Title V Permit Renewal Application

St. Lucie County Baling and Recycling Facility

Florida Department of Environmental Protection

St. Lucie County, Florida

October 2013

CDM Smith

CDM Smith

1701 Highway A-1-A, Suite 301
Vero Beach, Florida 32963
tel: +1 772 231-4301
fax: +1 772 231-4332
cdmsmith.com

October 11, 2013

Mr. Syed Arif
Office of Permitting and Compliance
Florida Department of Environmental Protection
2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400

Subject: St. Lucie County Baling and Recycling Facility (ID No. 1110081)
Title V Air Operation Permit Renewal
Project No.: 1110081-007-AV

Dear Mr. Arif:

Please find enclosed the Title V Air Operation Permit Renewal Application for the St. Lucie County Bailing and Recycling Facility, in accordance with the requirements of Chapter 62-213 of the Florida Administrative Code (F.A.C.). This submittal consists of the completed, applicable pages of the Application for Air Permit – Long Form (DEP Form No. 62-210.900(1)) and supporting documentation provided as Appendices A through H. No application fee has been included in this package, consistent with 62-213.205(2), F.A.C.

We have also included a Responsible Official Notification Form (DEP Form No. 62-213.900(3)) designating Mr. Justin Gattuso of St. Lucie County Solid Waste as an Alternate Responsible Official. This designation is necessary because the Primary Responsible Official, Mr. Ron Roberts, is unexpectedly unavailable. Moreover, this means Mr. Roberts is not available to certify the application, nor to sign the Responsible Official Notification Form. Mr. Gattuso has certified this permit application in his place as the Alternate Responsible Official, and when Mr. Roberts returns the Responsible Official Notification Form will be re-submitted with his signature.

We appreciate the opportunity to provide you with this information. If you have any questions or would like additional information, please do not hesitate to contact our office.

Sincerely,

Eric J. Grotke, P.E., BCEE
Vice President
CDM Smith Inc.

CDM Smith

EJG/GJD/jj
Enclosure
File: PW_XM1_6277-100838.03.12

cc: Ron Roberts, SLC, w/ enclosure
Justin Gattuso, SLC, w/o enclosure
Joseph Curro, CDM Smith
Kevin Vann, CDM Smith
Gretchen Dorn, CDM Smith

FDEP TITLE V PERMIT RENEWAL APPLICATION

St. Lucie County, Florida

St. Lucie County Baling and Recycling Facility

October 2013

Prepared for:

St. Lucie County Solid Waste Division

Baling and Recycling Facility

6120 Glades Cut-off Road

Ft. Pierce, Florida 34981

Prepared by:

CDM Smith

1701 Highway A-1-A, Suite 301

Vero Beach, Florida 32963

CDM Smith Project No.:
6277-100838

CDM Smith

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Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit:

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- To establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial, revised, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: St. Lucie County	
2. Site Name: St. Lucie County Baling and Recycling Facility	
3. Facility Identification Number: 1110081	
4. Facility Location Description: Intersection of Florida Turnpike and I-95 Street Address or Other Locator: 6120 Glades Cut-Of Road City: Fort Pierce, FL County: St. Lucie Zip Code: 34981	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: Gretchen Dorn
2. Application Contact Mailing Address... Organization/Firm: CDM Smith Inc. Street Address: 1701 Highway A1A, Suite 301 City: Vero Beach State: Florida Zip Code: 32963
3. Application Contact Telephone Numbers... Telephone: (772)231-4301 ext. Fax: (772)231-4332
4. Application Contact E-mail Address: DornGJ@cdmsmith.com

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 10/11/13	3. PSD Number (if applicable):
2. Project Number(s): 1110081-007-AV	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)

Air Construction Permit

☐ Air construction permit.

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☒ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

☐ Air construction permit and Title V permit revision, incorporating the proposed project.

☐ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

☐ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

This application is for the renewal of the Title V Air Operations Permit for the St. Lucie County Baling and Recycling Facility.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
001	Municipal Solid Waste Landfill & Gas Collection System	AV05	
002	Landfill Gas Treatment and Control System	AV05	
003	C&D Debris Grinder Engine	AV05	

Application Processing Fee

Check one: ☐ Attached - Amount: $_____ ☒ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : Not Applicable
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Owner/Authorized Representative Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Owner/Authorized Representative E-mail Address:
5. Owner/Authorized Representative Statement: *I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.* Not Applicable _____ _____ Signature Date

APPLICATION INFORMATION

Application Responsible Official Certification

Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:
   Justin Gattuso, Operations Manager

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):

   ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

   ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

   ☒ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

   ☐ The designated representative at an Acid Rain source or CAIR source.

3. Application Responsible Official Mailing Address...
   Organization/Firm: St. Lucie County
   Street Address: 6120 Glades Cut-Off Road
   City: Fort Pierce State: Florida Zip Code: 34981

4. Application Responsible Official Telephone Numbers...
   Telephone: (772)462-1624 ext. Fax: (772)462-6987

5. Application Responsible Official E-mail Address: gattusoj@stlucieco.org

APPLICATION INFORMATION

6. Application Responsible Official Certification:

I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

Signature

10-11-13

Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: Joseph P. Curro
   Registration Number: 58416
2. Professional Engineer Mailing Address...
   Organization/Firm: CDM Smith
   Street Address: 1701 Highway A1A, Suite 301
   City: Vero Beach State: Florida Zip Code: 32963
3. Professional Engineer Telephone Numbers...
   Telephone: (772)231-4301 ext. Fax: (772)231-4332
4. Professional Engineer E-mail Address:
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here [X], if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here [ ], if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here [ ], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature JOSEPH P. CURRO LICENSE No 58416 (seal) — Date 10/11/13

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone 17 East (km) 559.89 North (km) 3029.65		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 27°23'19.7" Longitude (DD/MM/SS) 80°23'39.4"	
3. Governmental Facility Code: 3 -County	4. Facility Status Code: A - Active	5. Facility Major Group SIC Code: 49	6. Facility SIC(s): 4953
7. Facility Comment : This facility is an active landfill site. There is a Class I municipal solid waste (MSW) landfill with Phases I, II and IIIA closed. Phase IIIB of the Class I MSW landfill is currently active. There is also an active construction and demolition (C&D) debris landfill on site as well as a baling facility, a C&D debris processing facility and a planned single stream recyclables facility.			

Facility Contact

1. Facility Contact Name: Justin Gattuso
2. Facility Contact Mailing Address... Organization/Firm: St. Lucie County Street Address: 6120 Glades Cut-Off Road City: Fort Pierce State: Florida Zip Code: 34981
3. Facility Contact Telephone Numbers: Telephone: (772)462-1642 ext. Fax: (772) 462-6987
4. Facility Contact E-mail Address: gattusoj@stlucieco.org

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name: Ron Roberts
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: St. Lucie County Street Address: 6120 Glades Cut-Off Road City: Fort Pierce State: Florida Zip Code: 34981
3. Facility Primary Responsible Official Telephone Numbers... Telephone: (772)462-1827 ext. Fax: (772) 462-6987
4. Facility Primary Responsible Official E-mail Address: robertsr@stlucieco.gov

FACILITY INFORMATION

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☐ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☒ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment: Emission Units at this facility are subject to one or more of the following: 40 CFR Part 60, Subpart WWW; 40 CFR 63 Subpart AAAA, 40 CFR 63 Subpart ZZZZ	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted		2. Pollutant Classification	3. Emissions Cap [Y or N]?
CO	Carbon Monoxide	A	N
NMOC	Nonmethane Organic Compounds from MSW Landfill	B	N
NOX	Nitrogen Oxides	B	N
PM	Particulate Matter - Total	B	N
PM10	Particulate Matter - PM10	B	N
VOC	Volatile Organic Compounds A	A	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility-Wide Cap [Y or N]? (all units)	3. Emissions Unit ID's Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap

7. Facility-Wide or Multi-Unit Emissions Cap Comment:
Not applicable

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: Appendix B [ ] Previously Submitted, Date: _____

2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: Appendix C [ ] Previously Submitted, Date: _____

3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: Appendix D [ ] Previously Submitted, Date: _____

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location:
   [ ] Attached, Document ID: Appendix A [X] Not Applicable (existing permitted facility)

2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL):
   [ ] Attached, Document ID: _____

3. Rule Applicability Analysis:
   [ ] Attached, Document ID: _____

4. List of Exempt Emissions Units:
   [ ] Attached, Document ID: _____ [X] Not Applicable (no exempt units at facility)

5. Fugitive Emissions Identification:
   [ ] Attached, Document ID: _____ [X] Not Applicable

6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.):
   [ ] Attached, Document ID: _____ [X] Not Applicable

7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.):
   [ ] Attached, Document ID: _____ [X] Not Applicable

8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.):
   [ ] Attached, Document ID: _____ [X] Not Applicable

9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.):
   [ ] Attached, Document ID: _____ [X] Not Applicable

10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):
    [ ] Attached, Document ID: _____ [X] Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units:
   ☐ Attached, Document ID:_____ ☒ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities: (Required for initial/renewal applications only)
   ☒ Attached, Document ID: Appendix F ☐ Not Applicable (revision application)

2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought)
   ☒ Attached, Document ID: Appendix G
   ☐ Not Applicable (revision application with no change in applicable requirements)

3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)
   ☒ Attached, Document ID: Appendix H
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.

4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities Onsite but Not Required to be Individually Listed
   ☒ Not Applicable

5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☒ Not Applicable

6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:_____ ☒ Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Facilities Subject to Acid Rain, CAIR, or Hg Budget Program

1. Acid Rain Program Forms:

   Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable (not an Acid Rain source)

   Phase II NO_X Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

   New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable (not a CAIR source)

Additional Requirements Comment

Please see attached Appendices and Responsible Official Notification Form

III. EMISSIONS UNIT INFORMATION

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[X] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: Municipal solid waste landfill with active gas collection

3. Emissions Unit Identification Number: EU 001

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: 49
A - Active			

8. Federal Program Applicability: (Check all that apply)

[ ] Acid Rain Unit

[ ] CAIR Unit

9. Package Unit:
Manufacturer: Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment: The flare is separated and is under Emission Unit 002

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description: Flaring
2. Control Device or Method Code: 23

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: hours/day weeks/year	 days/week hours/year
6. Operating Capacity/Schedule Comment: Not applicable for fugitive emission from landfill	

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:	2. Emission Point Type Code: 4 – No true emissions point	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Not applicable		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: EU 001		
5. Discharge Type Code: F – Fugitive Emissions, No stack exists	6. Stack Height: feet	7. Exit Diameter: feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: 17 East (km): 560.03 North (km): 3029.42	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) 27°23'12.3952" Longitude (DD/MM/SS) 80°23'34.1746'	
15. Emission Point Comment: Fugitive emissions from landfill		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Waste disposal uncollected emissions (landfill gas and dust emissions)		
2. Source Classification Code (SCC): 5-01-004-02	3. SCC Units: Acre-Years Landfill Existing	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: Fugitive Emissions. The final Class I MSW landfill (see six phase build out plan in Appendix B) will provide 133 acres of storage for MSW disposal. (An additional 35 acres for construction and demolition (C&D) debris disposal is provided and will be adjacent to the final MSW landfill.)		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
NMOC			**EL**
PM			**NS**
PM10			**NS**
VOC			**NS**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: NMOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to 146 tons/year	
6. Emission Factor: 4000 ppmvd (as Hexane), Reference: NSPS 40 CFR 60.754	7. Emissions Method Code: 0 – Equal to allowable emission/worst case allowable emission
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See Appendix E for calculations	
11. Potential, Fugitive, and Actual Emissions Comment: Fugitive NMOC emissions from the landfill/landfill gas collection system. NMOC emission calculations based on the assumption that the gas collection system will only collect 75% of the generated landfill gas	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: PM and PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): 63 to 73 tons/year	
6. Emission Factor: See Appendix E for Fugitive Dust Calculations Reference: AP-42	7. Emissions Method Code: 3B – Calculated using emission factors from AP-42/Fire System or other published emission calculation source
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See Appendix E for calculations	
11. Potential, Fugitive, and Actual Emissions Comment: Fugitive Dust from site operations. PM 10 is assumed equal to Total PM emissions	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to 57 tons/year	
6. Emission Factor: VOC = 39% by weight of NMOC emissions Reference: AP-42 Section 2.4	7. Emissions Method Code: 3B – Calculated using emission factors from AP-42/Fire System or other published emission calculation source
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See Appendix E for Calculations	
11. Potential, Fugitive, and Actual Emissions Comment: NMOC, and therefore VOC, emission calculations based on the assumption that the gas collection system will only collect 75% of the generated landfill gas.	

G. VISIBLE EMISSIONS INFORMATION

Not applicable

H. CONTINUOUS MONITOR INFORMATION

Not applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: Appendix C [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: N/A [ ] Previously Submitted, Date _____

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: Appendix C [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable (construction application)

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable

6. Compliance Demonstration Reports/Records:
   [ ] Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   [X] Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   [ ] Attached, Document ID: _____ [X] Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1.	Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☒ Not Applicable
2.	Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
3.	Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1.	Identification of Applicable Requirements: ☒ Attached, Document ID: Appendix G
2.	Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☒ Not Applicable
3.	Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☒ Not Applicable
4.	Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: Landfill Gas Treatment and Control System

3. Emissions Unit Identification Number: EU 002

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
A - Active		6/19/1999	49

8. Federal Program Applicability: (Check all that apply)

[ ] Acid Rain Unit

[ ] CAIR Unit

9. Package Unit:
Manufacturer: LFG&E Triton Candle Flare Model Number: CF-2000

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment: Active municipal solid waste landfill with active landfill gas (LFG) collection. The LFG compression system treats & prepares the LFG for off-site use. LFG not sent offsite is sent to the open flare for destruction.

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description: Flaring
2. Control Device or Method Code: 23

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: 2000 SCFM OF LFG	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	7 days/week
52 weeks/year	8760 hours/year
6. Operating Capacity/Schedule Comment:	

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:	2. Emission Point Type Code: 1 – Single emissions point serving a single emissions unit	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Open candlestick flare		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: EU 002		
5. Discharge Type Code: V – a stack with an unobstructed opening discharging in a vertical or nearly vertical direction	6. Stack Height: 18 feet	7. Exit Diameter: 10 inches
8. Exit Temperature: 1,400 °F	9. Actual Volumetric Flow Rate: 110,663 acfm	10. Water Vapor: 6.9 %
11. Maximum Dry Standard Flow Rate: 29,233 dscfm at outlet; 1,862 dscfm LFG inlet	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: 17 East (km): 559.6 North (km): 3029.69	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) 27°23'21.2938" Longitude (DD/MM/SS) 80°23'49.8451"	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Non-assisted open gas flare		
2. Source Classification Code (SCC): 5-01-004-10	3. SCC Units: Million cubic feet waste gas burned	
4. Maximum Hourly Rate: 0.12	5. Maximum Annual Rate: 1051.2	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.00469%	8. Maximum % Ash:	9. Million Btu per SCC Unit: 520
10. Segment Comment: Percent sulfur is from AP-42 Section 2.4 (46.9ppmv); energy content based on average HHV of LFG samples taken 10/01/2013		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO	-	-	**NS**
NMOC	-	-	**NS**
NOx	-	-	**NS**
PM	-	-	**NS**
PM10	-	-	**NS**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: CO	2. Total Percent Efficiency of Control:
3. Potential Emissions: 23.06 lb/hour 101.01 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 0.37 lb/MMBtu Reference: AP-42 Table 13.5-1	7. Emissions Method Code: 3B – Calculated using emission factors from AP-42/Fire System or other published emission calculation source
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See Appendix E for Secondary Air Pollutants from Flare calculations	
11. Potential, Fugitive, and Actual Emissions Comment: Secondary CO emissions from the flare are based on AP-42 Section 13.5 Industrial Flares	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: NMOC	2. Total Percent Efficiency of Control: 98%
3. Potential Emissions: 0.67 lb/hour 3 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 4000 ppmvd (as hexane) Reference: NSPS 40 CFR 60.754	7. Emissions Method Code: 0 – Equal to allowable emission/worst case allowable emission
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See Appendix E for calculations	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE - NUMERICAL EMISSIONS LIMITATION REQUIRED BY RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 98% Destruction Required	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: 40 CFR 60.18	
6. Allowable Emissions Comment (Description of Operating Method): 98% destruction/removal efficiency of NMOC as required by 40CFR 60.752(b)(2)(iii)(B)	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: NOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: 4.24 lb/hour 18.56 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 0.068 lb/MMBtu Reference: AP-42 Table 13.5-1	7. Emissions Method Code: 3B – Calculated using emission factors from AP-42/Fire System or other published emission calculation source
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See Appendix E for Secondary Air Pollutants from Flare calculations	
11. Potential, Fugitive, and Actual Emissions Comment: Secondary NOX emissions from the flare are based on AP-42 Section 13.5 Industrial Flares, 1991	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: PM and PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: 2.02 lb/hour 8.86 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 270 kg/10^6 kg/dscm Methane Reference: AP-42 Table 2.4-4	7. Emissions Method Code: 3B – Calculated using emission factors from AP-42/Fire System or other published emission calculation source
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See Appendix E for calculations	
11. Potential, Fugitive, and Actual Emissions Comment: PM 10 is assumed equal to Total PM emissions	

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE 05	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: 5 % Exceptional Conditions: 20 % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: EPA Method 22	
5. Visible Emissions Comment: 40 CFR 60.18(c)(1) No Visible Emissions (5% opacity) except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. Visible Emission results attached in Appendix H Exhibit B	

H. CONTINUOUS MONITOR INFORMATION

Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: Appendix C [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: Appendix H Exh B [ ] Previously Submitted, Date _____

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: Appendix C [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [ ] Not Applicable (construction application)

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [ ] Not Applicable

6. Compliance Demonstration Reports/Records:
   [X] Attached, Document ID: Appendix H
   Test Date(s)/Pollutant(s) Tested: October 1, 2013 LFG Sampling; April 17, 2013 Visible Emissions Testing
   [ ] Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   [ ] Attached, Document ID: _____ [ ] Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: ☒ Attached, Document ID: Appendix G
2. Compliance Assurance Monitoring: ☒ Attached, Document ID: Appendix H ☐ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☒ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   [X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   [ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   [X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   [ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   [ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: C&D Debris Grinder Engine

3. Emissions Unit Identification Number: EU 003

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
A - Active	2004	2004	49

8. Federal Program Applicability: (Check all that apply)

   [ ] Acid Rain Unit

   [ ] CAIR Unit

9. Package Unit:
   Manufacturer: Caterpillar Model Number: 3412

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment: Existing 2004 model year 1000 HP diesel engine

Emissions Unit Control Equipment/Method: Control 0 of 0

1. Control Equipment/Method Description:
2. Control Device or Method Code:

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: hours/day weeks/year	days/week 8760 hours/year

6. Operating Capacity/Schedule Comment:
The grinder is not currently run continuously, but a full time operating schedule is requested to allow for fluctuations in demand based on incoming material volumes.

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: C&D Processing	2. Emission Point Type Code: 1 – Single emissions point serving a single emissions unit	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: C&D Debris Grinder Engine exhaust		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: EU 003 (new designation)		
5. Discharge Type Code: W	6. Stack Height: 15 feet	7. Exit Diameter: feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Distillate Oil (Diesel)		
2. Source Classification Code (SCC): **2-01-001-02**	3. SCC Units: 1000 Gallons Distillate Oil (Diesel) Burned	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			**EL**
NOx			**NS**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: CO	2. Total Percent Efficiency of Control:
3. Potential Emissions: 5.5 lb/hour 24 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 0.0055 lb/hp-hr Reference: AP-42 Table 3.4-1	7. Emissions Method Code: 3B – Calculated using emission factors from AP-42/Fire System or other published emission calculation source
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: This emissions estimate was calculated using AP-42 emission factors from Table 3.4-1. See Appendix E for calculations.	
11. Potential, Fugitive, and Actual Emissions Comment: The potential emissions from this engine will be re-examined during the engineering assessment proposed in Appendix H.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 23 ppmv of CO @ 15% O_2 or 70% reduction in CO	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: Performance testing	
6. Allowable Emissions Comment (Description of Operating Method): See requirements of 40 CFR 63 Subpart ZZZZ	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: NOx	2. Total Percent Efficiency of Control:
3. Potential Emissions: 24 lb/hour 105 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 0.024 lb/hp-hr Reference: AP-42 Table 3.4-1	7. Emissions Method Code: 3B – Calculated using emission factors from AP-42/Fire System or other published emission calculation source
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: This emissions estimate was calculated using AP-42 emission factors from Table 3.4-1. See Appendix E for calculations.	
11. Potential, Fugitive, and Actual Emissions Comment: The potential emissions from this engine will be re-examined during the engineering assessment proposed in Appendix H.	

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE20	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: 20 % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: EPA Method 9	
5. Visible Emissions Comment: Chapter 62-296.320(4)(b)1., F.A.C.: "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)."	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☐ Not Applicable (construction application)

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☐ Not Applicable

6. Compliance Demonstration Reports/Records:
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ To be Submitted, Date (if known):_____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   ☐ Attached, Document ID: _____ ☐ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

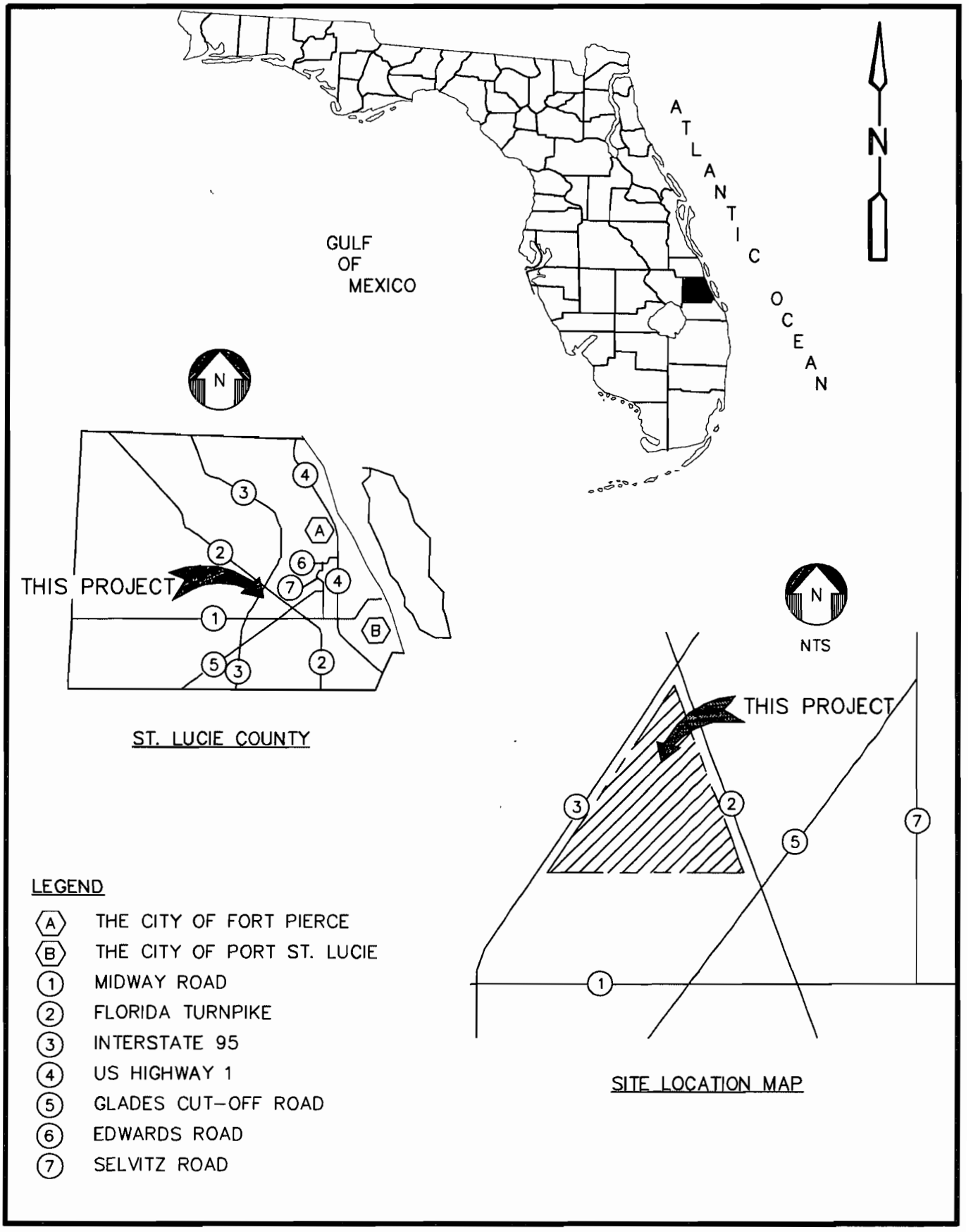
1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: ☒ Attached, Document ID: Appendix G
2. Compliance Assurance Monitoring: ☒ Attached, Document ID: Appendix H ☐ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☐ Not Applicable

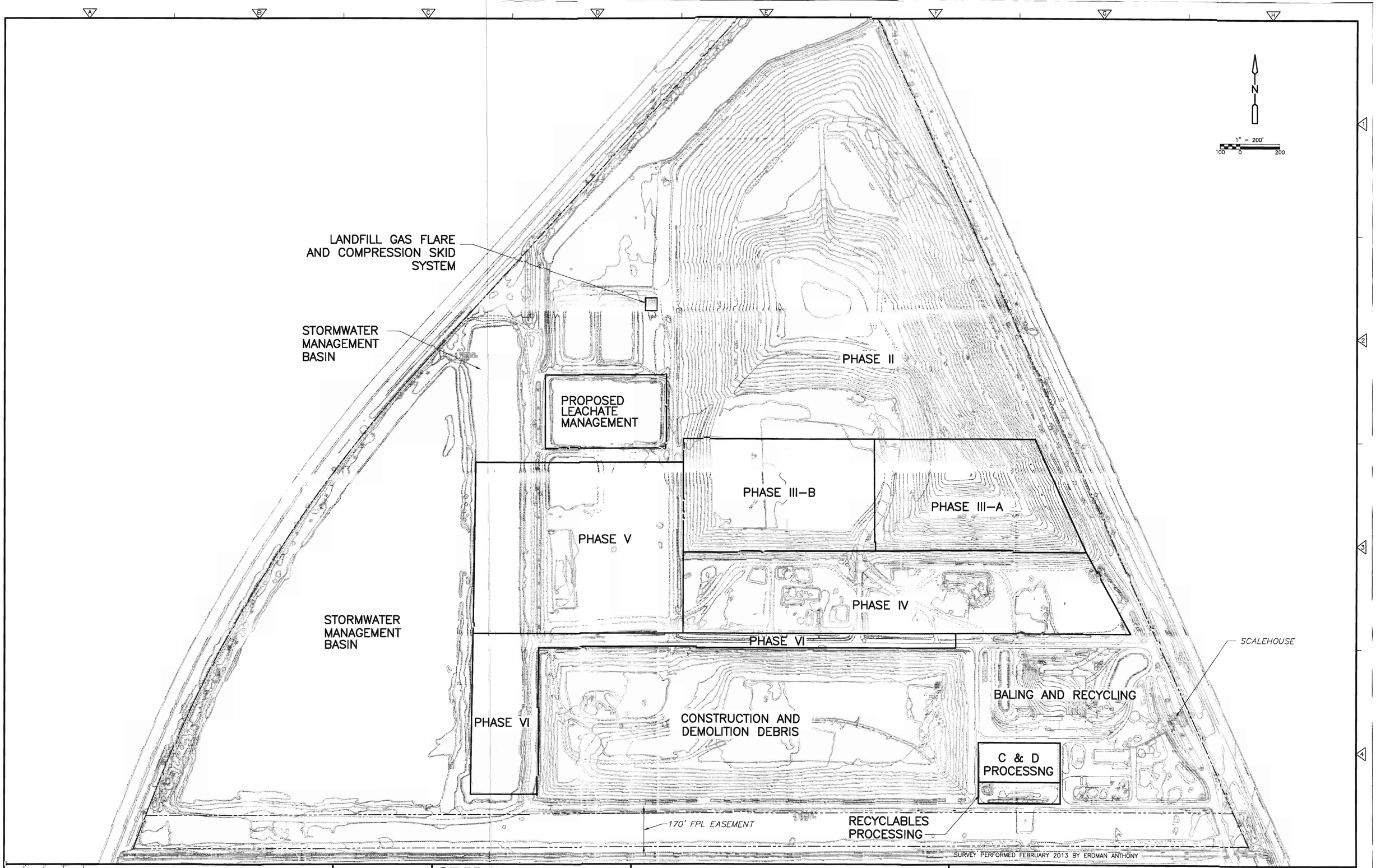
Additional Requirements Comment

See Appendix H for discussion of Compliance Plan.



Appendix – A
St. Lucie County Baling and Recycle Facility
Location Map

CDM Smith



SURVEY PERFORMED FEBRUARY 2013 BY ERDMAN ANTHONY

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: G. DORN
DRAWN BY: S. DELAHAYE
SHEET CHK'D BY: C. SCOTT
CROSS CHK'D BY:
APPROVED BY:
DATE: OCTOBER 2013

CDM Smith
50 Hampshire Street
Cambridge, MA 02139
Tel: (617) 452-6000

ST. LUCIE COUNTY BALING AND RECYCLING FACILITY
ST. LUCIE COUNTY , FLORIDA

TITLE V PERMIT RENEWAL

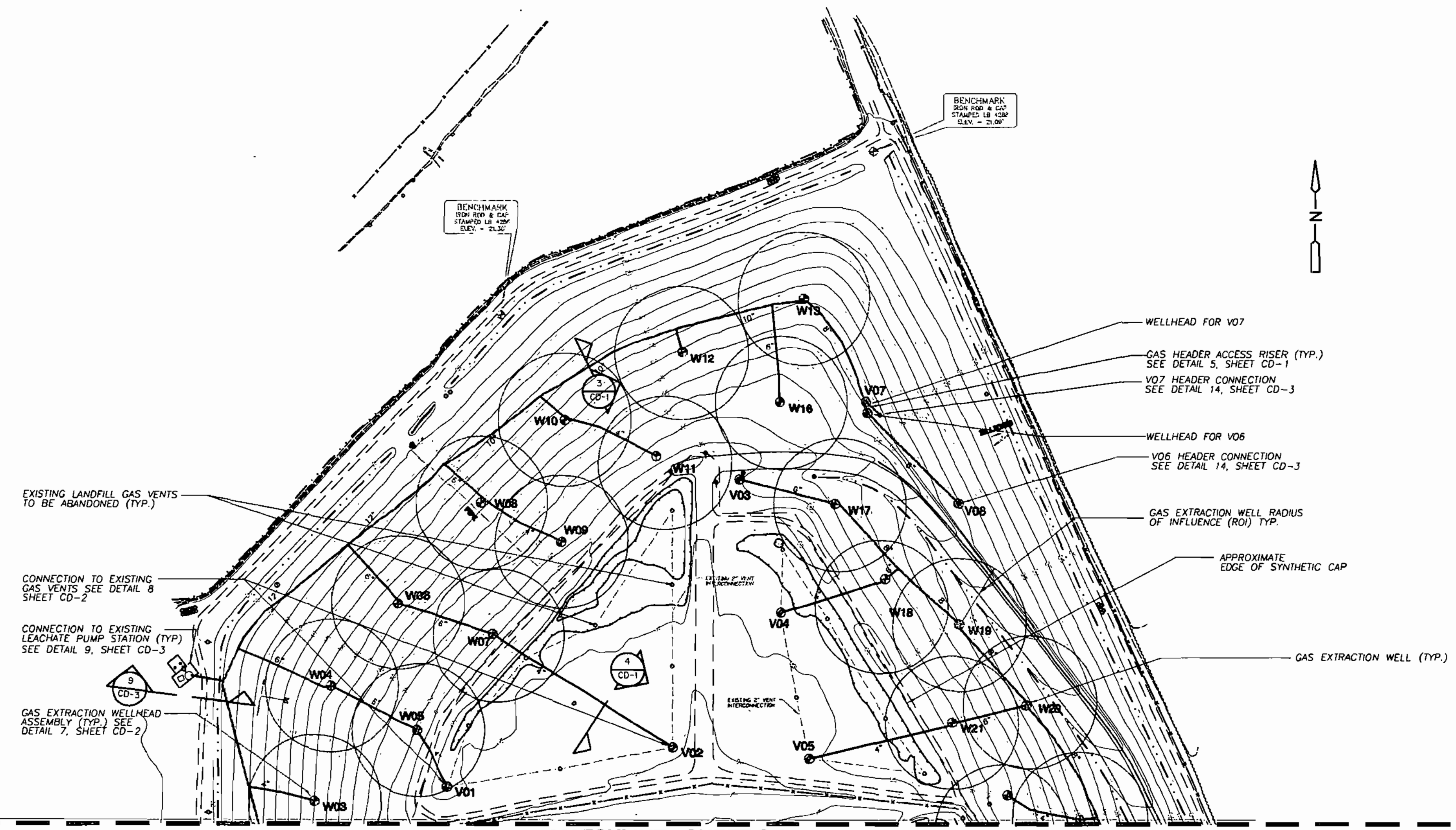
PROPOSED SITE BUILDOUT PLAN

PROJECT NO. 6277-94378
FILE NAME: FIG-B02.DWG
SHEET NO.
Appendix - B

Appendix C

Process Flow Diagram (LFG Record Drawings)

Record drawings of the current landfill gas collection and control system have been provided in this appendix as 11 inch by 17 inch copies for easy reference. All of these documents have previously been provided to FDEP as required at time of construction or completion of each component.



NOTE:
SEE CULPEPPER & TERPENING INC. SURVEY SHEET 1 OF 1 (ATTACHED) FOR AS-BUILT LOCATION.

MATCHLINE - SHEET C-2

LEGEND

- HDPE GAS COLLECTION HEADER PIPE
- EXISTING MANHOLE
- EXISTING GAS VENT
- GAS COLLECTION WELL
- MAIN GAS HEADER VALVE
- ACCESS RISER

1" = 100'
50 25 0 50 100

RECORD DRAWINGS

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE ENGINEER HAS NOT VERIFIED THE ACCURACY OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

CAMP DRESSER & McKEE INC Date JUNE 1999

RECORD DRAWING

REV. NO.	DATE	DRWN	CHKD	REMARKS
	6/99	AGC	KCL	RECORD DRAWING
A	9/17/98	SAT	JC	REVISED NW HEADER LAYOUT
A	4/10/98	SAT	JC	REVISED HEADER LAYOUT

DESIGNED BY: J. CURRO
DRAWN BY: W. SCULLY
SHEET CHK'D BY: J. CURRO
CROSS CHK'D BY: D. DUFFY
APPROVED BY:
DATE: DECEMBER 1997

CDM Camp Dresser & McKee Inc.
environmental services
offices worldwide

ST. LUCIE COUNTY, FLORIDA
DEPARTMENT OF SOLID WASTE MANAGEMENT

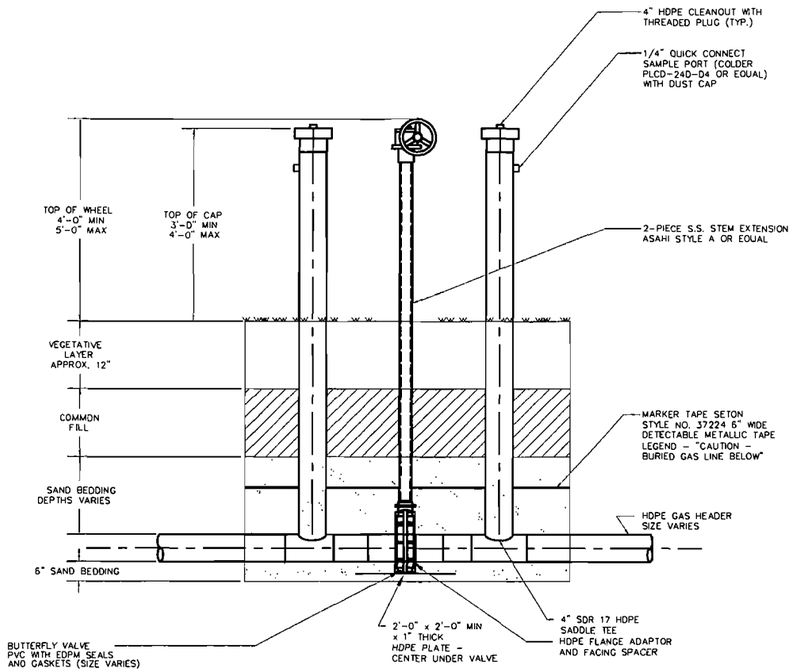
GLADES ROAD SANITARY LANDFILL

GAS WELL LAYOUT DESIGN (NORTH)

PROJECT NO. 6277-21840
FILE NAME: CIVL0001

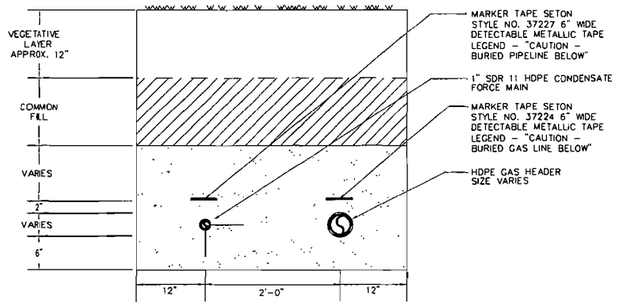
SHEET NO.
C-1

P:\6277\21840\Record\Civil\ CIvl0001 11/24/99 08:44:17 19:03:52



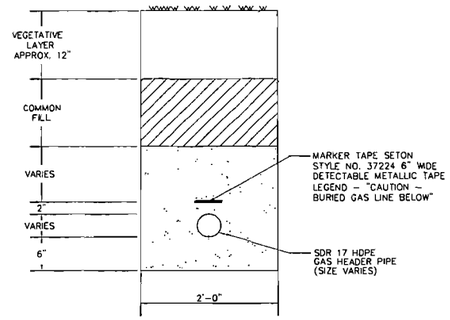
ACCESS RISERS AND GAS HEADER ZONE VALVE

DETAIL 1 / C-2 — NTS



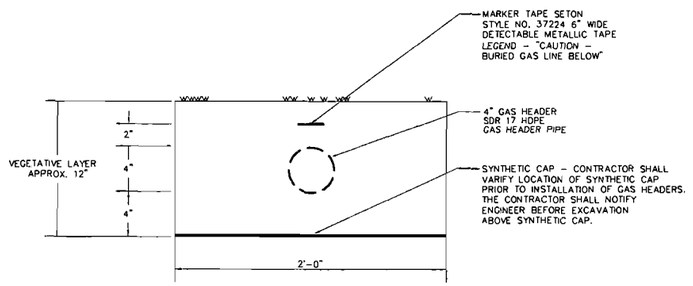
GAS HEADER AND CONDENSATE FORCE MAIN TRENCH

DETAIL 2 / C-2 — NTS



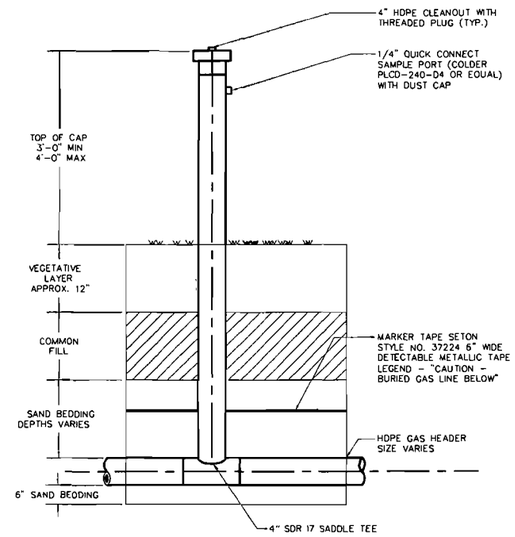
TYPICAL HDPE GAS HEADER TRENCH SECTION

DETAIL 3 / C-1 — NTS



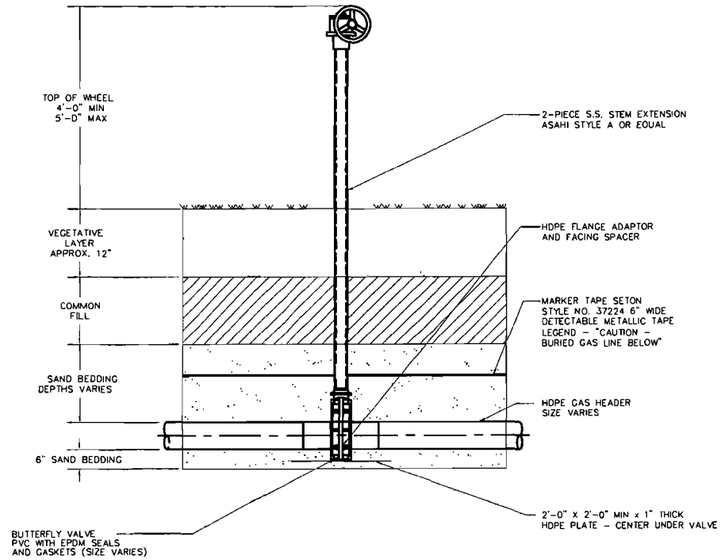
HDPE GAS HEADER TRENCH SECTION ABOVE SYNTHETIC LINER

DETAIL 4 / C-1 — NTS



TYPICAL ACCESS RISER

DETAIL 5 / C-1, C-2 — NTS



TYPICAL BURIED GAS HEADER VALVE

DETAIL 6 / C-2 — NTS

REV. NO.	DATE	DRWN	CHKD	REMARKS
A	4/10/98	SAT	JC	REVISED ACCESS RISERS

DESIGNED BY: J. CURRO
DRAWN BY: W. SCULLY
SHEET CHK'D BY: J. CURRO
CROSS CHK'D BY: D. DUFFY
APPROVED BY:
DATE: DECEMBER 1997

CDM Camp Dresser & McKee Inc.
environmental services offices worldwide

ST. LUCIE COUNTY, FLORIDA
DEPARTMENT OF SOLID WASTE MANAGEMENT

GLADES ROAD SANITARY LANDFILL

MISCELLANEOUS DETAILS

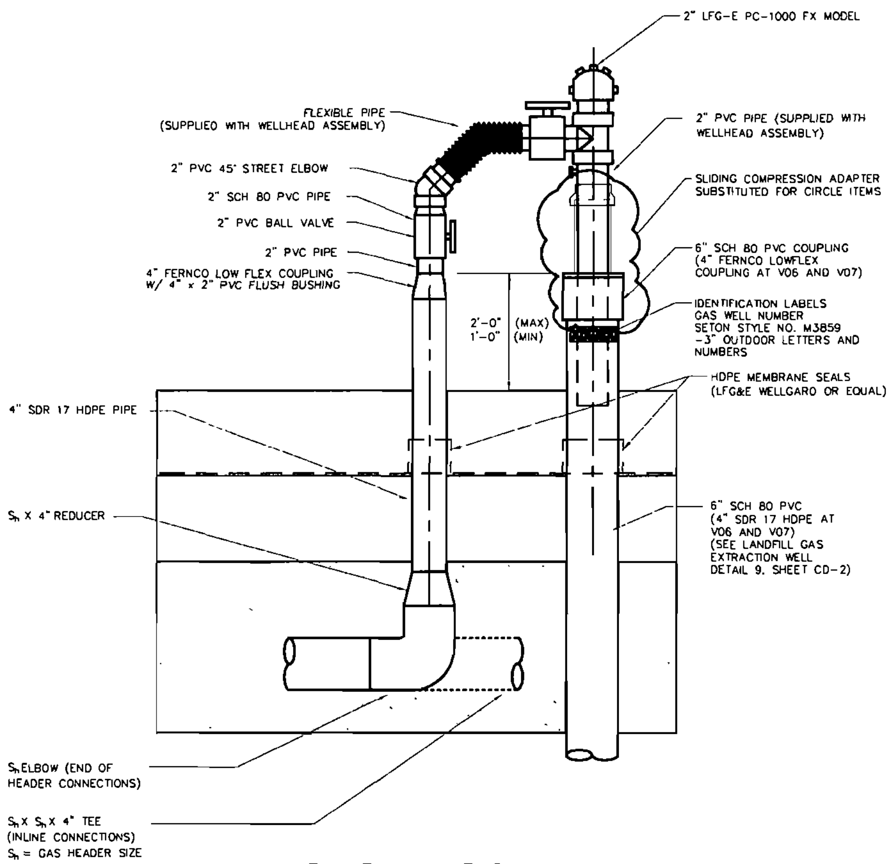
PROJECT NO. 6277-21840
FILE NAME: DETL0001

SHEET NO.
CD-1

P:\6277\21840\Report\CWR\DETAILS\Detl0001 11/22/99 15:40:12 4:48:29 Chiverreg

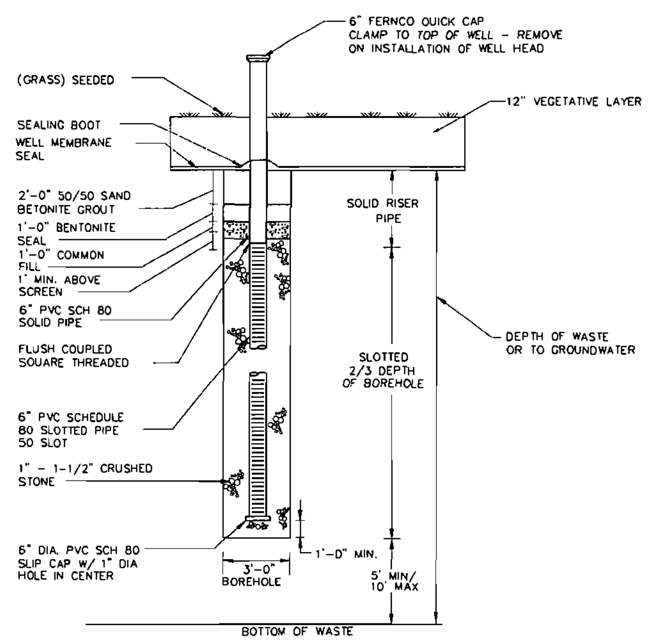
GAS WELL I.D. NO.	FINAL GND. ELEV. (FT.)	WELL DEPTH (FT.)	SCREEN LENGTH (FT.)
W01	59.0'	26.0'	17.5' SCREEN
W02	61.6'	27.0'	20' SCREEN
W03	54.1'	19'-11"	12.5' SCREEN
W04	53.5'	18.5'	SLOTTED PIPE 10.0'
W05	86.1'	51.1'	SLOTTED PIPE 30.0'
W06	56.4'	21.4'	SLOTTED PIPE 15.0'
W07	84.3'	49.3'	SLOTTED PIPE 30.0'
W08	52.9'	17.9'	SLOTTED PIPE 12.8'
W09	77.6'	43.0'	SLOTTED PIPE 30.0'
W10	53.6'	18.6'	SLOTTED PIPE 12.6'
W11	76.8'	41.8'	SLOTTED PIPE 35.0'
W12	56.1'	22.2"	SLOTTED PIPE 15.0'
W13	53.9'	20.0'	12.6' SCREEN
W16	72.6'	37.6'	SLOTTED PIPE 30.0'
W17	74.8'	36.6'	25.0' SLOTTED
W18	73.8'	34.0'	22.5' SLOTTED
W19	60.5'	26.0'	17.5' SLOTTED
W20	50.2'	17.9'	10.0' SLOTTED
W21	77.7'	24.0'	13.0' SLOTTED
W22	50.3'	18.4'	10.0' SLOTTED
W23	69.3'	34.8'	22.5' SLOTTED
W24	70.7'	35.0'	SLOTTED PIPE 27.5'
W25	69.5'	36.0'	25.0' SLOTTED
W26	68.5'	33.4'	22.5' SLOTTED
W27	67.7'	34.0'	22.5' SLOTTED
W28	68.7'	34.0'	25.0' SCREEN
W29	74.9'	40.4'	27.5' SLOTTED
W30	75.9'	41'-10"	27.5' SLOTTED
W31	75.0'	39.6'	27.5' SLOTTED
W32	73.6'	32.0'	22.5' SLOTTED
W33	72.9'	38.0'	25.0' SLOTTED
W34	74'-10"	37.0'	25.0' SLOTTED
W35	75.6'	40.7'	27.5' SLOTTED
W36	58.5'	25.0'	15.0' SCREEN
W37	63.0'	28.0'	20.0' SCREEN
W38	58.5'	24.4'	17.6' SCREEN

LANDFILL GAS EXTRACTION WELL SCHEDULE



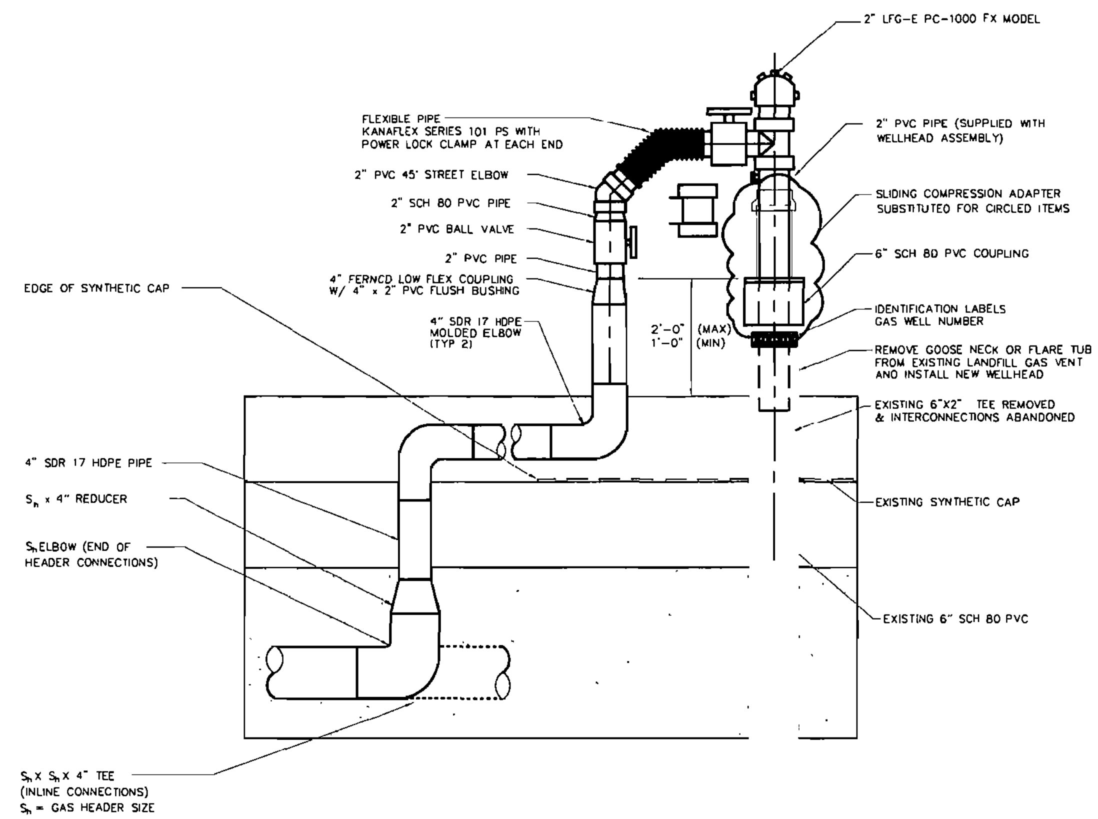
WELLHEAD ASSEMBLY

DETAIL 7
NTS
C-1, C-2



LANDFILL GAS EXTRACTION WELL DETAIL

DETAIL 9
NTS
C-1, C-2



WELLHEAD ASSEMBLY FOR CONNECTION TO EXISTING VENTS

DETAIL 8
NTS
C-1

REV. NO.	DATE	DRWN	CHKD	REMARKS
B	9/22/98	SAT	JC	REVISED DETAIL 7 - ADDED 4" FLEX COUPLING
A	4/10/98	SAT	JC	REVISED WELL SCHEDULE

DESIGNED BY: J. CURRO
DRAWN BY: W. SCULLY
SHEET CHK'D BY: J. CURRO
CROSS CHK'D BY: D. DUFFY
APPROVED BY:
DATE: DECEMBER 1997

CDM Camp Dresser & McKee Inc.

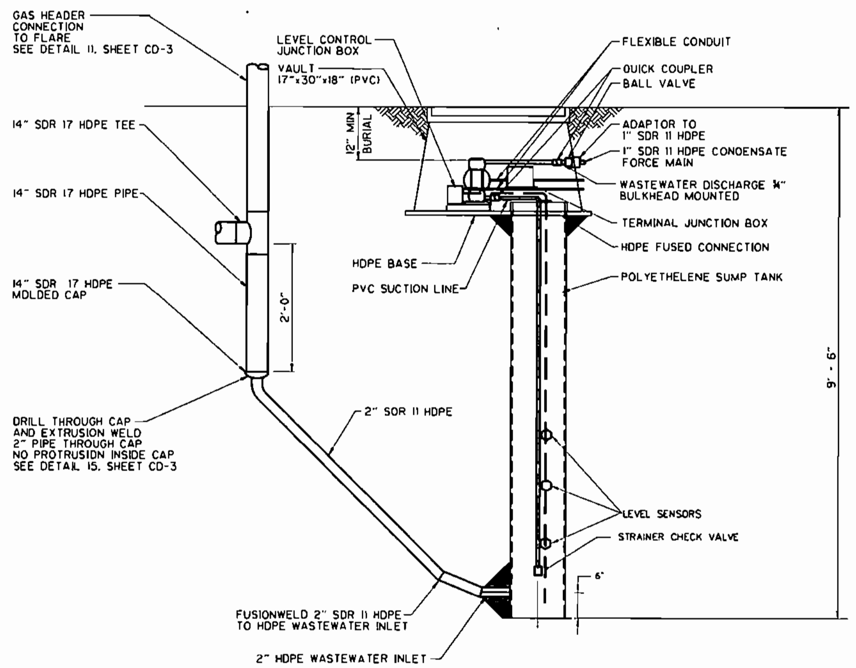
ST. LUCIE COUNTY, FLORIDA
DEPARTMENT OF SOLID WASTE MANAGEMENT

GLADES ROAD SANITARY LANDFILL

MISCELLANEOUS DETAILS

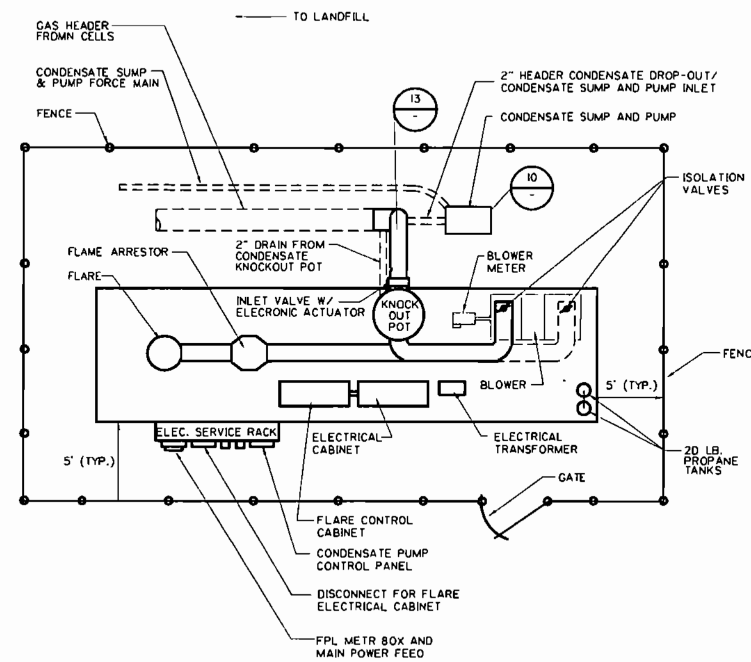
PROJECT NO. 6277-21840
FILE NAME: DETL0002

SHEET NO.
CD-2



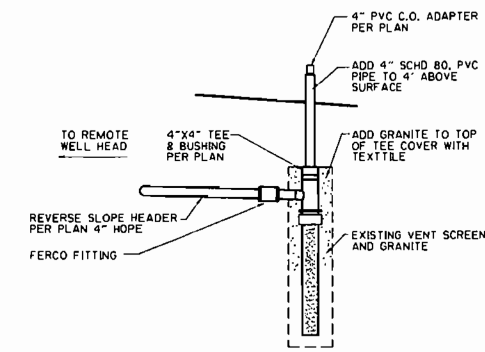
CONDENSATE SUMP AND PUMP

DETAIL 10 / C-1
NTS



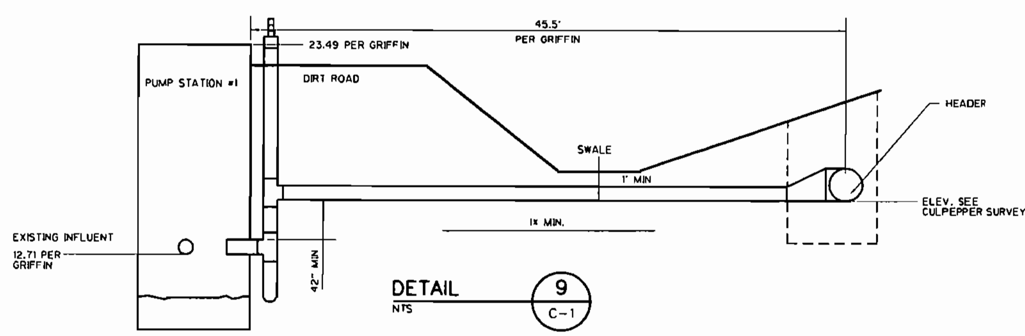
FLARE SYSTEM SCHEMATIC

DETAIL 11 / C-2
NTS

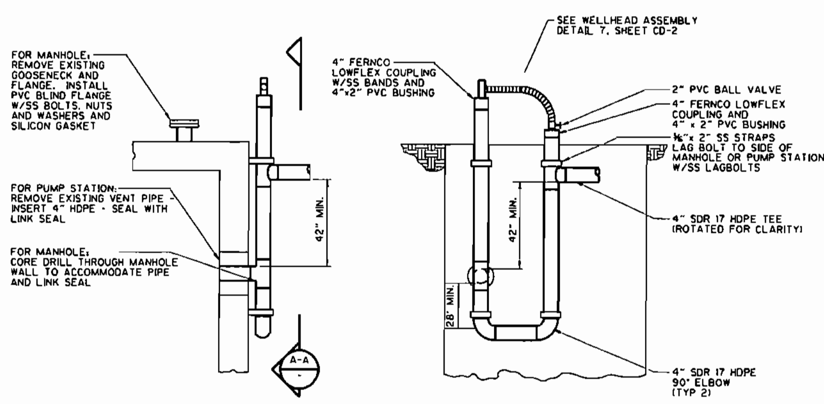


V06 AND V07 HEADER CONNECTION

DETAIL 14 / C-1
NTS

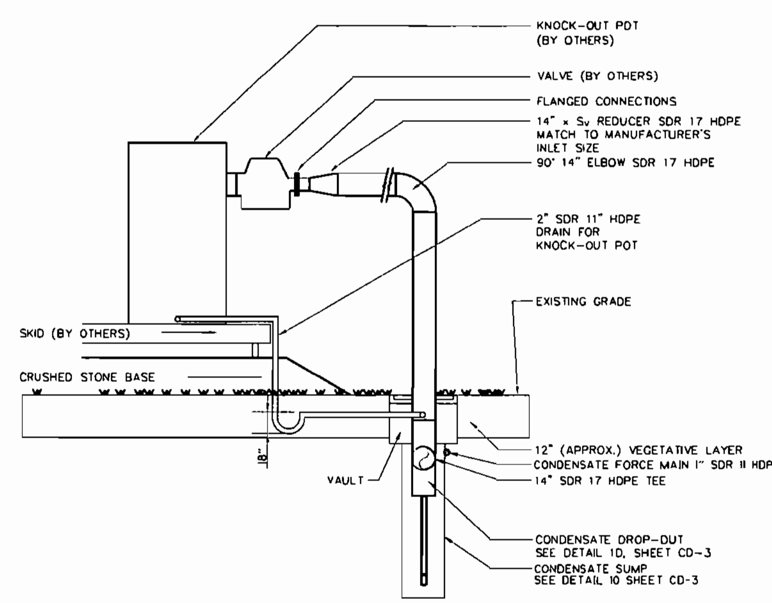


DETAIL 9 / C-1
NTS



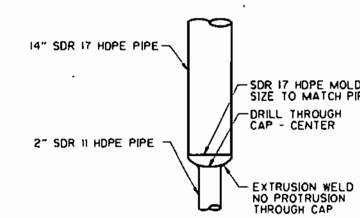
CONNECTION TO EXISTING PUMP STATIONS AND MANHOLES

DETAIL 12 / C-2
NTS



TYPICAL HEADER CONNECTION TO FLARE UNIT

DETAIL 13 / -
NTS



2-INCH TRANSITION

DETAIL 15 / -
NTS

REV. NO.	DATE	DRWN	CHKD	REMARKS
B	9/17/98	SAT	JPC	REVISED DETAIL 14 - ADDED V07
A	4/10/98	SAT	JC	REVISED MANHOLE CONNECTION/ADDED DETAILS FOR CONDENSATE SUMP

DESIGNED BY: J. CURRO
DRAWN BY: W. SCULLY
SHEET CHK'D BY: J. CURRO
CROSS CHK'D BY: D. DUFFY
APPROVED BY:
DATE: DECEMBER 1997

CDM Camp Dresser & McKee Inc.

ST. LUCIE COUNTY, FLORIDA
DEPARTMENT OF SOLID WASTE MANAGEMENT

GLADES ROAD SANITARY LANDFILL

MISCELLANEOUS DETAILS

PROJECT NO. 6277-21840
FILE NAME: DETL0003

SHEET NO.
CD-3

LEGEND:

NEW HEADER CONNECTION

NEW HORIZONTAL GAS COLLECTOR

N

1" = 60'

30 0 60

MATCHLINE - SHEET C-1

EXIST. 4" HDPE PIPE

CONNECT TO EXIST. 4" HDPE PIPE

14"X4" TEE

6" BLIND FLANGE

6" BLIND FLANGE

4" SDR 17 HDPE

14" TEE

14" SDR 17 HDPE

14" TEE

4" SDR 17 HDPE 3% (TYP)

14" TEE

14" TEE

6" BLIND FLANGE

6" BLIND FLANGE

N 1,110,500

N 1,110,000

MAPPING LIMIT

N = 1110317.86
E = 852908.02

N = 1110220.10
E = 852904.54

N = 1110117.29
E = 852904.13

N = 1110019.14
E = 852908.96

N = 1110338.26
E = 853709.60

N = 1110242.45
E = 853758.01

N = 1110152.27
E = 853798.42

N = 1110051.43
E = 853846.69

A CD-3 (TYP)

B CD-3 (TYP)

10' SOLID HDPE (TYP)

191'	180'	180'	180'	60' SOLID
203'	200'	190'	190'	60' SOLID
214'	210'	200'	200'	60' SOLID
222'	225'	210'	210'	60' SOLID
D	C	B	A	

TYPE D 6" PERFORATED HDPE

TYPE C 6" PERFORATED HDPE

TYPE B 6" PERFORATED HDPE

TYPE A 6" PERFORATED HDPE

WALL

RW

OBS

OPEN STORAGE

OBSTRUCTED

E 853,000

E 853,500

E 854,000

MAPPING LIMIT

RECORD DRAWINGS

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE ENGINEER HAS NOT VERIFIED THE ACCURACY OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

CAMP DRESSER & McKEE INC. Date JUNE 2008

RECORD DRAWING

JOSEPH P. CURRO
P.E. NO. 58416

REV. NO.	DATE	DRWN	CHKD	REMARKS
	05/08	JAS	JAH	RECORD DRAWING

DESIGNED BY: J. CURRO
DRAWN BY: A. NUNES
SHEET CHK'D BY: W. SPRIGGS
CROSS CHK'D BY: D. SHAH
APPROVED BY: J. CURRO
DATE: NOV 2006

CDM Camp Dresser & McKee Inc.
consulting engineering construction operations
1701 State Road A-1-A, Suite 301 Vero Beach Florida 32963 Tel: 772-231-4201 Fax: COA No. EB 0000020

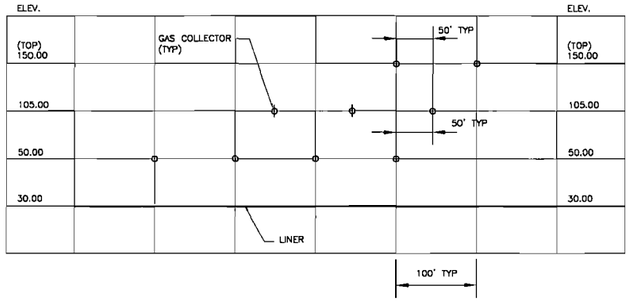
ST. LUCIE COUNTY
BALING AND RECYCLING FACILITY
LANDFILL GAS COLLECTION SYSTEM EXPANSION

PHASE - IIIA GAS COLLECTION SYSTEM
PLAN AT EL. 50'

PROJECT NO. 6277-53082
FILE NAME: C002STPL.dwg

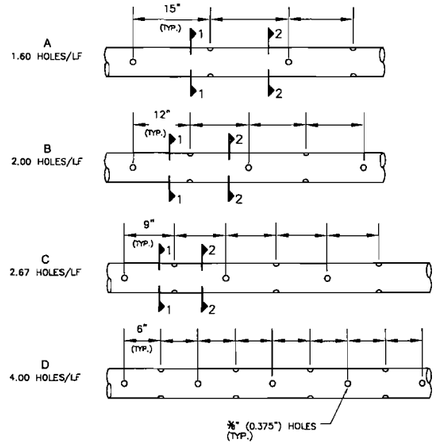
SHEET NO.
C-2

Xref's: [TITLETXT, PHASE_IIIA TOPO, CVL0000,] Images: []
Filename: P:\6277\53082\RECORD\02CIVIL\C002STPL.dwg Last saved by: SANCHEINOJA Time: 6/9/2008 9:21:11 AM



HORIZONTAL GAS COLLECTORS SECTION LOOKING WEST

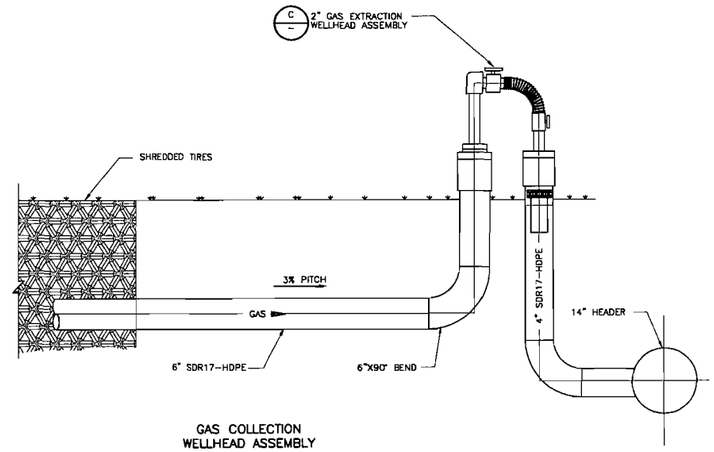
NTS



PIPE SECTIONS

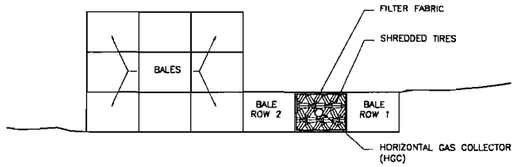
PHASE IIIA
PIPE PERFORATION

DETAIL A
NTS



GAS COLLECTION
WELLHEAD ASSEMBLY

DETAIL B
NTS

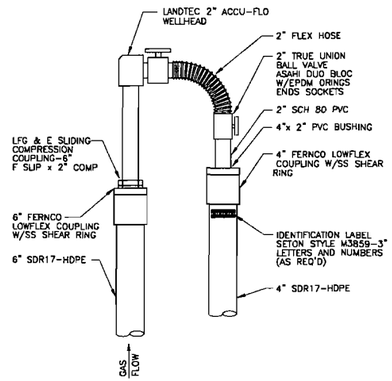


HGC INSTALLATION PROCEDURE:

1. PLACE ROW 1 OF BALES ACROSS PHASE IIIA (EASE/WEST).
2. PLACE ALL PIPING ON TOP OF ROW 1.
3. PLACE ROW 2 OF BALES ACROSS PHASE IIIA (EAST/WEST), LEAVING A ONE BALE WIDE "SLOT" FOR INSTALLATION OF THE HGC'S.
4. PLACE FILTER FABRIC AND SHREDDED TIRE BASE IN "SLOT".
5. FUSION WELD ENTIRE LENGTH OF HGC ON TOP OF ROW 1.
6. DROP LENGTH OF HGC ON TOP OF SHREDDED TIRE BASE AND SDJUST GRADE AND ALIGNMENT.
7. FILL "SLOT" WITH ADDITIONAL SHREDDED TIRES AND WRAP FILTER FABRIC OVER TOP.
8. CONTINUE PLACING BALES IN THE AREA.

HORIZONTAL GAS COLLECTOR INSTALLATION PROCEDURE

NTS



WELLHEAD CONNECTION TO
HORIZONTAL GAS COLLECTOR

DETAIL C
NTS

RECORD DRAWINGS

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE ENGINEER HAS NOT VERIFIED THE ACCURACY OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

CAMP DRESSER & McKEE INC Date JUNE 2008

RECORD DRAWING

JOSEPH P. CURRO
P.E. NO. 58416

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: J. CURRO
DRAWN BY: A. NUNES
SHEET CHK'D BY: W. SPRIGGS
CROSS CHK'D BY: D. SHAH
APPROVED BY: J. CURRO
DATE: NOV 2006

CDM Camp Dresser & McKee Inc.
consulting engineering construction operations
1701 State Road A-1-A, Suite 301
Vero Beach Florida 32963
Tel: 772-231-4301
Fla. COA No. EB 0000020

ST. LUCIE COUNTY
BALING AND RECYCLING FACILITY
LANDFILL GAS COLLECTION
SYSTEM EXPANSION

HORIZONTAL GAS COLLECTION SYSTEM - DETAILS

PROJECT NO. 6277-53082
FILE NAME: CD03DETL.dwg

SHEET NO.
CD-3

Xref's: [TITLETXT,] Images: []
Filename: P:\6277\53082\RECORD\02Civil\Details\CD03DETL.dwg Last saved by: SANGWINOJA Time: 6/6/2008 1:57:51 PM

LEGEND:

K-1 — NEW HORIZONTAL GAS COLLECTOR

NEW HEADER CONNECTION

W401 — NEW 12" DIA. VERTICAL GAS WELLS

W311 — EXIST. VERTICAL GAS WELLS

N

1" = 60'

30 0 60

MATCHLINE - SHEET C-1

EXIST. 4" HDPE PIPE

CONNECT TO EXIST. 4" HDPE PIPE 4" TEE

4" SDR 17 HDPE

14"X4" WYE

14" SDR 17 HDPE

3% MIN

4" SDR 17 HDPE 3% (TYP)

N1110409.02
E853076.72

10' SOLID

(TYP) A CD-3

K-1

102' C | 102' B | 102' A | 60' SOLID

N1110426.02
E853452.72

N1110316.02
E853083.72

10' SOLID

K-2

110' C | 110' B | 110' A | 60' SOLID

N1110337.02
E853483.72

N1110202.02
E853085.72

10' SOLID

K-3

127' C | 126' B | 126' A | 60' SOLID

N1110235.02
E853533.72

(TYP) B CD-3

CONTOUR EL = 105'

105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25

N 1110500 N 1110500

N 1110000 N 1110000

OBS

#6
E 854062.78
N 1109952.33
EL 20.74

RECORD DRAWINGS

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CAMP DRESSER & McKEE INC. Date JUNE 2009

RECORD DRAWING

JOSEPH P. CURRO
P.E. NO. 58416

REV. NO.	DATE	DRWN	CHKD	REMARKS
	05/08	JAS	JAH	RECORD DRAWING

DESIGNED BY: J. CURRO
DRAWN BY: A. NUNES
SHEET CHK'D BY: W. SPRIGGS
CROSS CHK'D BY: D. SHAH
APPROVED BY: J. CURRO
DATE: NOV 2006

CDM Camp Dresser & McKee Inc.
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1701 State Road A-1-A Suite 301
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tel: 772-231-4301
Flo. COA No EB 0000020

ST. LUCIE COUNTY
BALING AND RECYCLING FACILITY

LANDFILL GAS COLLECTION SYSTEM EXPANSION

PHASE - IIIA GAS COLLECTION SYSTEM PLAN AT EL. 105'

PROJECT NO. 6277-53062
FILE NAME: C003STPL.dwg

SHEET NO.
C-3

Xrefs: [TTLTEXT, PHASE_IIIA TOPO, CML0000, 60022-14]
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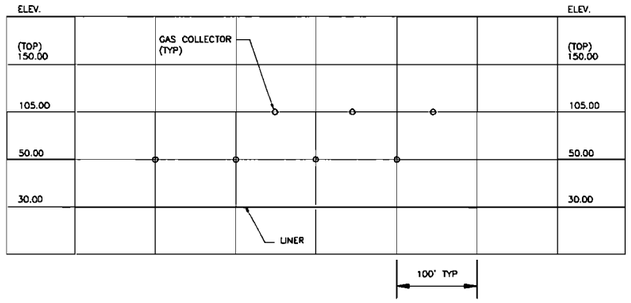
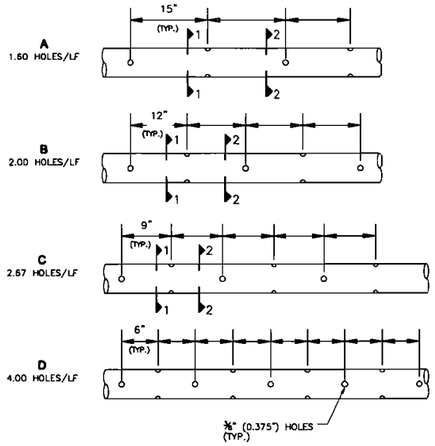


HORIZONTAL GAS COLLECTORS SECTION LOOKING WEST

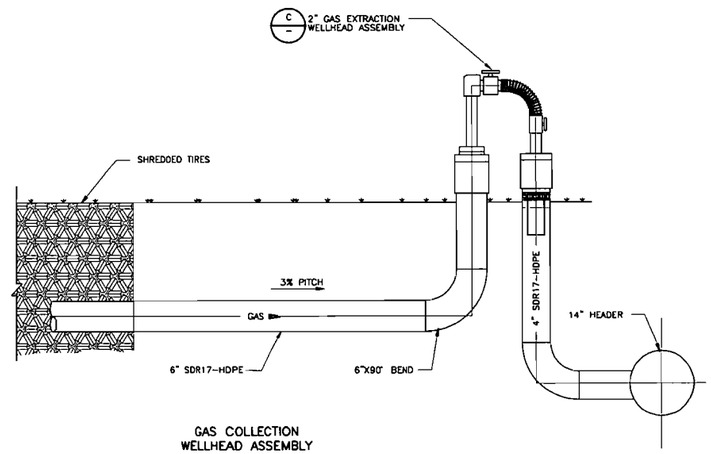
NTS



PIPE SECTIONS

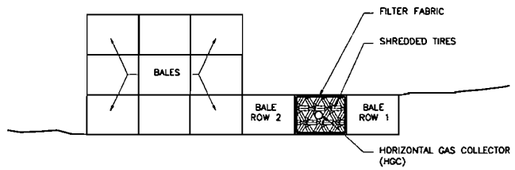
PHASE IIIA
PIPE PERFORATION

DETAIL A
NTS



GAS COLLECTION
WELLHEAD ASSEMBLY

DETAIL B
NTS

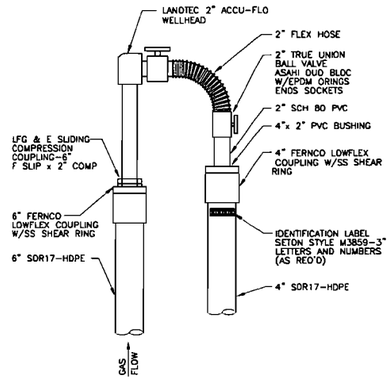


HGC INSTALLATION PROCEDURE:

1. PLACE ROW 1 OF BALES ACROSS PHASE IIIA (EASE/WEST).
2. PLACE ALL PIPING ON TOP OF ROW 1.
3. PLACE ROW 2 OF BALES ACROSS PHASE IIIA (EAST/WEST), LEAVING A ONE BALE WIDE "SLOT" FOR INSTALLATION OF THE HGC'S.
4. PLACE FILTER FABRIC AND SHREDDED TIRE BASE IN "SLOT".
5. FUSION WELD ENTIRE LENGTH OF HGC ON TOP OF ROW 1.
6. DROP LENGTH OF HGC ON TOP OF SHREDDED TIRE BASE AND SDJUST GRADE AND ALIGNMENT.
7. FILL "SLOT" WITH ADDITIONAL SHREDDED TIRES AND WRAP FILTER FABRIC OVER TOP.
8. CONTINUE PLACING BALES IN THE AREA.

HORIZONTAL GAS COLLECTOR INSTALLATION PROCEDURE

NTS



WELLHEAD CONNECTION TO
HORIZONTAL GAS COLLECTOR

DETAIL C
NTS

RECORD DRAWINGS

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CAMP DRESSER & MCKEE INC. Date JUNE 2009

RECORD DRAWING

JOSEPH P. CURRO
P.E. NO. 58416

REV. NO.	DATE	DRWN	CHKD	REMARKS
	05/08	JAS	JAH	RECORD DRAWING

DESIGNED BY: J. CURRO
DRAWN BY: A. NUNES
SHEET CHK'D BY: W. SPRIGGS
CROSS CHK'D BY: D. SHAH
APPROVED BY: J. CURRO
DATE: NOV 2006

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ST. LUCIE COUNTY
BALING AND RECYCLING FACILITY
LANDFILL GAS COLLECTION
SYSTEM EXPANSION

HORIZONTAL GAS COLLECTION SYSTEM - DETAILS

PROJECT NO. 6277-SJ062
FILE NAME: CD03DETL.dwg

SHEET NO.
CD-3

LANDFILL GAS (LFG) SYMBOLS

SYMBOL	FEATURE
○	EXISTING VERTICAL LFG WELLHEAD
□	EXISTING HORIZONTAL LFG WELLHEAD
^	EXISTING LFG RISERS
▽	EXISTING LFG VALVE
	EXISTING CLUSTER OF LFG RISERS
	EXISTING LFG HDPE PIPE
	PROPOSED LFG HDPE PIPE
○	PROPOSED VERTICAL LFG WELL
□	PROPOSED HORIZONTAL LFG WELL
▨	PROPOSED REPLACEMENT OF EXISTING VERTICAL LFG WELL
⊗	EXISTING VERTICAL WELL TO BE ABANDONED
●	PROPOSED ACCESS RISER
⋈	PROPOSED VALVE
+	PROPOSED BLIND FLANGE OR CAP IN EXISTING HDPE PIPE
⊥	PROPOSED TIE-IN TO EXISTING HDPE PIPE
- - -	PROPOSED HDRIZONTAL LFG COLLECTION PIPE

1" = 60'
30 0 60

N

RECORD DRAWINGS

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CDM Smith REVIEWED BY: KEVIN VANN, P.E. Date JANUARY 2012

NOTE: THESE STATEMENTS ARE REQUIRED BY RULE 61G15-30, F.A.C. FOR RECORD DOCUMENTS THAT INCLUDE INFORMATION PROVIDED BY OTHERS.

MATCH LINE - SEE SHEET C-6

DATE:
JOSEPH P. CURRO
P.E. NO. 58416

REV. NO.	DATE	DRWN	CHKD	REMARKS
	12/11	DPW	JAH	RECORD DRAWINGS
	2/11	BSC	JAH	CONFORMED

DESIGNED BY: C. JANSSEN
DRAWN BY: I. OLIVER
SHEET CHK'D BY: J. HOFFMAN
CROSS CHK'D BY: K. VANN
APPROVED BY: J. CURRO
DATE: JANUARY 2012

CDM Smith
1701 Highway A-1-A, Suite 301
Vero Beach, FL 32963
Tel: (772) 231-4301
FL COA No. EB-0000020

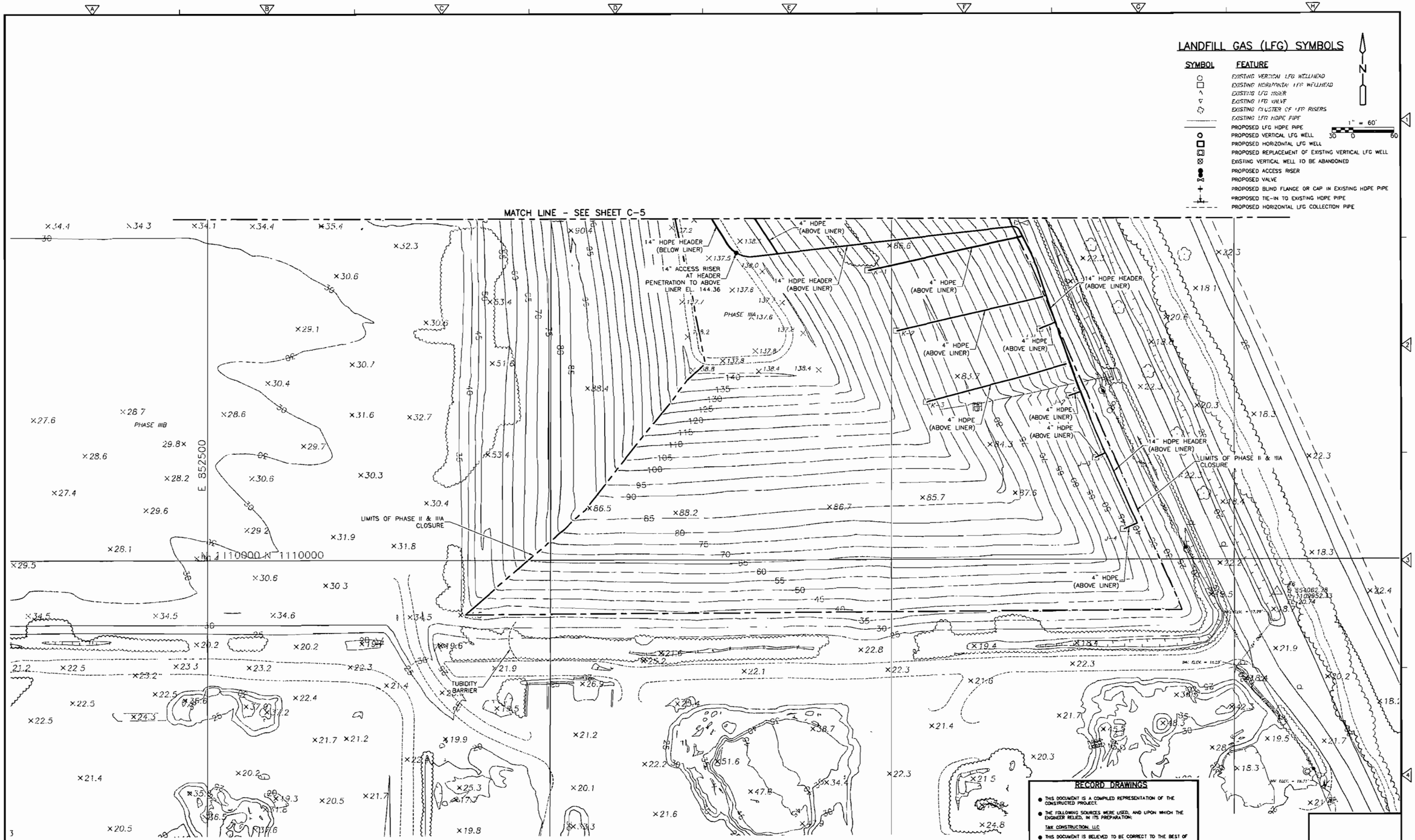
ST. LUCIE COUNTY
BALING AND RECYCLING FACILITY
CLASS I LANDFILL
PHASES II & IIIA CLOSURE

LANDFILL GAS PLAN

PROJECT NO. 6277-73803
FILE NAME: C005STPL

SHEET NO.
C-5

RECORD DRAWINGS



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DATE:
JOSEPH P. CURRO
P.E. NO. 58416

REV. NO.	DATE	DRWN	CHKD	REMARKS
	12/11	DPM	JAH	RECORD DRAWINGS
	2/11	BSC	JAH	CONFORMED

DESIGNED BY: G. JANSSEN
DRAWN BY: I. OLIVER
SHEET CHK'D BY: J. HOFFMAN
CROSS CHK'D BY: J. LADNER
APPROVED BY: K. VANN
DATE: JANUARY 2012

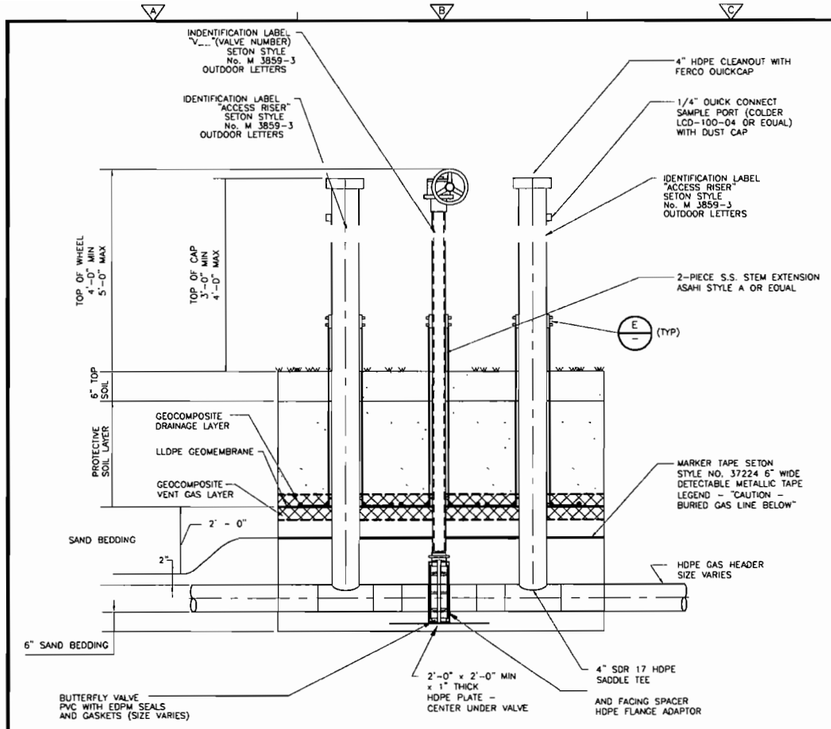
CDM Smith
1701 Highway A-1-A, Suite 301
Vero Beach, FL 32963
Tel: (772) 231-4301
FL COA No. EB-0000020

ST. LUCIE COUNTY
BALING AND RECYCLING FACILITY
CLASS I LANDFILL
PHASES II & IIIA CLOSURE

LANDFILL GAS PLAN

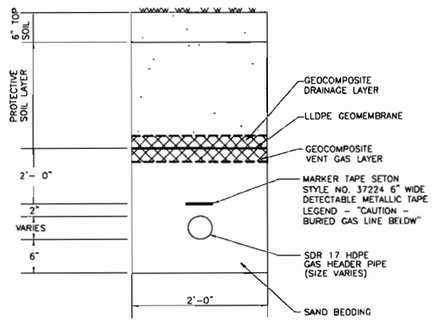
PROJECT NO. 6277-73803
FILE NAME: C006STPL
SHEET NO.
C-6

RECORD DRAWINGS



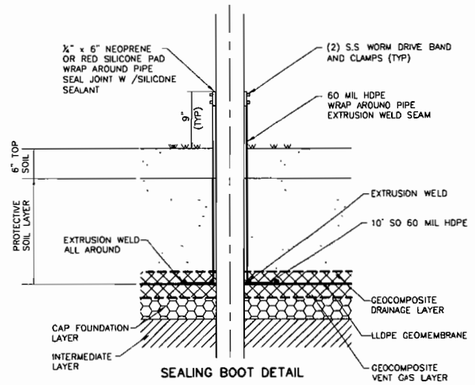
ACCESS RISERS AND GAS HEADER ZONE VALVE

DETAIL A NTS



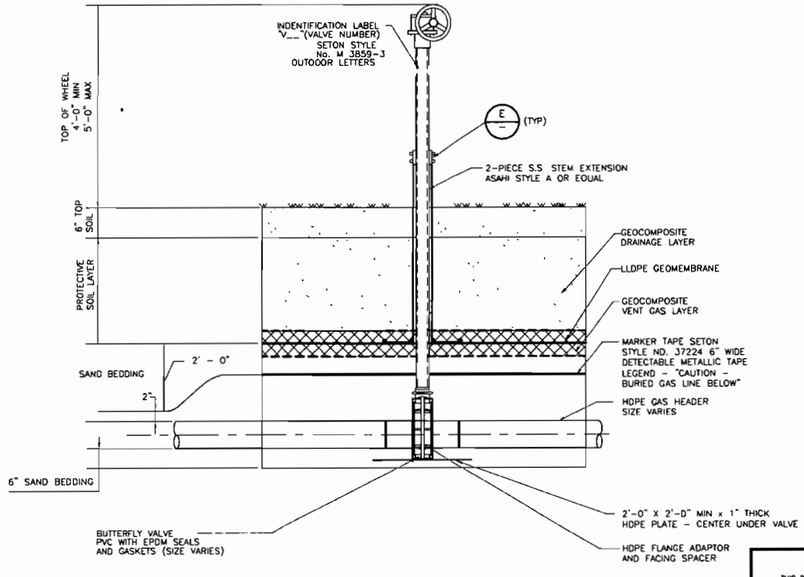
TYPICAL HDPE GAS HEADER TRENCH SECTION

DETAIL C NTS



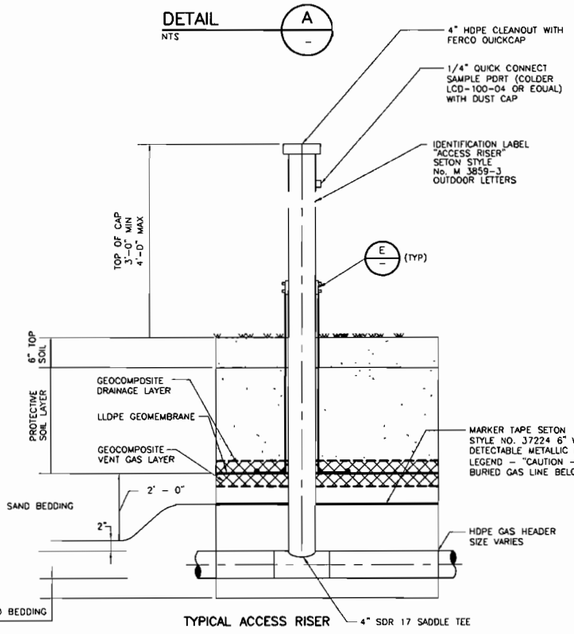
SEALING BOOT DETAIL

DETAIL E NTS



TYPICAL BURIED GAS HEADER VALVE

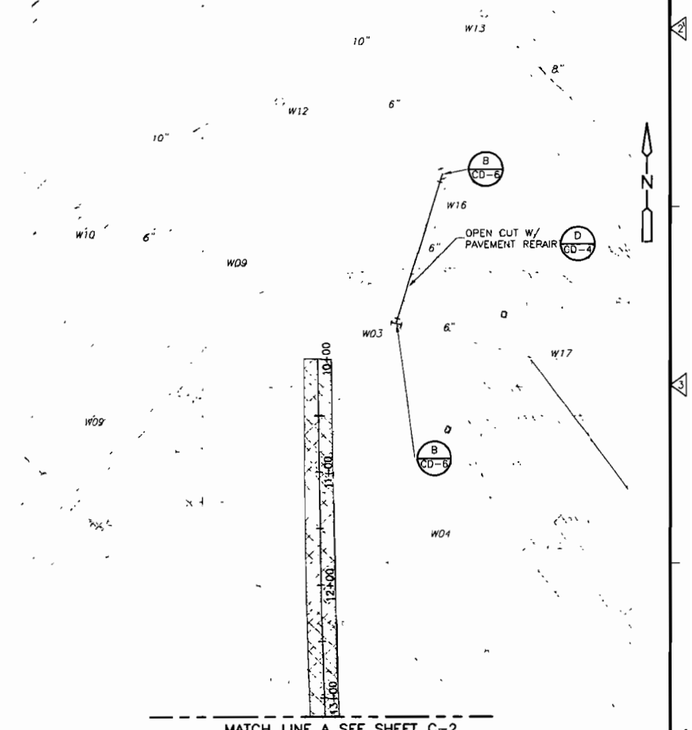
DETAIL D NTS



TYPICAL ACCESS RISER

DETAIL B NTS

NOTE:
1. COMMON FILL LAYER SHALL HAVE A MAXIMUM THICKNESS OF 1" AND SHALL BE USED FOR SAND BEDDING LAYER.



MATCH LINE A SEE SHEET C-2

PARTIAL PLAN

DETAIL F 1"=60' C-1

RECORD DRAWINGS

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CDM Smith REVIEWED BY: KEVIN VANN, P.E. Date JANUARY 2012

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DATE:
JOSEPH P. CURRO
P.E NO. 58416

REV NO.	DATE	DRWN	CHKD	REMARKS
	12/11	DPW	JAH	RECORD DRAWINGS
	2/11	BSC	JAH	CONFORMED

DESIGNED BY: G. JANSSEN
DRAWN BY: I. OLIVER
SHEET CHK'D BY: J. HOFFMAN
CROSS CHK'D BY: K. VANN
APPROVED BY: J. CURRO
DATE: JANUARY 2012

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Vero Beach FL 32963
Tel: (772) 231-4301
FL COA No. EB-0000020

ST. LUCIE COUNTY
BALING AND RECYCLING FACILITY
CLASS I LANDFILL
PHASES II & IIIA CLOSURE

GAS SYSTEM DETAILS

PROJECT NO 6277-73803
FILE NAME: CD05GSDT

SHEET NO.
CD-5

RECORD DRAWINGS

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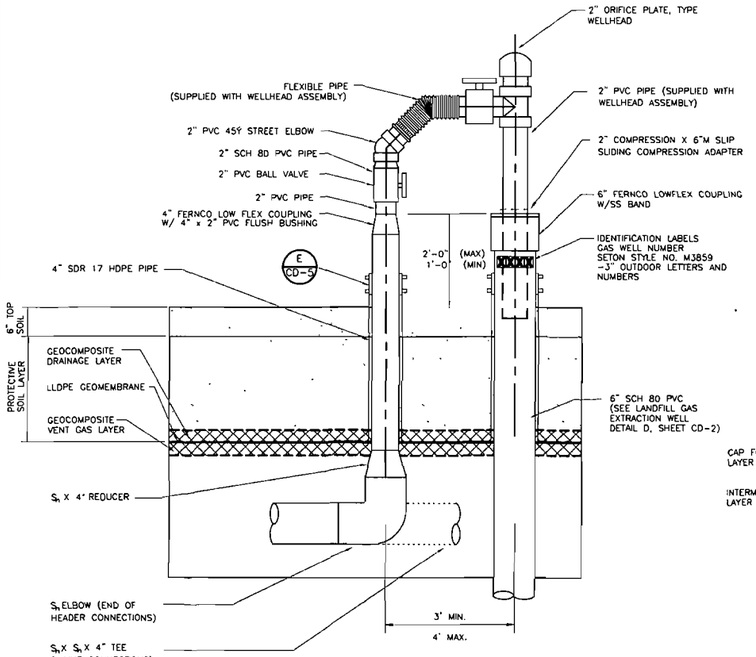
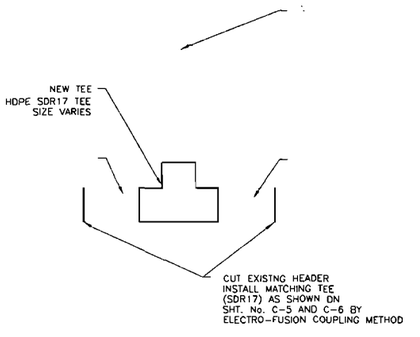


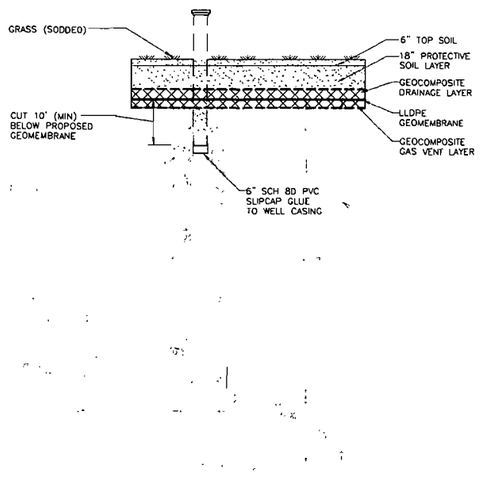
WELLHEAD ASSEMBLY

DETAIL A — NTS



NEW TEE INSTALLATION IN EXISTING HEADER PLAN VIEW

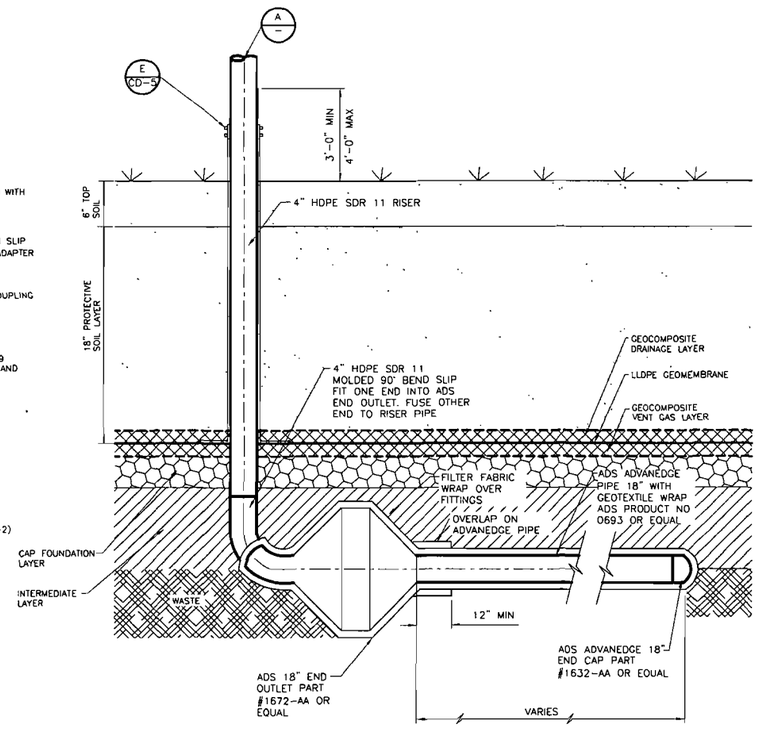
DETAIL B — NTS



NOTE: BACKFILL WITH COMMON FILL

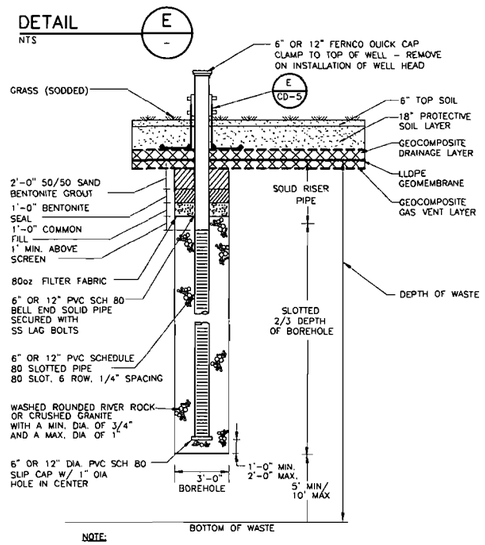
LANDFILL GAS EXTRACTION WELL ABANDONMENT DETAIL

DETAIL C — NTS



ADVANEDGE PIPE TO RISER DETAIL

DETAIL E — NTS



NOTE:

1. WELLS W322R, W323R, AND W343R SHALL BE 12" WELLS. REMAINING WELLS WILL BE INSTALLED AS 6" WELLS

LANDFILL GAS EXTRACTION WELL DETAIL

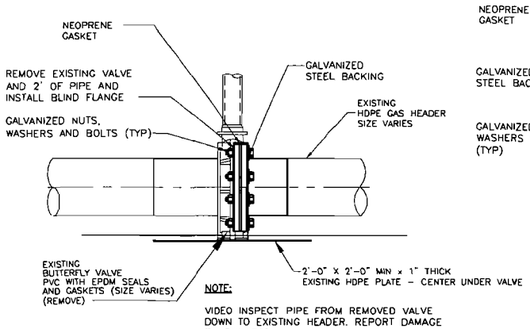
DETAIL D — NTS

St Lucie County Baling And Recycling Facility

Proposed Vertical LFG Well Depth Schedule

Gas Well ID	Current Waste Elevation (ft, NGVD)	Approx. Bottom Liner Elevotion (ft, NGVD)	Well Depth (ft)	Screen Length (ft)
W-#				
W-29R	125.0	32.0	~~88.0~~ 83	~~58.7~~ 60
W-30R	~~130.0~~ 125.00	30.0	~~95.0~~ 85	~~63.3~~ 57
W-301R	130.0	25.0	~~105.0~~ 95	~~70.0~~ 63
W-311R	125.0	25.0	~~95.0~~ 90	~~63.3~~ 60
W-312R	~~137.6~~ 135.48	25.0	~~107.6~~ 100	~~71.7~~ 71
W-321R	~~122.39~~ 136.89	25.0	~~92.3~~ 97	~~61.6~~ 70
W-322R	~~144.2~~ 139.79	25.0	~~119.2~~ 112	~~70.6~~ 71
W-323R	~~141.7~~ 138.60	25.0	~~116.2~~ 76	~~77.8~~ 50
W-331R	~~130.0~~ 127.86	25.0	~~105.0~~ 97	~~70.0~~ 60
W-332R	~~143~~ 112.18	25.0	~~118.0~~ 112	~~78.7~~ 84
W-333R	~~141.0~~ 140.00	30.0	~~111.0~~ 95	~~74.0~~ 63
W-341R	~~128.35~~ 127.52	25.0	~~98.3~~ 97	~~65.6~~ 60
W-342R	~~139.0~~ 139.79	25.0	~~114.0~~ 105	~~76.0~~ 76
W-343R	~~145.0~~ 137.00	32.0	~~113.0~~ 95	~~75.3~~ 63
W-313R	~~138.0~~ 136.89	25.0	~~113.0~~ 102	~~75.3~~ 80

1. CURRENT WASTE ELEVATIONS WERE OBTAINED FROM THE TOPOGRAPHIC SURVEYS CONDUCTED DURING NOVEMBER 2009, MAY 2010, AND OCTOBER 2010. THESE ELEVATIONS VARY AND ARE CONSIDERED APPROXIMATE.
2. BOTTOM LINER ELEVATIONS WERE OBTAINED FROM THE RECORD DRAWINGS FOR CELL IIC, PHASE II, CELL IIIA.
3. CONTRACTOR TO VERIFY CURRENT WASTE ELEVATION.

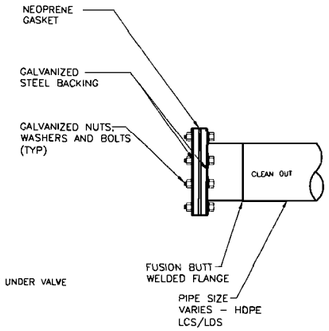


NOTE:

VIDEO INSPECT PIPE FROM REMOVED VALVE DOWN TO EXISTING HEADER. REPORT DAMAGE TO ENGINEER.

TYPICAL BLIND FLANGE TO REPLACE EXISTING VALVE

DETAIL F — NTS



CUT AND ABANDON HEADER BLIND FLANGE DETAIL

DETAIL G — NTS

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CDM Smith REVIEWED BY: KEVIN VANN, P.E. Date JANUARY 2012

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REV NO.	DATE	DRWN	CHKD	REMARKS
	12/11	DPW	JAH	RECORD DRAWINGS
	2/11	BSC	JAH	CONFORMED

DESIGNED BY: G. JANSSEN
DRAWN BY: I. OLIVER
SHEET CHK'D BY: J. HOFFMAN
CROSS CHK'D BY: K. VANN
APPROVED BY: J. CURRO
DATE: JANUARY 2012

CDM Smith
1701 Highway A-1-A, Suite 301
Vero Beach, FL 32963
Tel: (772) 231-4301
FL COA No. EB-0000020

ST. LUCIE COUNTY
BALING AND RECYCLING FACILITY
CLASS I LANDFILL
PHASES II & IIIA CLOSURE

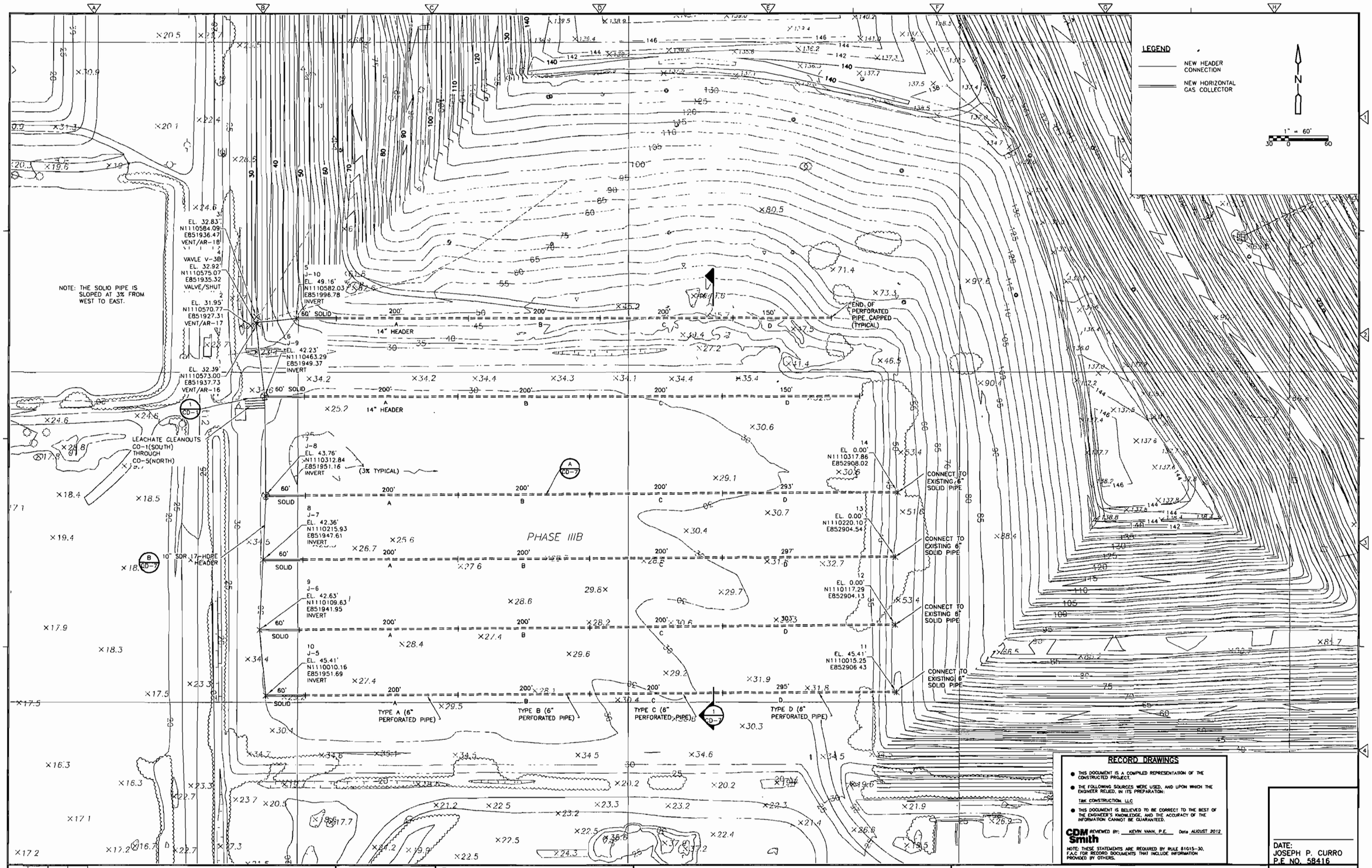
GAS SYSTEM DETAILS

DATE:
JOSEPH P. CURRO
P.E NO. 58416

PROJECT NO 6277-73803
FILE NAME: CD06GSDT

SHEET NO.
CD-6

RECORD DRAWINGS



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CDM Smith REVIEWED BY: KEVIN VANN, P.E. Date AUGUST 2012

NOTE: THESE STATEMENTS ARE REQUIRED BY RULE 61G15-30, F.A.C. FOR RECORD DOCUMENTS THAT INCLUDE INFORMATION PROVIDED BY OTHERS.

REV. NO.	DATE	DRWN	CHKD	REMARKS
	2/11	BSC	JAH	CONFORMED

DESIGNED BY: R. KADAMABALA
DRAWN BY: I. OLIVER
SHEET CHK'D BY: G. JANSSEN
CROSS CHK'D BY: J.LADNER
APPROVED BY: J. CURRO
DATE: DECEMBER 2010

CDM
1701 Highway A-1-A, Suite 301
Vero Beach, FL 32963
Tel: (772) 231-4301
FL COA No. EB-0000020
consulting • engineering • construction • operations

ST. LUCIE COUNTY
BALING AND RECYCLING FACILITY
CLASS I LANDFILL
PHASES II & IIIA CLOSURE

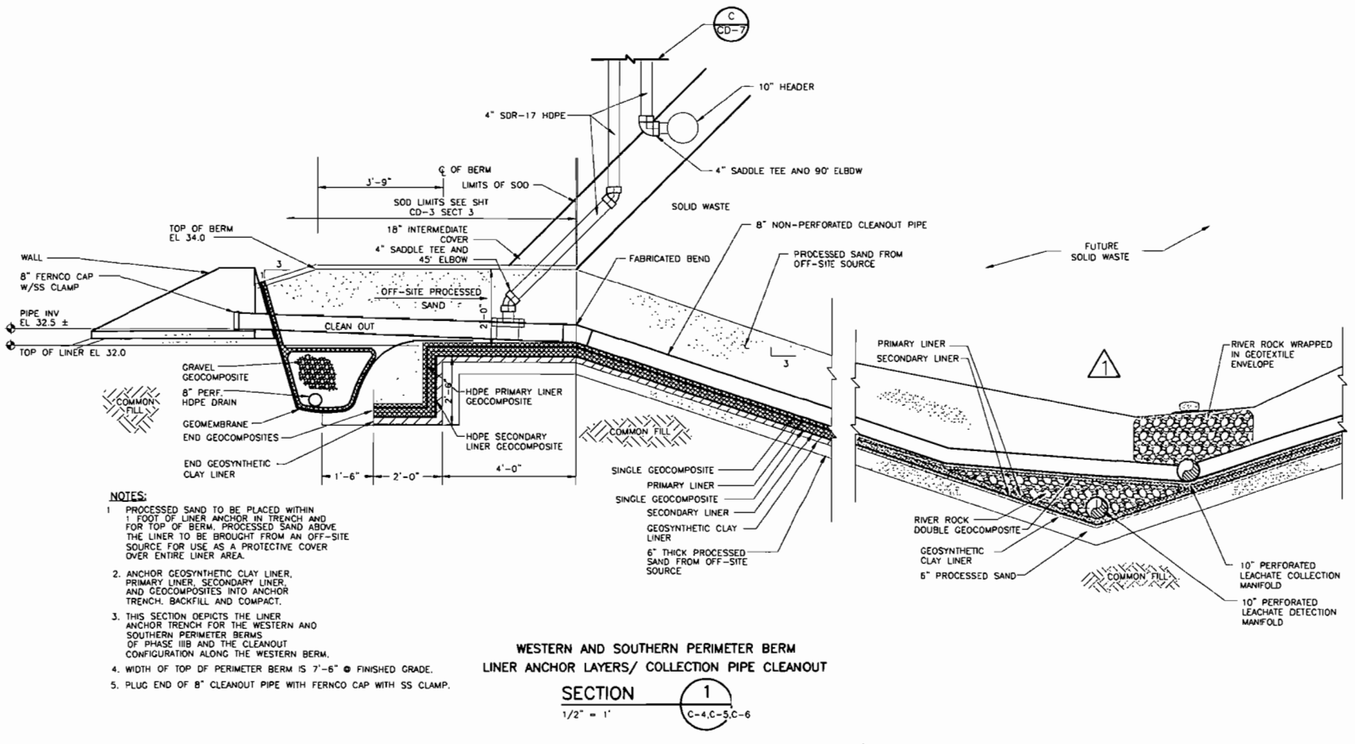
LANDFILL GAS EXPANSION
AT 50' NGVD

DATE:
JOSEPH P. CURRO
P.E NO. 58416

PROJECT NO. 6277-73B03
FILE NAME: C008SPRC

SHEET NO.
C-8

RECORD DRAWINGS

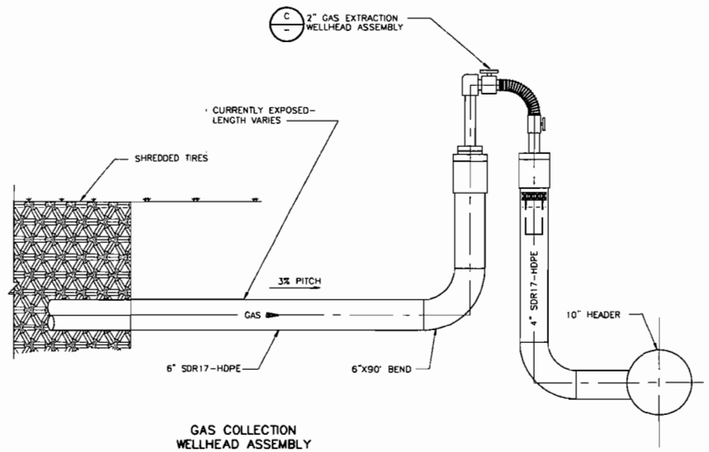


NOTES:

1. PROCESSED SAND TO BE PLACED WITHIN 1 FOOT OF LINER ANCHOR IN TRENCH AND FOR TOP OF BERM. PROCESSED SAND ABOVE THE LINER TO BE BROUGHT FROM AN OFF-SITE SOURCE FOR USE AS A PROTECTIVE COVER OVER ENTIRE LINER AREA.
2. ANCHOR GEOSYNTHETIC CLAY LINER, PRIMARY LINER, SECONDARY LINER, AND GEOCOMPOSITES INTO ANCHOR TRENCH. BACKFILL AND COMPACT.
3. THIS SECTION DEPICTS THE LINER ANCHOR TRENCH FOR THE WESTERN AND SOUTHERN PERIMETER BERMS OF PHASE IIIB AND THE CLEANOUT CONFIGURATION ALONG THE WESTERN BERM.
4. WIDTH OF TOP OF PERIMETER BERM IS 7'-6" @ FINISHED GRADE.
5. PLUG END OF 8" CLEANOUT PIPE WITH FERNCO CAP WITH SS CLAMP.

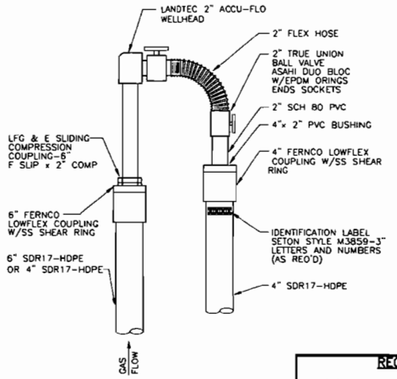
WESTERN AND SOUTHERN PERIMETER BERM
LINER ANCHOR LAYERS/ COLLECTION PIPE CLEANOUT

SECTION 1 (C-4,C-5,C-6)
1/2" = 1'



GAS COLLECTION WELLHEAD ASSEMBLY

DETAIL B (NTS)



WELLHEAD CONNECTION TO HORIZONTAL GAS COLLECTOR

DETAIL C (NTS)

RECORD DRAWINGS

- THIS DOCUMENT IS A COMPILED REPRESENTATION OF THE CONSTRUCTED PROJECT.
- THE FOLLOWING SOURCES WERE USED, AND UPON WHICH THE ENGINEER RELIED, IN ITS PREPARATION:

  T&K CONSTRUCTION, LLC
- THIS DOCUMENT IS BELIEVED TO BE CORRECT TO THE BEST OF THE ENGINEER'S KNOWLEDGE, AND THE ACCURACY OF THE INFORMATION CANNOT BE GUARANTEED.

CDM Smith REVIEWED BY: KEVIN VANN, P.E. Date JULY 2012

NOTE: THESE STATEMENTS ARE REQUIRED BY RULE 61G15-30, F.A.C FOR RECORD DOCUMENTS THAT INCLUDE INFORMATION PROVIDED BY OTHERS.

DATE:
JOSEPH P. CURRO
P.E NO. 58416

REV. NO.	DATE	DRWN	CHKD	REMARKS
	2/11	BSC	JAH	CONFORMED

DESIGNED BY: R. KADAMBALA
DRAWN BY: I. OLIVER
SHEET CHK'D BY: G. JANSSEN
CROSS CHK'D BY: J. LADNER
APPROVED BY: J. CURRO
DATE: DECEMBER 2010

CDM
Camp Dresser & McKee, Inc
1701 Highway A-1-A, Suite 301
Vero Beach, FL 32963
Tel: (772) 231-4301
FL COA No. EB-0000020
consulting · engineering · construction · operations

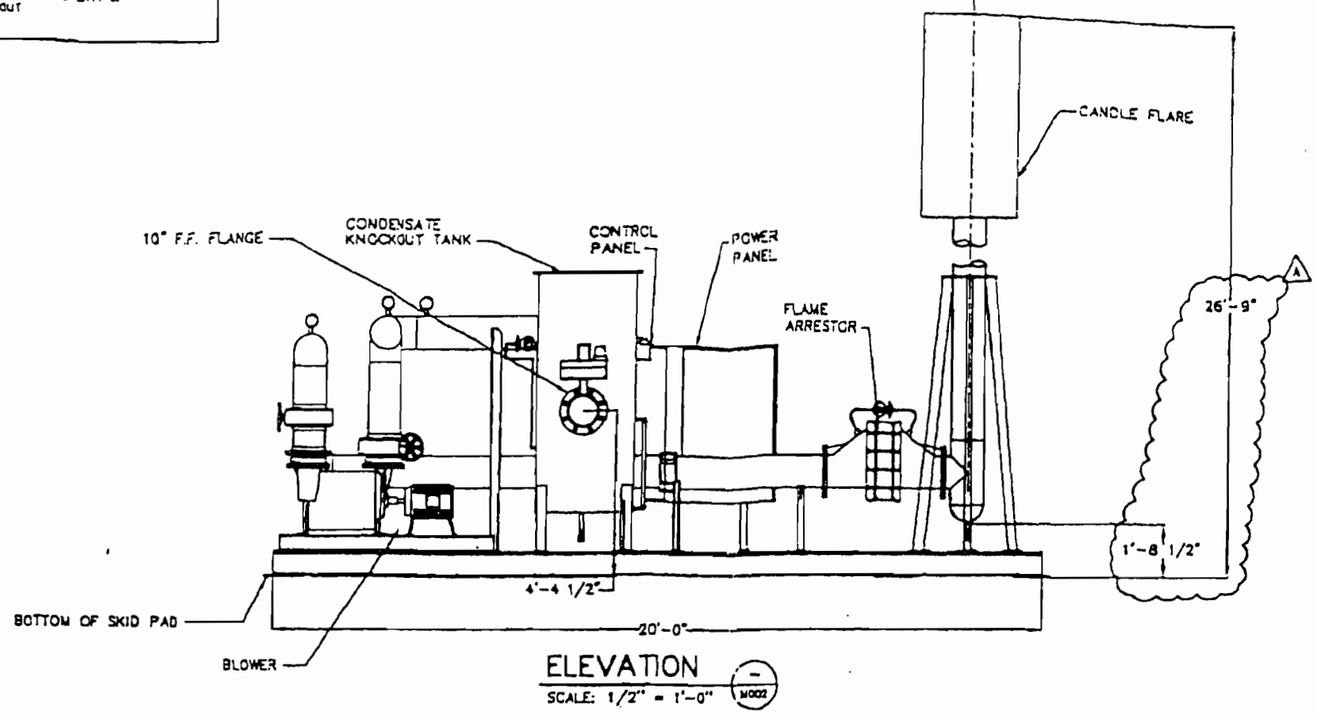
ST. LUCIE COUNTY
BALING AND RECYCLING FACILITY
CLASS I LANDFILL
PHASES II & IIIA CLOSURE

LANDFILL GAS COLLECTION SYSTEM DETAILS

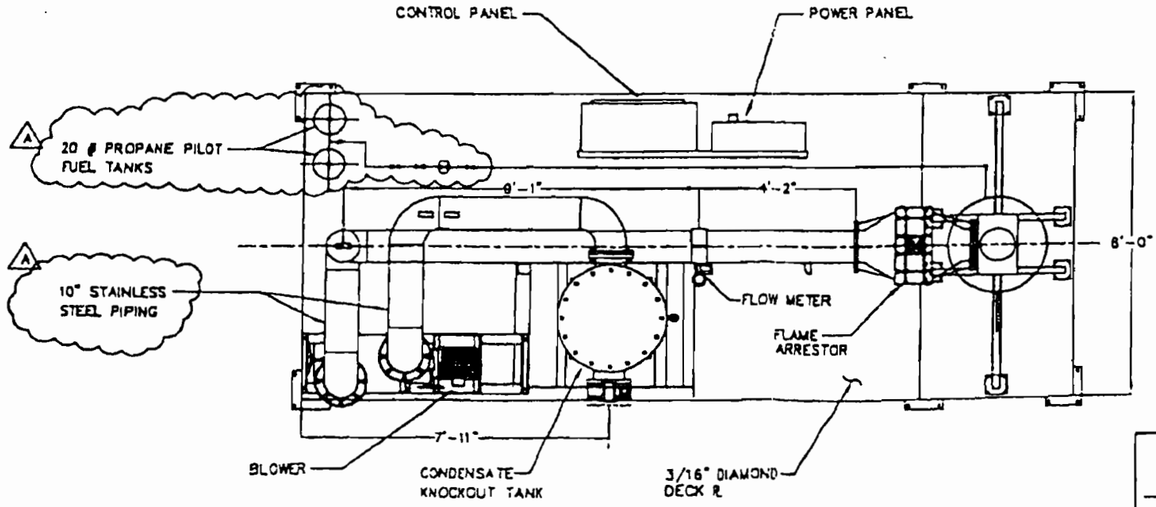
PROJECT NO. 6277-73803
FILE NAME: CD07GDRC
SHEET NO.
CD-7

RECORD DRAWINGS

Figure 4-1



ELEVATION (-) M002
SCALE: 1/2" = 1'-0"



PLAN VIEW (-) M002
SCALE: 1/2" = 1'-0"

REV	DESCRIPTION	DATE	APPROVED
A	REVISED DRAWING	3-11-99	

LFG&E
LANDFILL GAS & ENVIRONMENTAL PRODUCTS INC.
8535 PROSPECT AVE. SANTEE, CA 92071
TEL: (619)596-9061, FAX: (619)596-9068

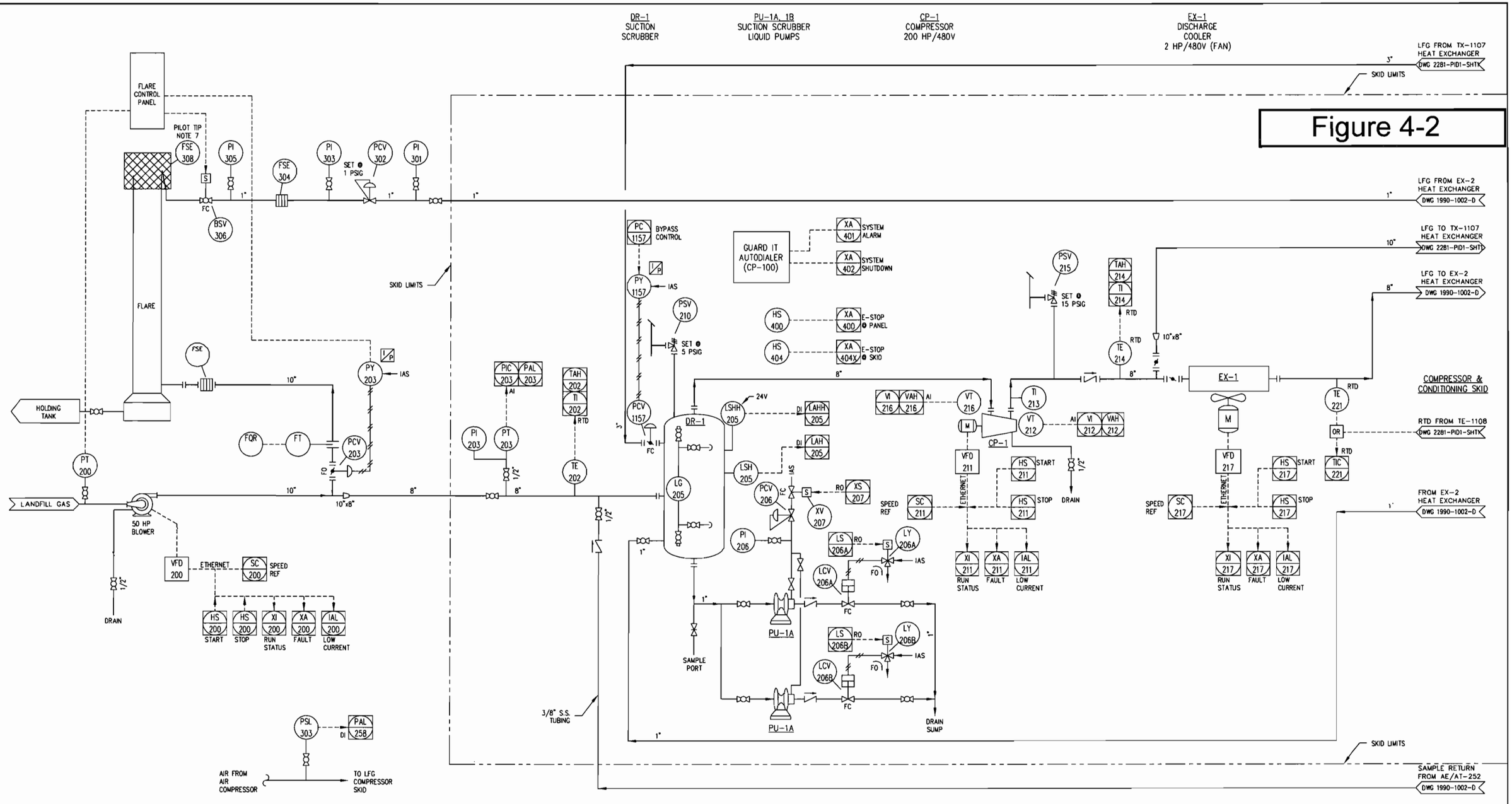
TRITON™ FLARE
CF-2000

SHEET DESCRIPTION:
ELEVATION AND PLAN
2000 SCFM SKID MOUNTED CANDLE FLARE

PROJECT LOCATION:
LANDFILL GAS FLARE SYSTEM
ST. LUCIE COUNTY

APPROVED BY :
DATE :
DRAWN BY : A.C.D
REVISED :
REV. NO. : -
SHEET X OF X
DRAWING NO. :

Figure 4-2



NOTES:

1. FOR DRAWING INDEX AND GENERAL NOTES SEE DWG # 1990-0001-0.
2. TI AND TE INSTRUMENTS REQUIRE 3/4"-316-SS THERMOWELL (TW).
3. PROCESS PIPING AND TUBING SHALL BE 316 SS UNLESS OTHERWISE NOTED.
4.
5. BALL VALVES AND NEEDLE VALVES SHALL BE 1/2" UNLESS OTHERWISE NOTED.
6.
7. PILOT CAPACITY: 15-100 SCFM.

SEE DRAWING 2281-PID1-SHT2 FOR SHIP LOOSE MATERIALS PROVIDED BY LFG SPECIALTIES FOR FIELD INSTALLATION.
DRAWING REVISION 6 UPDATED BY LFG SPECIALTIES TO REFLECT REQUIRED MODIFICATIONS FOR OPERATION.

REF DRAWINGS	REV	DATE	DESCRIPTION	BY	APP
	6	02/13	AS FABRICATED	TRS	GP
	5	09/05	AS-BUILT ISSUE	TTH	CMB
	4	08/05	DELETED CHECK VALVE	AWG	CMB
	3	06/05	GENERAL REVISION	PAC	CMB
	2	06/05	GENERAL REVISION	CJV	JCV
	1	04/05	GENERAL REVISION	PAC	CMB
	0	03/05	ISSUED FOR CONSTRUCTION	CJV	CMB

CLIENT: TROPICANA PRODUCTS, INC.
FT. PIERCE, FLORIDA

JOB NO.	DES	CMB	02/05	CKD	AWG	03/05
1990-C001	DRN	CJV	02/05	APP	CMB	03/05

FILE: 1990-1001-D SCALE: NONE

CPL SYSTEMS, INC.
280 Industrial Parkway
Lafayette, Louisiana 70508

ST. LUCIE COUNTY SOLID WASTE FACILITY
LFG TO ENERGY PROJECT
EX-2 HEAT EXCH LEVEL ALARMS
P & I DIAGRAM, SH 1 OF 2

DWG NO. 1990-1001-D REV 6

EX-2
HEAT EXCHANGER
FIN-TUBE

RC-1
CHILLER
HEAT LOAD: 60 TONS
CHILLED WATER/GLYCOL

PU-2A/B
CHILL WATER/GLYCOL
PUMPS
(2) 2HP/480V

Figure 4-3

GLYCOL OUTLET TO TX-1114 — DWG 2281-PID1-SHT1
GLYCOL RETURN FROM TX-1114 — DWG 2281-PID1-SHT1
LS FROM LSHH-1118 — DWG 2281-PID-SHT1
LFG FROM EX-1 DISCHARGE COOLER — DWG 1990-1001-D
TO DR-1 SUCTION SCRUBBER — DWG 1990-1001-D
SAMPLE PORT
DRAIN SUMP
EXPANSION TANK — SET @ 50 PSIG TR
PSV 226
LG 232
LAHH 228 DI
LAH 228 DI
LSHH 228
LSH 228
EX-2
PI 224
TI 225
LG 227
RTD REFRIG GAS TEMP
TE 260
TI 260
TT 260
FAL 229 DI
FSL 229
INS
TI 234
TE 235
TT FROM TE-1116 — DWG 2281-PID1-SHT1
SKID LIMITS
TAHH 235
TIC 235
LY 237A
LS 237A
LCV 237A
LY 237B
LS 237B
LCV 237B
IAS
FO
FC
COMPRESSOR & CONDITIONING SKID
TE 249 RETURN
TI 249
TI 250 OUTGOING
TE 250
PU-2A
PU-2B
VFD 231
ETHERNET
SC 230 REF SPEED
SC 231 SPEED REF
START HS 230
STOP HS 230
STATUS RUN XI 230
RTD FAULT XA 230
CURRENT LOW IAL 230
HS 231 START
HS 231 STOP
XI 231 RUN STATUS
XA 231 FAULT
IAL 231 LOW CURRENT
ENABLE XS 245 RO
RUN STATUS XS 245 DI
ALARM ZA 245 DI
FIELD CONNECT
CHILLER SKID
CHILLER CONTROL PANEL
RC-1 CHILLER
AAH 252
AI 252
AY 252
AT 252
AE 252 O2
120V
1" TEE
3/8" S.S. TUBING
PAL 236
PAH 236
PI 236
PT 236
REPLUMB OXYGEN INLET AND PLUG PORT ACCORDINGLY.
1"x8"
APPROXIMATELY 5000'
CUSTODY TRANSFER STATION
ETHERNET/ FIBER OPTIC SWITCH
FY 257
ETHERNET
FIBER OPTIC
TO TROPICANA FACILITY
FLOW COMPUTER
FQIC 257
24V IN CAL
LFG BTU FAULT
TT 253
TE 253
FT 254
FE 254
PT 255
AT 256
AE 256
BTU ANALYZER
SPEC. BREAK
10" HDPE DR17
APPROXIMATELY 2500'
TO TROPICANA FACILITY
LFG TO FLARE PILOT — DWG 1990-1001-D
SAMPLE RETURN TO DR-1 — DWG 1990-1001-D
LFG FROM SKID DISCHARGE — DWG 2281-PID1-SHT1
10"
10"x8"

NOTES:

1. FOR DRAWING INDEX AND GENERAL NOTES SEE DWG # 1990-0001-0.
2. TI AND TE INSTRUMENTS REQUIRE 3/4"-316-SS THERMOWELL (TW).
3. PROCESS PIPING AND TUBING SHALL BE 316 SS UNLESS OTHERWISE NOTED.
4.
5. BALL VALVES AND NEEDLE VALVES SHALL BE 1/2" UNLESS OTHERWISE NOTED.
6. INS ( ) INDICATES INSULATION REQUIRED.

SEE DRAWING 2281-PID1-SHT2 FOR SHIP LOOSE MATERIALS PROVIDED BY LFG SPECIALTIES FOR FIELD INSTALLATION.
DRAWING REVISION 5 UPDATED BY LFG SPECIALTIES TO REFLECT REQUIRED MODIFICATIONS FOR OPERATION.

REV	DATE	DESCRIPTION	BY	APP
5	02/13	AS FABRICATED	TRS	GP
4	09/05	AS-BUILT ISSUE	TTH	CMB
3	08/05	ADDED DISCHARGE CHECK VALVE	AWG	CMB
2	06/05	GENERAL REVISION	CJV	JCV
1	04/05	GENERAL REVISION	PAC	CMB
0	03/05	ISSUED FOR CONSTRUCTION	CJV	CMB

CLIENT: TROPICANA PRODUCTS, INC.
FT. PIERCE, FLORIDA

JOB NO.	DES	CMB	02/05	CKD	AWG	03/05
1990-C001	DRN	CJV	02/05	APP	CMB	03/05

FILE: 1990-1002-D — SCALE: NONE

CPL SYSTEMS, INC.
280 Industrial Parkway
Lafayette, Louisiana 70508

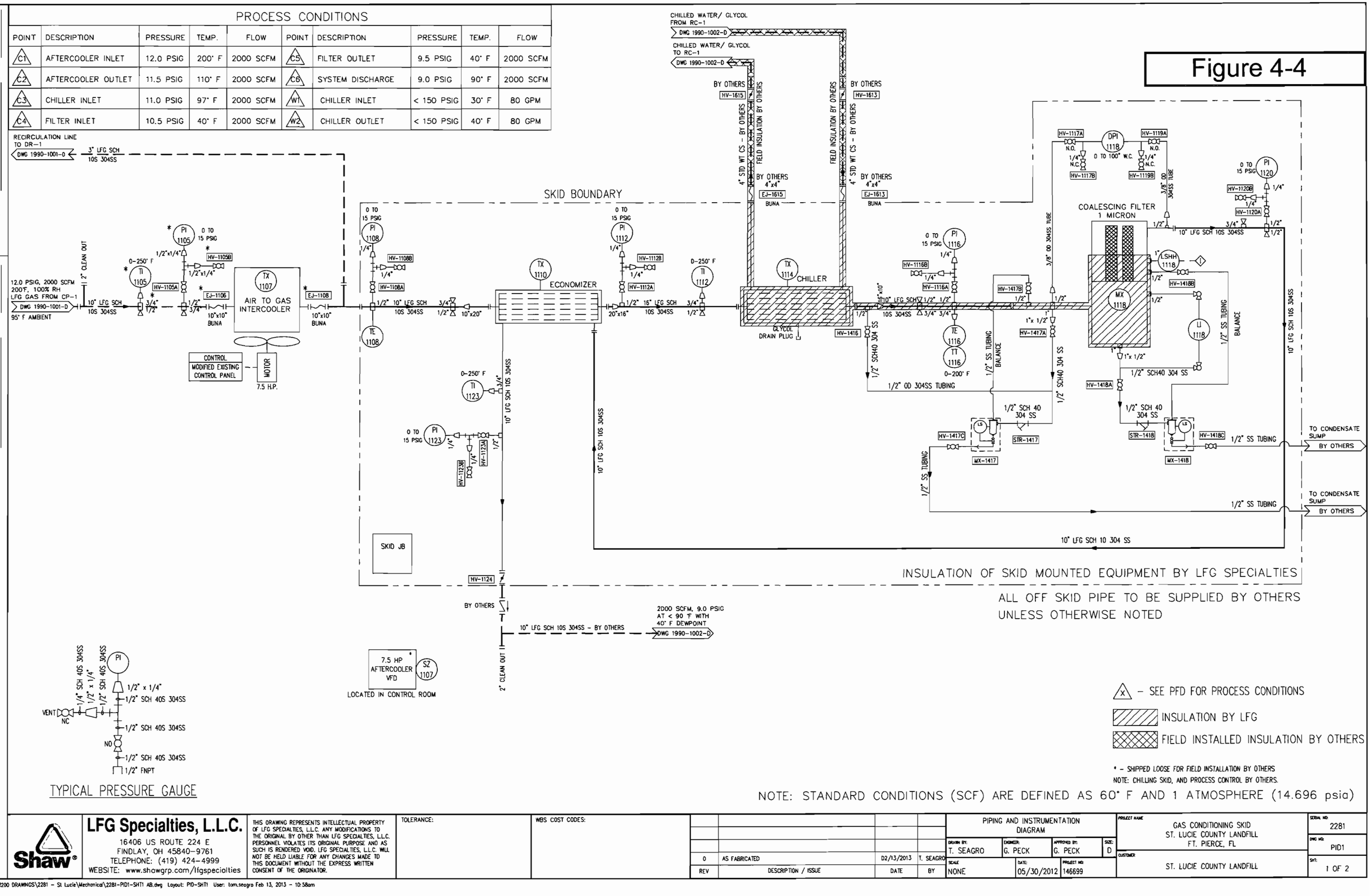
ST. LUCIE COUNTY SOLID WASTE FACILITY
LFG TO ENERGY PROJECT
EX-2 HEAT EXCH LEVEL ALARMS
P & I DIAGRAM, SH 2 OF 2

DWG NO. 1990-1002-D — REV 5

Figure 4-4

PROCESS CONDITIONS

POINT	DESCRIPTION	PRESSURE	TEMP.	FLOW	POINT	DESCRIPTION	PRESSURE	TEMP.	FLOW
C1	AFTERCOOLER INLET	12.0 PSIG	200° F	2000 SCFM	C5	FILTER OUTLET	9.5 PSIG	40° F	2000 SCFM
C2	AFTERCOOLER OUTLET	11.5 PSIG	110° F	2000 SCFM	C6	SYSTEM DISCHARGE	9.0 PSIG	90° F	2000 SCFM
C3	CHILLER INLET	11.0 PSIG	97° F	2000 SCFM	W1	CHILLER INLET	< 150 PSIG	30° F	80 GPM
C4	FILTER INLET	10.5 PSIG	40° F	2000 SCFM	W2	CHILLER OUTLET	< 150 PSIG	40° F	80 GPM



TYPICAL PRESSURE GAUGE

⟨X⟩ – SEE PFD FOR PROCESS CONDITIONS

INSULATION BY LFG

FIELD INSTALLED INSULATION BY OTHERS

* – SHIPPED LOOSE FOR FIELD INSTALLATION BY OTHERS

NOTE: CHILLING SKID, AND PROCESS CONTROL BY OTHERS.

NOTE: STANDARD CONDITIONS (SCF) ARE DEFINED AS 60° F AND 1 ATMOSPHERE (14.696 psia)

APPROVED PROJECT MGR: _____ DATE: _____ PROCUREMENT: _____ DATE: _____

LFG Specialties, L.L.C.
16406 US ROUTE 224 E
FINDLAY, OH 45840-9761
TELEPHONE: (419) 424-4999
WEBSITE: www.shawgrp.com/lfgspecialties

TOLERANCE:

WBS COST CODES:

REV	DESCRIPTION / ISSUE	DATE	BY
0	AS FABRICATED	02/13/2013	T. SEAGRO

PIPING AND INSTRUMENTATION DIAGRAM

DRAWN BY:	ENGINEER:	APPROVED BY:	SIZE:
T. SEAGRO	G. PECK	G. PECK	D
SCALE: NONE	DATE: 05/30/2012	PROJECT NO: 146699	

PROJECT NAME: GAS CONDITIONING SKID, ST. LUCIE COUNTY LANDFILL, FT. PIERCE, FL

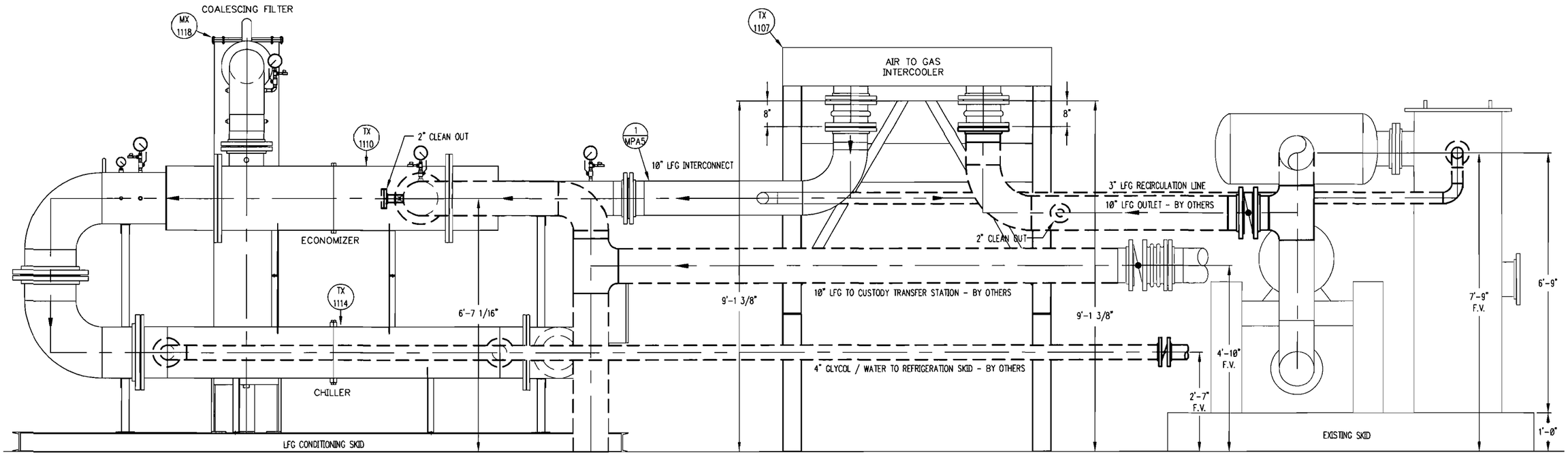
CUSTOMER: ST. LUCIE COUNTY LANDFILL

SERIAL NO: 2281

DWG NO: PID1

SHT: 1 OF 2

Figure 4-5



1/GA SHT2 ELEVATION – GAS CONDITIONING SYSTEM

SCALE: 3/4"=1'-0"

APPROVED

PROJECT MGR: _____ DATE: _____

PROCUREMENT: _____ DATE: _____

Shaw®

LFG Specialties, L.L.C.
16406 US ROUTE 224 E
FINDLAY, OH 45840-9761
TELEPHONE: (419) 424-4999
WEBSITE: www.shawgrp.com/lfgspecialties

TOLERANCE:

WBS COST CODES:

REV	DESCRIPTION / ISSUE	DATE	BY
Ø	AS FABRICATED (LFG SUPPLIED SCOPE)	11/01/2012	T. SEAGRO

GAS SYSTEM
SITE GENERAL ARRANGEMENT

DRAWN BY:	ENGINEER:	APPROVED BY:	SIZE:
T. SEAGRO	G. PECK	G. PECK	D
SCALE: 3/4"=1'-0"	DATE: Ø5/3Ø/2012	PROJECT NO: 11Ø157.ØØ125162	

PROJECT NAME: GAS CONDITIONING SKID
ST. LUCIE COUNTY LANDFILL
FT. PIERCE, FL

CUSTOMER: ST. LUCIE COUNTY LANDFILL

SERIAL NO: 2281
DWG NO: GA
SHT: 2 OF 2

File: O:\LFG\2200 DRAWINGS\2281 - St Lucie\Mechanical\2281-GA-SHT2 AB.dwg Layout: GA-SHT2 User: tom.seagro Feb 13, 2013 - 11:10am

DATE:

PROCUREMENT:

DATE:

APPROVED PROJECT MGR:

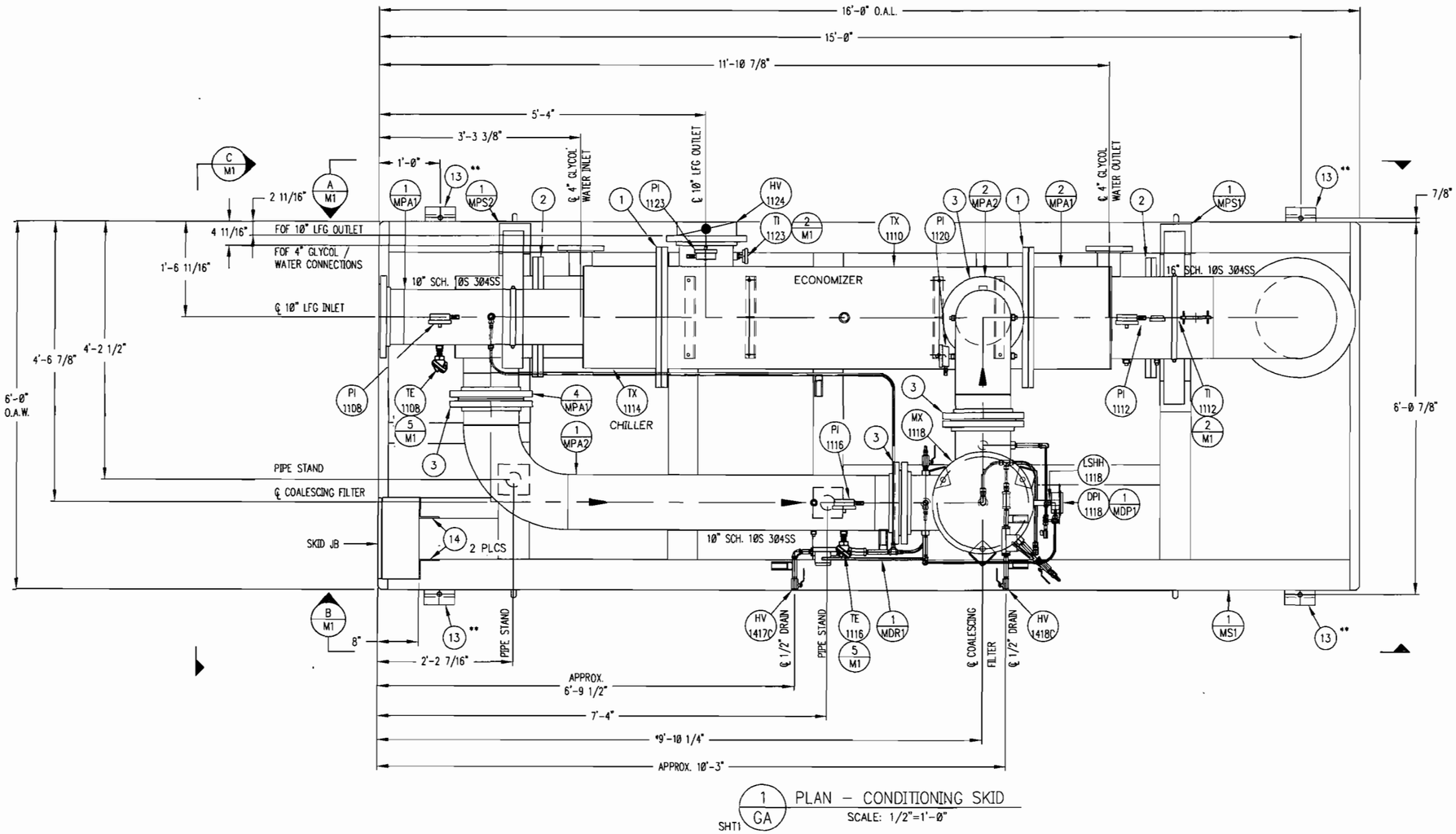
NOTES:

1. ALL SURFACES SHALL BE FREE OF WELD SPATTER AND/OR OTHER FOREIGN MATERIAL.
2. EXTERIOR SURFACE PREPARATION & PAINTING PROCEDURES (EXCLUDING S.S.):
   A. COMMERCIAL BLAST PER SPEC. NO. SSPC-SP 6
   B. PRIME COAT WITH SHERWIN WILLIAMS RECOATABLE EPOXY PRIMER (RED OXIDE B67R5) 4-6 MILS DFT.
   C. TOP COAT WITH SHERWIN WILLIAMS ACROLON 218 HS (GRAY), ACRYLIC POLYURETHANE, 3-6 MILS DFT.
3. ALL BOLTS, CAP SCREWS AND NUTS WILL BE SAE GRADE 5 WITH YELLOW ZINC DICHROMATE PLATING. THREADED RODS WILL BE STAINLESS STEEL. ALL THREADS WILL BE UNIFIED NATIONAL COARSE.
4. APPLY NEOPRENE RUBBER TO ANGLES AND ACROSS FLAT USING RUBBER CEMENT PER MANUFACTURERS DIRECTIONS.

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	SUPPLIER	PART NO.	INVENTORY AMOUNT
1	2	20" FULL FACE NON ASBESTOS GASKET 1/8" THICK	LFG	NON STOCK	
2	2	16" FULL FACE NON ASBESTOS GASKET 1/8" THICK	LFG	USFG16	
3	4	10" FULL FACE NON ASBESTOS GASKET 1/16" THICK	LFG	WFG10NA	
4	1	16" FULL FACE NON ASBESTOS GASKET 1/16" THICK	LFG	NON STOCK	
5	4	1/2" SS PIPE PLUG	LFG	FLOOR STOCK	
6	5	3/4" SS PIPE PLUG	LFG	FLOOR STOCK	
7	4	3/4"x 1/2" REDUCING BUSHING	LFG	FLOOR STOCK	
8	11	1/2" STD WT 304SS NIPPLE 2" LONG	LFG	FLOOR STOCK	
9	5	1/2" STD WT 304SS NPT TEE	LFG	FLOOR STOCK	
10	10	1/2" x 1/4" SS REDUCING BUSHING	LFG	FLOOR STOCK	
11	5	1/4" STD WT 304SS NIPPLE 2" LONG	LFG	FLOOR STOCK	
12	1	1/2" STD WT 304SS FNPT ELL	LFG	FLOOR STOCK	
13	4	PINCH PLATES	LFG	PINCHPLATE	
14	2	4"x 4"x 1/4" CS ANGLE	LFG	SA0414	5.1

Figure 4-6



1 / SHT1 GA PLAN – CONDITIONING SKID

SCALE: 1/2"=1'-0"

ESTIMATED SKID WEIGHT = 10,000 LBS
*FINAL DIMENSION SUBJECT TO CHANGE BASED ON REHEATER NOZZLE LOCATION
**-SHIP LOOSE

Shaw®

LFG Specialties, L.L.C.
16406 US ROUTE 224 E
FINDLAY, OH 45840-9761
TELEPHONE: (419) 424-4999
WEBSITE: www.shawgrp.com/lfgspecialties

TOLERANCE:

WBS COST CODES:

REV	DESCRIPTION / ISSUE	DATE	BY
Ø	AS FABRICATED	11/01/2012	T. SEAGRO

GAS CONDITIONING SKID LAYOUT

DRAWN BY:	ENGINEER:	APPROVED BY:	SIZE:
T. SEAGRO	G. PECK	G. PECK	D

SCALE: 1/2"=1'-0" | DATE: 05/30/2012 | PROJECT NO: 146699

PROJECT NAME: GAS CONDITIONING SKID ST. LUCIE COUNTY LANDFILL FT. PIERCE, FL

CUSTOMER: ST. LUCIE COUNTY LANDFILL

SERIAL NO: 2281

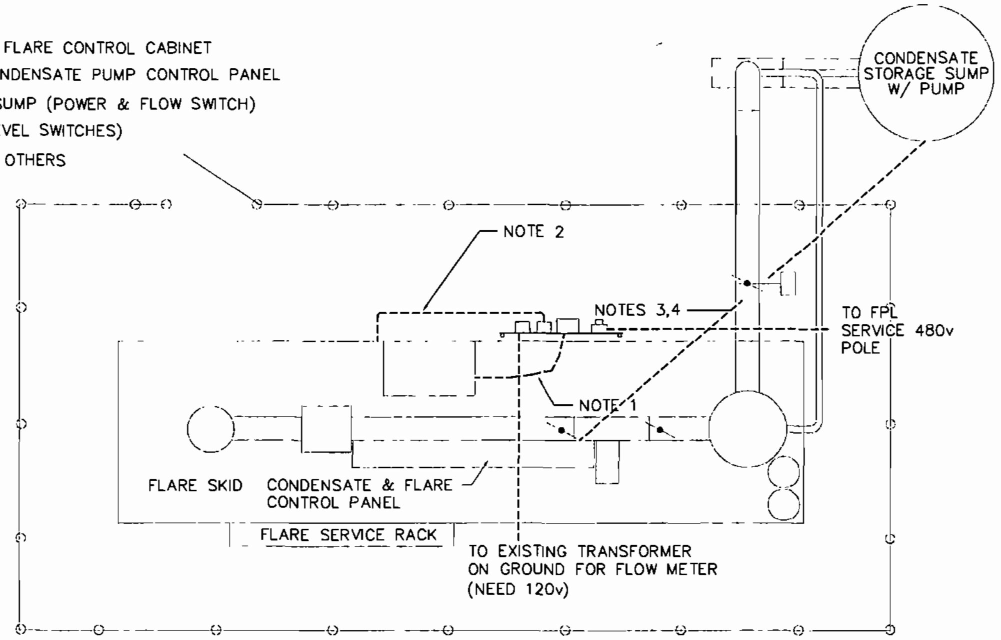
DWG NO: M1

SHT: 1 OF 3

File: O:\LFG\2200 DRAWINGS\2281 – St Lucie\Mechanical\2281-M1-SHT1 A8.dwg Layout: M1-SHT1 User: tom.seagro Feb 13, 2013 – 11:10am

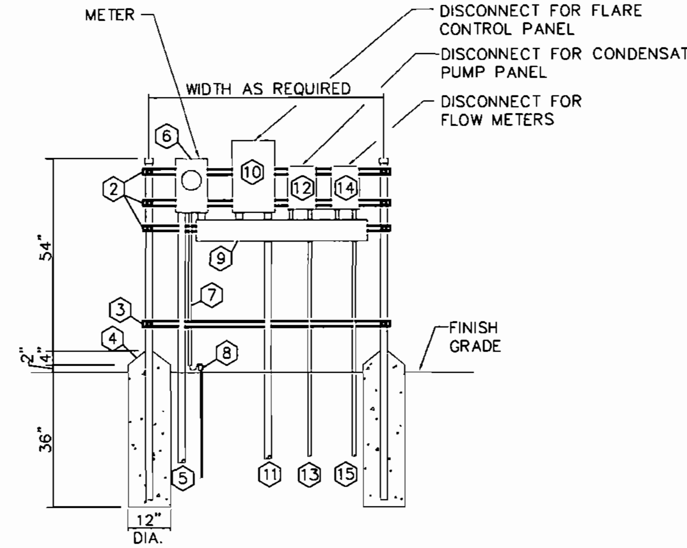
NOTES:

1. 3#3/0 & 1#1/0G-2"C TO FLARE CONTROL CABINET
2. 3#10 & 1#10G-1"C TO CONDENSATE PUMP CONTROL PANEL
3. 4#12 & 2#14-3/4"C TO SUMP (POWER & FLOW SWITCH)
4. 5#14-3/4"C TO SUMP (LEVEL SWITCHES)
5. FLARE SYSTEM WIRING BY OTHERS



FLARE SYSTEM ELECTRICAL PLAN

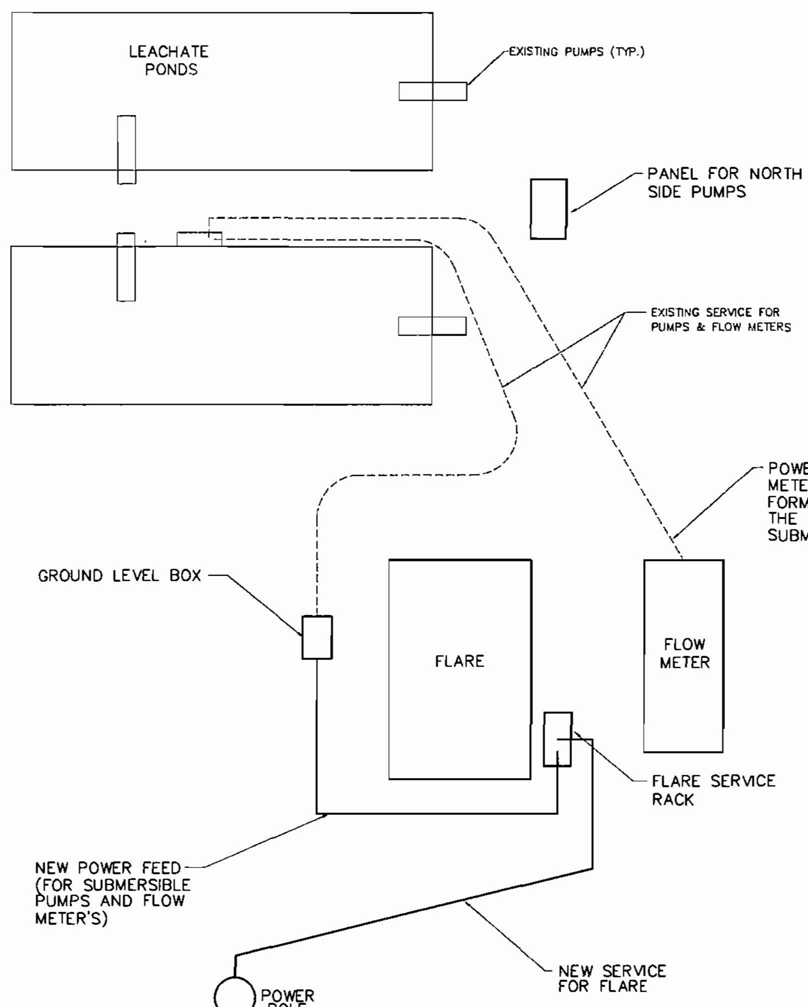
SCALE: 1/4"=1'-0"



ELECTRICAL SERVICE RACK

NOT TO SCALE

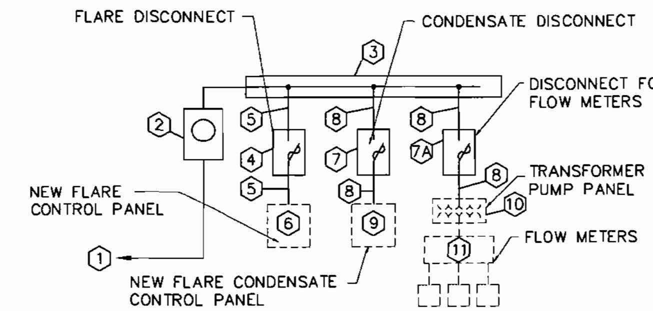
1. 8'-0"X 2" DIAMETER SCHEDULE 40 ALUMINUM PIPE SUPPORT. FILL WITH CLEAN SAND AND CAP. PAINT BOTTOM HALF WITH TWO (2) COATS OF BITUMASTIC.
2. ALUMINUM CHANNEL EQUIPMENT SUPPORTS. MOUNT ALL SUPPORTS AND EQUIPMENT USING STAINLESS STEEL HARDWARE.
3. ALUMINUM CHANNEL CONDUIT SUPPORT. MOUNT CONDUIT USING PVC CLAMPS WITH STAINLESS STEEL HARDWARE.
4. 2500 PSI CONCRETE BASES. SLOPE TOPS AWAY FROM PIPE SUPPORTS.
5. CONDUIT TO FPL SERVICE POLE (APPROX. 100'). PROVIDE RGS RISER AND WEATHERHEAD AT POLE.
6. FPL METER. PROVIDE METER CAN PER FPL REQUIREMENTS.
7. 1/2" CONDUIT WITH BARE #6 COPPER WIRE TO GROUND ROD.
8. PRESSURE TYPE BRONZE CONNECTOR CLAMP TO 20'X 5/8" DIAMETER COPPER CLAD GROUND ROD.
9. PVC WIREWAY. MAKE CONNECTIONS AS REQUIRED.
10. 200A, 3P FUSED DISCONNECT SWITCH WITH NEMA 3R ENCLOSURE, SQUARE "D" CATALOG NO. H364NRB OR APPROVED EQUAL. PROVIDE 3-200A CLASS R FUSES WITH REJECTION KIT (FOR FLARE CONTROL PANEL)
11. CONDUIT TO FLARE CONTROL PANEL (APPROX. 20')
12. 30A, 3P FUSED DISCONNECT SWITCH WITH NEMA 3R ENCLOSURE, SQUARE "D" CATALOG NO. H361NRB OR APPROVED EQUAL. PROVIDE 3-30A CLASS R FUSES WITH REJECTION KIT. (FOR CONDENSATE PUMP CONTROL PANEL).
13. CONDUIT TO CONDENSATE PUMP CONTROL PANEL.
14. 30A, 3P FUSED DISCONNECT SWITCH WITH NEMA 3R ENCLOSURE, SQUARE "D" CATALOG NO. H361NRB OR APPROVED EQUAL. PROVIDE 3-30A CLASS R FUSES WITH REJECTION KIT. (FOR FLOWMETERS).
15. CONDUIT TO EXISTING TRANSFORMER (APPROX. 20')



REVISED POWER FEED LAYOUT FOR EXISTING FLOW METERS & SUBMERSIBLE PUMPS

GENERAL NOTES:

1. THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED FOR A COMPLETE ELECTRICAL SYSTEM AS SHOWN ON THE DRAWINGS.
2. THE CONTRACTOR SHALL VISIT AND EXAMINE CAREFULLY THE AREAS AFFECTED BY THIS WORK TO BECOME FAMILIAR WITH ALL OF THE CONDITIONS UNDER WHICH THE WORK WILL BE PERFORMED. ANY EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED TO MEET THE CONDITIONS OF THE INSTALLATION ARE TO BE FURNISHED BY THE CONTRACTOR AT NO EXTRA COST.
3. THE CONTRACTOR SHALL COORDINATE ELECTRICAL SERVICE WITH FPL.
4. THE INSTALLATION SHALL MEET ALL REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL CODES HAVING JURISDICTION.
5. AN EQUIPMENT GROUND WIRE SIZED PER NEC ARTICLE 250 SHALL BE PULLED IN ALL ELECTRICAL CONDUITS, POWER & CONTROL, WHETHER OR NOT INDICATED ON THE PLANS.
6. ALL EQUIPMENT AND MATERIALS SHALL BE NEW AND UNUSED AND U.L. LISTED.
7. ALL EQUIPMENT FURNISHED AND INSTALLED BY THE CONTRACTOR SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION.
8. ALL WIRES SHALL BE #12 COPPER, MINIMUM, 600V, XHHW, UNLESS OTHERWISE NOTED.
9. ALL CONDUIT SHALL BE SCHEDULE 80 PVC UNLESS OTHERWISE NOTED. ABOVE GRADE CONDUITS AND WIREWAYS SHALL BE PAINTED WITH TWO COATS OF SILVER PAINT.
10. SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING EQUIPMENT: DISCONNECT SWITCHES, CONDUIT, AND WIRE.
11. REMOVE EXISTING RISER, CONDUIT, WIRE, DISCONNECT SWITCHES, AND FPL METER SERVING EXISTING TRANSFORMER FOR FLOWMETERS, AND RETURN TO OWNER. REMOVE EXISTING UNUSED ELECTRICAL EQUIPMENT EAST OF LEACHATE PONDS AND RETURN TO THE OWNER.



POWER RISER DIAGRAM

1. 3#3/0 & 1#1/0 N-2" FROM FPL SERVICE POLE 480/277V, 3Ø, 4W
2. FPL METER
3. WIREWAY. PROVIDE 3#3/0 & 1#1/0 G-2"C FROM FPL METER INTO WIREWAY.
4. 200A, 3P FUSED DISCONNECT SWITCH (-FLARE)
5. 3#3/0 & 1#1/0 G-2"C
6. FLARE CONTROL PANEL (BY OTHERS) (ON SKID)
7. 30A, 3P FUSED DISCONNECT SWITCH (CONDENSATE PUMP)

7A. 30A, 3P FUSED DISCONNECT FLOW METERS

8. 3#10 & 1#10 G-1"C
9. CONDENSATE PUMP CONTROL PANEL (BY OTHERS) (ON SKID)
10. EXISTING 30KVA, 480:208/120V, 3Ø, 4W DRY TYPE TRANSFORMER WITH NEMA 3R ENCLOSURE
11. EXISTING FLOWMETER WIREWAY WITH EXISTING CONDUIT AND WIRE.

RECORD DRAWINGS

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE ENGINEER HAS NOT VERIFIED THE ACCURACY OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

CAMP DRESSER & McKEE INC Date JUNE 1999

RECORD DRAWING

FOUR JAYS Consulting, Inc.
1173 Old Dixie Highway Lake Park, Florida 33404
561 844 7506 FAX 561 844 7510

REV. NO.	DATE	DRWN	CHKD	REMARKS
	6/99	AGC	KCL	RECORD DRAWING

DESIGNED BY: LWS
DRAWN BY: WLS
SHEET CHK'D BY: LWS
CROSS CHK'D BY:
APPROVED BY:
DATE: MAY 1, 1998

CDM Camp Dresser & McKee Inc.

ST. LUCIE COUNTY
GLADES CUT-OFF ROAD LANDFILL

LANDFILL GAS COLLECTION AND CONTROL SYSTEM

ELECTRICAL DETAILS

PROJECT NO. 6277-21840
FILE NAME:
SHEET NO.
E-1

Appendix D

Precautions to Prevent Emissions of Unconfined Particulate Matter

According to FDEP Regulation 62-296.320(4)(c)1., 3 & 4, F.A.C., no facility is allowed to generate emissions of unconfined particulate matter without conducting reasonable mitigation to prevent such emissions. These activities include transporting of matter, construction, alteration, demolition or wrecking; or loading, unloading, storing, or handling of materials.

To minimize particulate matter emissions, the following particulate matter controls are used at the St. Lucie County Baling and Recycling Facility:

- Roadways and parking areas leading into the site have been paved;
- Water is sprayed on unpaved roadways and on the working face of the landfill to reduce particulate matter emissions; and
- Landscaping and vegetation planting has been strategically employed to reduce particulate emissions on the site.

Appendix E

Fugitive Emissions Identification

Calculation of Fugitive Dust (PM-10) Emissions from Landfill Operations

Summary

There are three sources of fugitive dust emissions:

1. Vehicle traffic on unpaved road
2. Movement of waste placement equipment at working face of landfill
3. Yard waste grinding

The combined maximum potential to emit from these three fugitive PM10 sources is:

	Tons/Year
Unpaved Road	18.3
Working Face	31.4
Yard Waste Grinding	13.30
Total	**63.0**

PM10 emissions are assumed equal to Total PM emissions
Detailed calculations for each of these sources are presented below.

Unpaved Road Vehicle Traffic PM10 Emission Factor

Source: AP-42, Section 13.2.2 Unpaved Roads

Emission Factor Equation:

$E = [(k\ (s/12)^a\ (W/3)^b) / (M_{dry}/0.2)^c] * [(365-p)/365]$

Where:

	Trucks	Pick up trucks
E = PM10 emission factor in lb/VMT		
k = particle size multiplier	2.6	2.6
s = silt content in percent	6.4	6.4
a = empirical constant	0.8	0.8
W = vehicle weight in tons (loaded)	30	1.5
W = vehicle weight in tons (unloaded)	20	
b = empirical constant	0.4	0.4
M_{dry} = surface material moisture content %	0.2	0.2
c = empirical constant	0.3	0.3
p = no. of days with precip.	123	123
Calculated Loaded Emission Factor	2.62	0.79
Calculated Unloaded Emission Factor	2.23	0.00

Total PM10 Emissions Equation:

$PM10 = SUM (EF_i * T_i * L)$

Where:

PM10 = total daily roadway PM10 emissions in pounds/day

Class I Landfill

	bale trucks	pick-up trucks
EF_i = emission factor for ith vehicle class		
(loaded)	2.62	0.79
(unloaded)	2.23	N/A
T_i = one-way trips/day for each vehicle class		
(loaded)	16	20
(unloaded)	16	
L = length of unpaved road (mi.)	1.00	

C&D Cell

EF_i = emission factor for ith vehicle class	
(loaded)	2.62
(unloaded)	2.23
T_i = one-way trips/day for each vehicle class	
(loaded)	100
(unloaded)	100
L = length of unpaved road (mi.)	0.05

Total Calculated Unpaved Road PM10 Emissions

	(lb/day)	*(lb/day)*	*(ton/year)*
Class I Landfill			
Loaded trucks	41.9	15.8	9.0
Unloaded trucks	35.6	N/A	5.6
C&D Cell			
Loaded trucks	13.1		2.0
Unloaded trucks	11.1		1.7
Total	101.8	15.8	18.3

Note: The ton/year calculation is based on operation of the landfill six days per week, 52 weeks per year. No credit is taken for reductions due to dust control efforts (see Appendix D).

Fugitive PM10 Emissions from Other Equipment on Unpaved Surfaces

Source: AP-42, Section 11.9

Pushing (Dozer) Operations Emission Factor Equation:

$E = k [0.45 (S)^{1.5}] / (M)^{1.4}$

Where:

E = PM10 emission rate in kg/hr		
k = mulitplier to adjust to PM10	0.75	
S = silt content of surface material (%)	6.9	(default value)
M = moisture cont. of surface mat. (%)	7.9	(default value)
E =	0.34	kg/hr

PM10 Emission Factors, by Type of Operation

Dozers and Scrapers (kg/hr)	0.34
Compacting - use dozer equation	0.34
Loaders - use dozer equation	0.34
Dump Trucks - use dozer equation	0.34
Fork Lift - use dozer equation	0.34
Semi Trailers/Tractors - use dozer equation	0.34

Total Calculated Working Face PM10 Emissions

	Equipment		PM10 Emissions		
	Quantity	Hours/Day	(kg/day)	(lb/day)	(ton/yr)
Bulldozers	6	8	16.3	36.0	5.6
Compactors	2	8	5.4	12.0	1.9
Front End Loaders	9	8	24.5	54.0	8.4
Dump Trucks	4	8	10.9	24.0	3.7
Fork Lift	3	8	8.2	18.0	2.8
Tractor/Semi-Trailers	6	8	16.32	36.0	5.6
Skid Steers	3	8	8.16	18.0	2.8
Aerial Lift	1	1	0.45	1.0	0.2
Excavators	3	1	1.02	2.2	0.4
Utility Tractor	2	1	0.68	1.5	0.2
Water Truck	1	4	1.36	3.0	0.5
Totals:	40	58	91	201	31

PM10 Emissions from Materials Grinding

Source: AP-42, Section 11.24.2

PM10 Emission Factor

Wood / yard waste girnding (lb/ton processed)	0.31
C&D Debris grinding (lb/ton processed)	0.31

Equipment

Yard Waste Grinder throughput (tons/day)	250.0
C&D Debris Grinder throughput (tons/day)	25.0

Calculated PM10 Emissions

	(lb/day)	*(ton/year)*
EF * throughput =	85.3	13.30

Appendix E

Class I Landfill Gas Flow Rate Calculations

Emission Unit - 2,000 scfm Flare

	Inlet SCFM	Cu.ft. of air needed to combust ea. Cu.ft. of gas[1]	Exit Gas Flow Rate SCFM
Max. Potential Gas Flow per Flare	2000	15.7	31400

	Actual Conditions	Dry Standard Conditions
Moisture content of gas[2]	6.9%	0%
Temperature of gas[2]	1400^0 F	68^0 F

Convert standard ft^3/min to dsf^3/min:

$$31{,}400.0 \frac{ft^3}{min} * (1 - 0.069) =$$

29,233 outlet dscfm

Convert scfm to acfm:

$$31{,}400.0 \frac{ft^3}{min} * \frac{459.67^0 R + 1400^0 F}{459.67^0 R + 68^0 F} =$$

110,663 outlet acfm

[1] Combustion air ratio provided by vendor, LFG Specialties

[2] Combustion air ratio provided by vendor, LFG Specialties

Appendix E

Methane and NMOC Emission Rates - 2,000-scfm Flare

Flare Gas Flow Design Capacity:	2000	scfm	29,766,672.72 std. m^3/year
Assumed Total Gas Generation:	2667	scfm	39,688,896.96 std. m^3/year

(It is assumed that the collection system is at least 75% efficient. Worst-case total = 2000 scfm / 0.75)
(For comparison, from Attachment 2 Class I Landfill LandGEM Report to the 2013 Electronic Annual Operating Report submitted to FDEP on 3/15/2013, the maximum projected LFG Generation rate is 28.6 million m^3/year in 2058.)

Methane Flows

Pollutant	Concentration of Methane* (% by Vol.)	MW of Methane (g/mol)	Methane Flow Rate to Flare (scfm)	Methane Flow Rate to Flare (std. m^3/year)	Methane to Flare (Mg/yr)	Methane to Flare (tpy)	Controlled Methane Emissions** (Mg/yr)	Controlled Methane Emissions** (tpy)
Collected Methane (75% of Total)	51.89%	16.043	1,038	15,445,926	10,458	10,596	209	212

*Percent by volume, as reported to EPA through the electronic Greenhouse Gas Reporting Tool (eGGRT) for 2012

**Control efficiency of flare assumed to 98% destruction (vendor Information)

NMOC Emission Rate for 2,000-scfm Flare

Pollutant	Concentration of NMOC (ppmv)	MW of NMOC (as Hexane) (g/mol)	Concentration of NMOC (g/std. m^3)	NMOC, Uncontrolled (Mg/yr)	NMOC, Uncontrolled (tpy)	NMOC, Controlled* (tpy)	NMOC, Controlled* (lbs/hr)	VOC, Controlled** (tpy)	VOC, Controlled** (lbs/hr)	
Uncollected NMOC (25% of total); EU 1	4000	86.18	14.55	144	146	146	33.39	57	13.02	> 5 tpy
Collected NMOC (75% of total); EU 2	4000	86.18	14.55	144	146	2.9	0.67	1.1	0.26	< 5tpy

*Assumed 98% Control of NMOC by flare for calculation (from Vendor Information). Assumed no destruction for fugitive emissions.

**Assumed VOC is 39% by weight of NMOC per AP 42 Section 2.4

Standard Conditions

Temperature	288.75 K,	474.366 R
Pressure	101.3253489 kPa,	14.696 psia
Universal Gas Constant, R	8.31448 Pa-m^3/mol-K,	10.7316 psia-ft^3/lbmol-R
Conversion Factor	42.20471986 mol/m^3,	0.002886829 lbmol/ft^3

Appendix E

Class I Landfill Hazardous Air Pollutants

St. Lucie County Baling and Recycling Facility Class I Landfill - Hazardous Air Pollutants

Input Information:	
Landfill Gas Flow to Flare:	2.98E+07 std. m^3/year

Standard Conditions	
Temperature	288.75 K
Pressure	101.325349 kPa
Universal Gas Constant, R	8.31448 Pa-m^3/mol-K
Conversion Factor	42.2047199 mol/std. m^3

Hazardous Air Pollutant (HAP)[1]	Molecular Weight	Default Conc. (ppmv)	Mass Conc.[2] (ug/std. m3)	HAP in LFG sent to Flare (Mg/yr)	HAP in LFG sent to Flare (tons/yr)	Controlled Emissions[3] (tons/yr)	Fugitive Emissions[4] (tons/yr)
1,1,1-Trichlorethane (methyl chloroform)	133.41	0.480	2702.66	8.04E-02	8.15E-02	1.63E-03	0.027
1,1,2,2-Tetrachloroethane	167.85	1.11	7863.31	2.34E-01	2.37E-01	4.74E-03	0.079
1,1-Dichloroethane (ethylidene dichloride)	98.97	2.35	9815.95	2.92E-01	2.96E-01	5.92E-03	0.099
1,1-Dichloroethene (vinylidene chloride)	96.94	0.20	822.36	2.45E-02	2.48E-02	4.96E-04	0.008
1,2-Dichloroethane (ethylene dichloride)	98.96	0.41	1699.87	5.06E-02	5.13E-02	1.03E-03	0.017
1,2-Dichloropropane (propylene dichloride)	112.99	0.18	858.37	2.56E-02	2.59E-02	5.18E-04	0.009
Acrylonitrile	53.06	6.33	14175.29	4.22E-01	4.28E-01	8.55E-03	0.143
Benzene	78.11	1.91	6296.53	1.87E-01	1.90E-01	3.80E-03	0.063
Carbon disulfide	76.13	0.58	1873.21	5.58E-02	5.65E-02	1.13E-03	0.019
Carbon tetrachloride	153.84	0.004	25.97	7.73E-04	7.83E-04	1.57E-05	0.000
Carbonyl sulfide	60.07	0.49	1242.27	3.70E-02	3.75E-02	7.49E-04	0.012
Chlorbenzene	112.56	0.25	1206.64	3.59E-02	3.64E-02	7.28E-04	0.012
Chloroethane (ethyl chloride)	64.52	1.25	3403.81	1.01E-01	1.03E-01	2.05E-03	0.034
Chlorform	119.39	0.03	151.16	4.50E-03	4.56E-03	9.12E-05	0.002
Dichlorobenzene	147.00	0.21	1321.47	3.93E-02	3.99E-02	7.97E-04	0.013
Dichloromethane (methylene chloride)	84.94	14.3	51263.63	1.53E+00	1.55E+00	3.09E-02	0.515
Ethylbenzene	106.16	4.61	20654.89	6.15E-01	6.23E-01	1.25E-02	0.208
Ethylene dibromide	187.88	0.001	7.93	2.36E-04	2.39E-04	4.78E-06	0.000
Hexane	86.18	6.57	23896.42	7.11E-01	7.21E-01	1.44E-02	0.240
Mercury	200.61	2.92E-04	2.47	7.36E-05	7.46E-05	1.49E-06	0.000
Methyl ethyl ketone (2-butanone)	72.11	7.09	21577.58	6.42E-01	6.51E-01	1.30E-02	0.217
Methyl isobutyl ketone (hexone)	100.16	1.87	7904.91	2.35E-01	2.38E-01	4.77E-03	0.079
Perchloroethylene (tetrachloroethylene)	165.83	3.73	26105.56	7.77E-01	7.87E-01	1.57E-02	0.262
Toluene	92.13	39.3	152811.01	4.55E+00	4.61E+00	9.22E-02	1.536
Trichloroethylene	131.40	2.82	15638.87	4.66E-01	4.72E-01	9.43E-03	0.157
Vinyl chloride	62.50	7.34	19361.42	5.76E-01	5.84E-01	1.17E-02	0.195
Xylenes	106.16	12.1	54213.48	1.61E+00	1.64E+00	3.27E-02	0.545
Total HAP Emissions[5]						**0.27**	**4.49**

Notes:

1. These calculations are for emissions of hazardous air pollutants (HAPs), as listed in Title III of the 1990 Clean Air Act Amendments.
2. ug/std. m3 = Concentration(ppmdv)*Conversion Factor(mol/ std. m3)*Molecular Weight (g/mol)
3. Assumed 98% Control of NMOC by flare for calculation (from Vendor Information).
4. Fugitive emissions assumes 75% collection efficiency and are estimated as (HAP sent to flare)*(1/0.75 - 1)
5. No individual HAP has the potential to emit over 10 tpy, and the potential to emit of total HAP does not exceed 25 tpy, so facility is not major for any HAP emissions.

Appendix E

Secondary Air Pollutants from Flare

Energy content (HHV) of landfill gas: 519.5 Btu/dscf 18,343.55 Btu/dry std. m3
(Energy content as determined by lab analysis on samples of SLC LFG taken 10/01/2013

CO and NOx Emission Rates Based on AP-42 Table 13.5-1 Industrial Flares (open candlestick flares)

Pollutant	LFG Flow Rate to Flare (std. m^3/yr)	Energy input to flare (MMBtu/yr)	Emission Factor (lb/MMBtu)	Emissions from Flare (lb/yr)	Emissions from Flare (lb/hr)	Emissions from Flare (ton/yr)	
2,000-scfm Flare (EU 2)							
Carbon Monoxide	2.98E+07	546,026	0.37	202,030	23.06	101.01	> 5 tpy
Nitrogen Oxides	2.98E+07	546,026	0.068	37,130	4.24	18.56	> 5 tpy

SO2 and HCl Emission Rates Based on Mass Balance

Pollutant	Total landfill Gas Flow Rate to Flare (Std. m^3/yr)	Concentration of S or Cl in Landfill Gas (ppmV)	Emission rate of S or Cl (m^3/yr)	Molecular Weight of S or Cl (g/gmol)	Uncontrolled Mass Emissions of S or Cl (kg/yr)	Control Efficiency (%)	Ratio of Molecular Weights SO_2/S or HCl/Cl	Controlled Mass Emissions of Pollutant (kg/yr)	Controlled Mass Emissions of Pollutant (lb/hr)	Controlled Mass Emissions of Pollutant (ton/yr)	
2,000-scfm Flare (EU 2)											
Sulfur - Sulfur Dioxide	**2.98E+07**	**4.01**	119.28	32.06	161.41	0	2.00	322.53	0.081	0.36	< 5 tpy
Chlorine - Hydrogen Chloride	**2.98E+07**	**42.0**	1,250.2	35.45	1,870.5	91	1.03	173.19	0.044	0.19	< 0.5 tpy

PM Emission Rates Based on AP-42 Table 2.4-4 Emission Factors for Secondary Compounds Exiting Control Devices (MSW Landfill)

Pollutant	Total Methane Flow Rate to Flare (Std. m^3/yr)	Emission Factor (kg/10^6 dscm Methane)	Emissions from Flare (kg/yr)	Emissions from Flare (tpy)	Emissions from Flare (lb/hr)	
2,000-scfm Flare (EU 1)						
Particulate Matter	**2.98E+07**	**270**	8,037	8.86	2.02	> 5 tpy

The calculation methodology for CO and NOx is from U.S. EPA, Compilation of Air Pollutant Emission Factors (Report No. AP-42), Section 13.5 Industrial Flares,1991.
The calculation of SO2, HCL and PM as well as the concentration of Cl in LFG are from: No. AP-42, Section 2.4, Municipal Solid Waste Landfills, 199
Concentration of S in Landfill gas calculated from the results of H2S concentration in the four samples taken on 10/01/201

Gross Heating Value of the Gas

Heating Value Results from ASTM D3588-98:
Samples taken from SLC Flare on 10/01/2013

Sample	Higher Heating Value (aka Gross Heating Value)
SLC-1	*516* BTU/dscf
SLC-2	*521* BTU/dscf
SLC-3	519 BTU/dscf
SLC-4	*522* BTU/dscf
Average HHV	**519.5 BTU/dscf**
	19.36 MJ/m^3

Appendix E

Sulfur Content Calculations

Results of ASTM D5388-98

Samples collected on 10/01/2013	Total Reduced Sulfur as H_2S
SLC-1	5 ppmV
SLC-2	4.17 ppmV
SLC-3	3.66 ppmV
SLC-4	4.2 ppmV
Average:	**4.2575 ppmV**

Sulfur content in Landfill Gas (LFG)

Hydrogen Sulfide concentration	*4.2575*	ppmV as H_2S
Mol. Wt. of sulfur	32	g/mol
Mol. Wt of Hydrogen sulfide	34	g/mol
Ratio of Mol.wt of Sulfur/Mol.Wt. of H2S	0.941	
Total sulfur content in landfill gas	**4.01**	**ppmV as S**

Appendix E

Engine Exhaust Emissions

C&D Debris Grinder Engine (EU 003)

Engine Operation Information	
Rating	1,000 HP
Operation	8,760 hours/year

Pollutant	Emission factor (lb/hp-hr)[a] (power output)	Emissions (lb/hr)	Emissions (tpy)
NOx (uncontrolled)	0.024	24	105
NOx (controlled)	0.013	13	57
CO	5.50E-03	5.5	24
SOx[b]	4.05E-06	4.05E-03	1.77E-02
PM[c]	7.00E-04	0.7	3
TOC	7.05E-04	0.705	3

a. Emission Factors from AP-42 Table 3.4-1 for Diesel Fueled, large stationary engines
b. Assumes fuel sulfur content of 0.05%
c. PM10 emissions assumed to equal total PM emissions

Appendix F

List of Insignificant Activities

Table F-1 List of Insignificant Activities Pursuant to Rule 62-213.430(6)

Source	Quantity	Description	Reason for Exemption
Emergency Stand-By Generator	3	(2) 125kW Propane fueled generators (Scalehouse, model year 1994; Maintenance shop, model year 1995) and (1) PTO-Diesel Fueled (Model year 1998), 157 HP	Rule 62-210.300(3)(a)35, F.A.C. Existing engines exempt from NESHAP 40 CFR 63 Subpart ZZZZ based on emergency use status (40 CFR 63.6585(f)(2)) Exempt from 40 CFR 60 Subpart IIII and JJJJ based on manufacture dates (40 CFR 60.4200 and 60.4230)
Mobile Sources			
Bulldozers	6	Mobile Source	Rule 62-213.430(6), F.A.C.
Off Road Dump Truck	4	Mobile Source	Rule 62-213.430(6), F.A.C.
Front-End Loaders	9	Mobile Source	Rule 62-213.430(6), F.A.C.
Compactor	2	Mobile Source	Rule 62-213.430(6), F.A.C.
Sport Utility Vehicles	16	Mobile Source	Rule 62-213.430(6), F.A.C.
Tractor/Semi-Trailers	6	Mobile Source	Rule 62-213.430(6), F.A.C.
Fork Lifts	3	Mobile Source	Rule 62-213.430(6), F.A.C.
Skid Steers	3	Mobile Source	Rule 62-213.430(6), F.A.C.
Aerial Lift	1	Mobile Source	Rule 62-213.430(6), F.A.C.
Gator Utility Vehicles	4	Mobile Source	Rule 62-213.430(6), F.A.C.
Excavators	3	Mobile Source	Rule 62-213.430(6), F.A.C.
Backhoe	1	Mobile Source	Rule 62-213.430(6), F.A.C.
Utility Tractor	2	Mobile Source	Rule 62-213.430(6), F.A.C.
Vactruck	1	Mobile Source	Rule 62-213.430(6), F.A.C.
Riding Mower	1	Mobile Source	Rule 62-213.430(6), F.A.C.
Street Sweeper	1	Mobile Source	Rule 62-213.430(6), F.A.C.
Water Truck	1	Mobile Source	Rule 62-213.430(6), F.A.C.

Appendix G

Identification of Applicable Requirements

G.1 Applicable Requirements

The St. Lucie County (SLC) Baling and Recycling Facility is subject to the following requirements.

- New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills, 40 CFR 60 Subpart WWW National Emissions Standards
- National Emission Standards for Hazardous Air Pollutants (NESHAP) for Municipal Solid Waste Landfills as provided in 40 CFR 63 Subpart AAAA
- NESHAP for Stationary Reciprocating Internal Combustion Engines as provided in 40 CFR 63 Subpart ZZZZ
- Florida Department of Environmental Protection (FDEP) Title V Core List

G.2 Reporting Requirements

The SLC Baling and Recycling Facility currently has the following routine reporting requirements:

- Annual Operations Report (AOR), or Electronic Annual Operations Report (EAOR) for Title V sources (Rule 62-4.070(3)), F.A.C., due on or before April 1st each year;
- Statement of Compliance for Title V sources (Rule 62-213.440(3), F.A.C.), due March 1st each year;
- Annual Compliance Report for Landfills with active collection systems subject to 40CFR60 Subpart WWW or CC, 40CFR60.757(f), and 40CFR63.1980(a)), due March 1st and September 1st of each year.
- Semi-Annual Compliance Report for engine subject to 40 CFR 63 Subpart ZZZZ (40 CFR 63.6650)

The Startup, Shutdown and Malfunction (SSM) Plan, revised in February 2007, contains procedures for startup, shutdown and malfunction events related to SLC's Class I landfill gas collection and control systems. The plan also includes immediate and periodic reporting requirements, per 60 CFR 63.10 (5)(i). All procedures were developed to fulfill the objectives of operating the systems consistent with good air pollution control practices, and of correcting problems as soon as practicable to minimize excess emissions.

The Semi-Annual Compliance Report for Landfills with Active Collection Systems would contain the following applicable information required by 40 CFR 60.757(f) and 40 CFR 63.1980(a):

(1) Value and length of time for exceedance of applicable parameters monitored under §60.756(a), (b), (c), and (d). (Note that (b) and (d) do not apply to the SLC Baling and Recycling Facility, which uses an open candlestick flare as the control device.) These parameters are:

- gauge pressure at the gas collection header, measured monthly
- gas nitrogen or oxygen concentration at the gas collection header, measured monthly
- landfill gas temperature at each wellhead, measured monthly, and
- presence of flame at flare, based on heat sensing device, such as thermocouple or ultraviolet beam.

(2) Description and duration of all periods when the gas stream is diverted from the control device (open flare) through a bypass line or the indication of bypass flow as specified under §60.756.

(3) Description and duration of all periods when the control device (open flare) was not operating for a period exceeding 1 hour and length of time the control device was not operating.

(4) All periods when the collection system was not operating in excess of 5 days.

(5) The location of each exceedance of the 500 parts per million methane concentration as provided in §60.753(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month.

(6) The date of installation and the location of each well or collection system expansion added pursuant to paragraphs (a)(3), (b), and (c)(4) of §60.755.

(7) SSM Plan report, showing that actions taken during all startups, shutdowns and malfunctions of the gas collection system and flare are consistent with the SSM Plan. (Actions taken inconsistent with the SSM Plan must be reported within two working days.)

An SSM Report is submitted to Florida Department of Environmental Protection (FDEP), as part of SLC's Semi-Annual Operating Report, with the intention of notifying FDEP if actions taken during all startups, shutdowns and malfunctions of the gas collection system and flare were consistent with the procedures specified in the SSM Plan. (Actions taken inconsistent with the SSM Plan must be reported within two working days.)

Appendix H

Compliance Report and Plan

H.1 Landfill and LFG System (EU 001 and EU 002) Compliance

The SLC Baling and Recycling Facility is required to test the landfill gas flare in accordance with 40 CFR 60.18, The net heating value and actual exit velocity is required to be determined initially and once every five years when the Title V permit is renewed. The visible emissions testing is required to be tested annually. This compliance test report meets the requirements of Title V Air Operation Permit No. 1110081-006-AV and the New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills, 40 CFR 60 Subpart WWW. This section contains summary of regulatory requirements, compliance test results and calculations for the 2,000 scfm, non-assisted flare at the SLC Baling and Recycling Facility.

H.1.1 Regulatory Requirements

The control device (i.e., landfill gas flare) at the SLC Baling and Recycling Facility is subject to the following testing requirements as specified in Emission Unit Condition No. 1.31 and 40 CFR 60.18:

- **Visible Emissions Testing** to determine compliance with the visible emission provisions must be conducted using Reference Method 22;
- **Net Heating Value** of the gas being combusted must be calculated using the equation provided by 40 CFR 60.18(f)(3) which requires the use of the sample concentration, as measured by organics via Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D 1946-77 and the net heat of combustion of the sample obtained via ASTM D 2382-76 (if published values are not available);
- **Actual Exit Velocity** of a flare must be determined by dividing the volumetric flow rate, as determined by Reference Methods 2, 2A, 2C or 2D, by the unobstructed cross sectional area of the flare tip, and must be less than the Maximum Permitted Velocity, below; and
- **Maximum Permitted Velocity** must be determined using the net heating value in the equation provided by 40 CFR 60.18(f)(4)

SLC has received approval to use alternative methods to determine the net heating value of the landfill gas flare at the Baling and Recycling Facility. The United States Environmental Protection Agency (USEPA) approved the use of alternative methods on March 22, 2005. The site-specific approval applies only to the utility flare and allows SLC to use Method ASTM D1945-03 "*Standard Test Method for Analysis of Natural Gas by Gas Chromatography*" and Method ASTM D3588-98 "*Standard Practice for Calculating the Net Heating Value, Compressibility Factor, and Relative Density of Gaseous Fuels*" for determining the Net Heating Value of the gas instead of using Method 18 and ASTM D1946-77. The approved alternate procedure also allows use of a calibrated flow meter in lieu of Method 2, 2A, 2C or 2D, for determining the Actual Exit Velocity.

H.1.2 Compliance Testing Results

Visual Determination of Emissions from Flares (40 CFR 60.18(f)(1))

Visible Emissions Testing was conducted at the SLC Baling and Recycling Facility on April 17, 2013. EPA Reference Method 22 was used in performing this test as required in 40 CFR 60.18 (f)(1). The observation period consisted of two hours and no visible emissions were reported during the testing period. **Exhibit H-1** contains the visible emissions log for this test.

Net Heating Value of the Gas (40 CFR 60.18(f)(3))

Landfill gas sampling was performed at the SLC Baling and Recycling Facility on October 1, 2013. Four 30-minute landfill gas samples were collected in individual 6-L summa canisters and were shipped to Atmospheric Analysis and Consulting Inc., for analysis. Laboratory analysis consisted of Method ASTM D3588-98, as approved by USEPA and FDEP.

Four samples were analyzed for gas composition and for net (lower) heating value of the landfill gas by Method ASTM D3588-98. Laboratory results for net heating value of the landfill gas samples were 464, 469, 467, and 470 British Thermal Units per dry standard cubic foot of landfill gas (BTU/dscf) for each individual samples, as presented in **Exhibit H-2**, with an average net heating value of 467.5 BTU/dscf or 17.42 MJ/m^3. Chapter 40 CFR 60.18(c)(3)(ii) requires that the net heating value of the gas being combusted be 200 BTU/scf or greater for non-assisted flares. The average Net Heating Value of 467.5 BTU/scf for the 2,000-scfm flare meets this requirement.

Actual Exit Velocity (40 CFR 60.18(f)(4))

The Actual Exit Velocity is determined by dividing the volumetric flow rate of the landfill gas by the unobstructed cross sectional area of the flare tip. We are presenting two cases of calculated actual exit velocity. The maximum actual exit velocity is calculated using data from 2012 and is representative for normal operating conditions. The calculation using 2013 data is current operating conditions (blockage in flare tip), but the facility is working towards reestablishing 2012 operating conditions (fixing flare tip to be unobstructed).

The maximum volumetric flow rate reading obtained from the calibrated flow meter (Annubar-type instrument) in 2012 was 1160.246 scfm. The diameter of the flare tip is 10 inches. The actual exit velocity of the flare is 35.45 ft/sec (10.81 m/s).

$$V_{EXIT} = \frac{Q}{A_{TIP}} = \frac{Q}{\pi r^2}$$

$$= \frac{1160.246 \ \frac{ft^3}{\min}}{\pi * 5^2 in^2} * \frac{144 \ in^2}{ft^2} * \frac{1 \ \min}{60 \ s}$$

$$= 35.45 \ \frac{ft}{s} = 10.81 \ \frac{m}{s}$$

The maximum flow rate was taken from 2012 instead of 2013 because the flare tip area is currently obstructed by residue buildup and flow to the flare is restricted. Under current conditions of approximately 70% of the tip area blocked and a flow to the flare not exceeding 300 scfm, the actual exit velocity is estimated to be 30.56 ft/s (9.31 m/s). Measures are being taken to remove the blockage and return the flare to full capacity.

Maximum Permitted Velocity (40 CFR 60.18(f)(5))

The maximum permitted velocity, Vmax, for the 2,000-scfm flare was determined by using the equation provided in 40 CFR 60.18(f)(5). The variable Heating Value (HV) is the net heating value (lower heating value, LHV) of the landfill gas, as determined by Method ASTM D3588-99, which is equal to 17.42 MJ/m^3. The numbers 28.8 and 31.7 are constants

$$Log_{10}(V_{MAX}) = \frac{HV + 28.8}{31.7}$$

$$= \frac{17.42 \ \frac{MJ}{m^3} + 28.8}{31.7}$$

$$V_{MAX} = 28.71 \ \frac{m}{s} = 94.18 \ \frac{ft}{s}$$

Substituting for HV and solving for Vmax equates to 94.18 ft/s (28.71 m/s). This is the maximum permitted velocity for the 2,000-scfm flare.

Non-assisted flares are allowed if designed for and operated with an exit velocity, as determined by the methods specified in 40 CFR 60.18 (f)(4), less than the maximum permitted velocity, V max, as determined by the method specified above, and less than 122 m/sec (400 ft/sec). The SLC flare operates at an actual exit velocity less than the maximum permitted velocity as expressed below. Both the calculated 2012 velocity of 35.45 ft/sec and the calculated 2013 exit velocity of 30.56 ft/sec are below the permitted value.

$$V_{EXIT} = 35.45 \ \frac{ft}{s} < V_{MAX} = 94.18 \ \frac{ft}{s}$$

H.1.3 Compliance Test Reports

The current Compliance Test Program, last updated August 27, 2009, for the SLC Baling and Recycling Facility was included in the Title V Semi-Annual Report for the period of January to June 2013 and submitted to FDEP on September 12, 2013. An Electronic Annual Operating Report (EAOR) and a Statement of Compliance are submitted each year to provide operating conditions of the landfill and to report any deviations or exceedances of normal operating conditions.

H.2 C&D Grinder Engine (EU 003) Compliance

The existing stationary, C&D debris, horizontal grinder is equipped with a 2004 model year, 1000 horsepower (HP), diesel-fueled, compression ignition, reciprocating internal combustion engine.

H.2.1 Regulatory Requirements

In accordance with 40 CFR 63 Subpart ZZZZ, an existing stationary CI RICE located at an area source of HAP emissions, must comply with the applicable emission limitations, operating limitations, and other requirements no later than May 3, 2013. The C&D grinder engine is subject to this requirement, but this date of compliance was not met, so a compliance plan is provided below.

As a non-emergency, non-black start CI stationary RICE rated for more than 500 HP, this engine must meet a limit concentration of carbon monoxide (CO) in its exhaust to 23 parts per million ppmvd at 15 percent oxygen or reduce CO emissions by 70 percent or more. (40 CFR 60 Subpart ZZZZ, Table 2d)

Because this existing stationary engine was manufactured in 2004, it is exempt from 40 CFR 60 Subpart IIII.

H.2.2 Proposed Compliance Plan

The following actions are being planned to bring the engine into compliance with the requirements of 40 CFR 63 Subpart ZZZZ.

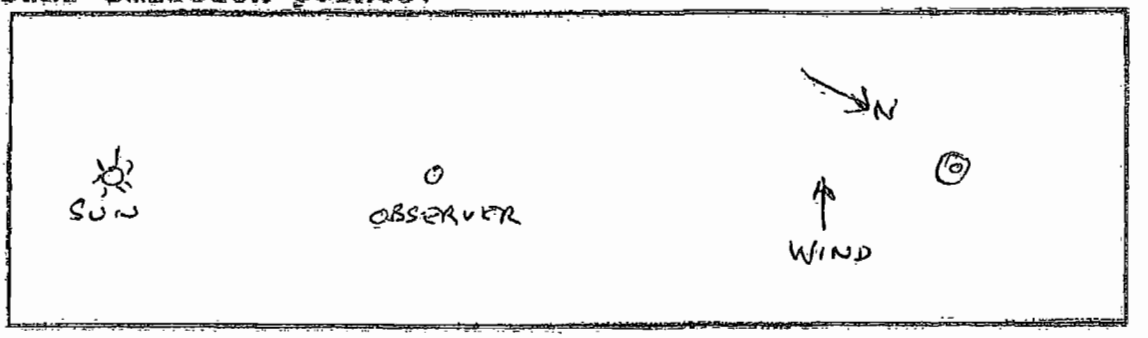
- Engineering Assessment (3 months) - the engine will be assessed for current performance including preliminary testing of carbon monoxide content in engine exhaust
- Engineering Determination (2 months) - using information gathered during the assessment, a determination will be made if control equipment (e.g. an oxidation catalyst) is required. If control equipment is required the necessary equipment will be identified and specified.
- Equipment Acquisition, Installation and Start-up (9 months) - a request for bids will be issued, bids will be assessed and contract awarded, the design will be reviewed and approved, the equipment will be fabricated and then the equipment will be installed
- Compliance Planning - (1 month) any required site specific monitoring plans, performance evaluation plans and testing protocols will be written and operations and maintenance plans will be updated as necessary
- Testing - (1 month + 60 day notice) the appropriate information will be submitted to FDEP and notice will be given of initial testing
- Reporting - (1 month) reports will be prepared and submitted in accordance with site specific plans and in accordance with 40 CFR 63 Subpart ZZZZ requirements

Estimates of time required are provided with the above actions and the date of completion and satisfaction of compliance requirements is June, 2015.

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTDOOR LOCATION

Company ST LUCIE COUNTY LANDFILL	Observer J. CURRO (C)/D. HIGHTOWER (H)
Location FT. PIERCE, FL	Affiliation CDM SMITH
Company Rep.	Date 4/17/13
Sky Conditions PARTLY/MOSTLY CLOUDY	Wind Direction E
Precipitation NONE	Wind Speed 0-5 MPH
Industry LANDFILL	Process Unit LANDFILL GAS FLARE

Sketch process unit: indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS		Clock Time	Observation period duration, min:sec	Accumulated emission time, min:sec
Begin Observation	@H	10:30A	15:00	0:00
	@C	10:45A	15:00	0:00
	@H	11:00A	15:00	0:00
	C	11:15A	15:00	0:00
	H	11:30A	15:00	0:00
	C	11:45A	15:00	0:00
	H	12:00P	15:00	0:00
	C	12:15P	15:00	0:00
End Observation		12:30P		

Figure 22-1

Atmospheric Analysis & Consulting, Inc.

CLIENT	: CDM Smith
PROJECT NAME	: St. Lucie County
AAC PROJECT NO.	: 131403
REPORT DATE	: 10/8/2013

On October 7, 2013, Atmospheric Analysis & Consulting, Inc. received four (4) Six-Liter Summa Canisters for BTU analysis by ASTM D-3588. Upon receipt, the samples were assigned unique Laboratory ID numbers as follows:

Client ID	Lab No.	Initial Pressure (mmHg)
SLC-1	131403-66922	709.2
SLC-2	131403-66923	569.5
SLC-3	131403-66924	590.0
SLC-4	131403-66925	635.5

ASTM D-3588 Analysis – Up to a 1 mL aliquot of sample is injected into the GC/SCD/TCD/FID for analysis following ASTM D-3588 as specified in the SOW.

No problems were encountered during receiving, preparation, and/or analysis of these samples. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOP# AACI-ASTM D-3588.

I certify that this data is technically accurate, complete, and in compliance with the terms and conditions of the contract. The Laboratory Director or his designee, as verified by the following signature, has authorized release of the data contained in this hardcopy data package.

If you have any questions or require further explanation of data results, please contact the undersigned.

Marcus Hueppe
Laboratory Director

This report consists of 13 pages.

ACCREDITED IN ACCORDANCE WITH nelac Certificate #E87837

1534 Eastman Ave., Ste. A • Ventura, • CA 93003 www.aaclab.com • (805) 650-1642 • FAX (805) 650-1644

Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report
ASTM-D3588 (BTU and F-Factor)

CLIENT	**CDM Smith**	**SAMPLING DATE**	**10/01/2013**
PROJECT NO.	**131403**	**ANALYSIS DATE**	**10/08/2013**

	Client ID:	SLC-1	
	AAC ID:	131403-66922	
	Component	Mole %	Weight %
FIXED GASES	H_2	0.00	0.00
	O_2	1.71	1.99
	N_2	13.04	13.30
	CO	0.00	0.00
	CO_2	34.25	54.89
	CH_4	50.99	29.79
	He	NM	NM
	Ar	NM	NM
HYDROCARBONS	C_2 (as Ethane)	0.0002	0.0002
	C_3 (as Propane)	0.0027	0.0044
	C_4 (as Butane)	0.0007	0.0014
	C_5 (as Pentane)	0.0007	0.0018
	C_6 (as Hexane)	0.0008	0.0024
	C_{6+} (as Hexane)	0.0084	0.0262
TRS	TRS as H2S	0.0005	0.0007
H2O	Moisture content	NM	NM

All results have been normalized to 100% on a dry weight basis.

Fuel Gas Specifications			
Atomic Breakdown - (scf/lb) / %		*HHV Btu/lb*	7124
Carbon (C)	37.3	*LHV Btu/lb*	6414
Hydrogen (H)	7.5	*HHV Btu/dscf*	516
Oxygen (O)	41.9	*LHV Btu/dscf*	464
Nitrogen (N)	13.3	*F-Factor*	9396
Helium (He)	0.00	*Specific Gravity*	0.9483
Argon (Ar)	0.00	*C2-C6+ Weight %*	0.0364
Sulfur (S)	0.00	*MW lb/lb-mole*	27.463

Marcus Hueppe
Laboratory Director

1534 Eastman Ave., Ste. A • Ventura, • CA 93003 www.aaclab.com • (805) 650-1642 • FAX (805) 650-1644

Atmospheric Analysis & Consulting, Inc.

LABORATORY ANALYSIS REPORT

Total Reduced Sulfur Compounds Analysis by ASTM D-5504

CLIENT **CDM Smith**
PROJECT NO. **131403**

SAMPLING DATE **10/01/2013**
ANALYSIS DATE **10/08/2013**

Client ID	SLC-1
AAC ID	131403-66922
Canister Dilution Factor	1.28
Analyte	Result
Hydrogen Sulfide	< 0.064 ppmv
Carbonyl Sulfide	**0.238 ppmv**
Sulfur Dioxide	< 0.064 ppmv
Carbon Disulfide	< 0.064 ppmv
Total Inorganic Sulfur	**0.238 ppmv**
Methyl Mercaptan	< 0.064 ppmv
Ethyl Mercaptan	< 0.064 ppmv
Isopropyl Mercaptan	< 0.064 ppmv
sec-Butyl Mercaptan	< 0.064 ppmv
tert-Butyl Mercaptan	< 0.064 ppmv
n-Propyl Mercaptan	< 0.064 ppmv
iso-Butyl Mercaptan	< 0.064 ppmv
n-Butyl Mercaptan	< 0.064 ppmv
n-Pentyl Mercaptan	< 0.064 ppmv
n-Hexyl Mercaptan	< 0.064 ppmv
n-Heptyl Mercaptan	< 0.064 ppmv
n-Octyl Mercaptan	**0.254 ppmv**
Total Mercaptans	**0.254 ppmv**
Thiophene	**0.145 ppmv**
Tetrahydrothiophene	< 0.064 ppmv
2-Methylthiophene	**0.133 ppmv**
3-Methylthiophene	< 0.064 ppmv
2,5-Dimethyl Thiophene	< 0.064 ppmv
2-Ethyl Thiophene	< 0.064 ppmv
2-Propyl Thiophene	< 0.064 ppmv
2-Butyl Thiophene	**0.133 ppmv**
Bromothiophene	< 0.064 ppmv
Benzothiophene	< 0.064 ppmv
Total Thiophenes	**0.411 ppmv**
Dimethyl Sulfide	**2.86 ppmv**
Methylethylsulfide	< 0.064 ppmv
Diethyl Sulfide	< 0.064 ppmv
Phenyl Sulfide	< 0.064 ppmv
Total Organic Sulfides	**2.86 ppmv**
Dimethyl Disulfide	**0.358 ppmv**
Diethyl disulfide	**0.091 ppmv**
Total Organic Disulfides	**0.449 ppmv**
Total Unidentified Sulfur	**1.02 ppmv**
Total Reduced Sulfur	**5.00 ppmv**

All compound's concentrations expressed in terms of H_2S
Total Reduced Sulfur (TRS) does not include COS and SO2

Marcus Hueppe
Laboratory Director

1534 Eastman Ave., Ste. A • Ventura, • CA 93003 www.aaclab.com • (805) 650-1642 • FAX (805) 650-1644

Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report
ASTM-D3588 (BTU and F-Factor)

CLIENT	**CDM Smith**	**SAMPLING DATE**	**10/01/2013**
PROJECT NO.	**131403**	**ANALYSIS DATE**	**10/08/2013**

	Client ID:	SLC-2	
	AAC ID:	131403-66923	
	Component	Mole %	Weight %
FIXED GASES	H_2	0.00	0.00
	O_2	1.42	1.65
	N_2	12.02	12.24
	CO	0.00	0.00
	CO_2	35.05	56.05
	CH_4	51.49	30.02
	He	NM	NM
	Ar	NM	NM
HYDROCARBONS	C_2 (as Ethane)	0.0002	0.0002
	C_3 (as Propane)	0.0027	0.0043
	C_4 (as Butane)	0.0006	0.0013
	C_5 (as Pentane)	0.0007	0.0018
	C_6 (as Hexane)	0.0008	0.0024
	C_{6+} (as Hexane)	0.0093	0.0291
TRS	TRS as H2S	0.0004	0.0005
H2O	Moisture content	NM	NM

All results have been normalized to 100% on a dry weight basis.

Fuel Gas Specifications			
Atomic Breakdown - (scf/lb) / %		*HHV Btu/lb*	7180
Carbon (C)	37.8	*LHV Btu/lb*	6465
Hydrogen (H)	7.6	*HHV Btu/dscf*	521
Oxygen (O)	42.4	*LHV Btu/dscf*	469
Nitrogen (N)	12.2	*F-Factor*	9405
Helium (He)	0.00	*Specific Gravity*	0.9502
Argon (Ar)	0.00	*C2-C6+ Weight %*	0.0390
Sulfur (S)	0.00	*MW lb/lb-mole*	27.519

Marcus Hueppe
Laboratory Director

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LABORATORY ANALYSIS REPORT

Total Reduced Sulfur Compounds Analysis by ASTM D-5504

CLIENT **CDM Smith** **SAMPLING DATE** **10/01/2013**
PROJECT NO. **131403** **ANALYSIS DATE** **10/08/2013**

Client ID	**SLC-2**
AAC ID	**131403-66923**
Canister Dilution Factor	**1.62**
Analyte	**Result**
Hydrogen Sulfide	< 0.081 ppmv
Carbonyl Sulfide	**0.172 ppmv**
Sulfur Dioxide	< 0.081 ppmv
Carbon Disulfide	**0.111 ppmv**
Total Inorganic Sulfur	**0.283 ppmv**

Methyl Mercaptan	< 0.081 ppmv
Ethyl Mercaptan	< 0.081 ppmv
Isopropyl Mercaptan	< 0.081 ppmv
sec-Butyl Mercaptan	< 0.081 ppmv
tert-Butyl Mercaptan	< 0.081 ppmv
n-Propyl Mercaptan	< 0.081 ppmv
iso-Butyl Mercaptan	< 0.081 ppmv
n-Butyl Mercaptan	< 0.081 ppmv
n-Pentyl Mercaptan	< 0.081 ppmv
n-Hexyl Mercaptan	< 0.081 ppmv
n-Heptyl Mercaptan	< 0.081 ppmv
n-Octyl Mercaptan	**0.195 ppmv**
Total Mercaptans	**0.195 ppmv**

Thiophene	**0.152 ppmv**
Tetrahydrothiophene	< 0.081 ppmv
2-Methylthiophene	**0.165 ppmv**
3-Methylthiophene	< 0.081 ppmv
2,5-Dimethyl Thiophene	< 0.081 ppmv
2-Ethyl Thiophene	< 0.081 ppmv
2-Propyl Thiophene	< 0.081 ppmv
2-Butyl Thiophene	**0.096 ppmv**
Bromothiophene	< 0.081 ppmv
Benzothiophene	< 0.081 ppmv
Total Thiophenes	**0.413 ppmv**

Dimethyl Sulfide	**2.62 ppmv**
Methylethylsulfide	< 0.081 ppmv
Diethyl Sulfide	< 0.081 ppmv
Phenyl Sulfide	< 0.081 ppmv
Total Organic Sulfides	**2.62 ppmv**

Dimethyl Disulfide	**0.337 ppmv**
Diethyl disulfide	< 0.081 ppmv
Total Organic Disulfides	**0.337 ppmv**

Total Unidentified Sulfur	**0.495 ppmv**
Total Reduced Sulfur	**4.17 ppmv**

All compound's concentrations expressed in terms of H_2S
Total Reduced Sulfur (TRS) does not include COS and SO2

Marcus Hueppe
Laboratory Director

1534 Eastman Ave., Ste. A • Ventura, • CA 93003 www.aaclab.com • (805) 650-1642 • FAX (805) 650-1644

Laboratory Analysis Report
ASTM-D3588 (BTU and F-Factor)

CLIENT	**CDM Smith**	**SAMPLING DATE**	**10/01/2013**
PROJECT NO.	**131403**	**ANALYSIS DATE**	**10/08/2013**

	Client ID:	SLC-3	
	AAC ID:	131403-66924	
	Component	Mole %	Weight %
FIXED GASES	H_2	0.00	0.00
	O_2	1.42	1.65
	N_2	12.10	12.30
	CO	0.00	0.00
	CO_2	35.14	56.13
	CH_4	51.33	29.88
	He	NM	NM
	Ar	NM	NM
HYDROCARBONS	C_2 (as Ethane)	0.0002	0.0002
	C_3 (as Propane)	0.0029	0.0047
	C_4 (as Butane)	0.0007	0.0014
	C_5 (as Pentane)	0.0007	0.0018
	C_6 (as Hexane)	0.0008	0.0025
	C_{6+} (as Hexane)	0.0101	0.0317
TRS	TRS as H2S	0.0004	0.0005
H2O	Moisture content	NM	NM

All results have been normalized to 100% on a dry weight basis.

Fuel Gas Specifications			
Atomic Breakdown - (scf/lb) / %		*HHV Btu/lb*	7148
Carbon (C)	37.7	*LHV Btu/lb*	6436
Hydrogen (H)	7.5	*HHV Btu/dscf*	519
Oxygen (O)	42.5	*LHV Btu/dscf*	467
Nitrogen (N)	12.3	*F-Factor*	9410
Helium (He)	0.00	*Specific Gravity*	0.9515
Argon (Ar)	0.00	*C2-C6+ Weight %*	0.0422
Sulfur (S)	0.00	*MW lb/lb-mole*	27.555

Marcus Hueppe
Laboratory Director

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LABORATORY ANALYSIS REPORT

Total Reduced Sulfur Compounds Analysis by ASTM D-5504

CLIENT CDM Smith
PROJECT NO. 131403

SAMPLING DATE 10/01/2013
ANALYSIS DATE 10/08/2013

Client ID	SLC-3
AAC ID	131403-66924
Canister Dilution Factor	1.59
Analyte	Result
Hydrogen Sulfide	< 0.080 ppmv
Carbonyl Sulfide	**0.176 ppmv**
Sulfur Dioxide	< 0.080 ppmv
Carbon Disulfide	< 0.080 ppmv
Total Inorganic Sulfur	**0.176 ppmv**

Methyl Mercaptan	< 0.080 ppmv
Ethyl Mercaptan	< 0.080 ppmv
Isopropyl Mercaptan	< 0.080 ppmv
sec-Butyl Mercaptan	< 0.080 ppmv
tert-Butyl Mercaptan	< 0.080 ppmv
n-Propyl Mercaptan	< 0.080 ppmv
iso-Butyl Mercaptan	< 0.080 ppmv
n-Butyl Mercaptan	< 0.080 ppmv
n-Pentyl Mercaptan	< 0.080 ppmv
n-Hexyl Mercaptan	< 0.080 ppmv
n-Heptyl Mercaptan	< 0.080 ppmv
n-Octyl Mercaptan	**0.104 ppmv**
Total Mercaptans	**0.104 ppmv**

Thiophene	**0.150 ppmv**
Tetrahydrothiophene	< 0.080 ppmv
2-Methylthiophene	**0.189 ppmv**
3-Methylthiophene	< 0.080 ppmv
2,5-Dimethyl Thiophene	< 0.080 ppmv
2-Ethyl Thiophene	< 0.080 ppmv
2-Propyl Thiophene	< 0.080 ppmv
2-Butyl Thiophene	< 0.080 ppmv
Bromothiophene	< 0.080 ppmv
Benzothiophene	< 0.080 ppmv
Total Thiophenes	**0.339 ppmv**

Dimethyl Sulfide	**2.50 ppmv**
Methylethylsulfide	< 0.080 ppmv
Diethyl Sulfide	< 0.080 ppmv
Phenyl Sulfide	< 0.080 ppmv
Total Organic Sulfides	**2.50 ppmv**

Dimethyl Disulfide	**0.284 ppmv**
Diethyl disulfide	< 0.080 ppmv
Total Organic Disulfides	**0.284 ppmv**

Total Unidentified Sulfur	**0.433 ppmv**
Total Reduced Sulfur	**3.66 ppmv**

All compound's concentrations expressed in terms of H_2S
Total Reduced Sulfur (TRS) does not include COS and SO2

Marcus Hueppe
Laboratory Director

1534 Eastman Ave., Ste. A • Ventura, • CA 93003 www.aaclab.com • (805) 650-1642 • FAX (805) 650-1644

Laboratory Analysis Report
ASTM-D3588 (BTU and F-Factor)

CLIENT	**CDM Smith**	**SAMPLING DATE**	**10/01/2013**
PROJECT NO.	**131403**	**ANALYSIS DATE**	**10/08/2013**

	Client ID:	SLC-4	
	AAC ID:	131403-66925	
	Component	Mole %	Weight %
FIXED GASES	H_2	0.00	0.00
	O_2	1.43	1.67
	N_2	12.08	12.31
	CO	0.00	0.00
	CO_2	34.90	55.87
	CH_4	51.57	30.10
	He	NM	NM
	Ar	NM	NM
HYDROCARBONS	C_2 (as Ethane)	0.0002	0.0002
	C_3 (as Propane)	0.0027	0.0043
	C_4 (as Butane)	0.0006	0.0013
	C_5 (as Pentane)	0.0007	0.0017
	C_6 (as Hexane)	0.0007	0.0023
	C_{6+} (as Hexane)	0.0147	0.0462
TRS	TRS as H2S	0.0004	0.0005
H2O	Moisture content	NM	NM

All results have been normalized to 100% on a dry weight basis.

Fuel Gas Specifications				
Atomic Breakdown - (scf/lb) / %			***HHV Btu/lb***	**7203**
Carbon (C)	**37.8**		***LHV Btu/lb***	**6485**
Hydrogen (H)	**7.6**		***HHV Btu/dscf***	**522**
Oxygen (O)	**42.3**		***LHV Btu/dscf***	**470**
Nitrogen (N)	**12.3**		***F-Factor***	**9401**
Helium (He)	**0.00**		***Specific Gravity***	**0.9492**
Argon (Ar)	**0.00**		***C2-C6+ Weight %***	**0.0561**
Sulfur (S)	**0.00**		***MW lb/lb-mole***	**27.489**

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LABORATORY ANALYSIS REPORT

Total Reduced Sulfur Compounds Analysis by ASTM D-5504

CLIENT **CDM Smith** ***SAMPLING DATE*** ***10/01/2013***
PROJECT NO. 131403 **ANALYSIS DATE 10/08/2013**

Client ID	SLC-4
AAC ID	131403-66925
Canister Dilution Factor	1.46
Analyte	Result
Hydrogen Sulfide	< 0.073 ppmv
Carbonyl Sulfide	**0.162 ppmv**
Sulfur Dioxide	< 0.073 ppmv
Carbon Disulfide	< 0.073 ppmv
Total Inorganic Sulfur	**0.162 ppmv**
Methyl Mercaptan	< 0.073 ppmv
Ethyl Mercaptan	< 0.073 ppmv
Isopropyl Mercaptan	< 0.073 ppmv
sec-Butyl Mercaptan	< 0.073 ppmv
tert-Butyl Mercaptan	< 0.073 ppmv
n-Propyl Mercaptan	< 0.073 ppmv
iso-Butyl Mercaptan	< 0.073 ppmv
n-Butyl Mercaptan	< 0.073 ppmv
n-Pentyl Mercaptan	< 0.073 ppmv
n-Hexyl Mercaptan	< 0.073 ppmv
n-Heptyl Mercaptan	< 0.073 ppmv
n-Octyl Mercaptan	**0.229 ppmv**
Total Mercaptans	**0.229 ppmv**
Thiophene	**0.157 ppmv**
Tetrahydrothiophene	< 0.073 ppmv
2-Methylthiophene	**0.213 ppmv**
3-Methylthiophene	< 0.073 ppmv
2,5-Dimethyl Thiophene	< 0.073 ppmv
2-Ethyl Thiophene	< 0.073 ppmv
2-Propyl Thiophene	< 0.073 ppmv
2-Butyl Thiophene	**0.094 ppmv**
Bromothiophene	< 0.073 ppmv
Benzothiophene	< 0.073 ppmv
Total Thiophenes	**0.464 ppmv**
Dimethyl Sulfide	**2.61 ppmv**
Methylethylsulfide	< 0.073 ppmv
Diethyl Sulfide	< 0.073 ppmv
Phenyl Sulfide	< 0.073 ppmv
Total Organic Sulfides	**2.61 ppmv**
Dimethyl Disulfide	**0.317 ppmv**
Diethyl disulfide	< 0.073 ppmv
Total Organic Disulfides	**0.317 ppmv**
Total Unidentified Sulfur	**0.597 ppmv**
Total Reduced Sulfur	**4.2 ppmv**

All compound's concentrations expressed in terms of H_2S
Total Reduced Sulfur (TRS) does not include COS and SO2

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Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed : 10/08/2013
Analyst : ZG
Units : %

Instrument ID : TCD#1
Calb Date : 04/13/2012
Reporting Limit : 0.1%

I - Opening Continuing Calibration Verification - ASTM D-1945/1946

AAC ID	Analyte	H_2	O_2	N_2	CO_2	CH_4	CO
CCV	Spike Conc	10.3	10.5	19.6	10.3	9.9	10.3
	Result	11.7	11.0	22.3	10.7	10.7	11.2
	% Rec *	113.7	105.4	113.8	104.7	107.3	108.1

II - Method Blank - ASTM D-1945/1946

AAC ID	Analyte	H_2	O_2	N_2	CO_2	CH_4	CO
MB	Concentration	ND	ND	ND	ND	ND	ND

III - Laboratory Control Spike & Duplicate - ASTM D-1945/1946

AAC ID	Analyte	H_2	O_2	N_2	CO_2	CH_4	CO
Lab Control Standards	Sample Conc	0.0	0.0	0.0	0.0	0.0	0.0
	Spike Conc	10.3	10.5	19.6	10.3	9.9	10.3
	LCS Result	11.1	10.2	20.5	10.2	9.8	10.2
	LCSD Result	11.6	11.0	22.0	10.4	10.4	10.9
	LCS % Rec *	107.7	97.7	104.5	99.5	98.6	98.9
	LCSD % Rec *	113.1	104.8	111.9	101.8	104.8	105.7
	% RPD ***	4.9	6.9	6.9	2.4	6.1	6.7

IV - Sample & Sample Duplicate - ASTM D-1945/1946

AAC ID	Analyte	H_2	O_2	N_2	CO_2	CH_4	CO
131404-66926	Sample	0.0	1.0	15.6	31.8	47.1	0.0
	Sample Dup	0.0	1.1	17.1	33.8	51.7	0.0
	Mean	0.0	1.0	16.3	32.8	49.4	0.0
	% RPD ***	0.0	4.3	9.1	6.2	9.4	0.0

V - Matrix Spike & Duplicate - ASTM D-1945/1946

AAC ID	Analyte	H_2	N_2	CO_2	CH_4	CO
131404-66926	Sample Conc	0.0	8.2	16.4	24.7	0.0
	Spike Conc	10.3	9.2	10.3	9.9	10.3
	MS Result	11.1	17.9	25.2	34.0	9.9
	MSD Result	10.8	17.9	25.4	34.1	9.8
	MS % Rec **	107.9	105.5	86.1	94.2	95.3
	MSD % Rec **	104.8	105.5	87.4	94.3	94.8
	% RPD ***	2.9	0.1	1.6	0.2	0.6

VI - Closing Continuing Calibration Verification - ASTM D-1945/1946

AAC ID	Analyte	H_2	O_2	N_2	CO_2	CH_4	CO
CCV	Spike Conc	10.3	10.5	19.6	10.3	9.9	10.3
	Result	11.7	10.6	21.4	10.4	10.3	10.8
	% Rec *	114.0	101.1	109.2	101.9	103.8	104.0

** Must be 85-115%*
*** Must be 75-125%*
**** Must be < 25%*
ND = Not Detected
<RL = less than Reporting Limit

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Laboratory Director

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Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed : 10/08/2013
Analyst : ZG
Units : ppmv

Instrument ID : FID #3
Calb Date : 05/23/13
Reporting Limit : 0.5 ppmv

I - Opening Continuing Calibration Verification - ASTM D-1945/1946

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
CCV	Spike Conc	106.6	101.5	101.6	102.3	103.5	101.2
	Result	108.6	104.0	103.8	104.1	105.3	103.1
	% Rec *	101.9	102.5	102.2	101.8	101.7	101.8

II - Method Blank - ASTM D-1945/1946

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
MB	Concentration	ND	ND	ND	ND	ND	ND

III - Laboratory Control Spike & Duplicate - ASTM D-1945/1946

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
Lab Control Standards	Sample Conc	0.0	0.0	0.0	0.0	0.0	0.0
	Spike Conc	106.6	101.5	101.6	102.3	103.5	101.2
	LCS Result	110.3	106.1	106.2	106.1	107.4	104.6
	LCSD Result	110.5	106.2	106.6	106.6	107.5	104.6
	LCS % Rec *	103.5	104.6	104.5	103.7	103.7	103.4
	LCSD % Rec *	103.7	104.7	104.9	104.2	103.9	103.3
	% RPD ***	0.2	0.1	0.4	0.4	0.1	0.0

IV - Sample & Sample Duplicate - ASTM D-1945/1946

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
131403-66922	Sample	NA	0.0	13.5	1.7	0.0	0.0
	Sample Dup	NA	0.0	13.4	1.7	0.0	0.0
	Mean	NA	0.0	13.5	1.7	0.0	0.0
	% RPD ***	NA	0.0	0.7	0.5	0.0	0.0

V - Matrix Spike & Duplicate - ASTM D-1945/1946

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
131403-66922	Sample Conc	NA	0.0	6.7	0.9	0.0	0.0
	Spike Conc	NA	50.7	50.8	51.2	51.8	50.6
	MS Result	NA	50.4	57.8	51.9	51.9	50.3
	MSD Result	NA	50.3	57.5	51.4	51.3	50.2
	MS % Rec **	NA	99.4	100.5	99.7	100.2	99.4
	MSD % Rec **	NA	99.2	99.9	98.7	99.1	99.2
	% RPD ***	NA	0.3	0.6	1.1	1.1	0.3

VI - Closing Continuing Calibration Verification - ASTM D-1945/1946

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
CCV	Spike Conc	106.6	101.5	101.6	102.3	103.5	101.2
	Result	106.3	102.3	102.1	102.4	103.6	101.2
	% Rec *	99.7	100.8	100.5	100.1	100.1	100.0

** Must be 85-115%*

*** Must be 75-125%*

**** Must be < 25%*

ND = Not Detected

<RL = less than Reporting Limit

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Quality Control/Quality Assurance Report
ASTM D-5504

Date Analyzed: 10/08/13
Analyst: DH

Instrument ID: SCD#10
Calb. Date: 5/14/2013

Opening Calibration Verification Standard

	Resp. (area)	Result (ppbV)	% Rec *	% RPD ****
Initial	16616	493	98.6	NA
Duplicate	16809	499	99.7	1.2
Triplicate	16882	501	100.1	1.6

Method Blank

Analyte	Result
H2S	ND

Matrix Spike & Duplicate **Sample ID 131404-66926 x200**

Analyte	Sample Conc.	Spike Added	MS Result	MSD Result	MS % Rec **	MSD % Rec **	% RPD ***
H2S	355.3	250.0	613.0	602.1	101.3	99.5	1.8

Duplicate Analysis **Sample ID 131404-66926**

Analyte	Sample Result	Duplicate Result	Mean	% RPD ***
H2S	70869	71238	71054	0.5

Closing Calibration Verification Standard

Analyte	Std. Conc.	Result	%Recovery **
H2S	500.0	510.2	102.0

** Must be 95-105%*

*** Must be 90-110%*

**** Must be < 10%*

***** must be < 5% RPD from Initial result.*

Marcus Hueppe
Laboratory Director

1534 Eastman Ave., Ste. A • Ventura, • CA 93003 www.aaclab.com • (805) 650-1642 • FAX (805) 650-1644

ATMOSPHERIC ANALYSIS & CONSULTING, INC.
1534 Eastman Avenue, Suite A
Ventura, California 93003
Phone (805) 650-1642 Fax (805) 650-1644
E-mail: info@aaclab.com

AAC Project No. 131403 Page 1 of 1

CHAIN OF CUSTODY/ ANALYSIS REQUEST FORM

Client Name: CDM Smith
Project Name: St. Lucie County
Project Mgr (Print Name): Kevin Vann
Project Number:
Sampler's Name (Print Name): David Hightower
Sampler's Signature: David Hightower

AAC Sample No.	Date Sampled	Time Sampled	Sample Type	Client Sample ID/Description	Type/No. of Containers	ASTM 3588 BTU					
660922	10/1/13	14:00	Gas	SLC-1	SUMMA 1	X					
660923	10/1/13	14:35	Gas	SLC-2	SUMMA 1	X					
660924	10/1/13	15:05	Gas	SLC-3	SUMMA 1	X					
660925	10/1/13	15:35	Gas	SLC-4	SUMMA 1	X					

Analysis Requested

Send report:
Attn: Gretchen Dorn
Phone#: 772-360-3232
Fax# dorngi@CDMsmith.com

Send invoice to:
Attn:
P.O. #

Turnaround Time
24-Hr ____ 48-Hr ____
5 Day X Normal ____
Other (Specify) ____

Special Instructions/remarks:

Relinquished by (Signature)	Print Name	Date/Time	Received by (signature):	Print Name
David Hightower	David Hightower	10/1/13 17:00		
Relinquished by (Signature):	Print Name:	Date/Time 10/7/13 1400	Received by (Signature):	Print Name WES HORN

CDM Smith

cdmsmith.com