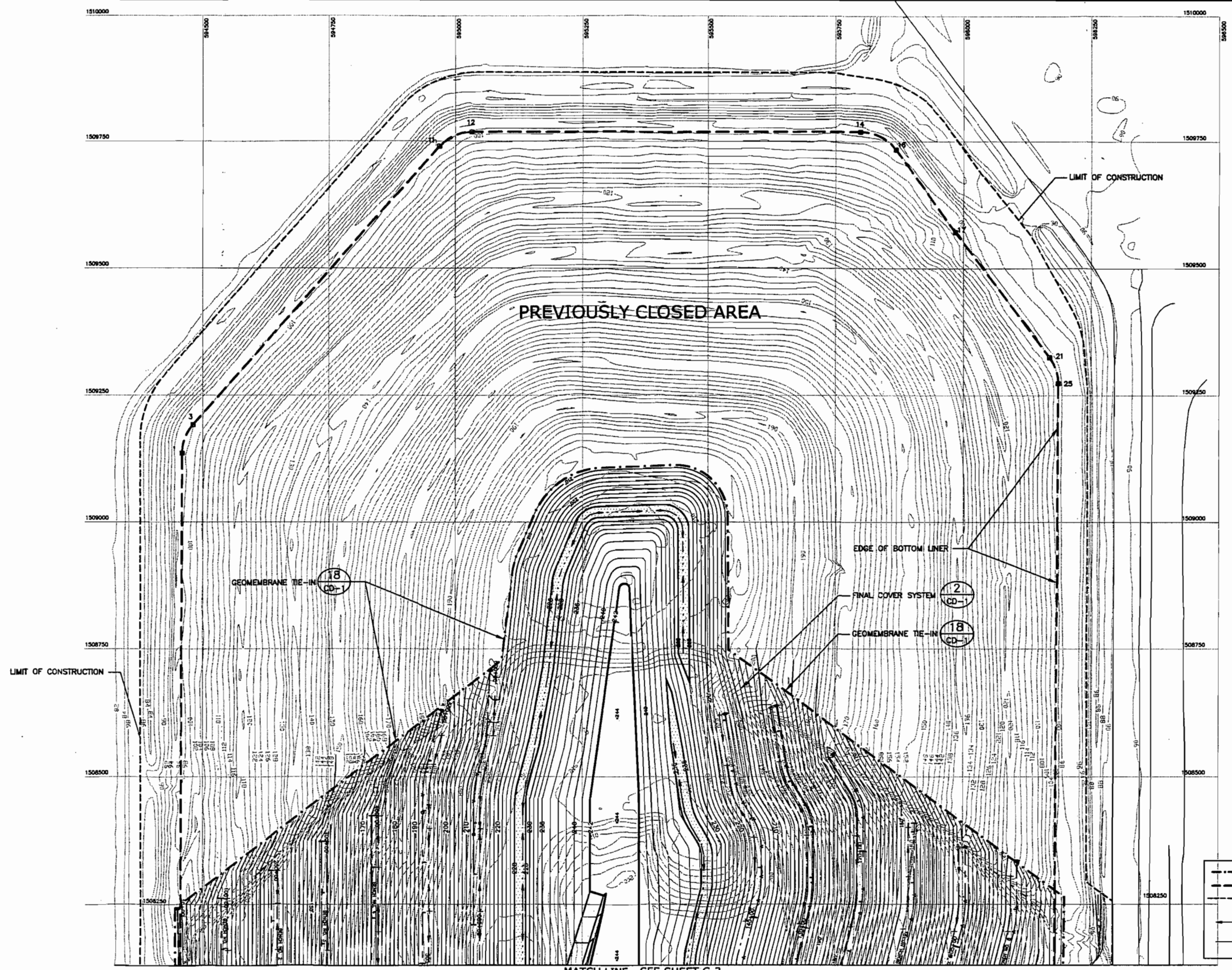


BOTTOM LINER LOCATION COORDINATES

MONUMENT ID NO.	NORTHING	EASTING	ELEV.	OFF-SET TO LIMIT (FT)
1	1509135.8122	594549.1650		
3	1509192.4435	594480.7286		
11	1509739.7804	594468.8337		
12	1509768.2087	595032.2021		
14	1509768.8960	595798.3716		
16	1509733.6082	595067.3819		
17	1508571.0843	595084.6882		
21	1508325.5228	596168.3432		
25	1509274.4147	596183.2747		
100	1507743.843	596211.091	99.89	34
101	1507543.634	596210.596	99.98	34
102	1507543.599	596210.070	99.92	34
103	1507143.800	596209.737	99.79	34
104	1508943.583	596209.238	99.50	33
105	1508933.557	596201.318	100.33	17
106	1508954.992	595851.256	98.68	17
107	1508904.800	595813.282	97.44	17
108	1508905.249	595413.247	97.69	17
109	1508905.883	595213.323	96.50	17
110	1508906.420	595013.314	95.80	17
111	1508888.575	594732.808	95.74	16
112	1507688.254	594592.248	95.71	16
113	1507187.737	594474.879	95.61	15
114	1507287.634	594461.110	95.83	15
115	1507387.159	594451.838	95.68	15
116	1507487.589	594448.437	95.72	15
117	1507587.940	594448.399	95.72	15
118	1507687.195	594447.076	95.70	15
121	1507787.308	594448.396	95.63	10
122	1507887.733	594448.298	95.64	10
123	1507987.585	594448.713	95.62	11
124	1508087.585	594447.148	95.66	8
125	1508187.112	594861.808	95.78	11

- AREA OF FINAL CLOSURE
- BOTTOM LINER ANCHOR TURNDOWN POINT
- LIMITS OF CONSTRUCTION
- HIGH POINT OF STORMWATER BENCH TERRACE
- LOW POINT OF STORMWATER BENCH TERRACE

<p>VERIFY SCALE</p> <p>BAR IS ONE INCH ON ORIGINAL DRAWING.</p> <p>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.</p>	<p>REUSE OF DOCUMENTS</p> <p>THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL-SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL-SCHAFFER INC.</p> <p>NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>DESIGNED</td><td>JML</td><td>DATE</td><td>08/05</td></tr> <tr><td>DRAWN</td><td>DPK</td><td>DATE</td><td>08/05</td></tr> <tr><td>CHECKED</td><td>JML</td><td>DATE</td><td>08/05</td></tr> <tr><td>APPROVED</td><td>MSB</td><td>DATE</td><td>08/05</td></tr> </table>	DESIGNED	JML	DATE	08/05	DRAWN	DPK	DATE	08/05	CHECKED	JML	DATE	08/05	APPROVED	MSB	DATE	08/05	<p>CH2MHILL</p> <p>WCG</p> <p>NEEL-SCHAFFER</p>	<p>WCG/NEEL-SCHAFFER, Inc. 2600 Lakeside Drive, Ste. 117 Maitland, Florida 32751-4216 407-647-8823 (fax) 407-539-0675 WWW.WCG1.COM CA9682</p>	<p>ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE</p> <p>FINAL CLOSURE GRADING PLAN</p>	<p>SHEET NO.</p> <p>C-1</p> <p>SCALE: AS NOTED</p> <p>PROJ. NO. WN.01111.001</p>
DESIGNED	JML	DATE	08/05																			
DRAWN	DPK	DATE	08/05																			
CHECKED	JML	DATE	08/05																			
APPROVED	MSB	DATE	08/05																			
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>NO.</th> <th>BY</th> <th>REVISIONS</th> <th>DATE</th> <th>CADD FILE NAME</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td>C-1.DWG</td> </tr> </table>	NO.	BY	REVISIONS	DATE	CADD FILE NAME					C-1.DWG										
NO.	BY	REVISIONS	DATE	CADD FILE NAME																		
				C-1.DWG																		



LEGEND

	AREA OF THIS CLOSURE PROJECT
	EDGE OF EXISTING BOTTOM LINER
	LIMITS OF CONSTRUCTION
	HIGH POINT OF STORMWATER BENCH TERRACE
	LOW POINT OF STORMWATER BENCH TERRACE

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REUSE OF DOCUMENTS
 THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL SCHAFFER INC.

NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.

NO.	BY	REVISIONS	DATE	CADD FILE NAME

DESIGNED	JML	DATE	08/05
DRAWN	DPK	DATE	08/05
CHECKED	JML	DATE	08/05
APPROVED	MSB	DATE	08/05

C-2.DWG

CH2MHILL **WCG**
 NEEL SCHAFFER

WCG/NEEL-SCHAFFER, Inc.
 2600 Lake Lucien Drive, Ste. 117
 Maitland, Florida 32751-4218
 407-647-8523 (fax) 407-639-0575
 WWW.WCG1.COM
 CA952

ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE

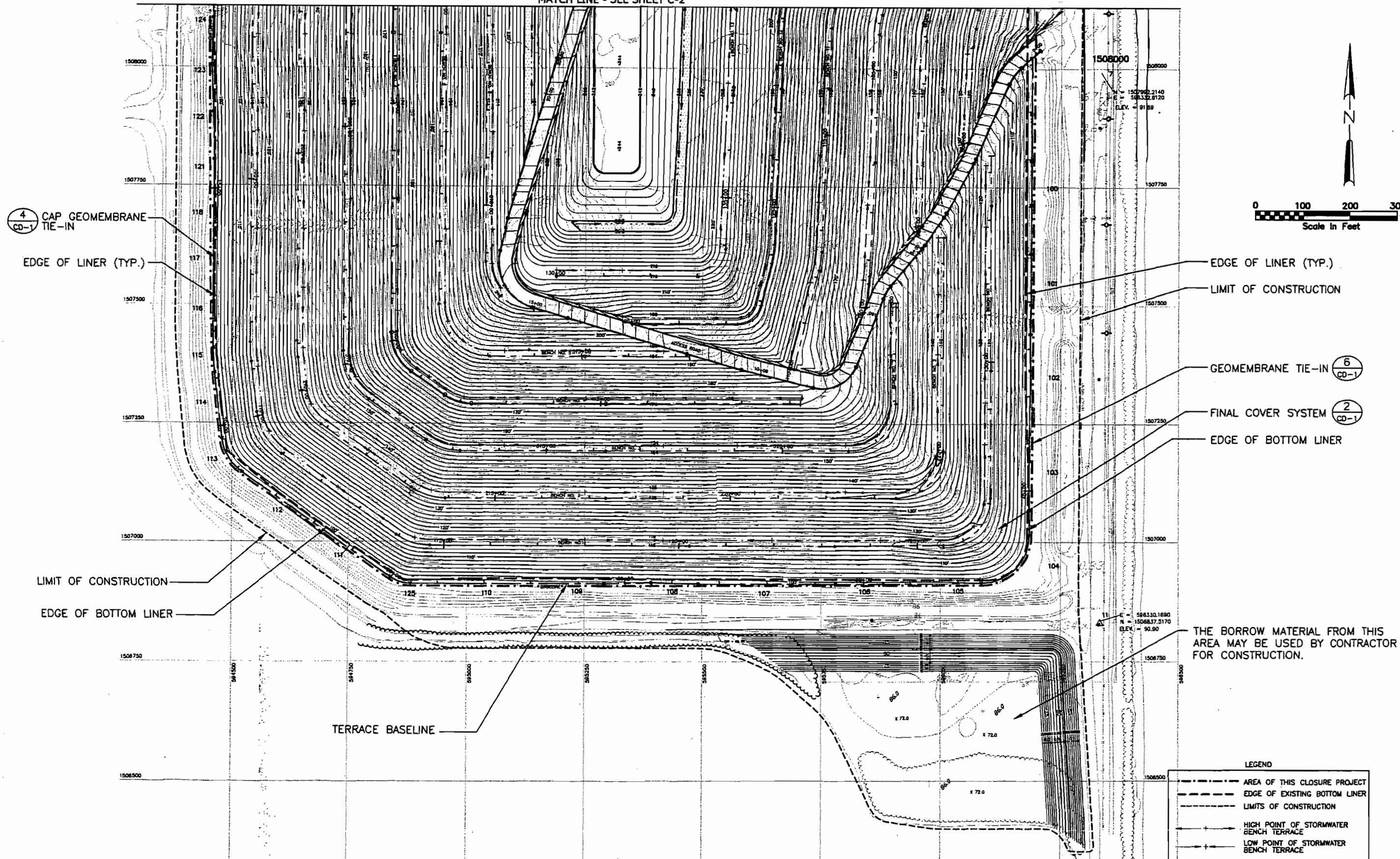
FINAL CLOSURE GRADING PLAN - NORTH

SHEET NO. C-2

SCALE: AS NOTED

PROJ. NO. WN.01111.001

MATCH LINE - SEE SHEET C-2



VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REUSE OF DOCUMENTS
 THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL SCHAFFER INC.

NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.

NO.	BY	REVISIONS	DATE	CAOD FILE NAME
				C-3.DWG

DESIGNED JML DATE 08/05
 DRAWN DPK DATE 08/05
 CHECKED JML DATE 08/05
 APPROVED MSB DATE 08/05

CH2MHILL **WCG**
 NEEL SCHAFFER

WCG/NEEL-SCHAFFER, Inc.
 2600 Lake Lucien Drive, Ste. 117
 Maitland, Florida 32751-4218
 407-647-6823 Fax 407-539-0575
 WWW.WCGI.COM
 CA9882

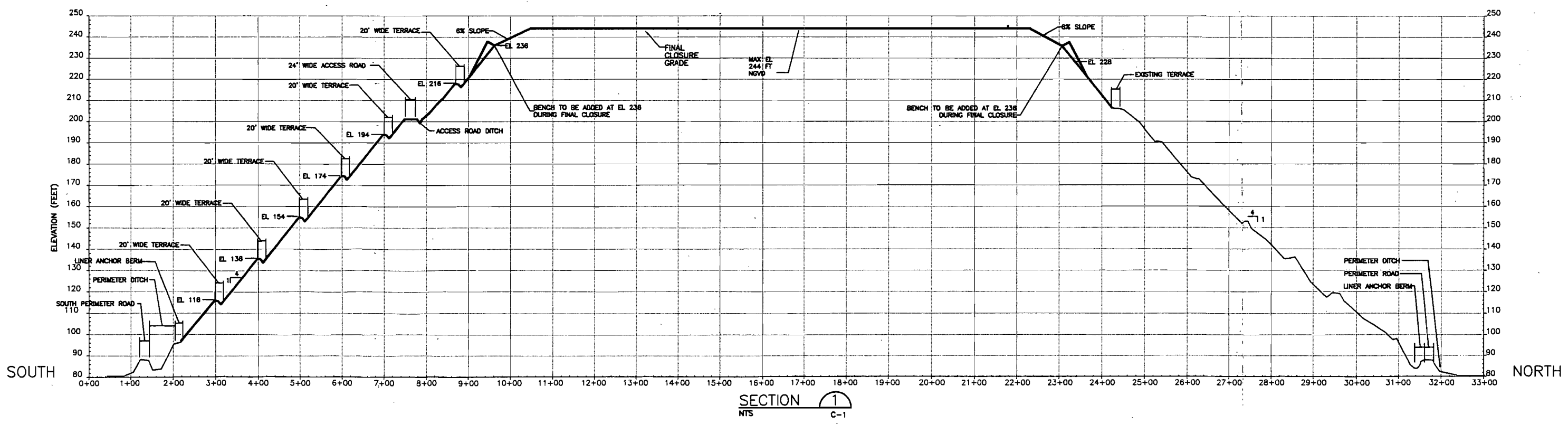
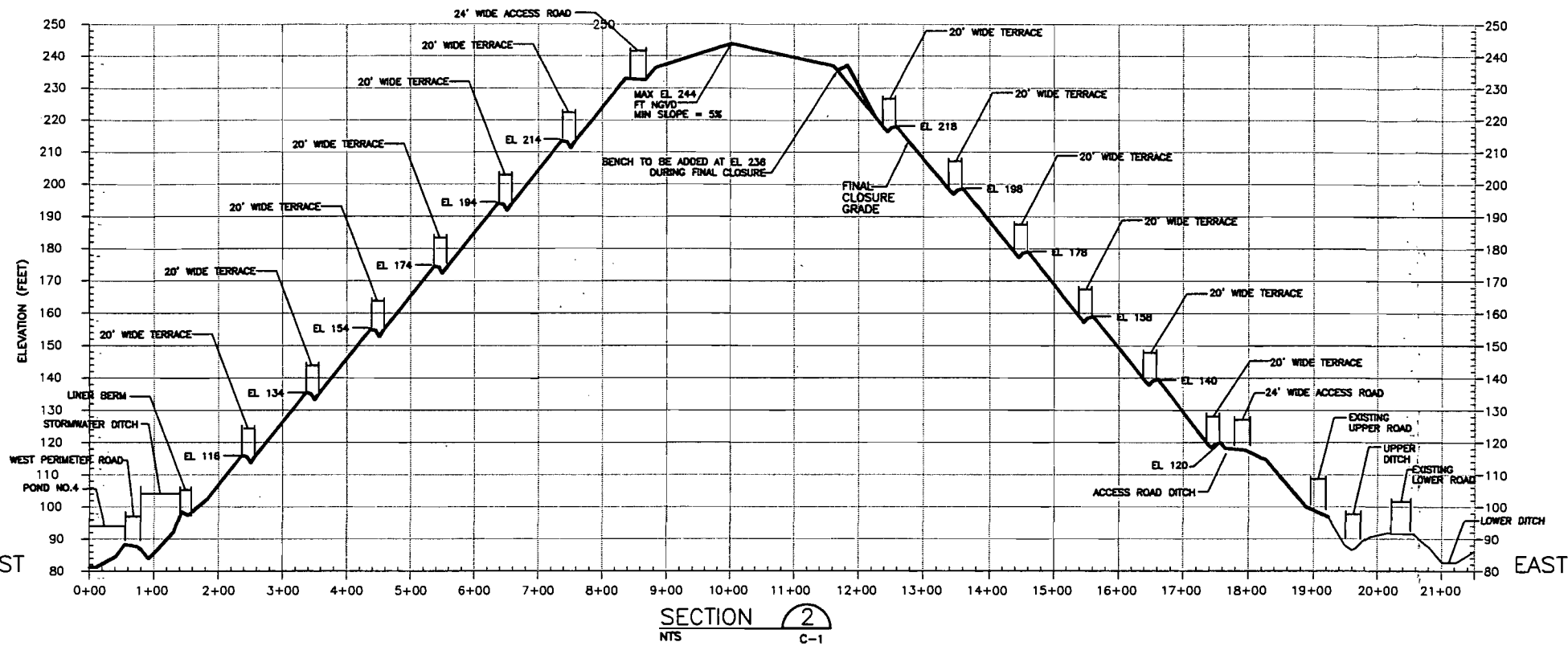
ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE

FINAL CLOSURE GRADING PLAN - SOUTH

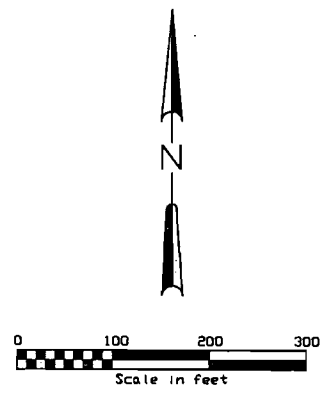
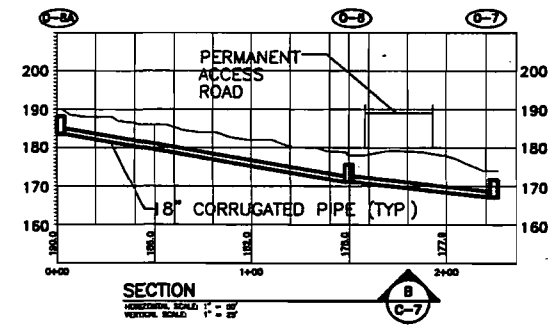
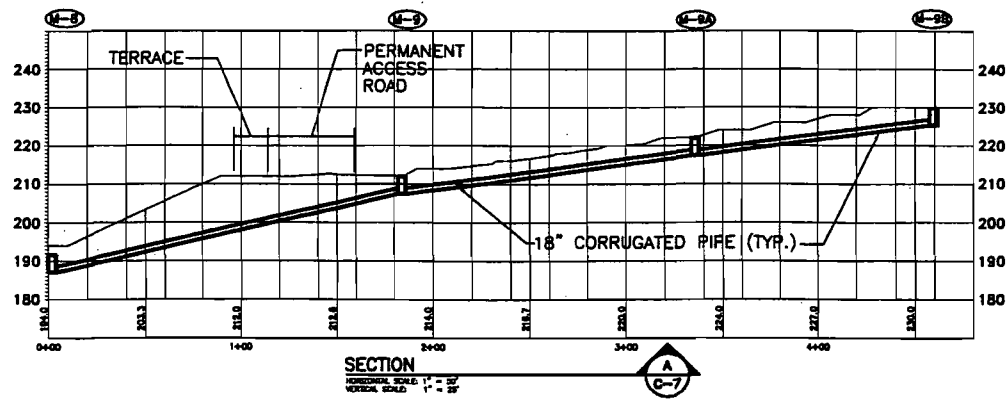
SHEET NO. C-3

SCALE: AS SHOWN

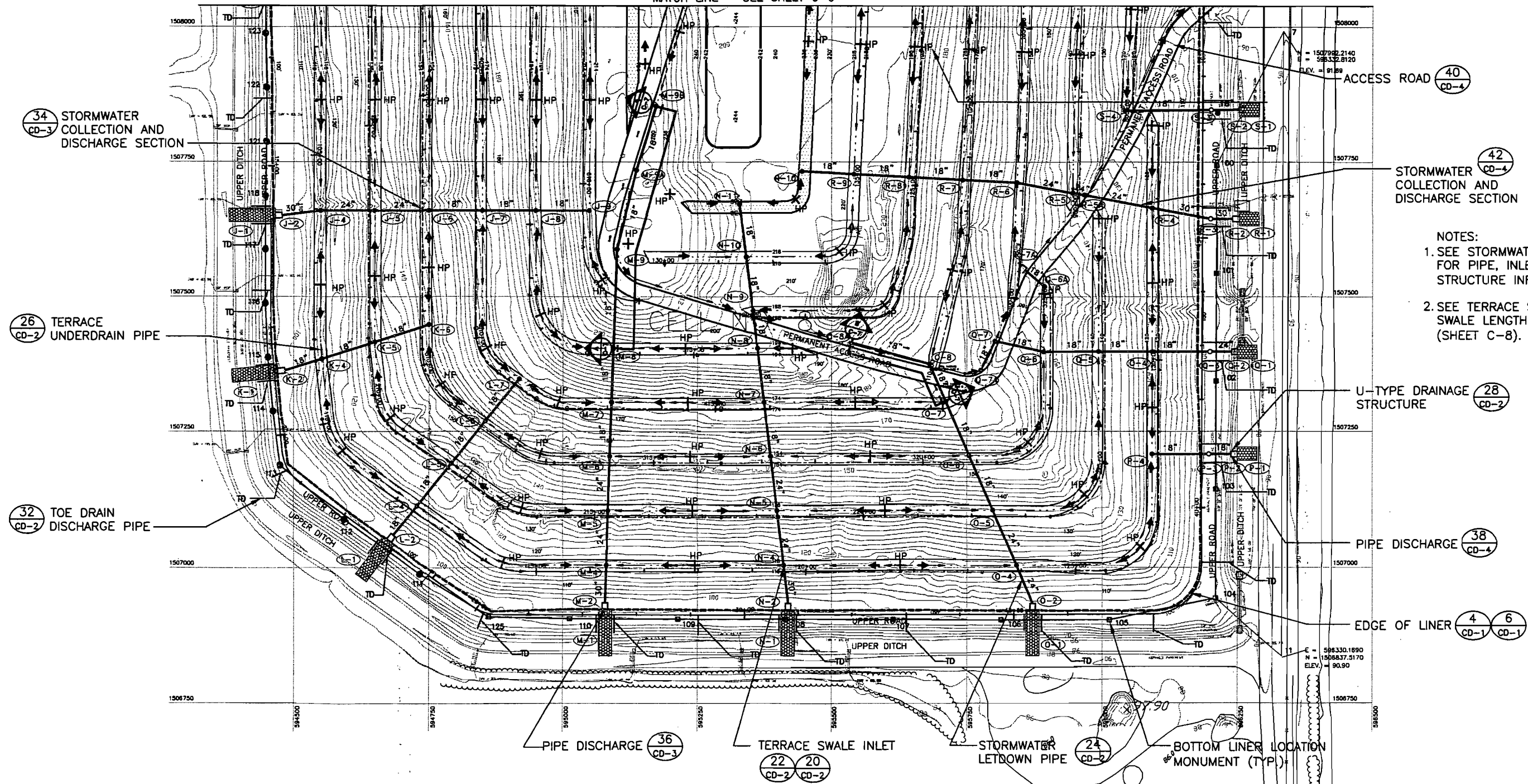
PROJ. NO. WN.01111.001



VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	REUSE OF DOCUMENTS THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL SCHAFFER INC.		DESIGNED JML DATE 08/05	DRAWN DPK DATE 08/05	CHECKED JML DATE 08/05	APPROVED MSB DATE 08/05	CH2MHILL WCG NEEL SCHAFFER	WCG/NEEL SCHAFFER, Inc. 630 N. Wymore Road, Suite 370 Maitland, Florida 32751-4216 407-647-6623 (fax) 407-539-0575 WWW.WCG1.COM CA9582	ORANGE COUNTY CELL 7B/B CLASS I LANDFILL - FINAL CLOSURE	SHEET NO. C-4
	NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.		NO.	BY	REVISIONS	DATE			CADD FILE NAME C-4.DWG	SCALE: AS SHOWN



MATCH LINE - SEE SHEET C-6



- NOTES:
- SEE STORMWATER STRUCTURE SCHEDULE FOR PIPE, INLET AND ENERGY DISSIPATION STRUCTURE INFORMATION (SHEET C-8)
 - SEE TERRACE SWALE SCHEDULE FOR SWALE LENGTH AND SLOPE INFORMATION (SHEET C-8).

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	REUSE OF DOCUMENTS THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL-SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL-SCHAFFER INC.		DESIGNED SHR DATE 08/05	DRAWN GEM DATE 08/05	CHECKED SHR DATE 08/05	APPROVED MSB DATE 08/05	ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE SHEET NO. C-7
	NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.		NO.	BY	REVISIONS	DATE	

PO BOX 562881, Orlando, Florida 32856-2881
 phone (407) 326-2504 fax (407) 277-3422
 CAJ 0000885 www.wcg-neel-schaffer.com
 civil and environmental engineering consultants
 serving the world



WCG/NEEL-SCHAFFER Inc.
 2800 Lake Lucien Drive, Ste. 117
 Maitland, Florida 32751-4216
 407-647-8823 fax 407-539-0215
 WWW.WCGI.COM
 CAJ052

STORMWATER STRUCTURE SCHEDULE

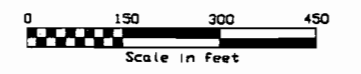
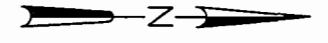
STRUCTURE NUMBER	STRUCTURE TYPE	GRATE MODEL/INDEX NUMBER	GRATER/M ELEVATION (FT NGVD)	INVERT IN (FT NGVD)	OUT (FT NGVD)	PIPE LENGTH (FT)	PIPE DIAMETER (INCHES)
B-9	EXIST INLET					102	18
B-10	INLET	SEE SHT CD-2	225.50		221.00		
D-9	EXIST INLET	SEE SHT CD-2				100	18
D-10	INLET	SEE SHT CD-2	225.50		221.00		
F-9	EXIST INLET					108	18
F-10	INLET	SEE SHT CD-2	225.50		221.00		
G-9	EXIST INLET					102	18
G-10	INLET	SEE SHT CD-2	225.50		221.00		
H-1	DISCHARGE	SEE SHT CD-3					
H-2	U-ENDWALL	FDOT 264	N/A	97.00		175	30
H-3	NOT USED						
H-4	NOT USED						
H-5	INLET	SEE SHT CD-2	133.50	129.00	129.00		24
H-6	INLET	SEE SHT CD-2	151.50	147.00	147.00		18
H-7	INLET	SEE SHT CD-2	171.50	167.00	167.00		18
H-8	INLET	SEE SHT CD-2	191.50	187.00	187.00		18
H-9	INLET	SEE SHT CD-2	211.50	207.00	207.00		18
H-10	INLET	SEE SHT CD-2	229.50	225.00			18
I-1	DISCHARGE	SEE SHT CD-3					
I-2	U-ENDWALL	FDOT 264	N/A	98.00		75	30
I-3	NOT USED						
I-4	INLET	SEE SHT CD-2	113.50	109.00	109.00		24
I-5	INLET	SEE SHT CD-2	133.50	129.00	129.00		24
I-6	INLET	SEE SHT CD-2	151.50	147.00	147.00		18
I-7	INLET	SEE SHT CD-2	171.50	167.00	167.00		18
I-8	INLET	SEE SHT CD-2	191.50	187.00	187.00		18
I-9	INLET	SEE SHT CD-2	211.50	207.00	207.00		18
I-10	INLET	SEE SHT CD-2	229.50	225.00			18
J-1	DISCHARGE	SEE SHT CD-3					
J-2	U-ENDWALL	FDOT 264	N/A	96.00		74	30
J-3	NOT USED						
J-4	INLET	SEE SHT CD-2	113.50	109.00	109.00		24
J-5	INLET	SEE SHT CD-2	133.50	129.00	129.00		24
J-6	INLET	SEE SHT CD-2	151.50	147.00	147.00		18
J-7	INLET	SEE SHT CD-2	171.50	167.00	167.00		18
J-8	INLET	SEE SHT CD-2	191.50	187.00	187.00		18
J-9	INLET	SEE SHT CD-2	211.50	207.00			18
K-1	DISCHARGE	SEE SHT CD-3					
K-2	U-ENDWALL	FDOT 261		98.00		74	18
K-3	NOT USED						
K-4	INLET	SEE SHT CD-2	113.50	109.00	109.00		18
K-5	INLET	SEE SHT CD-2	133.50	129.00	129.00		18
K-6	INLET	SEE SHT CD-2	151.50	147.00			18
L-1	DISCHARGE	SEE SHT CD-3					
L-2	U-ENDWALL	FDOT 261		98.00		70	18
L-3	NOT USED						
L-4	INLET	SEE SHT CD-2	113.50	109.00	109.00		18
L-5	INLET	SEE SHT CD-2	133.50	129.00	129.00		18
L-6	INLET	SEE SHT CD-2	151.50	147.00			18

STRUCTURE NUMBER	STRUCTURE TYPE	GRATE MODEL/INDEX NUMBER	GRATER/M ELEVATION (FT NGVD)	INVERT IN (FT NGVD)	OUT (FT NGVD)	PIPE LENGTH (FT)	PIPE DIAMETER (INCHES)
L-7	INLET	SEE SHT CD-2	171.50		167.00		
M-1	DISCHARGE	SEE SHT CD-3					
M-2	U-ENDWALL	FDOT 264		96.00		70	30
M-3	NOT USED						
M-4	INLET	SEE SHT CD-2	113.50	109.00	109.00		24
M-5	INLET	SEE SHT CD-2	133.50	129.00	129.00		24
M-6	INLET	SEE SHT CD-2	151.50	147.00	147.00		18
M-7	INLET	SEE SHT CD-2	171.50	167.00	167.00		18
M-8	INLET	SEE SHT CD-2	191.50	187.00	187.00		18
M-9	RDWY INLET	SEE SHT CD-2	212.00	207.50	207.50		18
M-9A	RDWY INLET	SEE SHT CD-2	222.00	217.50	217.50		18
M-9B	RDWY INLET	SEE SHT CD-2	230.00	225.50			18
N-1	DISCHARGE	SEE SHT CD-3					
N-2	U-ENDWALL	FDOT 264		98.00		72	30
N-3	NOT USED						
N-4	INLET	SEE SHT CD-2	113.50	109.00	109.00		24
N-5	INLET	SEE SHT CD-2	133.50	129.00	129.00		24
N-6	INLET	SEE SHT CD-2	151.50	147.00	147.00		18
N-7	INLET	SEE SHT CD-2	171.50	167.00	167.00		18
N-8	INLET	SEE SHT CD-2	191.50	187.00	187.00		18
N-9	INLET	SEE SHT CD-2	195.50	193.00	193.00		18
N-10	INLET	SEE SHT CD-2	215.50	211.00	211.00		18
N-11	INLET	SEE SHT CD-2	233.50	229.00			18
O-1	DISCHARGE	SEE SHT CD-3					
O-2	U-ENDWALL	FDOT 261		99.00		78	24
O-3	NOT USED						
O-4	INLET	SEE SHT CD-2	113.50	109.00	109.00		24
O-5	INLET	SEE SHT CD-2	133.50	129.00	129.00		24
O-6	INLET	SEE SHT CD-2	151.50	147.00	147.00		18
O-7	INLET	SEE SHT CD-2	171.50	167.00	167.00		18
O-8	INLET	SEE SHT CD-2	175.50	171.00	171.00		18
O-8A	RDWY INLET	SEE SHT CD-2	188.00	183.50			18
P-1	DISCHARGE	SEE SHT CD-3					
P-2	U-ENDWALL	FDOT 261		86.50		40	18
P-3	6" TYPE J MH	FDOT 200	101.0+/-	96.00	88.00		18
P-4	INLET	SEE SHT CD-2	117.50	113.00	113.00		18
Q-1	DISCHARGE	SEE SHT CD-3					
Q-2	U-ENDWALL	FDOT 261		85.50		40	24
Q-3	6" TYPE J MH	FDOT 200	101.5+/-	96.00	88.00		18
Q-4	INLET	SEE SHT CD-2	117.50	113.00	113.00		18
Q-5	INLET	SEE SHT CD-2	137.50	133.00	133.00		18
Q-6	INLET	SEE SHT CD-2	157.50	153.00	153.00		18

STRUCTURE NUMBER	STRUCTURE TYPE	GRATE MODEL/INDEX NUMBER	GRATER/M ELEVATION (FT NGVD)	INVERT IN (FT NGVD)	OUT (FT NGVD)	PIPE LENGTH (FT)	PIPE DIAMETER (INCHES)
Q-7	RDWY INLET	SEE SHT CD-2	164.00	159.50	159.50		18
Q-7A	RDWY INLET	SEE SHT CD-2	170.00		165.50		18
Q-6A	SPECIAL INLET	SEE SHT CD-2					18
R-7A	SPECIAL INLET	SEE SHT CD-2					18
R-1	DISCHARGE	SEE SHT CD-3					
R-2	U-ENDWALL	FDOT 264		87.00		40	30
R-3	6" TYPE J MH	FDOT 200	101.0+/-	96.00	89.00		30
R-4	INLET	SEE SHT CD-2	117.50	113.00	113.00		24
R-5A	INLET	SEE SHT CD-2	136.00	131.50	131.50		24
R-5	INLET	SEE SHT CD-2	137.50	133.00	133.00		24
R-6	INLET	SEE SHT CD-2	157.50	153.00	153.00		24
R-7	INLET	SEE SHT CD-2	175.50	171.00	171.00		18
R-8	INLET	SEE SHT CD-2	195.50	191.00	191.00		18
R-9	INLET	SEE SHT CD-2	215.50	211.00	211.00		18
R-10	INLET	SEE SHT CD-2	233.50	229.00			18
S-1	DISCHARGE	SEE SHT CD-3					
S-2	U-ENDWALL	FDOT 261		88.00		40	18
S-3	6" TYPE J MH	FDOT 200	101.0+/-	96.00	91.00		18
S-4	INLET	SEE SHT CD-2	117.50	113.00	113.00		18
T-1	DISCHARGE	SEE SHT CD-3					
T-2	U-ENDWALL	FDOT 264		88.00		38	30
T-3	6" TYPE J MH	FDOT 200	101.0+/-	96.00	91.00		30
T-4	INLET	SEE SHT CD-2	117.50	113.00	113.00		24
T-5	INLET	SEE SHT CD-2	137.50	133.00	133.00		24
T-6	INLET	SEE SHT CD-2	157.50	153.00	153.00		18
T-7	INLET	SEE SHT CD-2	175.50	171.00	171.00		18
T-8	INLET	SEE SHT CD-2	195.50	191.00	191.00		18
T-9	INLET	SEE SHT CD-2	215.50	211.00	211.00		18
T-10	INLET	SEE SHT CD-2	233.50	229.00			18
T-3	6" TYPE J MH	FDOT 200	101.0+/-	96.00	92.00		18
T-3A	RDWY INLET	SEE SHT CD-2	97.00		93.50		18
U-1	DISCHARGE	SEE SHT CD-3					
U-2	U-ENDWALL	FDOT 264		88.00		38	24
U-3	6" TYPE J MH	FDOT 200	101.0+/-	96.00	91.00		18
U-4	NOT USED						
U-5	NOT USED						
U-6	NOT USED						
U-7	INLET	SEE SHT CD-2	175.50	171.00	171.00		18
U-8	INLET	SEE SHT CD-2	195.50	191.00	191.00		18
U-9	INLET	SEE SHT CD-2	215.50	211.00	211.00		18
U-10	INLET	SEE SHT CD-2	233.50	229.00			18

TERRACE SWALE SCHEDULE

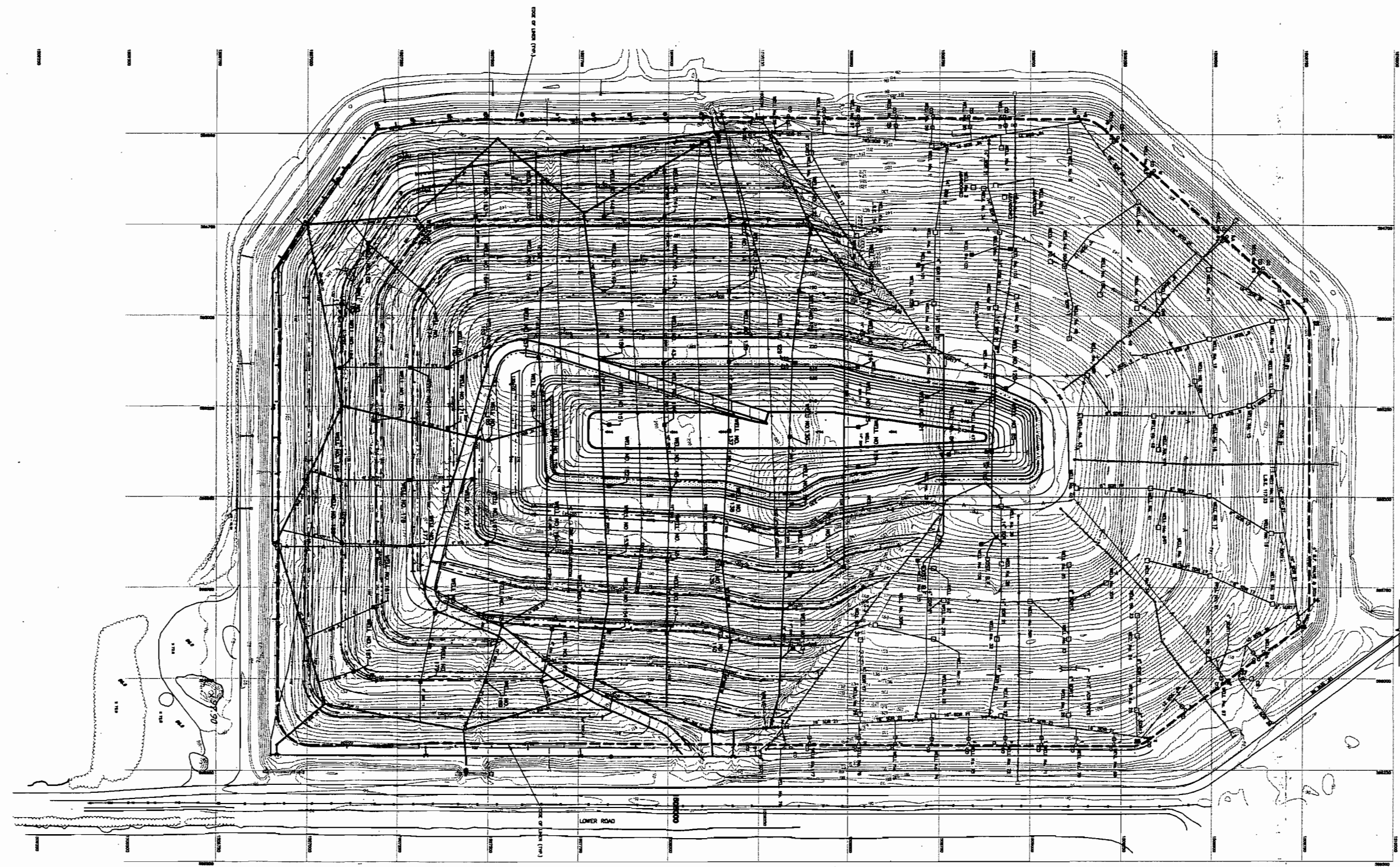
SWALE NUMBER	SWALE LENGTH (FT)	SWALE SLOPE (F/F)	SWALE NUMBER	SWALE LENGTH (FT)	SWALE SLOPE (F/F)
B-10L	248	0.0041	N-7L	141	0.0071
B-10R	44	0.0227	N-7R	172	0.0058
D-10L	48	0.0208	N-8L	133	0.0075
D-10R	142	0.0070	N-8R	88	0.0147
F-10L	118	0.0085	N-9L	0	
F-10R	85	0.0118	N-9R	248	0.0040
G-10L	86	0.0116	G-10L	245	0.0041
G-10R	259	0.0039	N-10R	178	0.0057
H-5L	30	0.0333	N-11L	140	0.0071
H-5R	109	0.0092	N-11R	108	0.0093
H-6L	65	0.0154	O-4L	217	0.0048
H-6R	120	0.0083	O-4R	239	0.0042
H-7L	92	0.0109	O-5L	200	0.0050
H-7R	132	0.0078	O-5R	177	0.0058
H-8L	230	0.0043	O-6L	182	0.0055
H-8R	142	0.0070	O-6R	117	0.0085
H-9L	206	0.0049	O-7L	168	0.0060
H-9R	152	0.0068	O-7R	0	
H-10L	164	0.0081	O-8L	0	
H-10R	165	0.0061	O-8R	179	0.0056
I-4L	182	0.0055	O-8AL	0	
I-4R	205	0.0049	O-8AR	0	
I-5L	110	0.0091	P-4L	176	0.0057
I-5R	205	0.0049	P-4R	88	0.0114
I-6L	120	0.0083	Q-4L	104	0.0098
I-6R	205	0.0049	Q-4R	127	0.0079
I-7L	132	0.0078	Q-5L	270	0.0037
I-7R	205	0.0049	Q-5R	245	0.0041
I-8L	143	0.0070	Q-6L	170	0.0059
I-8R	205	0.0049	Q-6R	113	0.0088
I-9L	154	0.0065	Q-7L	0	
I-9R	205	0.0049	Q-7R	0	
I-10L	165	0.0061	Q-7AL	0	
I-10R	138	0.0072	Q-7AR	0	
J-4L	205	0.0049	R-4L	140	0.0071
J-4R	137	0.0073	R-4R	152	0.0068
J-5L	205	0.0049	R-5L	158	0.0064
J-5R	120	0.0083	R-5R	258	0.0039
J-6L	205	0.0049	R-6L	242	0.0041
J-6R	106	0.0094	R-6R	188	0.0080
J-7L	205	0.0049	R-7L	241	0.0041
J-7R	255	0.0039	R-7R	240	0.0042
J-8L	205	0.0049	R-8L	240	0.0042
J-8R	194	0.0052	R-8R	240	0.0042
J-9L	205	0.0049	R-9L	145	0.0089
J-9R	132	0.0076	R-9R	240	0.0042
K-4L	138	0.0072	R-10L	52	0.0192
K-4R	178	0.0057	R-10R	240	0.0042
K-5L	123	0.0081	S-4L	182	0.0082
K-5R	145	0.0069	S-4R	185	0.0054
K-6L	108	0.0084	T-4L	169	0.0059
K-6R					



LEGEND

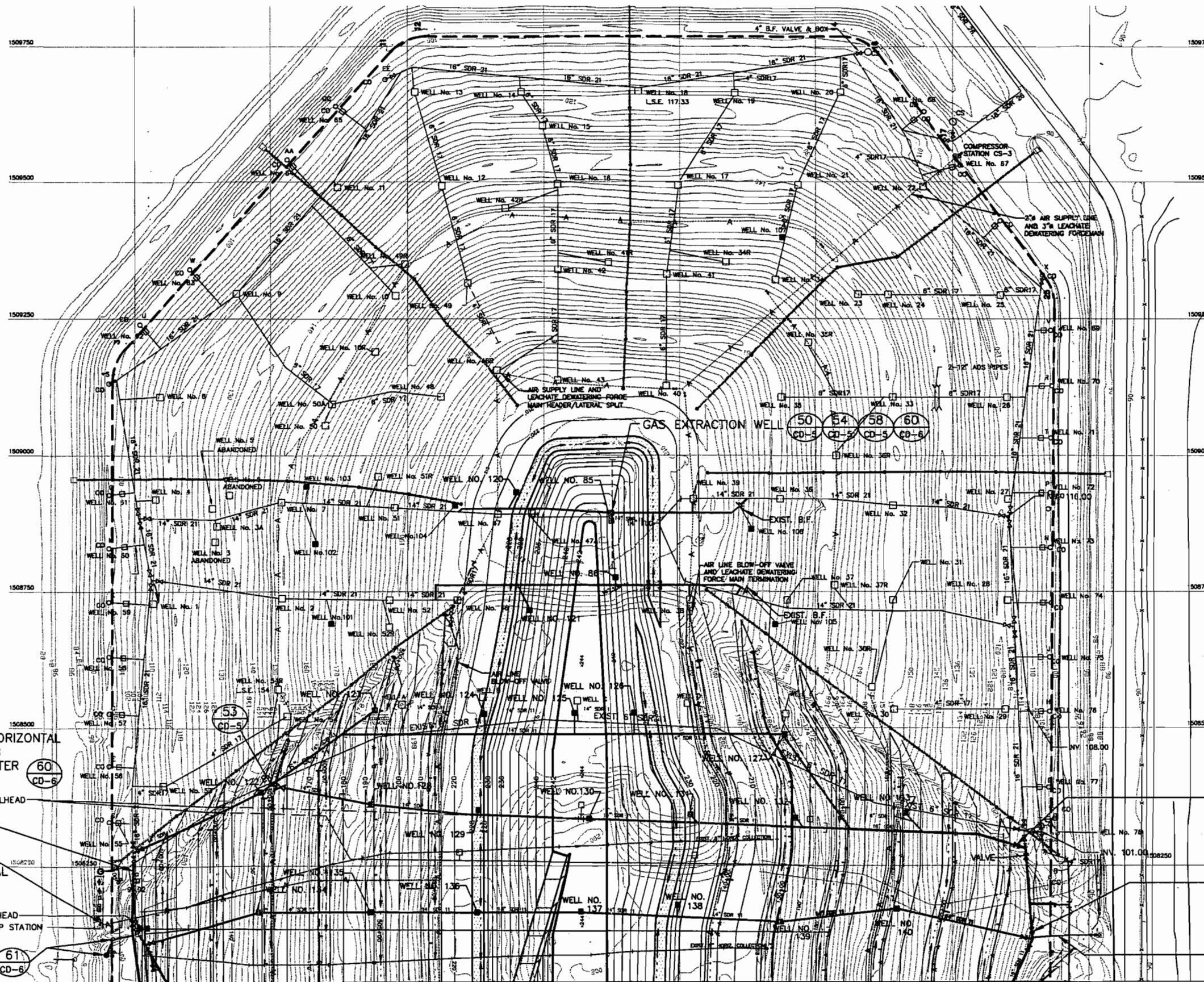
	EXISTING GAS WELL
	PROPOSED GAS WELL
	EXISTING GAS PIPING
	PROPOSED GAS PIPING
	EXISTING AIR SUPPLY & LEACHATE DEWATERING LINE IN COMMON TRENCH
	PROPOSED AIR SUPPLY & LEACHATE DEWATERING LINE

- NOTES:
1. SEE WELL SCHEDULE SHEET CD-5 FOR WELL LOCATIONS AND DEPTHS
 2. EXISTING AIR SUPPLY & LEACHATE DEWATERING SYSTEM ARE IN ACCORDANCE WITH PLANS FOR CELL 7B LANDFILL GAS MANAGEMENT SYSTEM IMPROVEMENTS PLAN SET MARCH 2002 PREPARED BY OTHERS.
 3. EXISTING "TRUNK SYSTEM" FOR AIR SUPPLY & LEACHATE DEWATERING SYSTEM SHOWN. NOT ALL DETAILS ARE SHOWN.
 4. PROPOSED SYSTEM WILL USE SAME TYPE OF CONNECTIONS AND APPURTENANCES AS PREVIOUSLY PERMITTED.



O:\1111\instru\May-2005\civil\c-9_10_c.dwg

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.					DESIGNED JML DATE 08/05 DRAWN DPK DATE 08/05 CHECKED JML DATE 08/05 APPROVED MSB DATE 08/05		ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE	SHEET NO.
	NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.				CADD FILE NAME C-9_C-10_C-11.DWG			C-9
						OVERALL LFG COLLECTION PLAN		SCALE: PROJ. NO. WN.01111.001



LEGEND

- EXISTING GAS WELL
- PROPOSED GAS WELL
- EXISTING GAS PIPING
- PROPOSED GAS PIPING
- EXISTING AIR SUPPLY & LEACHATE DEWATERING LINE IN COMMON TRENCH
- PROPOSED AIR SUPPLY & LEACHATE DEWATERING LINE

- NOTES:**
- NEW CELL 7B VERTICAL WELLS ARE WELL NOS. 85, 86, 120, 121 AND WELL NOS. 101 THRU 107. CELL 7B WELLS WILL BE EXTRACTION WELLS WITH WELL PUMPS. WELL NOS. 122 THROUGH 187 ARE NEW CELL 8 VERTICAL WELLS.
 - EXISTING AIR SUPPLY & LEACHATE DEWATERING SYSTEM PER CELL 7B LANDFILL GAS MANAGEMENT SYSTEM IMPROVEMENTS PLAN SET MARCH 2002.
 - EXISTING "TRUNK SYSTEM" FOR AIR SUPPLY & LEACHATE DEWATERING SYSTEM SHOWN.
 - FUTURE AIR SUPPLY AND WELL DEWATERING SYSTEMS TO USE SAME TYPE OF CONNECTIONS AND APPURTENANCES AS EXISTING SYSTEM.
 - EXTENSION OF AIR SUPPLY AND LEACHATE DEWATERING LINE (DEPENDENT ON WELL PERFORMANCE), LOCATION FOR PIPING AND COMPRESSOR STATIONS TO BE DETERMINED DURING FINAL CONSTRUCTION PLAN PREPARATION.

REWORK AND CONNECT EXISTING HORIZONTAL GAS COLLECTION PIPING TO TYPE B WELLHEAD TO NEW 16-INCH DIAMETER HEADER PIPE. (TYPICAL OF 24)

NEW 16" GAS HEADER — TYPE "B" WELLHEAD

INSTALL COMPRESSOR STATION NO. 4 AT LEACHATE PUMP STATION FOR AIR SUPPLY/LEACHATE REMOVAL

TYPE "B" WELLHEAD LEACHATE PUMP STATION

FLOW-THROUGH CONDENSATE SUMP CONNECT TO EXISTING MANHOLE

BURIED LFG VALVE

MULTIPLE PIPE JUNCTION

12" SDR 11 CONDENSATE DRAIN TO EXIST. CONDENSATE SUMP

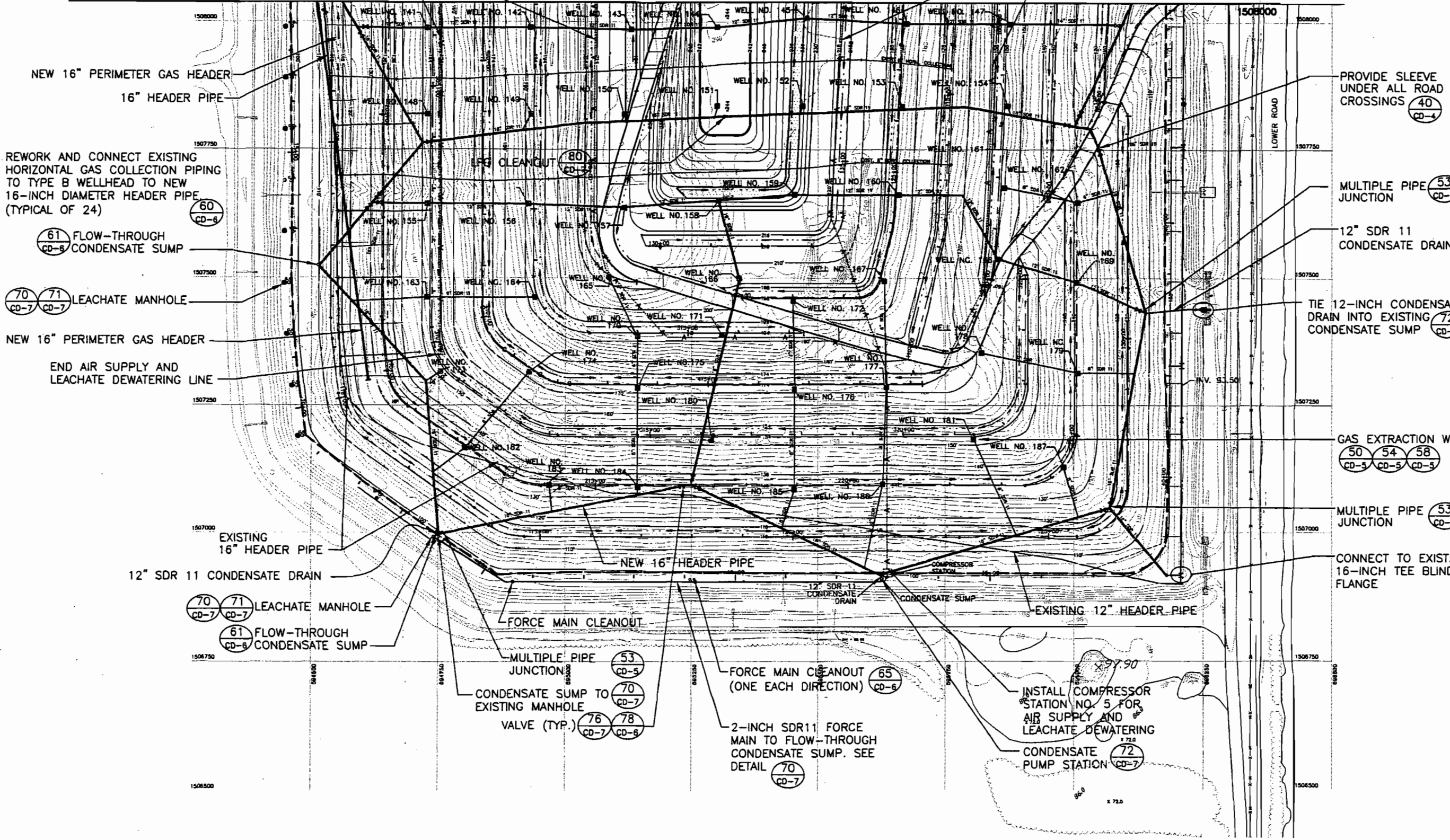
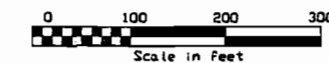
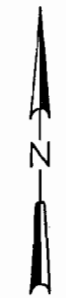
MATCHLINE — SEE SHEET C-11

VERIFY SCALE		DESIGNED		JML	DATE	08/05	<p>WCG (NEEL-SCHAFFER, Inc.) 2800 Lake Lucien Drive, Ste. 117 Maitland, Florida 32751-7238 407-647-8523 (Fax) 407-638-0575 WWW.WCG1.COM C0862</p>	ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL — FINAL CLOSURE		SHEET NO.
BAR IS ONE INCH ON ORIGINAL DRAWING.		DRAWN		DPK	DATE	08/05		PROPOSED LFG COLLECTION SYSTEM PLAN — NORTH		C-10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.		CHECKED		JML	DATE	08/05		SCALE:		PROJ. NO. WN.01111.001
NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.		APPROVED		MSB	DATE	08/05				
NO.	BY	REVISIONS	DATE	CADD FILE NAME	C-9_C-10_C-11.DWG					

AIR SUPPLY AND LEACHATE DEWATERING LINE. (SEE NOTE 3)

AIR SUPPLY AND LEACHATE DEWATERING LINE. (SEE NOTE 3)

MATCHLINE - SEE SHEET C-10



NEW 16" PERIMETER GAS HEADER
16" HEADER PIPE

REWORK AND CONNECT EXISTING HORIZONTAL GAS COLLECTION PIPING TO TYPE B WELLHEAD TO NEW 16-INCH DIAMETER HEADER PIPE (TYPICAL OF 24)

61 FLOW-THROUGH CONDENSATE SUMP

70 71 LEACHATE MANHOLE

NEW 16" PERIMETER GAS HEADER

END AIR SUPPLY AND LEACHATE DEWATERING LINE

EXISTING 16" HEADER PIPE

12" SDR 11 CONDENSATE DRAIN

70 71 LEACHATE MANHOLE

61 FLOW-THROUGH CONDENSATE SUMP

70 71 LEACHATE MANHOLE

61 FLOW-THROUGH CONDENSATE SUMP

70 71 LEACHATE MANHOLE

61 FLOW-THROUGH CONDENSATE SUMP

70 71 LEACHATE MANHOLE

61 FLOW-THROUGH CONDENSATE SUMP

70 71 LEACHATE MANHOLE

61 FLOW-THROUGH CONDENSATE SUMP

70 71 LEACHATE MANHOLE

61 FLOW-THROUGH CONDENSATE SUMP

PROVIDE SLEEVE UNDER ALL ROAD CROSSINGS

MULTIPLE PIPE JUNCTION

12" SDR 11 CONDENSATE DRAIN

TIE 12-INCH CONDENSATE DRAIN INTO EXISTING CONDENSATE SUMP

GAS EXTRACTION WELL

MULTIPLE PIPE JUNCTION

CONNECT TO EXIST. 16-INCH TEE BLIND FLANGE

FORCE MAIN CLEANOUT

FORCE MAIN CLEANOUT (ONE EACH DIRECTION)

2-INCH SDR11 FORCE MAIN TO FLOW-THROUGH CONDENSATE SUMP. SEE DETAIL

INSTALL COMPRESSOR STATION NO. 5 FOR AIR SUPPLY AND LEACHATE DEWATERING

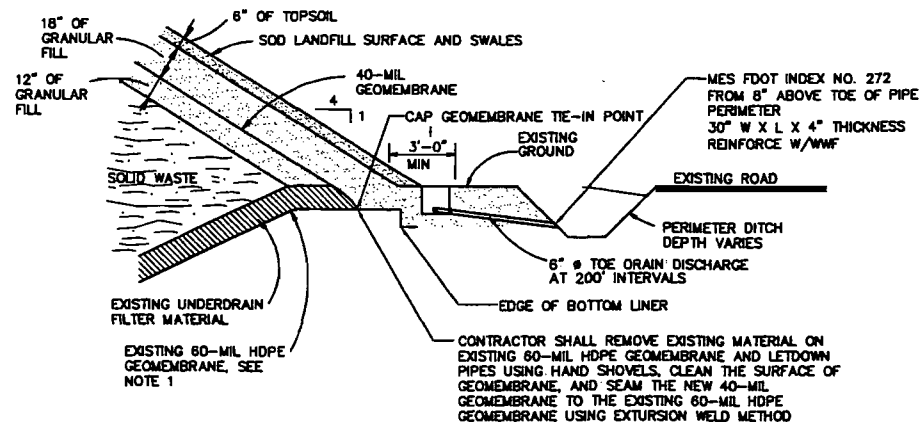
CONDENSATE PUMP STATION

LEGEND

□	EXISTING GAS WELL
■	PROPOSED GAS WELL
—	EXISTING GAS PIPING
—	PROPOSED GAS PIPING
—	EXISTING AIR SUPPLY & LEACHATE DEWATERING LINE IN COMMON TRENCH
—	PROPOSED AIR SUPPLY & LEACHATE DEWATERING LINE

- NOTES:
1. NEW CELL 7B VERTICAL WELLS ARE WELL NOS. 85, 86, 120, 121 AND WELL NOS. 101 THRU 107. CELL 7B WELLS WILL BE EXTRACTION WELLS WITH WELL PUMPS TIED INTO AIR SUPPLY AND LEACHATE DEWATERING LINES. WELL NOS. 122 THROUGH 187 ARE NEW CELL 8 VERTICAL WELLS.
 2. FUTURE AIR SUPPLY AND LEACHATE DEWATERING SYSTEMS TO USE SAME TYPE OF CONNECTIONS AND APPURTENANCES AS EXISTING SYSTEM, PER CELL 7B LANDFILL GAS MANAGEMENT SYSTEM IMPROVEMENTS PLAN SET MARCH 2002.
 3. EXTENSION OF AIR SUPPLY AND LEACHATE DEWATERING LINE (DEPENDENT ON WELL PERFORMANCE). LOCATION FOR PIPING AND COMPRESSOR STATIONS TO BE DETERMINED DURING FINAL CONSTRUCTION PLAN PREPARATIONS.

<p>VERIFY SCALE</p> <p>BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.</p>	<p>REUSE OF DOCUMENTS</p> <p>THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL-SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL-SCHAFFER INC.</p> <p>NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.</p>	<table border="1"> <tr> <th>NO.</th> <th>BY</th> <th>REVISIONS</th> <th>DATE</th> <th>CADD FILE NAME</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	BY	REVISIONS	DATE	CADD FILE NAME						<p>DESIGNED JML DATE 08/05</p> <p>DRAWN DPK DATE 08/05</p> <p>CHECKED JML DATE 08/05</p> <p>APPROVED MSB DATE 08/05</p>	<p>WCG NEEL-SCHAFFER</p> <p>WCG/NEEL-SCHAFFER, INC. 2800 Lake Lucien Drive, Ste. 117 Maitland, Florida 32751-7238 407-847-6522 (fax) 407-847-6576 www.wcg1.com C4682</p>	<p>ORANGE COUNTY CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE</p> <p>PROPOSED LFG COLLECTION SYSTEM PLAN - SOUTH</p>	<p>SHEET NO. C-11</p> <p>SCALE: PROJ. NO. WN.01111.001</p>
			NO.	BY	REVISIONS	DATE	CADD FILE NAME									
<p>C-9_C-10_C-11.DWG</p>																



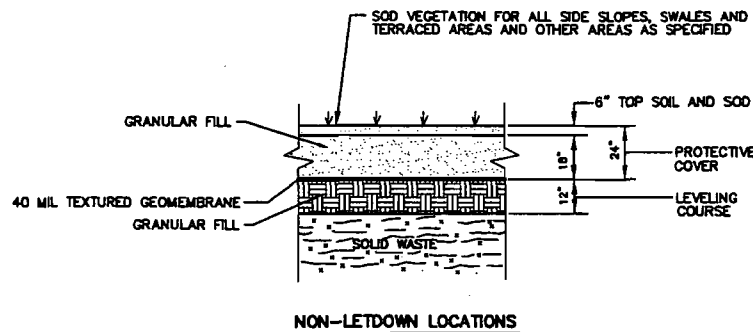
NOTES:

1. THE LOCATION OF THE EXISTING 60-MIL HDPE GEOMEMBRANE SHOWN IS APPROXIMATE. THE ACTUAL TIE-IN LOCATION BETWEEN 40-MIL GEOMEMBRANE AND 60-MIL GEOMEMBRANE SHALL BE FIELD DETERMINED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL.

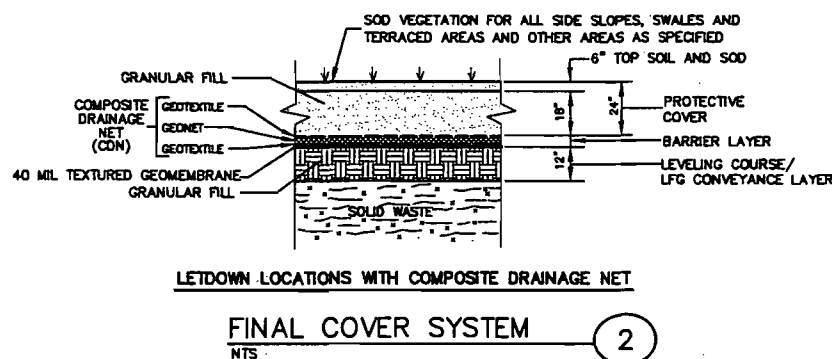
TYPICAL TIE-IN DETAIL FOR THE UPPER GEOMEMBRANE TO THE LOWER GEOMEMBRANE WEST AND SOUTH SIDE - CELL 8

NTS

4



NON-LETDOWN LOCATIONS

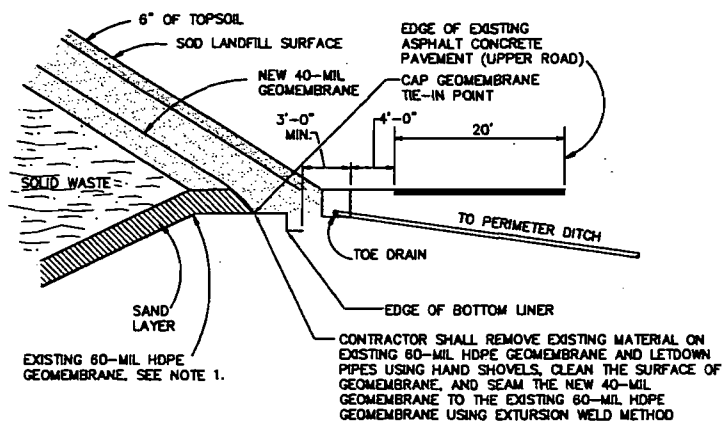


LETDOWN LOCATIONS WITH COMPOSITE DRAINAGE NET

FINAL COVER SYSTEM

NTS

2



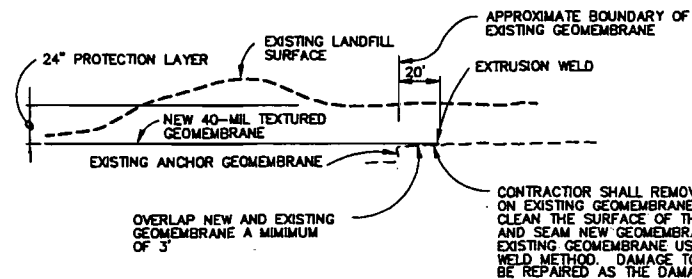
NOTES:

1. THE LOCATION OF THE EXISTING 60-MIL HDPE GEOMEMBRANE SHOWN IS APPROXIMATE. THE ACTUAL TIE-IN LOCATION BETWEEN 40-MIL GEOMEMBRANE AND 60-MIL GEOMEMBRANE SHALL BE FIELD DETERMINED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL.

TYPICAL TIE-IN DETAIL FOR THE UPPER GEOMEMBRANE TO THE LOWER GEOMEMBRANE EAST SIDE - CELL 8

NTS

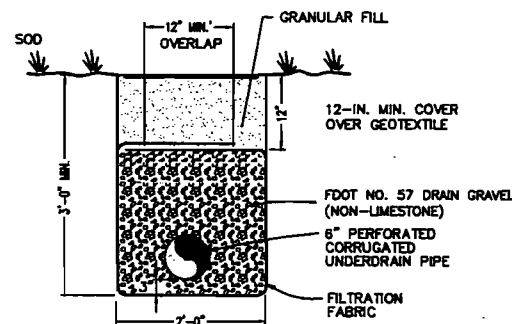
6



TYPICAL GEOMEMBRANE TIE-IN AT SLOPE DETAIL

NTS

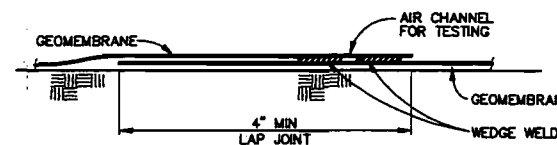
18



TOE DRAIN DETAIL

NTS

12



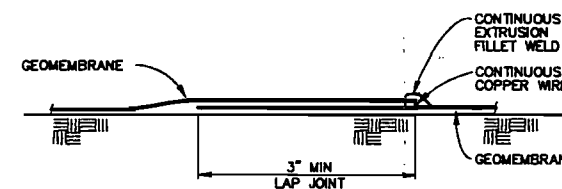
NOTES:

1. ALL WELDS SHALL BE CONTINUOUS AND WATERTIGHT.
2. REMOVE UNBONDED TOP EDGE IF AIR CHANNEL TEST FAILS AND VACUUM BOX TEST IS USED.
3. ALLOW A MINIMUM OF 4" OVERLAP BETWEEN NEW AND EXISTING GEOMEMBRANE.

GEOMEMBRANE DOUBLE WEDGE WELD

NTS

14



NOTES:

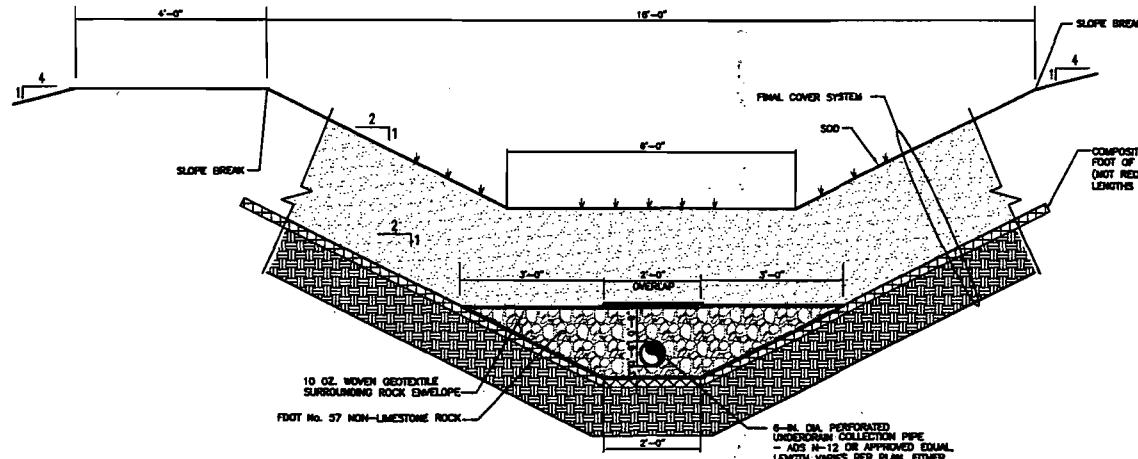
1. ALL WELDS SHALL BE CONTINUOUS AND WATERTIGHT.
2. SPARK TEST ALL EXTRUSION FILLET WELDS.
3. ALLOW A MINIMUM OF 3" OVERLAP BETWEEN NEW AND EXISTING GEOMEMBRANE.

GEOMEMBRANE LINING EXTRUSION WELD

NTS

16

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	REUSE OF DOCUMENTS THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL-SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL-SCHAFFER INC.		DESIGNED	JML	DATE	08/05	WCG NEEL-SCHAFFER WCG/NEEL-SCHAFFER, Inc. 630 N. Wyndome Road, Suite 370 Maitland, Florida 32751-4216 407-447-8822 Fax: 407-438-1078 www.wcg1.com C4692	CELL 7B/8 CLASS 1 LANDFILL - FINAL CLOSURE	ATTACHMENT NO.	CD-1
	NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.	NO. BY REVISIONS DATE CADD FILE NAME	DRAWN DPK DATE 08/05 CHECKED JML DATE 08/05 APPROVED MSB DATE 08/05	CD-1.DWG	CLOSURE/CIVIL DETAILS PROJ. NO. C94907051					

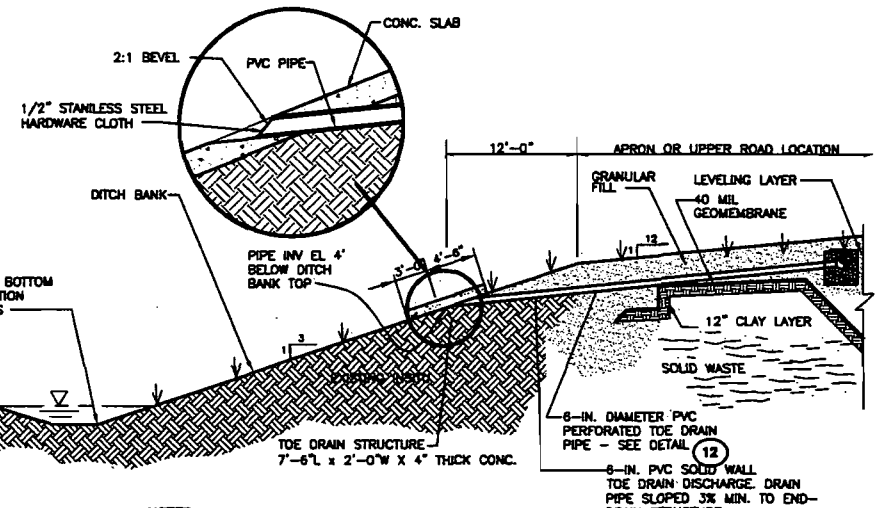


UNDERDRAIN COLLECTION PIPE DETAIL (26)

Pipe Size Dia. In.	Area S.F.	Q (Max.) (cfs)	Dimensions Ft. - In.													Concrete Class I C.Y.	Reinf. Steel Lbs.			
			W	H	L	a	b	c	d	e	f	g	m	n	p			s	t	k
30	7.07	85	10-5	7-3	12-4	5-3	7-1	3-10	1-7	1-3	3-0	3-6	2-3	7	7-1	8	8	3	10.34	1,072

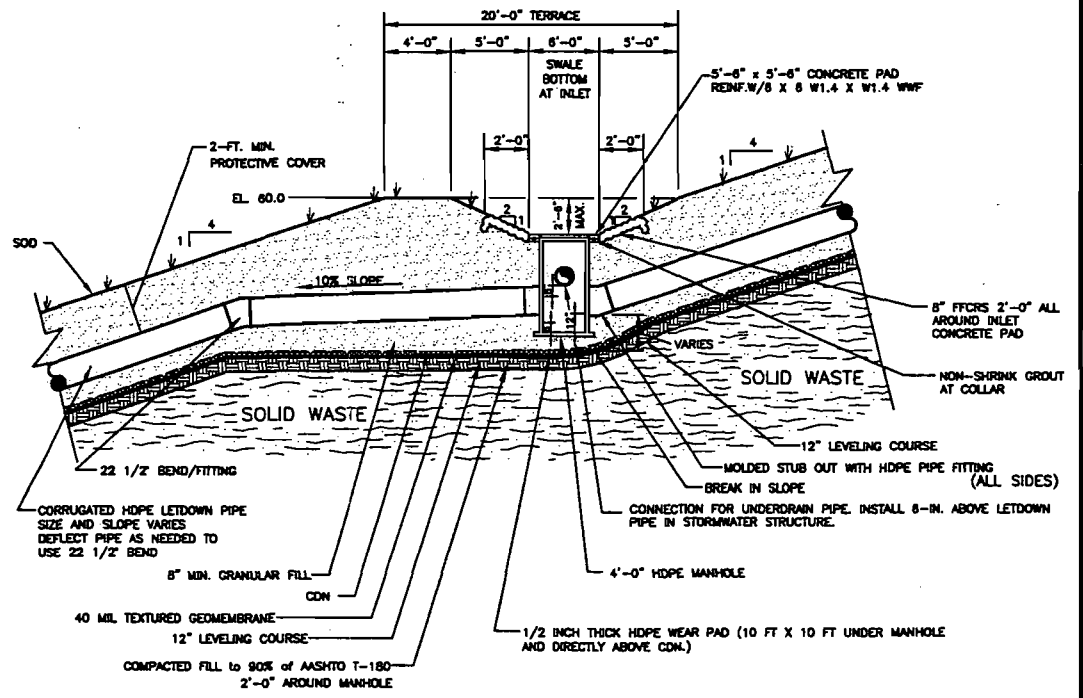
**FDOT INDEX NO. 264
U-TYPE DRAINAGE STRUCTURE** (28)

1. Chamfer all exposed edges.
2. Concrete meeting the requirements of ASTM C - 478 (4000 psi) may be used in lieu of Class I Concrete in precast items manufactured in plants which are under the Standard Operating Procedures for the inspection of precast drainage products.



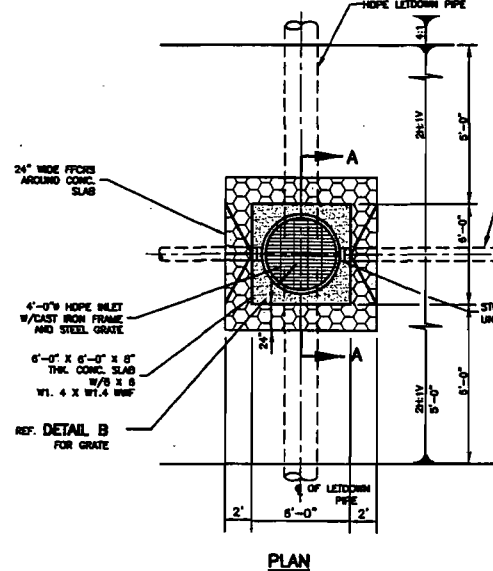
TOE DRAIN DISCHARGE PIPE (32)

NOTES:
1. TOE DRAIN DISCHARGE PIPE TO BE INSTALLED AT MAX 200-FT SPACING, EXCLUSIVE OF TOE DRAINS AT LETDOWN STRUCTURES. (SEE SHEETS C-6 AND C-7 FOR LOCATIONS)
2. GRADE PERIMETER DITCH IN ALL DISTURBED AREAS TO MATCH EXISTING SLOPES AND GRADES, AND INSTALL SOD ON ALL DISTURBED AREAS.

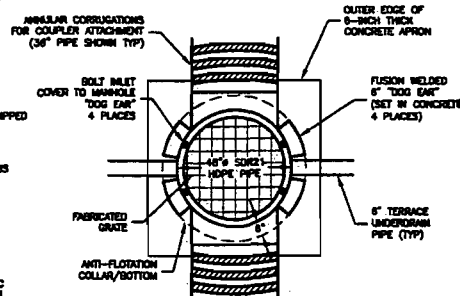
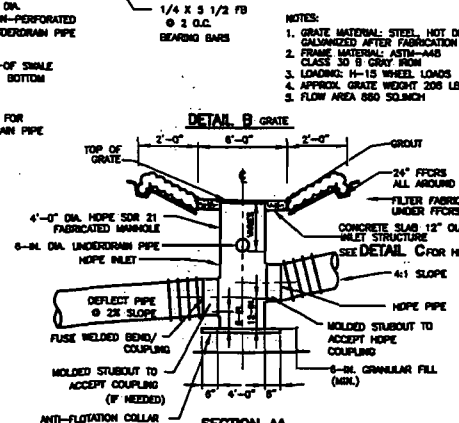
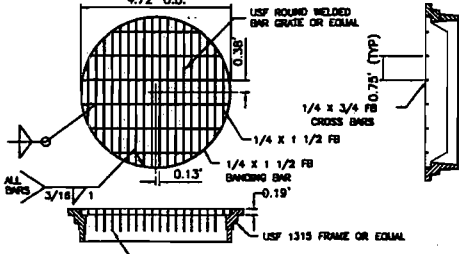


TYPICAL 20' WIDE TERRACE SWALE INLET DETAIL FOR TERRACE SWALES (22)

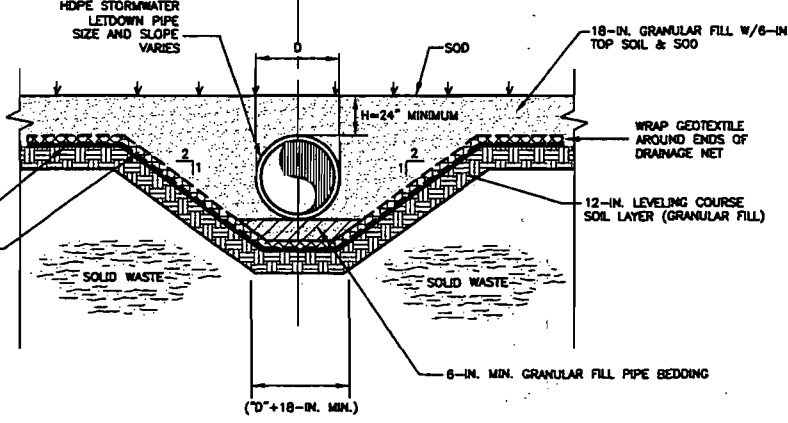
NOTES:
1. THE GRATES FOR 4'-0" DIA. HOPE DROP DRAIN BASH SHALL HAVE AT LEAST 850 SQUARE IN. OF FLOW AREA.
2. USE NON-SHRINK GROUT AT CONCRETE JOINTS.



TYPICAL DETAIL FOR TERRACE INLET (20)

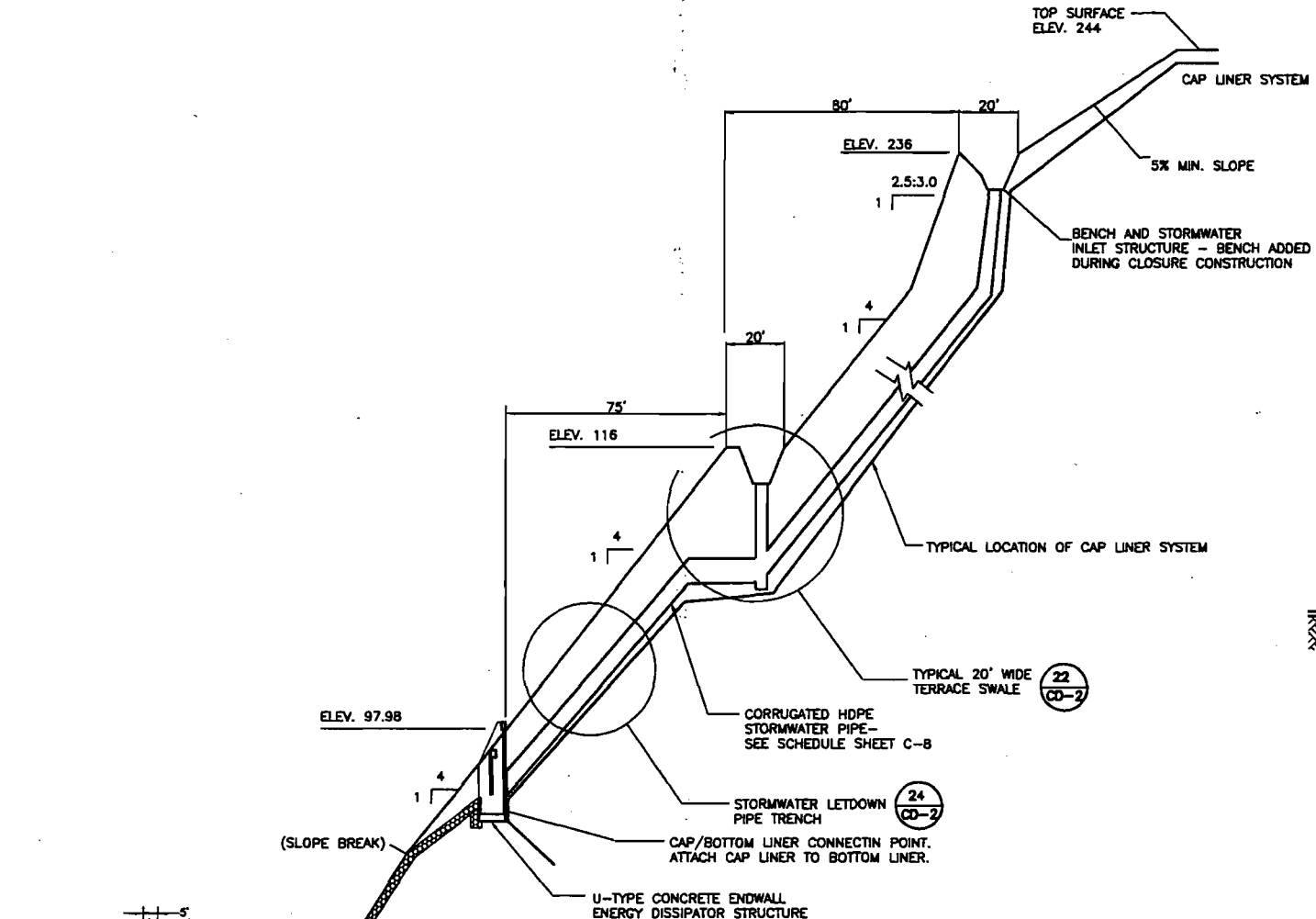


NOTES:
1. GRATE MATERIAL: STEEL, HOT DIPPED GALVANIZED AFTER FABRICATION
2. FRAME MATERIAL: ASTM-A48 CLASS 30 B CAST IRON
3. LOADING: H-15 WHEEL LOADS
4. APPROX. GRADE WEIGHT: 200 LBS
5. FLOW AREA: 850 SQ. INCH



STORMWATER LETDOWN PIPE DETAIL (24)

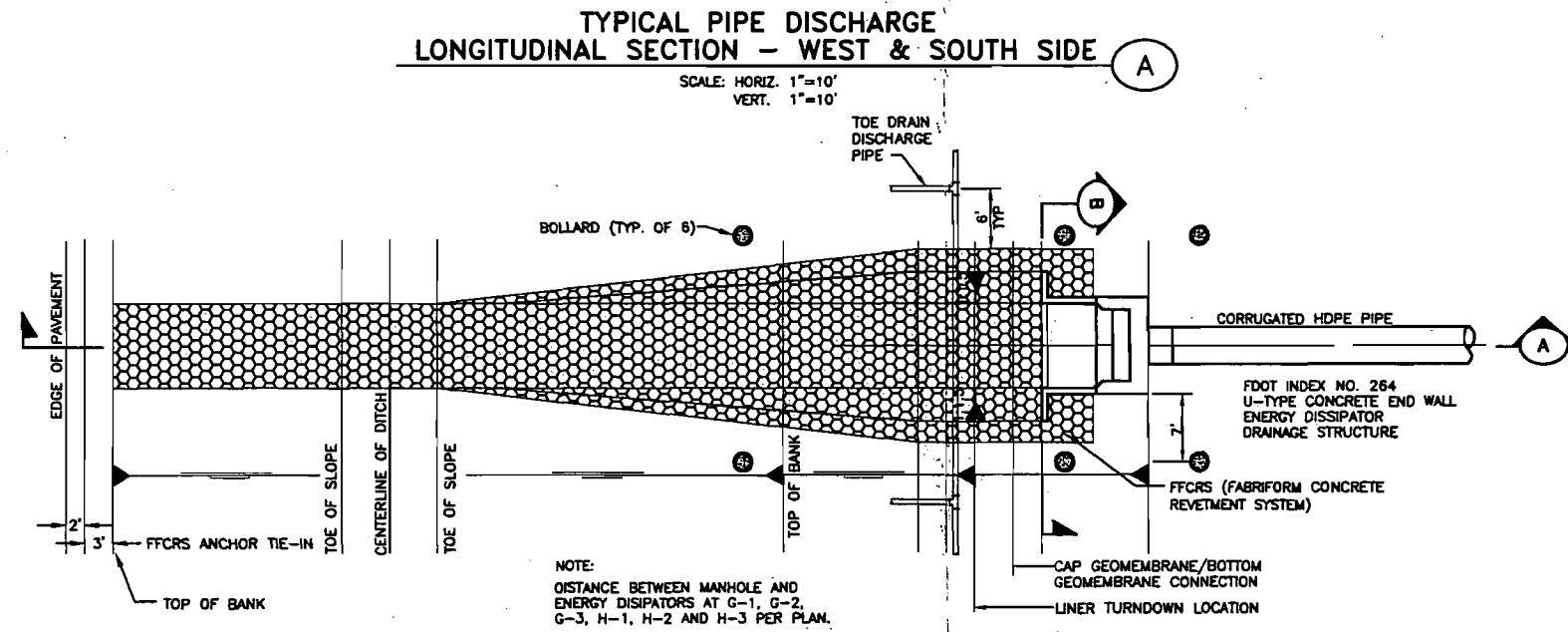
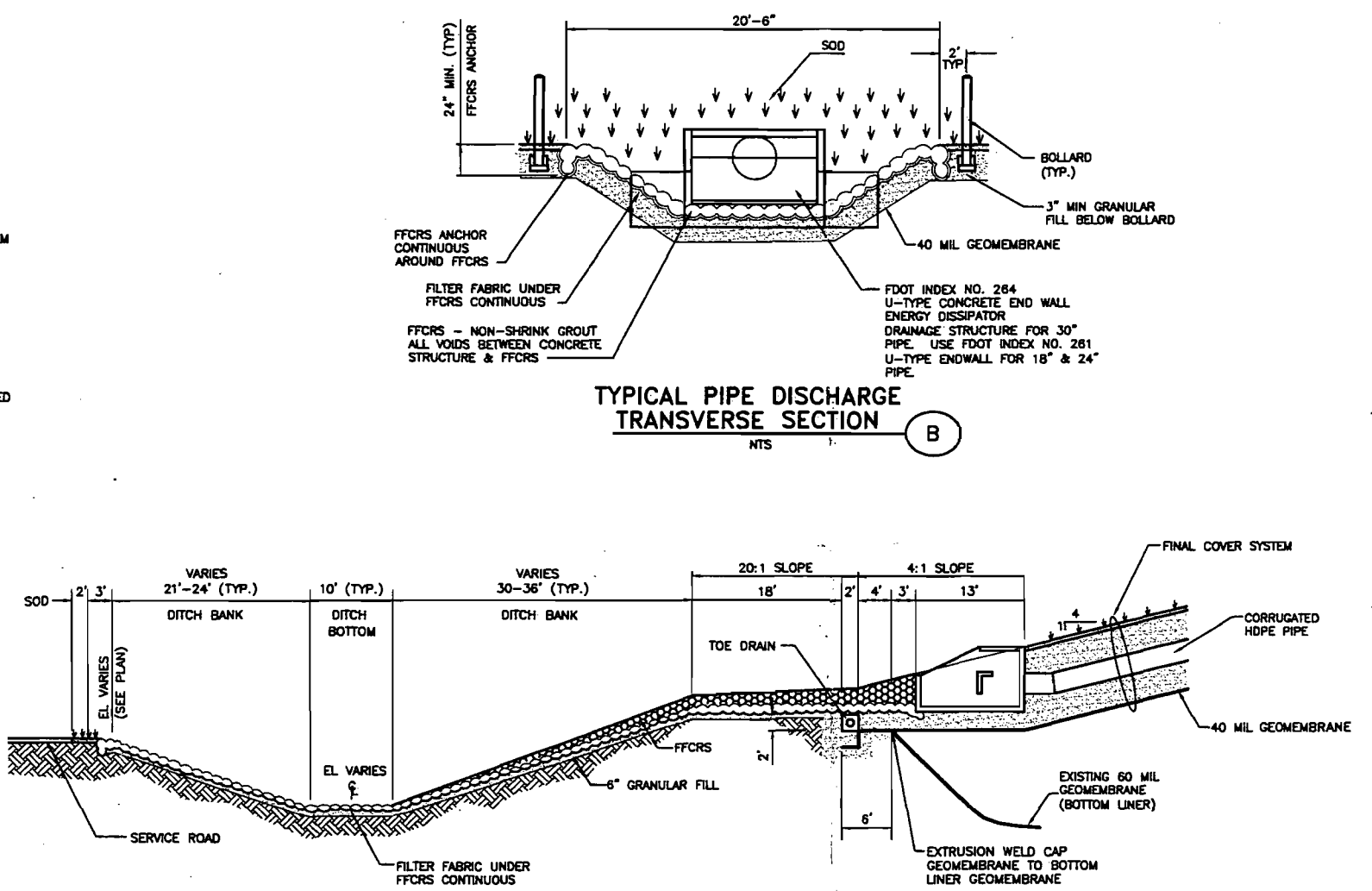
VERIFY SCALE	REUSE OF DOCUMENTS	DESIGNED	JML	DATE	08/05		WCG/NEEL-SCHAFFER, Inc. 2000 Latta Lucean Drive, Ste. 117 Metairie, Louisiana 70001-4216 504-887-0021 Fax: 504-887-0016 WWW.WCG1.COM C46822	CELL 7B/8 CLASS I LANDFILL FINAL CLOSURE	ATTACHMENT NO.
BAR IS ONE INCH ON ORIGINAL DRAWING.	THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL-SCHAFFER, INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL-SCHAFFER, INC.	DRAWN	DPK	DATE	08/05			STORMWATER MANAGEMENT DETAILS	CD-2
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.	CHECKED	JML	DATE	08/05			SCALE:	PROJ. NO. C94907051
		APPROVED	MSB	DATE	08/05				
		NO.	BY	REVISIONS	DATE	CADD FILE NAME	CD-2		



STORMWATER COLLECTION & DISCHARGE SECTION - WEST & SOUTH SIDE

SCALE: H: 1" = 30'
V: 1" = 6'

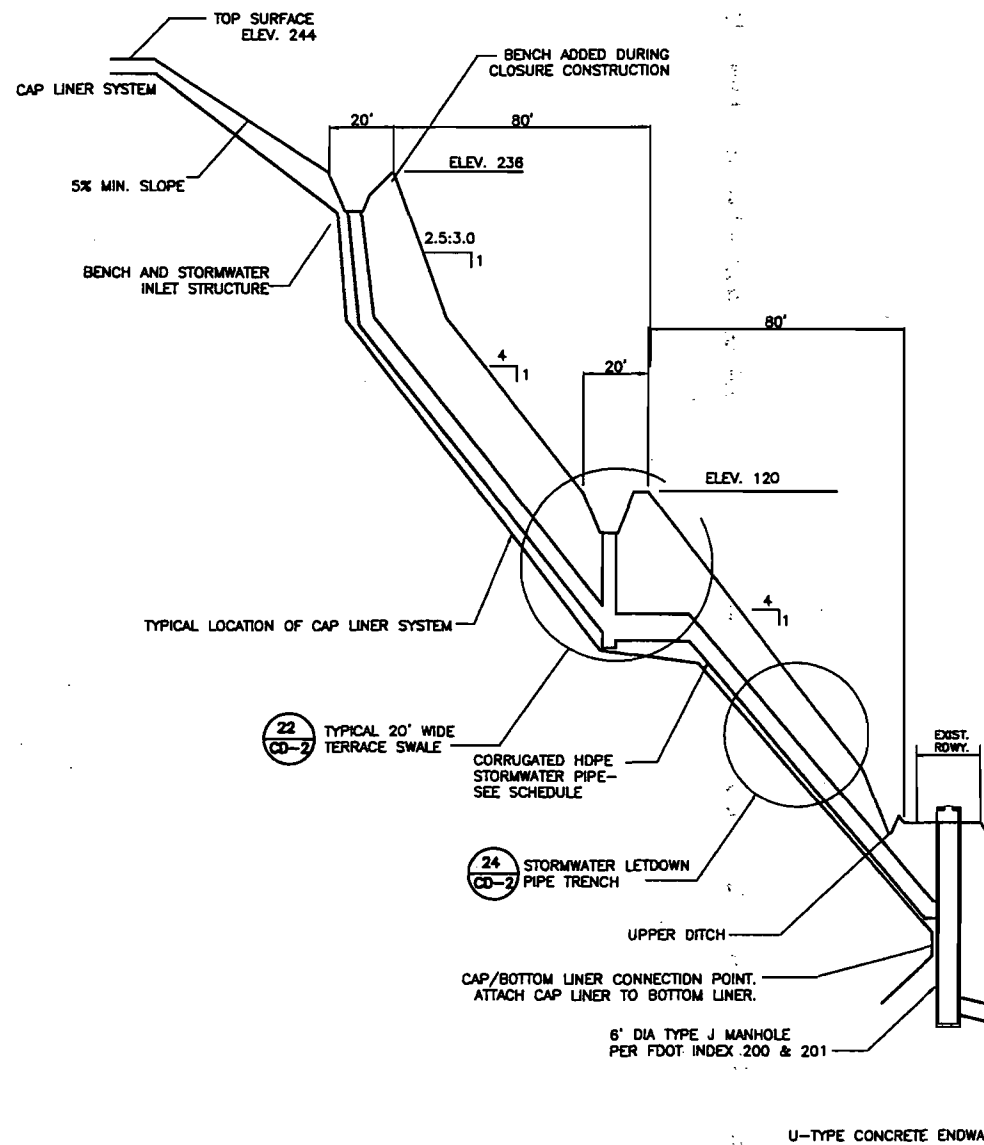
- NOTES:
- REFER TO SHEET CD-8 STORMWATER AND TERRACE SWALE SCHEDULES FOR TYPE, LENGTHS AND LOCATION OF STRUCTURES, PIPES AND SWALES.
 - FDOT INDEX 261 U-TYPE ENDWALLS SHALL BE USED WITH 18" & 24" LETDOWN PIPE SYSTEMS.
 - FDOT INDEX 284 U-TYPE ENERGY DISSIPATOR ENDWALLS SHALL BE USED WITH 30" LETDOWN PIPE SYSTEMS.
 - THE OUTLET END OF BOTH TYPES OF ENDWALLS SHALL BE PLACED AT THE SAME HORIZONTAL POINT IN THE FIELD. BECAUSE OF THE DIFFERENCE IN STRUCTURE LENGTH, ADJUST PIPE TO INLET OF THE SHORTER FDOT INDEX U-TYPE ENDWALL 261.



TYPICAL PIPE DISCHARGE DETAIL W/U-ENDWALL DRAINAGE STRUCTURE - WEST & SOUTH SIDE (EXCEPT STRUCTURES G-1, H-1, G-2, H-2, G-3 AND H-3)

SCALE: HORIZ. 1"=10'

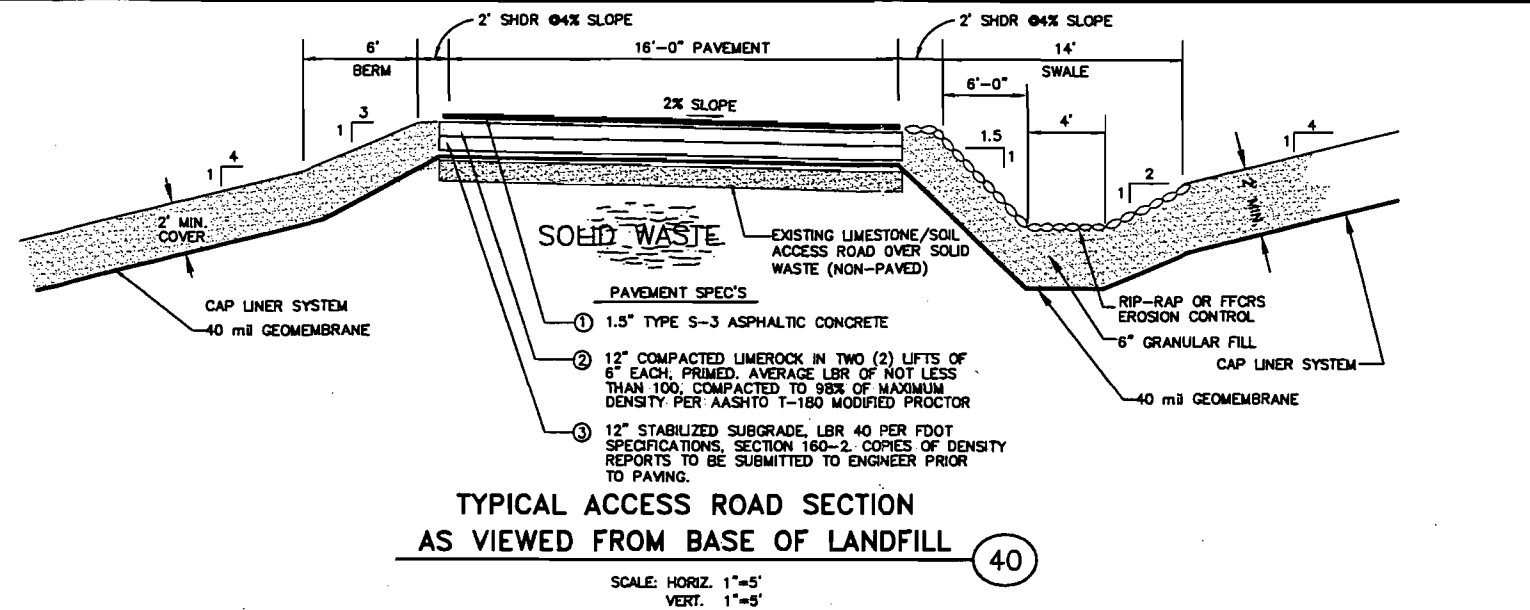
VERIFY SCALE	REUSE OF DOCUMENTS	DESIGNED	JML	DATE	08/05	<p>WCG/NEEL-SCHAFFER Inc. 630 N. Wynnwood Road, Suite 370 Maitland, Florida 32751-4218 407-647-8822 (Fax) 407-648-5078 WWW.WCG1.COM CA6982</p>	CELL 7B/8 CLASS I LANDFILL FINAL CLOSURE	ATTACHMENT NO.
BAR IS ONE INCH ON ORIGINAL DRAWING.	THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL-SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL-SCHAFFER INC.	DRAWN	DPK	DATE	08/05		STORMWATER MANAGEMENT DETAILS	CD-3
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.	CHECKED	JML	DATE	08/05		SCALE:	
		APPROVED	MSB	DATE	08/05		PROJ. NO.	C94907051



STORMWATER COLLECTION & DISCHARGE SECTION - EAST SIDE

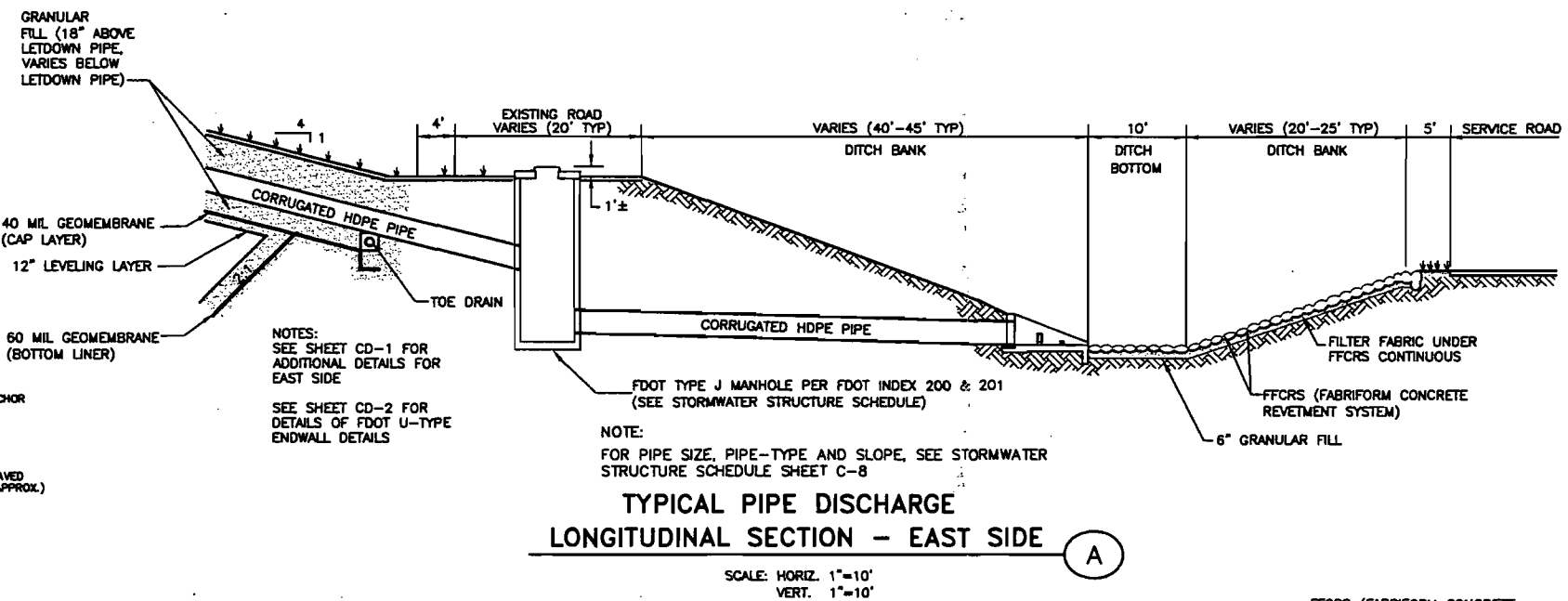
SCALE: H: 1" = 30'
V: 1" = 6'

- NOTES:
- REFER TO SHEET C-8 STORMWATER AND TERRACE SWALE SCHEDULES FOR TYPE, LENGTHS AND LOCATION OF STRUCTURES, PIPES AND SWALES.
 - FDOT INDEX 261 U-TYPE ENDWALLS SHALL BE USED WITH 18" & 24" LETDOWN PIPE SYSTEMS.
 - FDOT INDEX 264 U-TYPE ENERGY DISSIPATOR ENDWALLS SHALL BE USED WITH 30" LETDOWN PIPE SYSTEMS.
 - THE OUTLET END OF BOTH TYPES OF ENDWALLS SHALL BE PLACED AT THE SAME HORIZONTAL POINT IN THE FIELD. BECAUSE OF THE DIFFERENCE IN STRUCTURE LENGTH, ADJUST PIPE TO INLET OF THE SHORTER FDOT INDEX U-TYPE ENDWALL 261.



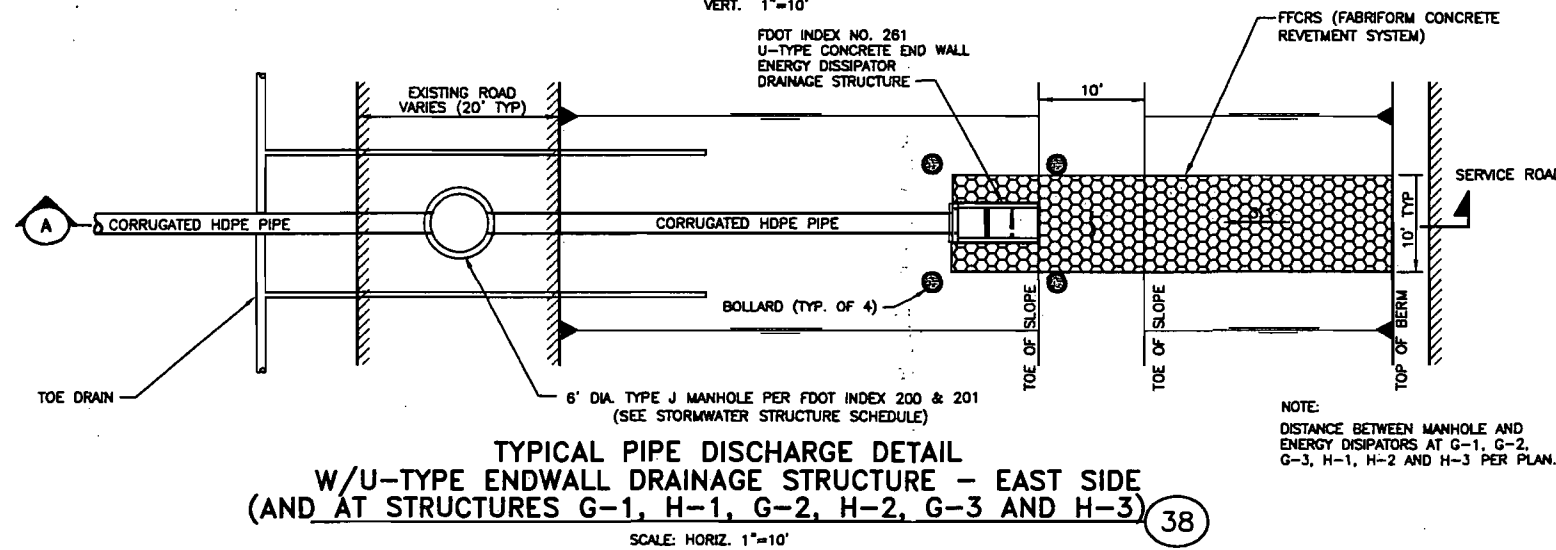
TYPICAL ACCESS ROAD SECTION AS VIEWED FROM BASE OF LANDFILL

SCALE: HORIZ. 1"=5'
VERT. 1"=5'



TYPICAL PIPE DISCHARGE LONGITUDINAL SECTION - EAST SIDE

SCALE: HORIZ. 1"=10'
VERT. 1"=10'



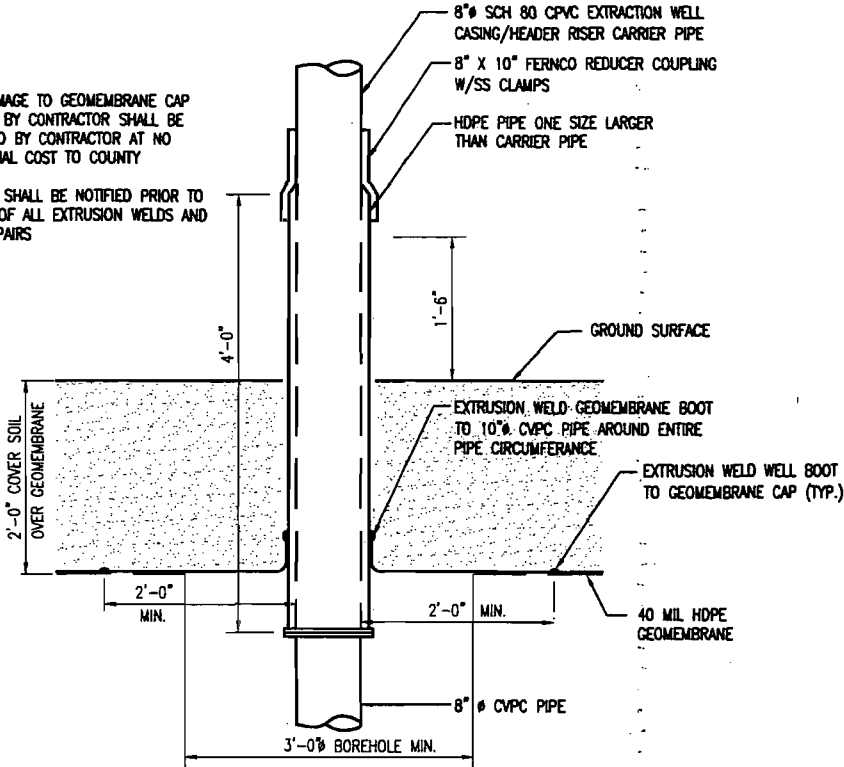
TYPICAL PIPE DISCHARGE DETAIL W/U-TYPE ENDWALL DRAINAGE STRUCTURE - EAST SIDE (AND AT STRUCTURES G-1, H-1, G-2, H-2, G-3 AND H-3)

SCALE: HORIZ. 1"=10'

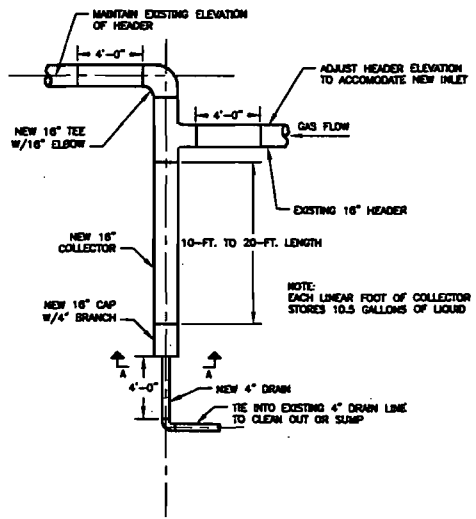
VERIFY SCALE	REUSE OF DOCUMENTS	DESIGNED	JML	DATE	08/05	<p>WCG/NEEL-SCHAFFER Inc. 630 N. Wynton Road, Suite 370 Maitland, Florida 32751-4218 407-847-8522 (local) 407-538-0576 WWW.WCG.COM C4892</p>	CELL 7B/8 CLASS I LANDFILL FINAL CLOSURE	ATTACHMENT NO.
BAR IS ONE INCH ON ORIGINAL DRAWING.	THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL-SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL-SCHAFFER INC.	DRAWN	DPK	DATE	08/05		STORMWATER MANAGEMENT DETAILS	CD-4
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.	CHECKED	JML	DATE	08/05			SCALE:
		APPROVED	MSB	DATE	08/05			PROJ. NO.
								C94907051
		NO.	BY	REVISIONS	DATE	CADD FILE NAME	CD-4	

NOTES

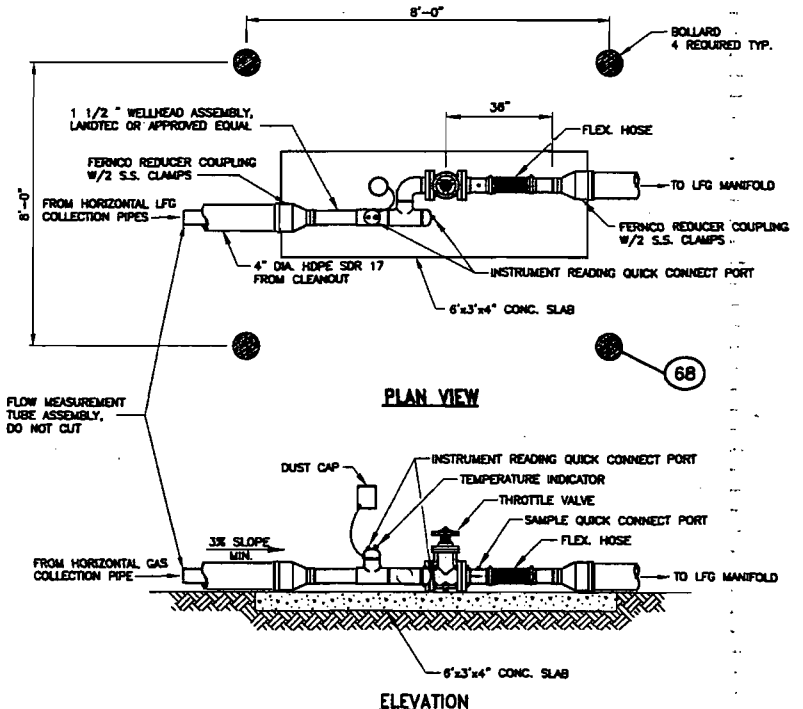
1. ANY DAMAGE TO GEOMEMBRANE CAP CAUSED BY CONTRACTOR SHALL BE REPAIRED BY CONTRACTOR AT NO ADDITIONAL COST TO COUNTY
2. COUNTY SHALL BE NOTIFIED PRIOR TO BURIAL OF ALL EXTRUSION WELDS AND CAP REPAIRS



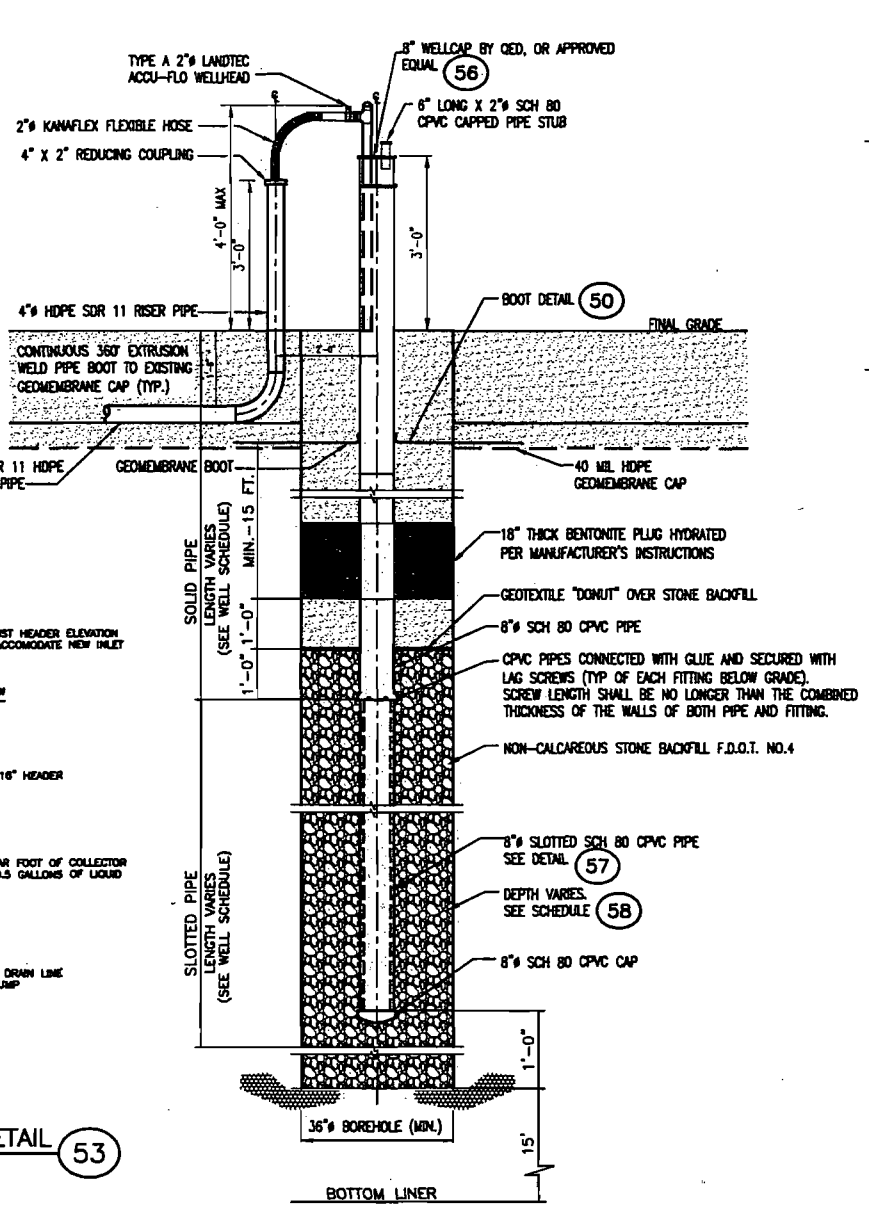
GEOMEMBRANE BOOT DETAIL FOR EXTRACTION WELL (50)
SCALE 1/4" = 1'-0"



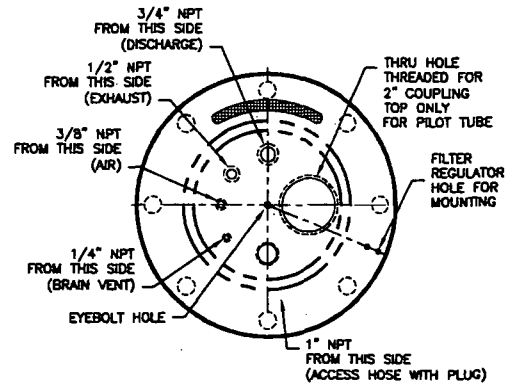
MULTIPLE PIPE JUNCTION DETAIL (53)
NTS



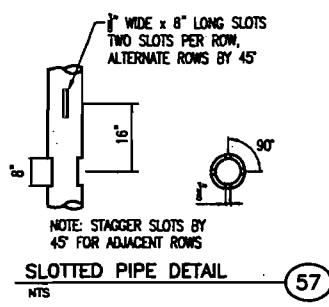
TYPE B WELLHEAD PLAN & LATERAL CONNECTION (52)
NTS



LFG EXTRACTION WELL DETAIL (54)
SCALE 1/4" = 1'-0"



WELL CAP (56)
NTS

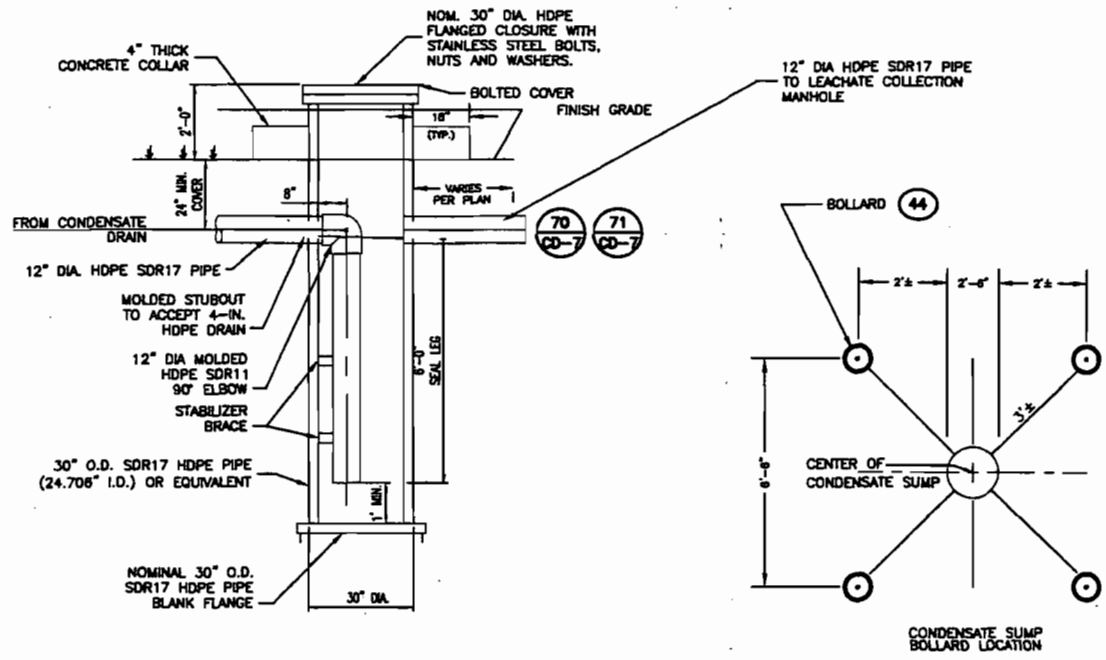


SLOTTED PIPE DETAIL (57)
NTS

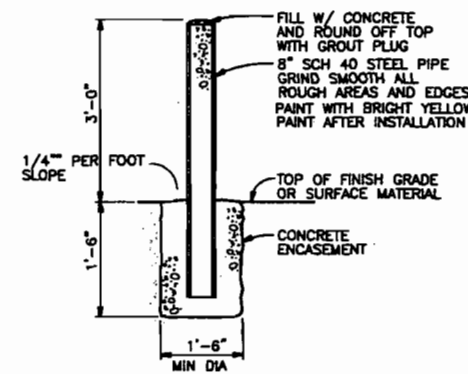
WELL NUMBER	NORTHING	EASTING	APPROXIMATE GROUND SURFACE (FT. NGVD)	APPROXIMATE DEPTH OF REFUSE (FT.)	WELL DEPTH	SLOTTED PIPE LENGTH (FT.)	SOLID PIPE LENGTH BELOW GRADE (FT.)	SOLID PIPE LENGTH ABOVE GRADE (FT.)	THICKNESS OF GRAVEL PACK (FT.)
85			238	144	122	88	44	4	90
86			238	144	122	88	44	4	90
101			172	77	62	40	21	4	42
102			185	70	55	34	20	4	38
103			160	65	50	29	20	4	31
104			210	115	100	66	33	4	68
105			190	95	80	53	28	4	55
106			198	103	88	58	29	4	60
107			156	61	46	25	20	4	27
120			228	135	120	80	40	4	82
121			244	150	135	90	45	4	92
122			154	63	48	32	16	4	34
123			194	98	83	56	27	4	58
124			232	135	120	80	40	4	82
125			244	150	135	90	45	4	92
126			236	145	130	87	43	4	89
127			198	100	85	57	28	4	59
128			184	98	83	56	27	4	58
129			232	140	125	84	41	4	86
130			244	145	130	87	43	4	89
131			236	140	125	84	41	4	86
132			198	100	85	57	28	4	59
133			158	60	45	30	15	4	32
134			154	58	43	29	14	4	31
135			194	88	73	49	24	4	51
136			232	136	121	81	40	4	83
137			242	154	139	93	46	4	95
138			236	138	124	83	41	4	85
139			198	98	83	56	27	4	58
140			157	62	47	31	16	4	33
141			154	62	47	31	16	4	33
142			194	100	85	57	28	4	59
143			232	156	141	94	47	4	96
144			242	152	137	92	45	4	94
145			136	146	131	88	43	4	90
146			198	95	80	54	26	4	56
147			158	62	47	31	16	4	33
148			153	62	47	31	16	4	33
149			194	100	85	57	28	4	59
150			232	130	115	77	38	4	79
151			243	150	135	90	45	4	92
152			236	140	125	84	41	4	86
153			198	95	80	54	26	4	56
154			158	65	50	34	16	4	36
155			154	65	50	34	16	4	36
156			194	100	85	57	28	4	59
157			219	130	115	77	38	4	79
158			236	136	121	81	40	4	83
159			236	136	121	81	40	4	83
160			198	102	87	58	29	4	60
161			158	62	47	31	16	4	33
162			140	40	25	10	15	4	12
163			154	65	50	34	17	4	36
164			174	100	85	57	28	4	59
165			214	122	107	72	35	4	74
166			204	105	90	60	30	4	62
167			198	102	87	58	29	4	60
168			156	62	47	31	16	4	33
169			140	65	50	34	17	4	36
170			194	104	89	60	29	4	62
171			194	100	85	57	28	4	59
172			198	102	87	58	29	4	60
173			154	60	45	30	15	4	32
174			174	80	65	44	21	4	46
175			174	80	65	44	21	4	46
176			174	72	57	38	19	4	40
177			174	77	62	42	20	4	44
178			170	70	55	37	18	4	39
179			136	40	25	10	15	4	12
180			154	55	40	25	15	4	27
181			154	52	37	22	15	4	24
182			133	40	25	10	15	4	12
183			135	43	28	13	15	4	15
184			133	38	23	12	11	4	14
185			133	38	23	12	11	4	14
186			133	40	25	10	15	4	12
187			137	35	20	10	10	4	12

LANDFILL GAS EXTRACTION WELL SCHEDULE (58)
NTS

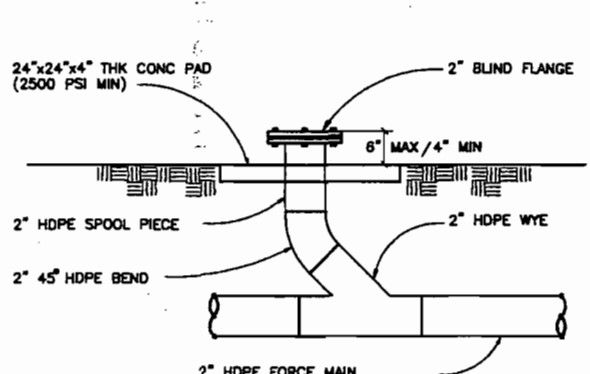
VERIFY SCALE	REUSE OF DOCUMENTS	DESIGNED	JML	DATE	08/05	<p>WCG/NEEL-SCHAFFER, INC. 2000 Lake Lucien Drive, Ste. 117 Maitland, Florida 32751-4218 407-647-8822 Fax: 407-638-0225 WWW.WCG1.COM CAG699</p>	CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE	ATTACHMENT NO.	CD-5
THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL-SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL-SCHAFFER INC.		DRAWN	DPK	DATE	08/05		<p>GAS MANAGEMENT SYSTEM DETAILS</p>	SCALE:	
NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.		CHECKED	JML	DATE	08/05			PROJ. NO.	C949D7051
		APPROVED	MSB	DATE	08/05				
		NO.	BY	REVISIONS	DATE	CADD FILE NAME	CD-5.DWG		



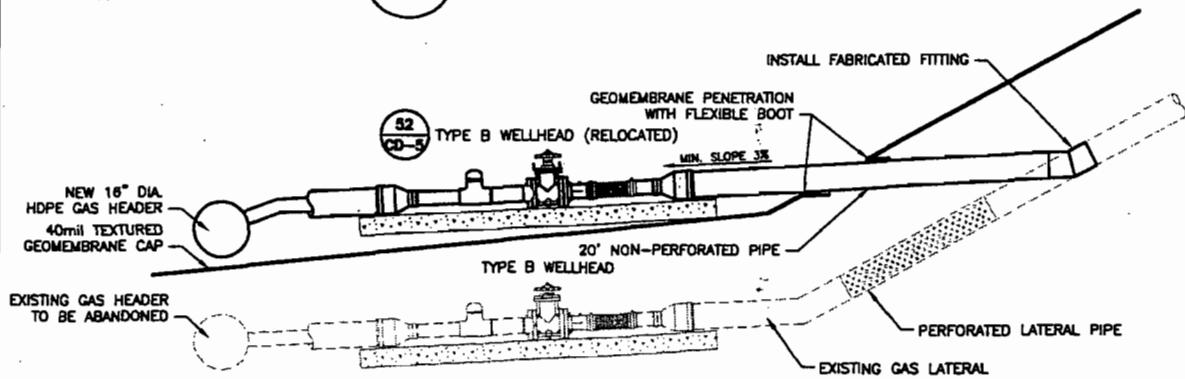
61 FLOW-THROUGH CONDENSATE SUMP WITH TRAP
NTS



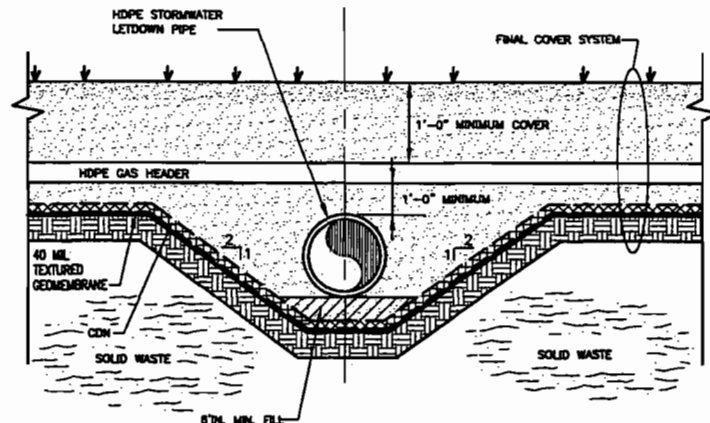
64 GUARD POST
(NOT INSTALLED OVER GEOMEMBRANE)
NTS



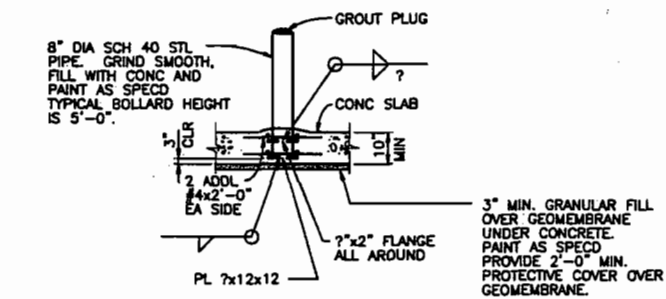
65 LEACHATE FORCE MAIN CLEANOUT
NTS



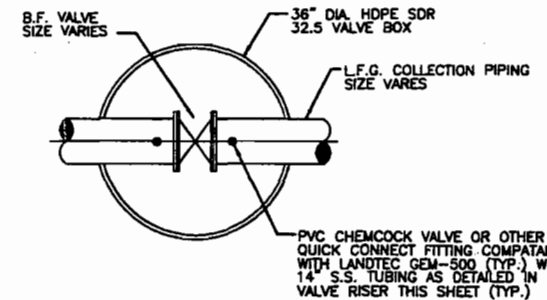
60 HORIZONTAL COLLECTION PIPE TIE-IN USING TYPE B WELL HEAD - WEST EDGE OF CELL 8
NTS



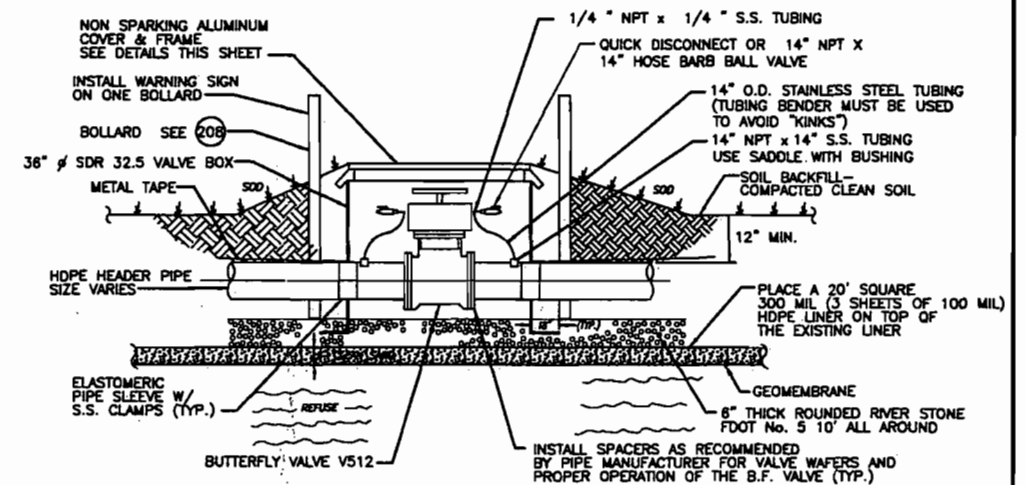
62 GAS HEADER/STORMWATER LETDOWN CROSSING (GAS HEADER PROFILE)
NTS



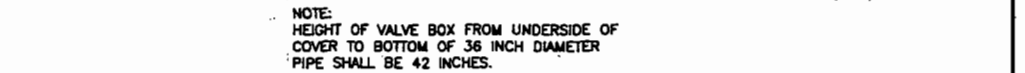
68 BOLLARD OVER GEOMEMBRANE CAP
NTS



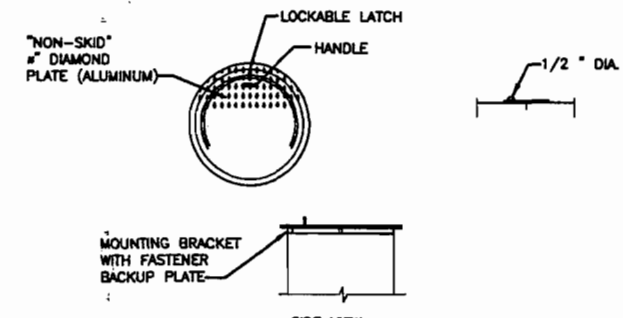
78 VALVE & BOX PLAN
NTS



66 ABOVE GEOMEMBRANE CONDENSATE DRAIN TIE-IN WITH DRIP LEG - EAST EDGE OF CELL 8
NTS

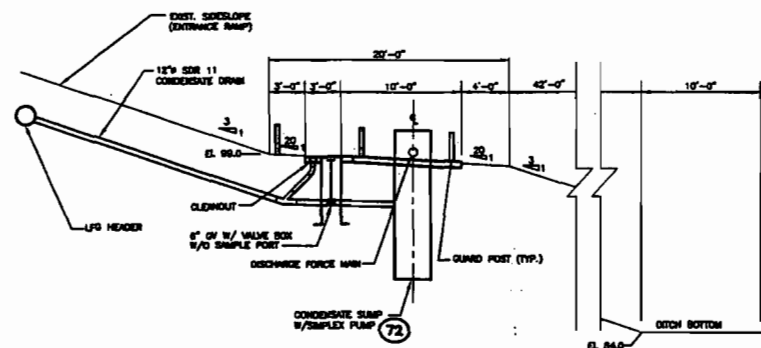


66 VALVE & BOX SECTION
NTS

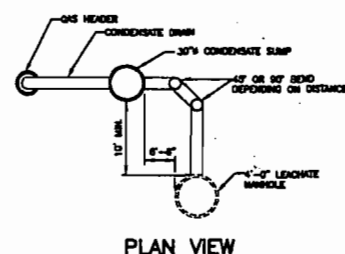


78 MANHOLE COVER DETAIL
NTS

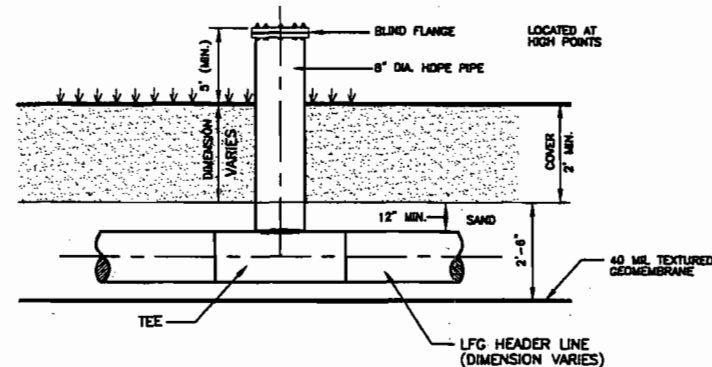
VERIFY SCALE	REUSE OF DOCUMENTS	DESIGNED	JML	DATE	08/05		ORANGE COUNTY LANDFILL GAS MANAGEMENT SYSTEM DETAILS	ATTACHMENT NO.	CD-6
BAR IS ONE INCH ON ORIGINAL DRAWING.	THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL-SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL-SCHAFFER INC.	DRAWN	DPK	DATE	08/05			SCALE:	PROJ. C94907051
0 = 1"		CHECKED	JML	DATE	08/05				
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.		APPROVED	DPK	DATE	08/05				
NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.		NO.	BY	REVISIONS	DATE	CADD FILE NAME	CD-6.DWG		



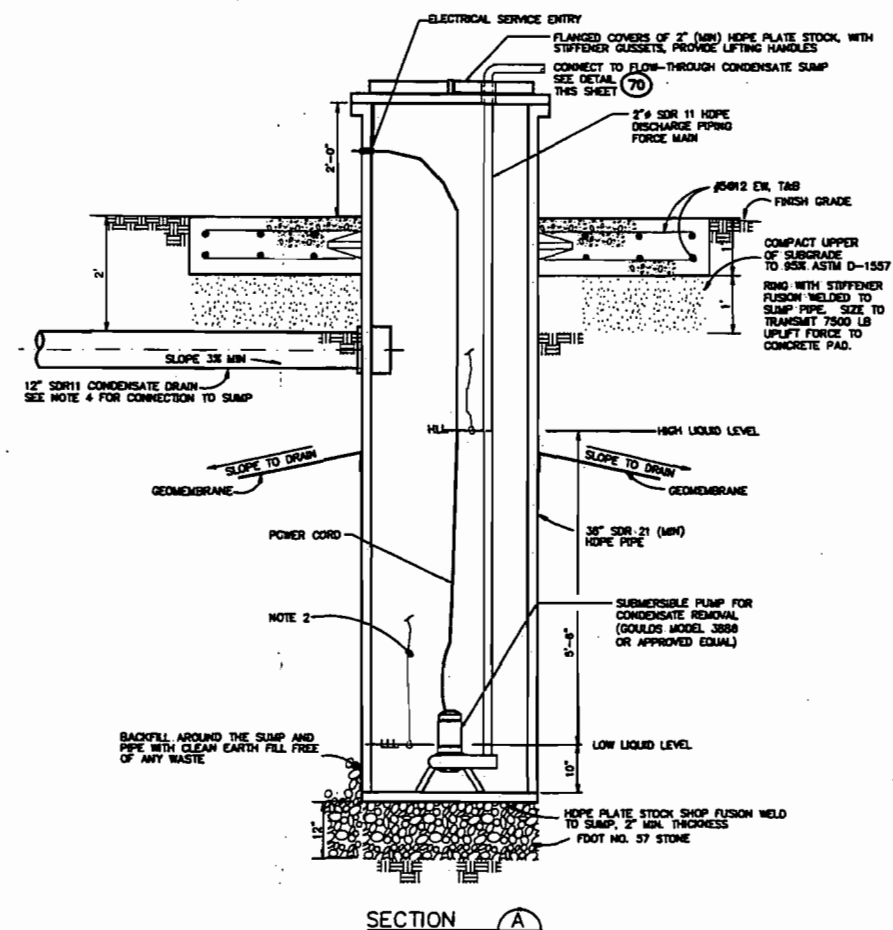
LANDFILL GAS MANIFOLD TO SOUTH CONDENSATE PUMP STATION (74)



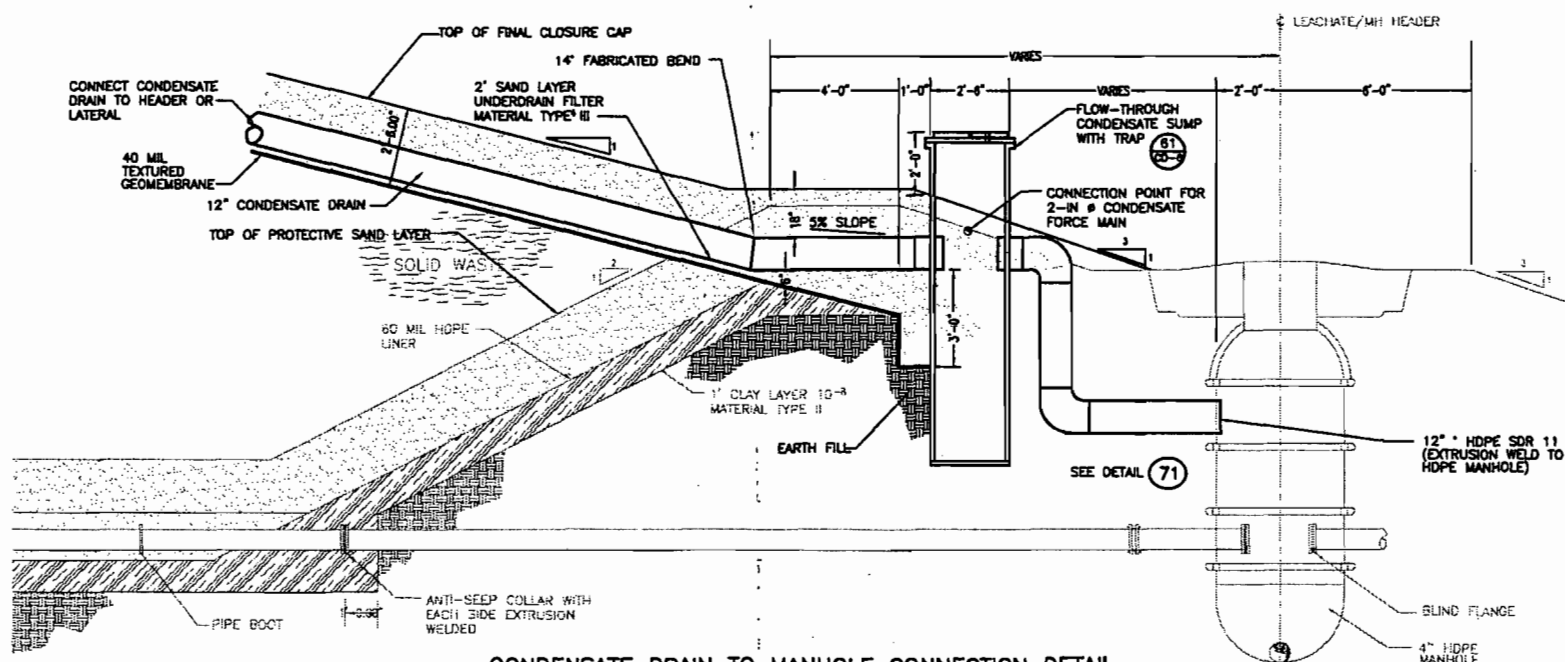
CONDENSATE DRAIN TO LEACHATE MANHOLE SOUTH AND WEST EDGE OF CELL 8 (71)



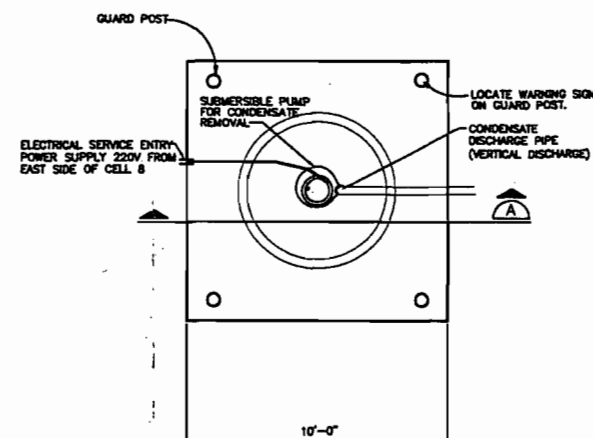
LFG CLEANOUT DETAIL - HEADER HIGH POINT (80)



SECTION A



CONDENSATE DRAIN TO MANHOLE CONNECTION DETAIL WEST SIDE OF CELL 8 (70)



CONDENSATE SUMP - PLAN SOUTH EDGE OF CELL 8 (72)

NOTES:

1. ALL PIPE CONNECTIONS TO CONDENSATE COLLECTION SUMPS TO BE SHOP INSTALLED. USE PRE-MOLDED FITTINGS AND FLANGE ADAPTERS. WALL PIECES SHALL BE FLANGED AT BOTH ENDS EXCEPT WHERE FUSION WELD BURIED JOINTS.
2. ALL FLOAT SWITCHES PER I&C SPEC'S.
3. WHERE NECESSARY TO PENETRATE THROUGH GEOMEMBRANE, EXTRUSION WELD.
4. FOR CONNECTION TO EXISTING CONDENSATE SUMP, EXCAVATE UNDER EXISTING SLAB TO TWO FEET BELOW INVERT OF NEW CONDENSATE DRAIN. BLOCK CONDENSATE FLOW TO SUMP. CORE CUT OPENING FOR NEW CONDENSATE DRAIN. FUSION WELD COLLAR AROUND HDPE DRAIN AND EXTRUSION WELD ON INSIDE AND OUTSIDE SURFACE OF CONDENSATE SUMP. BACKFILL SOILS AND COMPACT SOILS AROUND PIPE WITH HAND OPERATED COMPACTOR.

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 0 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REUSE OF DOCUMENTS
 THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WCG/NEEL-SCHAFFER INC. JOINT VENTURE AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF WCG/NEEL-SCHAFFER INC.
 NOT TO BE USED FOR CONSTRUCTION UNTIL APPROVED.

NO.	BY	REVISIONS	DATE	CADD FILE NAME
	JML	DESIGNED	08/05	CD-7.DWG
	DPK	DRAWN	08/05	
	JML	CHECKED	08/05	
	MSB	APPROVED	08/05	



WCG/NEEL-SCHAFFER, INC.
 2023 Lakeside Drive, Ste. 117
 Maitland, Florida 32751-4218
 407-547-8822 (local) 407-526-0578
 WWW.WCGI.COM
 C08822

CELL 7B/8 CLASS I LANDFILL - FINAL CLOSURE		ATTACHMENT NO.
GAS MANAGEMENT SYSTEM DETAILS		CD-7
SCALE:		PROJ. NO. C94907051