

**NEW RIVER SOLID WASTE ASSOCIATION  
REQUEST FOR PROPOSAL  
Landfill Gas-to-CNG Project**

RFP number: 18-01

Proposal Due Date: April 25, 2018, 3:00 p.m. local time

Pre-Proposal Meeting: Non-Mandatory Site Visit and Meeting  
March 28, 2018 10:00 am local time  
New River Regional Landfill  
East of S.R. 121, 2.5 miles north of Raiford  
24276 Northeast 157th Street  
Raiford, FL 32083

Contract Period: 15 years

Inquiries: Darrell O'Neal  
New River Solid Waste Association  
P.O. Box 647, Raiford, Florida 32083  
Telephone: (386) 431-1000  
Fax: (386) 431-1099  
E-mail: doneal@nrswa.org

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**All requests for additional information shall be made in writing  
Responses will be made available to all known Vendors in writing.  
No verbal responses will be provided.**

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**NOTICE**

It is the specific legislative intent of the New River Solid Waste Association (NRSWA) that NO CONTRACT under this solicitation shall be formed between NRSWA and the awardee (Vendor) until such time as the contract is executed by the last party to the transaction.

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## **1 GENERAL INFORMATION**

### **1-1 Purpose**

New River Solid Waste Association (NRSWA) has issued this Request for Proposal (RFP) for developing a landfill gas to compressed natural gas (CNG) conversion and vehicle fueling project at the New River Regional Landfill (NRRL), an active municipal solid waste landfill in Union County, Florida. NRSWA is seeking Vendors qualified to convert landfill gas (LFG) to CNG.

### **1-2 Pre-Proposal Meeting**

A pre-proposal meeting and site tour will be held on Wednesday, March 28, 2018, at 10:00 a.m. local time at the NRRL. The landfill office is at 24276 Northeast 157th Street, Raiford, Florida 32083, east of SR 121, 2.5 miles north of Raiford. The purpose of the meeting and site visit is to familiarize Vendors with the site, discuss the work to be performed, and answer questions. Attendance is strongly encouraged but not mandatory.

### **1-3 Contract Consideration**

The Contract is expected to be negotiated after NRSWA selects the Vendor.

### **1-4 Rejection**

NRSWA reserves the right to accept or reject any or all proposals or to waive any irregularities in any proposal or to accept the proposal that best serves the interest and intent of this Project and is from the most responsive and responsible Vendor.

### **1-5 Inquiries**

For questions and additional information, contact:

Darrell O'Neal  
New River Solid Waste Association  
P.O. Box 647, Raiford, Florida 32083  
Telephone: (386) 431-1000  
Fax: (386) 431-1099  
E-mail: doneal@nrswa.org

Requests for additional information regarding this RFP must be submitted in writing no later than April 11, 2018, 3:00 p.m. local time to NRSWA. Questions submitted by facsimile or other electronic media will be accepted; however, receipt by NRSWA is not guaranteed. The Vendor is responsible for ensuring receipt of the questions by NRSWA. NRSWA will respond to written requests in writing and will issue a written addendum to the proposal.

### **1-6 Addenda**

Any changes made to the RFP shall be brought to the attention of Vendors by issuing addenda. All addenda are part of the proposal documents and each Vendor will be bound by such addenda, whether or not the Vendor has received the addenda. Each Vendor is responsible for verifying that they have received all addenda issued before proposals are opened.

**1-7 Proposal Schedule**

**Table 1: Tentative Proposal Schedule**

Issue Requests for Proposals	March 8, 2018
Pre-Proposal Meeting and Site Tour	March 28, 2018
Receive Proposals	April 25, 2018
Evaluate Proposals/Select Vendor	May 2018

**1-8 Proposal Content and Signature**

All proposals shall be in the possession of NRSWA no later than April 25, 2018, 3:00 p.m. local time. Proposals must be mailed in a sealed envelope clearly marked:

Attention: Darrell O’Neal  
Landfill Gas-to-CNG Project RFP: 18-01  
New River Solid Waste Association  
P.O. Box 647, Raiford, Florida 32083

Submittals will include one original and two copies of the Vendor’s proposal.

Vendors are advised that the NRRL is in a rural area and overnight delivery may not be reliable.

Vendors may withdraw and/or replace proposals at any time until the deadline for submission of proposals.

Submissions by facsimile or other electronic media will not be accepted under any circumstances.

Regardless of the method of delivery, each Vendor shall be responsible for their proposal being delivered on time. Proposals received after the time set for solicitation closing will be rejected and returned unopened.

**1-9 Disclosure**

All information submitted in response to this RFP shall become a matter of public record, subject to Florida Statutes regarding public disclosure.

**1-10 Negotiations**

NRSWA, at its sole discretion, reserves the right to enter into contract negotiations with the Vendor determined to best meet the needs of NRSWA. If NRSWA and the Vendor cannot successfully negotiate a contract, NRSWA may terminate negotiations and begin negotiations with a second Vendor. No Vendor shall have any rights against NRSWA arising from such negotiations or termination.

**1-11 Recommended Proposal Preparation Guidelines**

All Vendors shall provide a straightforward and concise description of their ability to meet the RFP requirements. The proposal shall clearly show the technical approach to include work tasks, estimated time phasing, and the proposed approach rational. NRSWA discourages overly lengthy proposals.

**1-12 Prime Contractor Responsibilities**

The selected Vendor shall be required to assume full responsibility for all services offered in their proposal. The selected Vendor shall be the sole point of contact regarding contractual matters.

**1-13 License(s)**

The Vendor has sole responsibility of maintaining all license(s) required by the Federal government, the State of Florida, Union County, and/or local ordinances to perform the work specified in this Contract throughout the term of the Contract. This includes using Florida Licensed General Contractors, a Florida Licensed Professional Engineer, and a Florida Licensed Professional Land Surveyor to complete the work.

**1-14 Permit(s)**

NRSWA will obtain Florida Department of Environmental Protection (FDEP) Solid Waste and Title V permits as required for construction and operation of the plant under Development Project – Option 1. The Vendor will obtain FDEP Solid Waste and Title V permits as required for construction and operation of the plant under Development Project – Option 2. The Vendor shall obtain all permits related to local building permits.

**1-15 Delays**

All work will begin upon authorization from NRSWA. All work will proceed in a timely manner without delays. An implementation schedule must be presented before Contract execution. The Vendor shall begin the work UPON RECEIPT OF NOTICE TO PROCEED and shall perform in accordance with the terms and conditions established in the Contract.

**1-16 Governing Laws and Regulations**

The Vendor is required to be familiar with and shall be responsible for complying with all Federal, State, and local laws, ordinances, rules, and regulations that in any manner affect the work.

**1-17 Indemnification Clause**

The Vendor shall at all times indemnify and hold harmless NRSWA and its employees from and against any action, claims, damages, litigation, expenses, counsel fees, and compensation to the extent caused by the actions or omissions of the Vendor and/or the Vendor's subcontractor(s) in the performance of this Contract, including but not limited to any claims, damages, personal injuries, and/or property losses sustained by or alleged to have been sustained by any person or entity.

**2 SCOPE OF WORK**

**2-1 Development Option 1**

The Vendor shall provide a price and qualifications proposal to develop for NRSWA a fully operational LFG-to-CNG vehicle fuel conversion plant (Plant) with storage capacity and fast fueling station subject to the requirements and responsibilities listed below:

**NRSWA's responsibilities** for Option 1 shall generally include the following:

- Finance, own, and operate the Plant.
- Make periodic progress payments to the Vendor as construction is performed.
- Own, operate, and maintain the gas collection and control system (GCCS) to provide the necessary LFG flow rate and gas composition required for the Plant to produce up to 800 diesel gallon equivalents (DGE) per day.
- Provide a prepared site for the Plant not to exceed 2 acres to include clearing, geotechnical investigation, excavation of unsuitable soils, structural fill, positive drainage, stormwater controls, grass, paved access road, and parking area within reasonable limitations. NRSWA will deliver LFG to that location.
- Retain all environmental attributes associated with LFG and the converted CNG.
- Provide LFG from the existing blower station to the Plant at a positive pressure (>0 inches WC).
- Accept return of LFG condensate (water), waste gas, and wastewater from the Plant.
- Provide utility connections for electrical power service, potable water at the approximate rate of 20 gallons per minute (gpm) at 40 pounds per square inch gauge (psig), limited wastewater disposal via septic tank, and fiber-optic connection to the local telephone to the boundary of the Plant site.
- Obtain FDEP Solid Waste and Title V Air Operations Permits for construction and operation of the Plant to include permit fees, as required.
- Provide copies of operations data, design, and as-built drawings of the NRRL.

**The Vendor's responsibilities** for Option 1 shall generally include the following:

- Provide an LFG-to-CNG conversion plant capable of producing up to 800 DGE per day.
- Plant shall be designed to convert LFG, with a composition shown in the composition data in Attachment 4 to produce CNG vehicle fuel.
- The Plant will be designed to remove nitrogen from the LFG.
- Vendor may provide a deductive alternate for nitrogen removal based on LFG composition that includes less than 8% nitrogen.
- Develop the Plant with a fast fueling station and CNG storage as specified in Attachment 6.
- Provide all labor, materials, supervision, and technical support required to develop, construct, test, and train NRSWA staff except as noted in the NRSWA's responsibilities section above.
- Off-site disposal of industrial wastewater, and contaminated and hazardous materials.
- Comply with all Federal, State, and local regulations and permits.
- Obtain all local building permits.
- Use local labor and suppliers to the maximum possible extent.
- Provide a Plant capable of maintaining a minimum capacity factor of 90%.
- Provide provisions and points of connection for future Plant expansion.
- Obtain all Federal, State, and local permits for the proposed Plant except as noted above.
- Provide site improvements and utilities as needed beyond those provided by NRSWA.
- Provide hardware and programming for remote monitoring and control as shown in Attachment 6.
- Provide interconnection to the existing blower station for integrated controls.
- Cooperate with NRSWA to minimize construction cost by NRRL self-performing a portion of the construction as identified in NRSWA's responsibilities.
- Cooperate with NRRL to minimize adverse impacts to landfill operations and maintain regulatory compliance to specifically include Title V Air Operations Permit requirements.
- Provide factory-acceptance testing (FAT), start-up services, and operations for 30 days.
- Additional Plant requirements are provided in Attachment 6.

- For the Vehicle Fueling Facility provide an 18-month full warranty for parts, labor, travel time, and mileage.

### **Option 1 Add-Alternate**

**The Vendor's responsibilities** for the Option 1 – Add Alternate shall generally include the following:

- Provide a local electrical generation source for self-use by the Plant.
- Use CNG fuel produced by the Plant to operate a reciprocating engine electrical generator.
- The generator will be sized to power the Plant at full capacity.
- The generator will be rated for continuous duty operations.
- Provide electrical switch gear for Plant operation from the electrical utility.
- The generator shall be housed in a self-contained all weather enclosure.
- The generator will be configured to power the adjacent blower station when not being used by the Plant.

### **2-2 Development Option 2**

The Vendor shall develop a high-BTU LFG-to-CNG conversion Plant to convert all of the LFG collected at NRRL. The Vendor shall also develop a fast fueling station with storage capacity to be owned and operated by NRSWA. The Vendor shall supply NRSWA with up to 800 DGE per day and 200,000 DGE minimum per year of CNG for NRSWA to operate the fast fueling station with storage capacity described under Project Option 1. The Vendor will pay NRSWA for the LFG delivered to the Plant. The Vendor will sell CNG vehicle fuel to NRSWA on a unit basis (\$/DGE) as the fuel is used by NRSWA. The Vendor may not sell the CNG vehicle fuel to other users on a commercial basis using the NRSWA fueling station or NRRL site.

**NRSWA's responsibilities** for Option 2 shall generally include the following:

- Provide all collected LFG to the Plant with a gas composition shown in the composition data in Attachment 4.
- Own, operate, and maintain the GCCS to provide a balance between supplying the Plant with LFG and maintaining Title V compliance.
- Expand the GCCS as landfilling progresses.
- Provide a prepared site for the Plant and vehicle fueling facility not to exceed 3 acres to include clearing, geotechnical investigation, excavation of unsuitable soils, structural fill, positive drainage, stormwater controls, grass, paved access road, and parking area within reasonable limitations. NRSWA will deliver LFG to that location.
- Accept return of LFG condensate (water) from the plant.
- Provide utility connections for potable water at the approximate rate of 20 gpm at 40 psig, limited wastewater disposal via septic tank, and fiber-optic connection to the local telephone to the boundary of the Plant site.
- Obtain FDEP Solid Waste and Air Operations Permits for construction and operation of the fast fueling station to include permit fees as required.
- Provide copies of operations data, design, and as-built drawings of the NRRL.
- Transfer ownership of the vehicle fueling facility to NRSWA upon completion of the FAT.

**The Vendor's responsibilities** for Option 2 shall generally include the following:

- Provide an LFG to high-BTU/CNG conversion Plant capable of using all of the LFG collected at the NRRL including possible future expansions of the GCCS.
- Realize minimum LFG flows will not be guaranteed.
- Finance the Project.
- Design the Plant to convert the LFG with a composition shown in the composition data in Attachment 4 to a high-BTU pipeline quality fuel.
- Perform evaluations and investigations as needed to estimate the amount of LFG that could be generated at the NRRL reasonably collected by the GCCS and be delivered to the Plant.
- Size the Plant based on the results of the above-referenced evaluation and investigation to best use as much of the LFG as possible while balancing financial risk.
- Obtain all right-of-way and easements and other approvals as needed.
- Obtain approvals from pipeline and other authorities as needed.
- Provide a CNG vehicle fueling facility to meet the performance requirements of Option 1.
- Provide all labor, materials, supervision, and technical support required to develop, construct, test, and operate the Plant except as noted in the Responsibilities of NRSWA.
- Comply with all Federal, State, and local regulations and permits.
- Obtain all local building permits.
- Use local labor and suppliers to the maximum possible extent.
- Provide a Plant capable of maintaining a minimum capacity factor of 90%.
- Obtain all Federal, State, and local permits for the proposed plant except as noted above.
- Provide site improvements and utilities as needed beyond those provided by NRSWA.
- Cooperate with NRRL to minimize adverse impacts to landfill operations and maintain regulatory compliance to specifically include Title V Air Operations Permit requirements.
- Retain all environmental attributes associated with LFG that is accepted by the Plant.
- Provide the primary source of vacuum to collect LFG from the wellfield.
- Provide interconnection to the existing blower station for integrated controls.
- Provide an 18-month full warranty for parts, labor, travel time, and mileage for the Vehicle Fueling Facility.

### **2-3 Project Financing**

Financing for the project will be as follows:

1. Development Project – Option 1 shall be financed by NRSWA.
2. Development Project – Option 2 shall be financed by the Vendor.

The Vendor is not required to propose on both options and should clearly note options not selected or exceptions taken.

### **3 INFORMATION REQUIRED FROM VENDORS**

NRSWA intends to select a Vendor within 60 calendar days of the deadline for receipt of proposals. However, proposals must be firm and valid for award for a minimum of 120 calendar days after the deadline for receipt of proposals.

NRSWA shall not be obligated or liable for any costs incurred by Vendors before a Contract is issued. All costs to prepare and submit a response to this solicitation shall be borne by the Vendor.

Proposals for Option 1 or Option 2 shall conform to the format set forth in Table 4. A description of the required content follows.

**Table 2: Proposal Organization**

Section 1	Letter of Transmittal
Section 2	Form A - Vendor Information
Section 3	Form B - Bid Form – Option 1
	Form B-1 – Bid Form provided in Attachment 5 must be included in the proposal under Development Option 1. The Bid Form must be signed by a representative authorized to bind the Vendor.
	Compensation
Section 4	Form C - Exceptions or Deviations
Section 5	Vendor Contact Person and Company/Team Information
Section 6	Experience, Qualifications, and Financial Capability
Section 7	Technical Approach
Section 8	Compensation Proposal
Section 9	Implementation Schedule
Attachments	As Needed by Vendor

**3-1 Letter of Transmittal**

The Letter of Transmittal shall be prepared on the letterhead of the Vendor that would execute the Contract with NRSWA. The Letter of Transmittal is intended to introduce the Vendor and should contain at least the following information:

- a) A statement that the Vendor is prepared to meet NRSWA's procurement implementation schedule.
- b) A statement noting receipt of each addenda and the associated receipt date.
- c) A signature from a representative authorized to bind the Vendor to perform the proposed services if NRSWA awards the Vendor a contract.

**3-2 Vendor Information**

The completed Form A – Vendor Information provided in Attachment 5 must be included in the proposal.

**3-3 Bid Form – Option 1**

Form B-1 – Bid Form provided in Attachment 5 must be included in the proposal under Development Option 1. The Bid Form must be signed by a representative authorized to bind the Vendor.

**3-4 Compensation Schedule - Option 2**

Form B-2 – Compensation Schedule provided in Attachment 5 must be included in the proposal under Development Option 2. The Compensation Schedule must be signed by a representative authorized to bind the Vendor.

The Vendor shall compensate NRSWA for all LFG used by the Vendor. The units of compensation will be the value per MMBtu (\$/MMBtu).

### **3-5 Exceptions or Deviations**

Form C – Exceptions or Deviations provided in Attachment 5 must be included in the proposal. All exceptions and/or deviations from the minimum specifications outlined in this RFP must be clearly identified and noted on this sheet. If a Vendor has no exceptions or deviations, they must write “**NO EXCEPTIONS OR DEVIATIONS TAKEN**” and submit the form. The exceptions or deviations sheet must be signed by a representative authorized to bind the Vendor.

### **3-6 Vendor Contact Person and Company/Team Information**

This section shall designate the contact person (supplying name, address, telephone number, fax number, and e-mail address) to which NRSWA will send and receive all communication. This section shall also include at least the following:

- a) A short business history of the Vendor.
- b) Information on the Vendor, including organization, parent companies, affiliates, subsidiaries, and subcontractors that would assist in performing the scopes of services.
- c) An organizational chart and brief résumés of key individuals.

### **3-7 Experience, Qualifications, and Financial Capability**

The successful supplier must have proven competence and experience in the design, installation, and startup of similar landfill gas beneficial reuse facilities. The Vendor must have a minimum of two similar projects completed in the United States within the last 5 years. Project descriptions must include the following:

- a) Project name and location.
- b) Landfill Owner, operator, and contact information.
- c) Description of project and work and equipment specifically relevant to this project.
- d) Type of contractual relationship/Contract between the Vendor and the Owner (i.e. turnkey provider, gas user only, equity partner, etc.)
- e) Financing used to implement and operate the project.

The Vendor shall provide financing for all work for Option 2 as noted in this RFP. Proposals for Option 2 shall include a specific statement of intent to provide financing for the scope of work proposed. The source of financing should be included with a letter of commitment from that source. If the Vendor expects any preconditions on financing, these shall be identified and explained.

### **3-8 Technical Approach**

This section must include a description of the approach to implementing and executing the Option(s) selected by the Vendor. The description shall provide sufficient detail to demonstrate the Vendor's understanding of the issues and constraints associated with the project's development and implementation. At a minimum the Vendor must include the following as part of this section:

- a) A description of the processes proposed to be used to convert LFG to CNG.
- b) Performance data of the particular technologies and equipment proposed.
- c) The plan for obtaining revenue, under Option 2.

- d) The roles and responsibilities of the Vendor and any subcontractors.

Vendors submitting proposals that identify Alternate Options must additionally include a detailed scope of services that is being proposed.

### **3-9 Compensation Proposal**

This section must include a detailed discussion of the compensation plan and explain why the proposal provides the best economic benefit to NRSWA. For both Option 1 and Option 2, the discussion should include a proposed compensation schedule for the Contract period. A discussion of revenue escalation should be included.

### **3-10 Implementation Schedule**

This section must include a proposed schedule for beginning operation of the LFG-to-CNG project. Vendors should present schedules that are readily obtainable based on their experience. The implementation schedule should list the major milestones and dates. Include an MS Project or Primavera-style diagram of the proposed schedule based on an estimated Contract execution date of June 2018.

### **3-11 Insurability Requirements**

Before the Contract is executed, the Vendor shall supply proof of insurance or a written statement from a licensed insurance company that the Vendor can obtain insurance of the following type and minimum value:

1. **Liability Insurance:** The Vendor shall purchase and maintain such insurance that will protect NRRL from claims that may arise out of or result from the Vendor's operations under the terms and conditions of the Proposal. Liability insurance shall be obtained at the Vendor's expense and in the Vendor's name as the insured; the insurance shall also show NRSWA as an additional named insured. The limit of liability for this coverage shall not be less than \$5 million per occurrence.
2. **Workers' Compensation Insurance:** As required by the State of Florida.
3. **Property Insurance Coverage:** For 100% of the "replacement cost value."
4. **Environmental Impairment Insurance:** Coverage shall be provided and maintained as a separate policy for \$1 million per occurrence, \$5 million aggregate.

## **4 CRITERIA FOR SELECTION**

### **4-1 Evaluation Criteria**

NRSWA will review each proposal regarding the Vendor's qualifications, experience, financial capability, project approach, pricing, and project schedule. NRSWA expects to award the Contract to the Vendor who submits the proposal judged highest by the Selection Committee.

Proposals not meeting stated minimum terms and qualifications may be rejected by NRSWA as non-responsive. NRSWA reserves the right to waive any irregularities, technicalities, or irregularities in any proposal and to reject any or all proposals without cause.

**4-2 Local Contractor Preference**

Evaluation of proposals will be weighted in favor of Vendors proposing to use local companies for labor and materials to the extent possible. A list of local companies is provided in Table 5; however, this list is not comprehensive. As part of the proposal, the Vendor must identify the local companies intended to be used as part of the construction and operation of the plant.

**Table 3: NRSWA Local Contractor List**

<b>Contractor</b>	<b>Type</b>	<b>Contact</b>
Liberty Trucking	Limerock Supplier	386-496-1991
Pritchett Trucking	Limerock Supplier	386-496-2630
Mid-Fla Hauling, Inc.	Limerock Supplier	386-496-2251
Smith & Son’s Sod Company	Turf Supplier	386-755-4328
Suwannee Valley Grassing	Turf Supplier	386-752-2504
Thompson Sod	Turf Supplier	386-462-0507
Clemons Field Services	Turf Supplier	352-494-0122
Pipeline Contractors, Inc.	Underground Utilities	904-964-2019
North Florida Equipment Rental	Equipment Rental	386-496-2121
Tom Jenkins Electrical Services	Electrical Services	386-496-2439
Florida Tractor Repair	Equipment Repair	386-623-3095
Owen Alvarez & Sons Plumbing	Plumbing	904-964-4312
Jay Bird Plumbing Incorporated	Plumbing	386-496-0788
Apex Fabrication Incorporated	Metal Fabrication	904-259-4666
Ring Power CAT Rental Store	CAT Equipment Rental	904-755-3997
Union Lasteel Metal Buildings	Building Contractor	386-496-0681
Richard O Tillis Contracting Inc	Building Contractor	386-496-9026
Touchstone Heating & Air Inc	HVAC	386-496-3467
Hayes Electric & Air Conditioning Co	HVAC	905-964-8744
Pat Welch	Surveyor	904-964-8292

**4-3 Contract Period**

The proposed minimum Contract period is 15 years; however, the Vendor may propose alternate periods.

**5 FACILITY INFORMATION**

**5-1 NRSWA Description**

NRSWA is a governmental agency established through an Interlocal Agreement with Baker, Bradford, and Union Counties to provide solid waste disposal services. Waste is collected in each County by private waste management companies or is disposed of at convenience centers by citizens of the Counties. The private haulers and counties are responsible for transporting waste to the NRRL. Alachua and Levy Counties also have waste disposal contracts with the NRRL, and the landfill accepts waste on a case-by-case basis from “out-of-region” customers.

## 5-2 NRRL Facility Description

The NRRL is at 24276 Northeast 157th Street, Raiford, Florida 32083, east of SR 121, 2.5 miles north of Raiford. The Landfill is in Section 33, Township 4 South, Range 21 East with an approximate latitude of 30°06' North and longitude 82°13' West. Attachment 1 includes a Site Location Map.

The site covers approximately 500 acres and accepts Class I, Class III, and Special Wastes (e.g. white goods and tires). Recycling activities are outsourced. The NRRL consists of two discrete landfills, an active Class I and an inactive Class III landfill, which began accepting waste in 1992. The Class I landfill is comprised of six permitted cells with a footprint covering 82.2 acres. The initial Class III footprint covered about 13 acres. Between 2010 and 2015, all Class III landfilled waste was excavated and relocated to the Class I landfill (not including asbestos waste). The current Class III landfill footprint includes an approximately 1 acre inactive asbestos waste disposal area.

The facility is currently permitted for Cells 1 to 6. Cell 7 is a new 20-acre cell that is scheduled to start construction in the fall of 2018. Collectively, Cells 1 to 7 are referred to as *Phase I*. In the future, NRSWA will design and permit Phase II. Phase II is expected to be an additional 140-acre Class I disposal area on the east side of the NRRL property. **Please note that there is no guarantee that Phase II will be designed and permitted.** Attachment 2 includes a Site Plan illustrating the various phases and cells.

## 5-3 Regulation

The facility is currently under New Source Performance Standards (NSPS) requirements. Table 6 shows the NSPS active gas collection requirements based on each cell.

**Table 4: NRRL Compliance Dates by Cell**

Cell No.	Date Cell began accepting waste	Cell at final grade?	NSPS Compliance Date
Cells 1 and 2	July 1992	No	March 19, 2010
Cell 3	June 2000	No	March 19, 2010
Cell 4	June 2002	No	March 19, 2010
Cell 5	May 2007	No	July 1, 2012
Cell 6	October 2012	No	December 1, 2017

## 5-4 Bioreacting

NRRL has been pioneering new and innovated waste technologies, one is bioreacting. The construction of the NRRL bioreactor landfill began in 2001. Moisture addition was initiated in 2003. Cell 1 and Cell 2 at NRRL were operated as bioreactors until February 2008. Future bioreacting will be performed on a limited basis.

## 5-5 GCCS Design

The Phase I landfill is served by an active collection system consisting of a combination of vertical collection wells and horizontal collection trenches. The collection devices are connected to the flare station via a header system. A description of the GCCS is provided below and Attachment 3 shows the GCCS Design Plan.

### Vertical Collection Wells

Vertical collection wells are spaced approximately every 200 feet and have been triangulated to provide coverage in combination with the horizontal collection trenches over the area of waste mass. The vertical collection wells are constructed of solid and perforated 6-inch Schedule 80 PVC pipe installed in a 36-inch-diameter borehole. Vertical collection wells are the primary method of gas collection in Cells 1 to 4.

#### Horizontal Collector Trenches

Horizontal collector trenches are approximately 4 feet deep by 2 feet wide with a 6-inch-diameter perforated high-density polyethylene (HDPE) collector pipe. The trenches are filled with a porous non-carbonate, non-calcareous media and wrapped in a geotextile filter fabric. Porous media may include tire chips, crushed glass, or gravel as allowed by permit. Horizontal collector trenches are used in Cells 5 and 6 as the primary method of collecting gas.

#### Wellfield Piping

The wellfield is connected through a series of HDPE header pipes that convey the LFG to the flare station for destruction. A 16-inch header is the primary loop around the perimeter of Cells 1 to 6. Attachment 3 contains the Design Plan showing the existing wellfield piping layout.

#### Condensate Management

Condensate generated in the GCCS is managed by gravity draining to the existing leachate collection system at specific locations around the landfill.

#### Flare Station

The Class I Landfill GCCS is conveyed to an existing flare station, which includes the following gas control equipment:

- Three 800 standard cubic feet per minute (scfm) 15-horsepower centrifugal blowers with -45 inches water column vacuum at the blower inlet.
- A thermal convection mass flow meter.
- A non-assisted candlestick utility flare rated to a maximum flow rate of 3,000 scfm.

### **5-6 Waste Stream Projections**

Before 1999, the NRRL received an annual maximum of 55,394 tons per year (tpy) of Class I waste. With the onset of the Alachua County Contract in 1999, the Class I waste tonnage increased to approximately 200,000 tpy. Table 7 shows a numerical summary of historical landfilled Class I waste data.

The quantity of Class I waste is projected based on total historical tonnage data from 1999 through 2017, excluding 2004 because that year's data were not considered representative of the historical trends because a portion of the waste generated by Alachua County was diverted to another landfill. The projections were calculated based on historical growth trends and average population forecasts for the contributing counties. These trends and population forecasts estimate a 1 percent increase from 2018 to 2026.

**These waste stream projections are based on historical waste trends that change over time; there is no guarantee of these waste tonnages.**

**Table 5: Historical Waste Disposal Tonnage**

Year	Class I Historical [tpy]	Percent Increase
1992	23,788	
1993	30,046	26
1994	32,102	7
1995	32,612	2
1996	40,391	24
1997	45,576	13
1998	55,394	22
1999 <sup>(1)</sup>	219,793	297
2000	204,892	-7
2001	225,180	10
2002 <sup>(2)</sup>	236,379	5
2003	232,828	-2
2004 <sup>(3)</sup>	199,736	-14
2005	232,696	17
2006	254,626	9
2007	274,875	8
2008	261,442	-5
2009	265,342	1
2010	200,129	-24.58
2011	224,610	12.23
2012	225,669	0.47
2013	226,488	0.36
2014	231,760	2.33
2015 <sup>(4)</sup>	244,619	5.55
2016	252,943	3.40
2017	265,262	4.87
<b>Total Tonnage</b>	<b>4,739,178</b>	

**Table 6: Projected Waste Disposal Tonnage**

Year	Class I Projection [tpy]	Percent Increase
2018	267,946	1
2019	270,626	1
2020	273,332	1
2021	276,066	1
2022	278,826	1
2023	281,614	1
2024	284,431	1
2025 <sup>(5)</sup>	287,275	1

Notes:

- (1) 1999 – Alachua and Levy County contracts begin.
- (2) 2002 – The majority of Class III waste disposed of in the Class I landfill moving forward.
- (3) 2004 – Waste Management diverted approximately 20 percent of Alachua County waste from NRRL.
- (4) 2015 – Excavation and relocation of Class III landfill waste completed.
- (5) 2025 – Phase I (Cells 1 to 6) at Full Buildout.

**5-7 Conceptual Site Lifespan**

The apparent density of landfilled waste in the NRRL Class I landfill is approximately 1,200 pounds per cubic yard.

Estimated remaining landfill volume is based on conceptual final closure surfaces for Phases I and II. Table 9 shows the estimated volumes and lifespans for Phase I and the first cell of Phase II based on the waste projections discussed in Section 5-6. Please note that the lifespan for Phase II is only for the first 50-acre cell of the full 140-acre conceptual buildout. **These lifespans are based on historical waste**

trends and successful design and permitting of Cell 7 and Phase II Cell 1; there is no guarantee of these lifespans.

**Table 7: Estimated Remaining Landfill Volume as of April 2017**

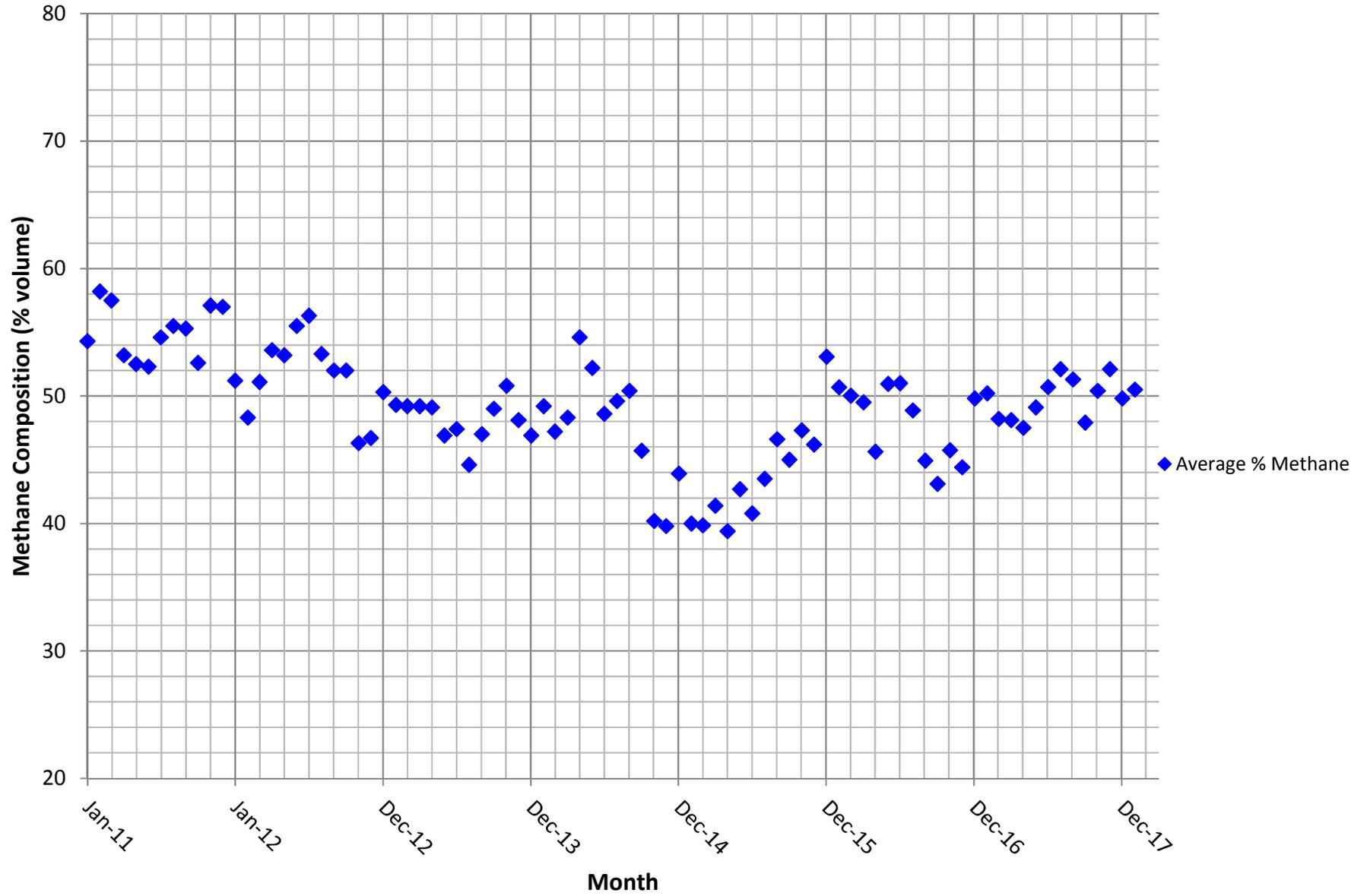
Landfill Filling Steps (as of 5/2009)	Estimated Volume [CY]	Estimated Completion Year
Phase I: Cells 1-6 to Buildout	3,266,244	2025
Phase I: Cell 7 to Buildout	2,330,000	2030
Phase II: Cell 1 (50 Acres)	4,920,139	2039

#### **5-8 Historical Gas Data**

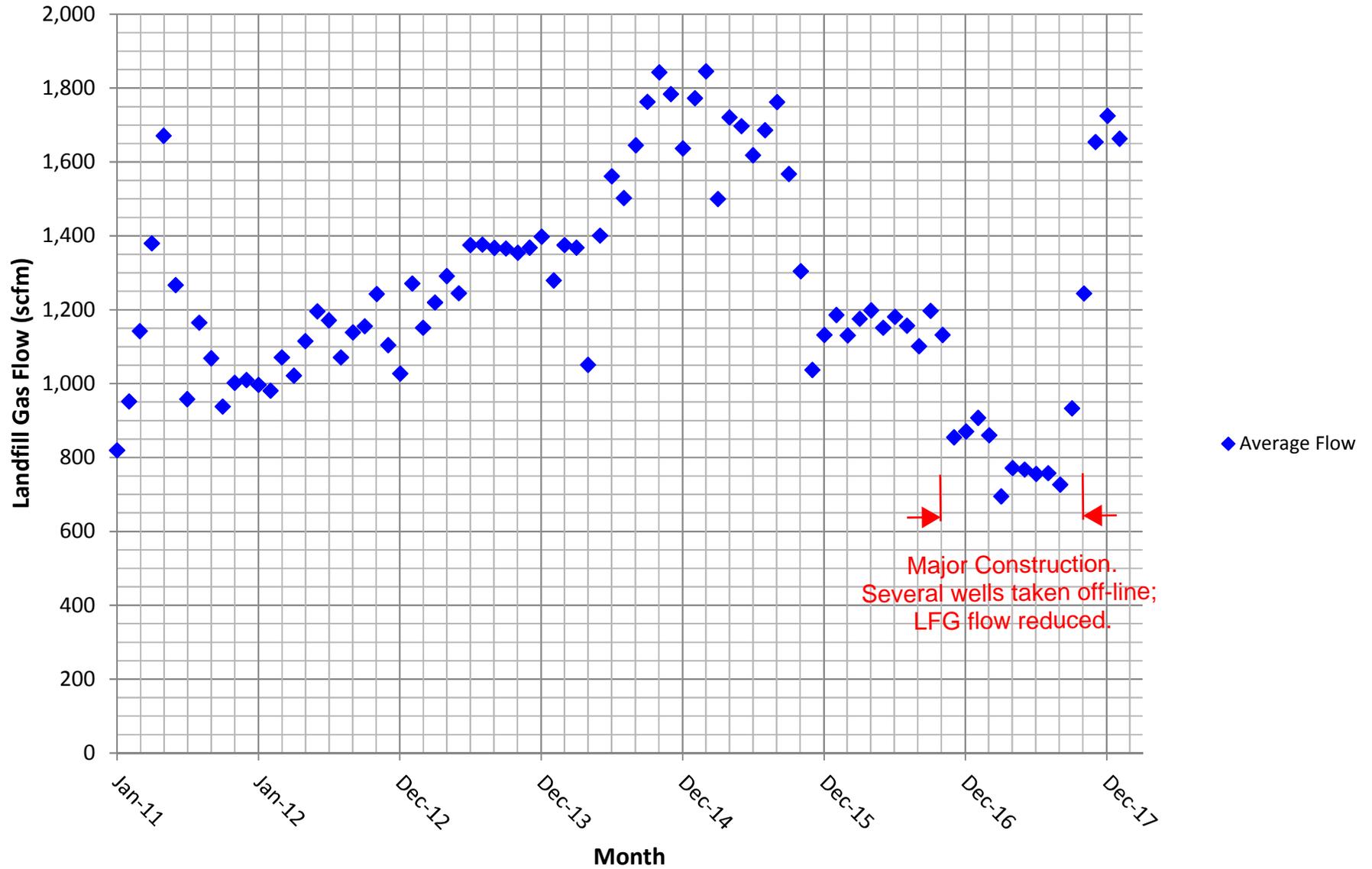
Limited historical gas data are available. Before March 2009, NRRL was used as a bioreactor demonstration project where the production of high-quality gas was not a primary concern. At the beginning of March 2009, NRRL completed its bioreactor demonstration project and redesigned its GCCS. **Figure 1** and **Figure 2** show the historical flow rate (in scfm) and methane composition data from January 1, 2011 to February 28, 2018. From November 2016 to October 2017, due to redesign of the collection system, maintenance work, and waste filling, the GCCS was not operating at full capacity; therefore, recent gas data show lower than expected flow rates. A minimum LFG flow rate and gas composition is not guaranteed.

Gas Composition Testing was conducted by TRC on April 9, 2014. Attachment 4 includes a summary of the results.

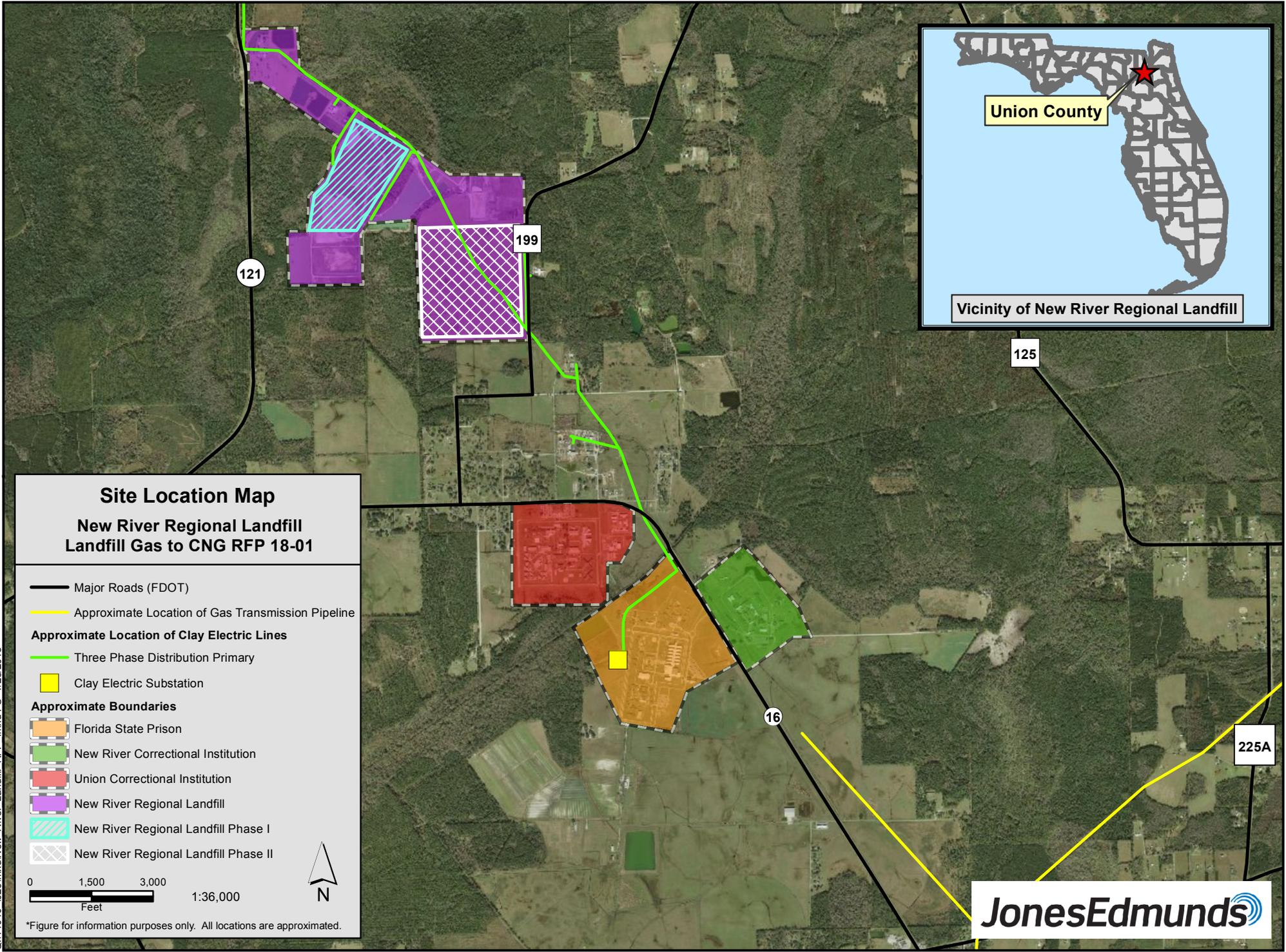
**Figure 1. Landfill Gas Methane Composition**



### Figure 2. Average Landfill Gas Flow



**ATTACHMENT 1**  
**SITE LOCATION MAP**



**Site Location Map**  
**New River Regional Landfill**  
**Landfill Gas to CNG RFP 18-01**

- Major Roads (FDOT)
- Approximate Location of Gas Transmission Pipeline
- Approximate Location of Clay Electric Lines**
  - Three Phase Distribution Primary
  - Clay Electric Substation
- Approximate Boundaries**
  - Florida State Prison
  - New River Correctional Institution
  - Union Correctional Institution
  - New River Regional Landfill
  - New River Regional Landfill Phase I
  - New River Regional Landfill Phase II

0 1,500 3,000  
 Feet 1:36,000

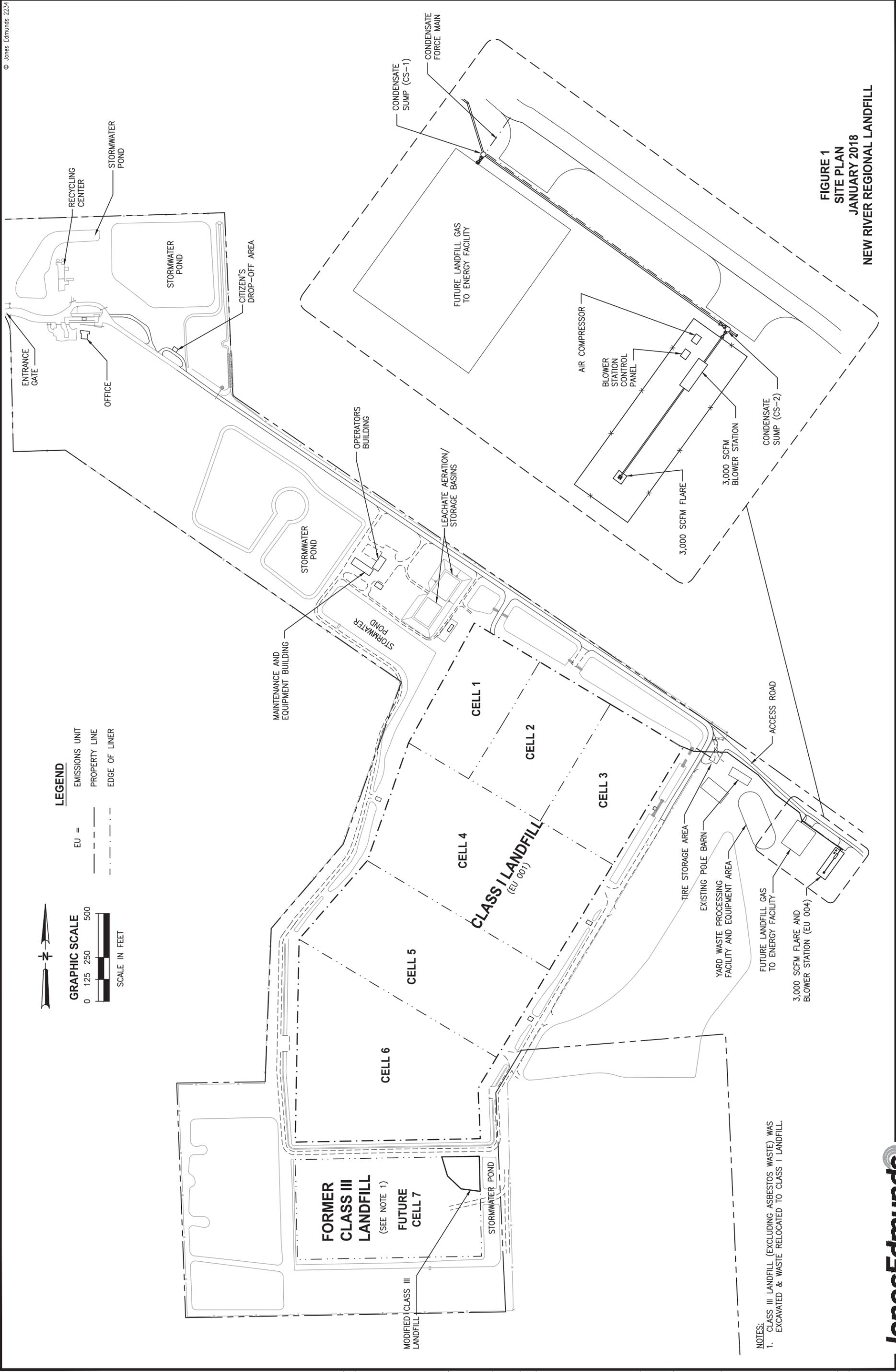
\*Figure for information purposes only. All locations are approximated.



C:\14040\_1025\mxd\New River Landfill RFP.mxd PS 1/28/2013

**ATTACHMENT 2**

**SITE PLAN**



**LEGEND**

EU =

EMISSIONS UNIT

PROPERTY LINE

EDGE OF LINER

**GRAPHIC SCALE**

0 125 250 500

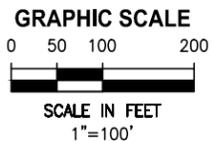
SCALE IN FEET

**NOTES:**

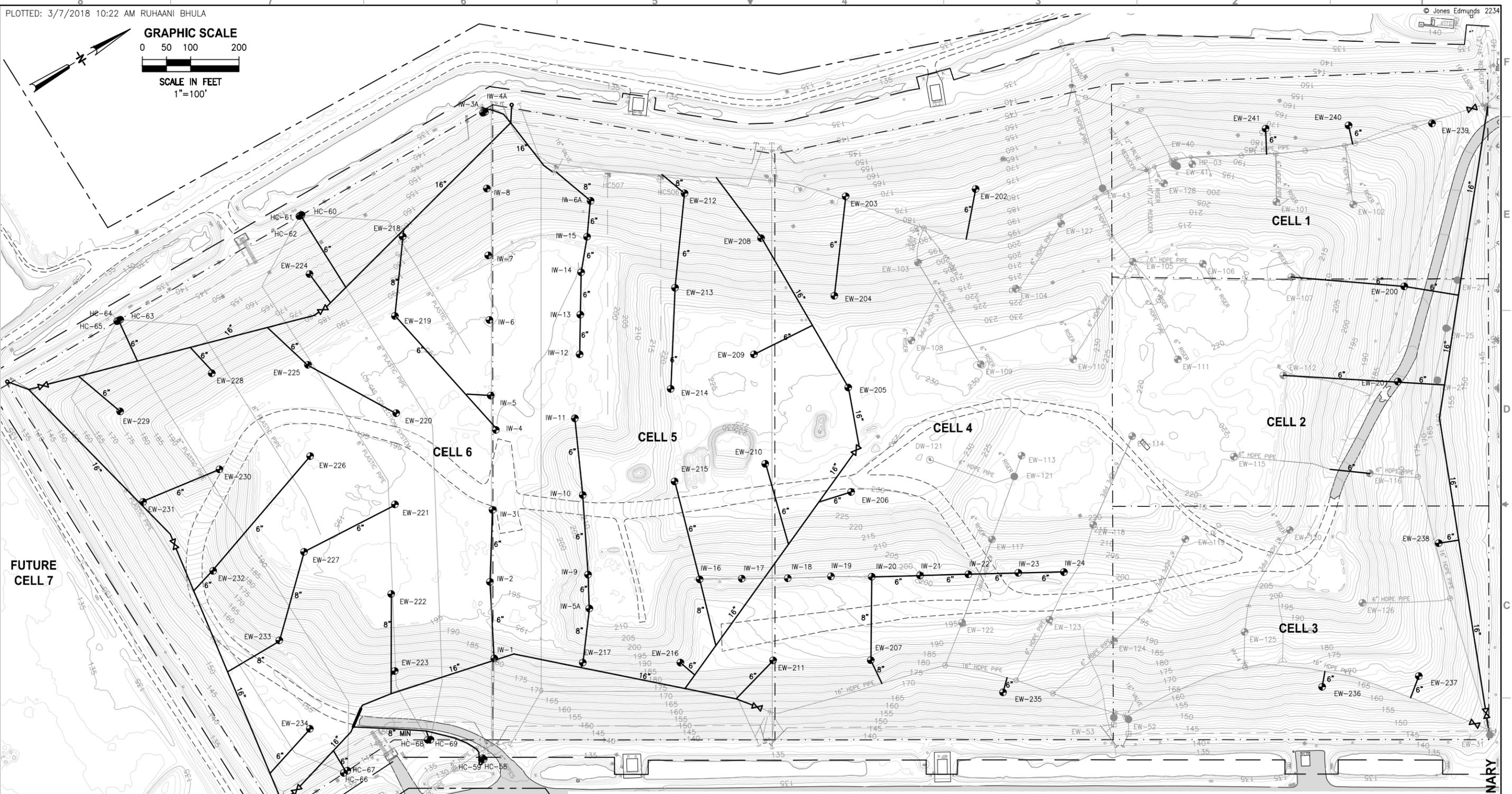
1. CLASS III LANDFILL (EXCLUDING ASBESTOS WASTE) WAS EXCAVATED & WASTE RELOCATED TO CLASS I LANDFILL.

**FIGURE 1**  
**SITE PLAN**  
 JANUARY 2018  
 NEW RIVER REGIONAL LANDFILL

**ATTACHMENT 3**  
**GCCS DESIGN PLAN**



\JFACAD\DRAWING\14040 NRSWA\072 GCCS EXPANSION\DESIGN DRAWINGS\CIVIL\_NOT USED\14040072-DESIGNPLAN.DWG  
 3/7/2018 10:18 AM RBHULA



**LEGEND**

- |         |                              |               |                              |   |                            |
|---------|------------------------------|---------------|------------------------------|---|----------------------------|
| ---     | PROPERTY LINE                | EW-113        | EXISTING VERTICAL WELLHEAD   | ⊕ | EXISTING ISOLATION VALVE   |
| -.-.-   | EDGE OF LINER                | EW-121, HP-02 | EXISTING HORIZONTAL WELLHEAD | ⊕ | PROPOSED VERTICAL WELLHEAD |
| - - - - | CELL BOUNDARY                | HC-45         | EXISTING REMOTE WELLHEAD     | ⊕ | PROPOSED IWELL             |
| ---     | EXISTING GAS CONVEYANCE PIPE | IW-2          | EXISTING IWELL               | □ | PROPOSED CONDENSATE TRAP   |
| ---     | GAS CONVEYANCE PIPE          | CS-2          | EXISTING CONDENSATE TRAP     |   |                            |

LTR.	DATE	REVISIONS	BY	APPRD.

DESIGNED	MHADLOCK
DRAWN	PUPSTILL
CHECKED	MHADLOCK



**NEW RIVER REGIONAL LANDFILL  
 GCCS EXPANSION  
 UNION COUNTY, FLORIDA**

**DESIGN PLAN**

CERTIFICATE OF AUTHORIZATION #1841	DATE	PROJECT NO.
APPROVED BY	JUN 2017	14040-072-01
P.E. #	SCALE	DWG. NO.
	1"=100'	

PRELIMINARY

**ATTACHMENT 4**  
**GAS COMPOSITION TESTING SUMMARY**



**TEST REPORT**  
For  
**LANDFILL GAS TO ENERGY PROJECT**

From the  
**LANDFILL GAS COLLECTION SYSTEM**

In service at the  
**NEW RIVER REGIONAL LANDFILL**

Located in  
**RAIFORD, UNION COUNTY, FLORIDA**

Prepared for the  
**NEW RIVER SOLID WASTE ASSOCIATION**

Test Completion Date: April 9, 2014  
Report Submittal Date: June 25, 2014

TRC Project No. 215071.LFTE.0000

New River Solid Waste Association  
New River Regional Landfill  
Landfill Gas Collection System  
Landfill Gas to Energy Test Report  
TRC Project Number 215071.LFTE.0000  
Report Submittal Date: June 25, 2014

### PROFESSIONAL ENGINEER CERTIFICATION

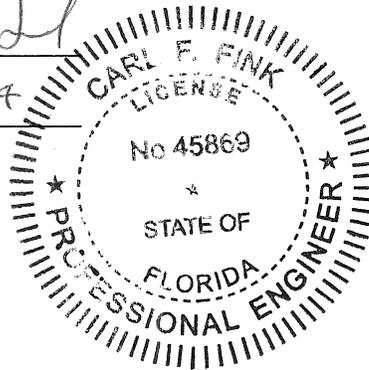
I certify that to the best of my knowledge:

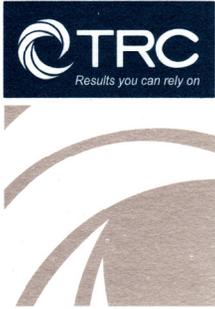
- The information provided in this document is true, accurate, and complete.

Signature: Carl F. Fink

Date: 6-26-2014

Carl F. Fink  
Florida Professional Engineer  
License No. 45869





6312 NW 18<sup>th</sup> Drive  
Suite 100  
Gainesville, FL 32653

352.378.0332 PHONE  
352.378.0354 FAX

[www.TRCSolutions.com](http://www.TRCSolutions.com)

June 25, 2014

Mrs. Carol G. Sawyer  
Jones Edmunds & Associates  
730 NE Waldo Road  
Gainesville, Florida 32641-5699  
(352) 672-8060 Phone

**RE:** Landfill gas to energy project for the New River Solid Waste Association

Mrs. Sawyer,

TRC – Air Measurements, Gainesville Office (TRC) conducted landfill gas sampling at the New River Regional Landfill in Raiford, Florida on April 9, 2014. The purpose of these tests was to conduct an engineering study of the landfill gas (LFG) for use in determination of suitability of use of the landfill gas for a gas to energy project.

Testing consisted of collection of duplicate samples of the landfill gas for analysis of various components of the landfill gas as part of an engineering study coordinated by Jones, Edmunds, and Associates (JEA) for the New River Solid Waste Association. LFG sample were collected into two (2) six-liter fused silica lined stainless steel sample canisters and analyzed using ASTM Method D1945 for basic compositional analysis and ASTM D3588 for gross and net heating values. These same canister samples were used to provide the samples for analysis of sulfur compounds using ASTM D5504. Also two (2) samples were collected using one-liter SUMMA canisters for analysis of toxic organics using EPA Method TO-15 with the addition of the top ten (10) TICs and Siloxanes all using a gas chromatographic column equipped with a mass spectrometer detector (GC-MS). Two samples were collected for ammonia analysis using a 0.1 N H<sub>2</sub>SO<sub>4</sub> solution in accordance with EPA Method CTM-027 (modified) by using a midget bubbler system and by sampling non isokinetically due to the presence of combustible landfill gases. In addition three flow test runs were conducted using EPA methods to measure the LFG flow rate for comparison purposes against the flare station flow meter.

ASTM method sample canisters were shipped to the Air Technology Laboratories, Inc. (Air Technology) of City of Industry, California for analysis of permanent gases (compositional analysis), heating value determination, and sulfur compounds. Also, TO-15/GC-MS sample canisters were shipped to Air Technology of City of Industry,

California for analysis of toxic organics, top ten (10) tentatively identified compounds (TICs), and Siloxanes. Acidic absorber solutions were shipped to Chester LabNet of Tigard, Oregon for analysis of ammonia.

Table 1, the executive summary, shows the analytical results of these tests; see *Attachments*. More detailed results of the analyses and any lab quality assurance procedures may be found in the lab results, also provided in the *Attachments* to this report.

The ASTM method and TO-15/GC-MS method sampling was conducted on the main header of the landfill gas line. The sample probe, lines, and flow controller were purged for 5 minutes using the inherent positive pressure of the landfill gas at the sampling location. The sample lines were then connected to the sampling canister. ASTM sampling was conducted over a 15-minute period at a flow rate of 221 ml/minute using a flow controller. Since the results of the O<sub>2</sub> concentration were below the laboratory minimum reporting limit, the O<sub>2</sub> concentrations were determined by difference by assuming that the balance gases were O<sub>2</sub>. TO-15/GC-MS sampling was conducted over a 15-minute period at a flow rate of approximately 40 ml/minute using a flow controller. The canisters were supplied by Air Technology.

CTM-027 sampling was conducted on the main header of the landfill gas line. The sample probe and lines were purged for 5 minutes using the inherent positive pressure of the landfill gas at the sampling location. The sample lines were then connected to a liquid absorption solution sampling train. This sampling train consisted of 2 midjet impingers, each containing a 15 ml 0.1 N H<sub>2</sub>SO<sub>4</sub> solution followed by an empty midjet impinger with silica gel. Sampling was conducted at a flow rate of approximately 2000 ml/min of landfill gas using a flow meter and NIST traceable dry gas meter for a 1-hour sample period. The samples were recovered at the end of each test and kept chilled until arrival at the analytical laboratory.

LFG volumetric flow rates were determined in accordance with EPA Methods 1A and 2C at the 12-inch diameter main header on the landfill gas line. A standard pitot tube, digital manometer, and thermocouple with digital thermometer were used to determine flare inlet velocities and flow rates. Data for three runs were collected; however, since only two samples were collected during the testing, only results from the first two runs were recorded into Table 1. The molecular weight used in the calculation of the flow rates was supplied from the ASTM D1945 compositional analysis with the results from the two compositional analyses used in the flow calculations.

Moisture content on the LFG was determined using a NIST traceable wet bulb/dry bulb apparatus. The wet and dry temperatures were then used to determine specific humidity of the LFG and thus moisture content. Moisture content was also measured simultaneously with the ammonia sampling train using gravimetric analysis with a midjet bubbler system.

This test report has been reviewed and approved for submittal by the following representatives:

  
TRC – Air Measurements  
Senior Project Manager

  
TRC – Air Measurements  
Carl Fink, P.E.



Air Measurements – Gainesville Office  
6312 NW 18th Drive, Suite 100  
Gainesville, Florida 32653  
(352) 378-0332 Office  
(352) 378-0354 Facsimile  
(352) 317-0041 Cellular  
Email: [lbrenner@trcsolutions.com](mailto:lbrenner@trcsolutions.com)

**ATTACHMENTS:**

- Table 1: Executive Summary
- Composition, Heating Value, and Sulfur Data Forms and Lab Results
- Toxic Organics and Siloxanes Data Forms and Lab Results
- Ammonia Data Forms and Lab Results
- Flow, Moisture, and Operational Data Forms

## **ATTACHMENTS**

**TABLE 1: Executive Summary**

Run Number / Component ID	Composition		Toxic Organics & Siloxanes		Flow/Moisture		Units
	Btu, Sulfur	Btu, Sulfur	& Siloxanes	& Siloxanes	Ammonia	Ammonia	
	D1945/3588/5504 Sample 1	D1945/3588/5504 Sample 2	TO-15/GC-MS Sample 1 <sup>†</sup>	TO-15/GC-MS Sample 2 <sup>†</sup>	1A/2C/4/CTM-027 Sample 1	1A/2C/4/CTM-027 Sample 2	
Oxygen (dry basis, per ASTM D1945)	1.94	1.86					Mol %
Nitrogen (dry basis, per ASTM D1945)	10.85	10.69					Mol %
Carbon Dioxide (dry basis, per ASTM D1945)	36.36	36.54					Mol %
Methane (dry basis, per ASTM D1945)	50.85	50.91					Mol %
Hydrogen Sulfide (per ASTM D5504)	34	22					ppmv
Methyl Mercaptan (per ASTM D5504)	4.6	4.4					ppmv
Dimethyl Sulfide (per ASTM D5504)	4.3	4.0					ppmv
Total Reduced Sulfur (per ASTM D5504)	44	32					ppmv
Gross HV Dry (per ASTM D3588)	514	514.4					Btu/ft <sup>3</sup>
Net HV Dry (per ASTM D3588)	462.8	463.1					Btu/ft <sup>3</sup>
Station LFG Meter Flow Rate					1408	1431	scfm
Measured LFG Flow Rate (per EPA M-1A, 2C)					1386.5	1384.2	scfm
Moisture content (per EPA M-4 stoich)					3.49	3.48	Mol %
Measured LFG Flow Rate (per EPA M-4 grav)					3.64	3.35	Mol %
Ammonia (per EPA CTM-027)					418	428	ppbv
Octamethylcyclotetrasiloxane (D4) (per GC-MS)			4800	4400			ppbv
Total Chlorinated Halides as Cl <sup>-</sup> (per EPA TO-15)			4960	3130			ppbv Cl <sup>-</sup>
Freon 12 (per EPA TO-15)			430	ND			ppbv
Vinyl Chloride (per EPA TO-15)			190	190			ppbv
Acetone (per EPA TO-15)			13000	13000			ppbv
Ethanol (per EPA TO-15)			26000	23000			ppbv
Propene (per EPA TO-15)			11000	ND			ppbv
Isopropyl Alcohol (per EPA TO-15)			26000	25000			ppbv
1-Propanol (per EPA TO-15)			22000	21000			ppbv
2-Butanol (per EPA TO-15)			28000	25000			ppbv
Propanoic acid, ethyl ester (per EPA TO-15)			2500	2600			ppbv
Butanoic acid, methyl ester (per EPA TO-15)			3200	3200			ppbv
3-Ethyl-4-methylheptane (per EPA TO-15)			ND	2600			ppbv
3, 4-Dimethylheptane (per EPA TO-15)			3000	ND			ppbv
Octane (per EPA TO-15)			2600	3000			ppbv
Butanoic acid, butyl ester (per EPA TO-15)			3300	2800			ppbv
5, 7-Dimethylundecane (per EPA TO-15)			ND	2400			ppbv
Undecane (per EPA TO-15)			2600	ND			ppbv
1,1-Dichloroethane (per EPA TO-15)			320	310			ppbv
2-Butanone (per EPA TO-15)			24000	23000			ppbv
cis-1,2-Dichloroethene (per EPA TO-15)			260	260			ppbv
Tetrahydrofuran (per EPA TO-15)			6400	5700			ppbv
Cyclohexane (per EPA TO-15)			ND	2300			ppbv
Benzene (per EPA TO-15)			1200	1100			ppbv
Trichloroethene (per EPA TO-15)			170	ND			ppbv
4-Methyl-2-pentanone (per EPA TO-15)			1400	1400			ppbv
Toluene (per EPA TO-15)			9800	9400			ppbv
Tetrachloroethene (per EPA TO-15)			470	450			ppbv
Ethyl Benzene (per EPA TO-15)			3700	3300			ppbv
m,p-Xylene (per EPA TO-15)			6200	5400			ppbv
o-Xylene (per EPA TO-15)			1800	1600			ppbv
Styrene (per EPA TO-15)			700	610			ppbv
4-Ethyltoluene (per EPA TO-15)			1100	870			ppbv
1,3,5-Trimethylbenzene (per EPA TO-15)			400	320			ppbv
1,2,4-Trimethylbenzene (per EPA TO-15)			850	650			ppbv
1,4-Dichlorobenzene (per EPA TO-15)			180	ND			ppbv

<sup>†</sup> ND means that the samples was not detected, or below the minimum reporting limit.

**ATTACHMENT 5**

**PROPOSAL FORMS:  
FORM A - VENDOR INFORMATION  
FORM B.1 – BID FORM  
FORM B.2 – COMPENSATION  
FORM C - EXCEPTIONS OR DEVIATIONS**

**FORM A**  
**NEW RIVER SOLID WASTE ASSOCIATION**  
**REQUEST FOR PROPOSAL**  
**Landfill Gas-to-CNG Project**  
**RFP: #18-01**

Name of Firm Submitting Proposal \_\_\_\_\_

**VENDOR INFORMATION SHEET**

Federal Employer Identification Number:	
Name and Title of Contact Person:	
Name:	Title:
Mailing Address:	
Street Address:	
City, State, Zip:	
Telephone:	Fax:
Email:	
Organization Structure:	
Circle one:	Corporation      Partnership      Proprietorship
_____	
(Specify Sole Officer)	
Joint Venture      Other (explain)	
If Corporation:	
Date of Incorporation:	
State of Incorporation:	
States registered in as foreign Corporation:	
Authorized Person:	
Print Name:	
Title:	
Telephone:	Fax:
Email:	

Signature of Authorized Person \_\_\_\_\_ Date: \_\_\_\_\_

**New River Solid Waste Association  
New River Regional Landfill  
Landfill Gas to CNG  
Request for Proposal #18-01**

FORM B-1. BID FORM – Option 1

This bid is submitted by (type or print):

Company Name: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Business Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_

Email: \_\_\_\_\_

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

Item	Description	Estimated Quantity	Units	Unit Price	Total Price
1	LFG-to-CNG Plant w/ Fueling Station and Storage Capacity	1	LS		
2	Deductive Alternate – (i.e. if LFG composition incl. less than 8% nitrogen content)	1	LS		
3	Add-Alternate – (i.e. for electrical generation source)	1	LS		
Total Lump Sum Bid Price					

**FORM B-2. COMPENSATION SCHEDULE - Option 2**  
**New River Solid Waste Association**  
**Request for Proposal - Landfill Gas to CNG Project**  
**Request for Proposal #18-01**

**Vendor Developed, Financed Turn-key Plant, Operated by the Vendor for the Duration of the Contract**

Company Name: \_\_\_\_\_  
 Name and Title: \_\_\_\_\_  
 Business Address: \_\_\_\_\_  
 Phone No.: \_\_\_\_\_  
 Email: \_\_\_\_\_

Signed: \_\_\_\_\_

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

Item	Description	Estimated Quantity	Units
1. Purchasing Price of LFG	Paid by Vendor to NRSWA		
	Purchase Price of LFG (first year)		\$/MMBTU
	Estimated Annual Revenue to NRRL (first year)	\$	
	Estimated Annual Revenue to NRRL (15 year)	\$	
2. Sale Price of CNG	Paid by NRSWA to Vendor		
	Annual Sale Price of CNG (first year)	\$	\$/DGE
4. Annual O&M Cost	Estimated Annual O&M Cost of the Plant	\$	\$/yr

Notes:

- 1 - This form may be modified as needed to better present the Vendor specific compensation schedule.
- 2 - Revenue estimates to be based on the initial capacity of the plant without expansion.



**ATTACHMENT 6**

**LFG-TO-CNG CONVERSION PLANT  
GENERAL SPECIFICATIONS**

LFG CONDITIONING SYSTEM AND CNG FUELING STATION –  
GENERAL SPECIFICATIONS

This item consists of supplying a fully operational landfill gas (LFG) to CNG vehicle fuel conditioning system (System) as described in development Option 1, with storage and fast fueling station as described in development Options 1 and 2. The facilities are to be located at the New River Regional Landfill (NRRL). This Section contains the project specifications and requirements. The specific equipment provided by the Vendor may be substituted during the submittal process under an “as-equal” determination by New River Solid Waste Association (NRSWA).

PART 1 GENERAL

1.01 CODES AND STANDARDS

- A. All equipment shall be designed, manufactured, tested, and installed in accordance with the latest editions of all applicable local, state, and national codes and standards, including but not limited to:
1. NFPA 52—Standard of Compressed Natural Gas (CNG) Vehicular Fuel Systems.
  2. NFPA 30A—Code for Motor Fuel Dispensing Facilities and Repair Garages.
  3. NFPA 56—Standard for Fire and Explosion Prevention During Cleaning and Purging of Flammable Gas Piping Systems
  4. NFPA 70—National Electric Code.
  5. ANSI B31.3—Chemical Plant and Petroleum Refinery Piping.
  6. ASME Section VIII—Boiler and Pressure Vessel Code.
  7. NEMA—National Electrical Manufacturers Association.
  8. OSHA—Occupational Safety and Health Administration.
  9. SAE J1616—Recommended Practice for Compressed Natural Gas Vehicle Fuel.
  10. Local Gas Equipment and Piping Codes.
  11. Applicable Local and State Building and Fire Codes.
  12. United States Department of Transportation (DOT) SP-14951.
  13. National Institute of Standards and Testing (NIST)
  14. American Petroleum Institute (API)
  15. National Electric Code (NEC)
  16. Underwriter’s Laboratory (UL)

## 1.02 SUBMITTALS

- A. All bidders are required to include the following information, at a minimum, with the bid response:
  - 1. Description of equipment offered.
  - 2. Performance guarantee statement
  - 3. Equipment literature and preliminary/typical equipment drawings.
  - 4. Manufacturer's warranty statement(s).
  - 5. Equipment delivery schedule and project timeline.
  - 6. Recommended spare parts lists for all equipment.
  - 7. List of subcontractors.
  
- B. The successful bidder shall submit the following drawings within twelve (12) weeks after receipt of award:
  - 1. Outline dimension drawings for all equipment proposed.
  - 2. Flow diagram for the complete system.
  - 3. Electrical diagrams for individual equipment and complete system.

## 1.03 PROJECT SCOPE

- A. Provide a complete system, including but not limited to:
  - 1. An LFG Conditioning System to produce 800 DGE per day.
  - 2. Skid-mounted dual CNG compressors for a fast fueling CNG station including a single point/dual hose trailer filling station and one dual-hose CNG dispenser with integrated controls.
  
- B. All equipment and materials supplied must be new.
  
- C. The successful bidder shall assist NRSWA as necessary for designing the site and obtaining necessary permits.
  
- D. The successful bidder shall have the following responsibilities:
  - 1. Visit the site to identify the locations of equipment, traffic patterns to access fueling, condensate drainage, electrical connections, and connections to the LFG source.
  - 2. Develop a Site Layout and Construction Plans for the installation of the System. The Construction Plans shall include foundation design, pad design, condensate piping, LFG piping, waste gas piping, electrical layout, and equipment placement.

3. Design the required interface of the existing blower/flare station with the new System.
4. Prepare technical information and designs for review and approval. The system shall have the major components and features specified in Part 2, Products, or an engineer-approved equal.

## PART 2 PRODUCTS

### 2.01 LFG CONDITIONING SYSTEM

- A. Supply a System that will produce approximately 800 DGE of product gas. The product gas must meet SAE J1616 CNG vehicle fuel specifications. The System must include all safety devices necessary for safe operation, applicable building codes, and permitting as required by the local fire authority.
- B. The raw LFG composition is provided in Attachment 4. The conditioning system must be designed to process the LFG composition shown in Attachment 4 and to meet SAE J1616 CNG vehicle fuel specifications.
- C. Proposal pricing must include the fabrication, materials, installation, and startup of the system.
- D. System Requirements:
  1. Maximum Gas Input Flow: 200-250 scfm of raw LFG.
  2. Maximum Ambient Temp.: 110°F.
  3. Minimum Ambient Temp.: 0°F.
- E. Assumed Inlet LFG Conditions:
  1. Gas Flow from Biogas Supply: 200-250 scfm.
  2. Gas Inlet Pressure from Blower Station: 1 inch to 10-inch WC maximum.
  3. Inlet Gas Temperature: 100 °F
  4. Relative Humidity: 100%.
  5. Gas Composition: Attachment 4.
- F. The bidder must demonstrate product gas production under the above inlet criteria.

### 2.02 CNG STORAGE

- A. One vertical three-pack of CNG storage vessels is required for the System. The vessels shall be installed vertically in racks in a one vessel wide x three-vessel-high freestanding assembly. Each vessel shall be used as a "storage bank" for

cascade fueling of natural gas vehicles. As a minimum, each vessel shall have the following major components and features:

1. ASME Material Spec Code Section VIII, Division I, for natural gas service.
2. Vessel Size: 20-inch-diameter x 37-foot-long (each).
3. Gas Capacity: Nominal 18,608 scf at 4,500 psig at 70°F per vessel.
4. Pressure Rating: 5,500 psig MAWP.
5. Safety relief valve per bank.
6. Fully ported ball valve with lockable handle.
7. Fully ported service valve with a minimum of 3/4 inch port.
8. Maintenance drain valve.
9. Painted in accordance with recommendations of the manufacturer.

## 2.03 CNG FUELING STATION

- A. The bidder is responsible for providing a fully operational CNG fueling package. A fully packaged duplex CNG compressor package and dryer mounted on a common steel skid is required, incorporating on skid piping, tubing, and wiring. The compressor and ancillary equipment shall be designed for use with natural gas as defined by NFPA 52 and for the operating conditions to which they may be subjected under manufacturer specified normal operating conditions. Electrical construction shall be in accordance with applicable provisions of NFPA 70.
- B. The manufacturer will use good manufacturing practices and procedures to ensure safety and performance for operating and servicing requirements.
- C. Each compressor shall be of the manufacturer's standard design for natural gas service, shall be packaged by the compressor manufacturer or a factory authorized third party packager, and shall include all components essential for correct operation from the inlet connection to the discharge connection of the package.
- D. One emergency shutdown (ESD) button shall be installed on each compressor enclosure with additional buttons in the dispensing area and as required by Code throughout the site.
- E. One inlet gas dryer is required designed to accommodate the flow from both compressors operating together. The single tower non-regenerating dryer shall be designed to meet production requirements.
  1. The dryer shall be supplied as a complete system with vessel, piping, filters, and digital dew point meter. All components shall be pre-piped, pre-wired, tested, and mounted on the compressor skid.
- F. One 460-volt power distribution panel is required with motor starters for the compressors and control power for the site. This panel requires a NEMA 3R rated self-standing enclosure and shall be located in a non-hazardous area.

- G. A remote monitoring and control system is required offering the following features:
1. Monitoring and data collection of the complete fueling process.
  2. Detailed fault alerts via email and SMS text messaging.
  3. Remote monitoring and administrative control from the NRRL office.
  4. Remote monitoring from the NRRL Operations building.
  5. Web based monitoring from off-site locations.
- H. One PLC controlled priority/ESD valve panel is required which shall be programmed to provide prioritized cascade filling of the storage vessels and ESD isolation of the stored gas. The valve panel shall feature 1/2 inch construction material and components.
1. The panel shall be controlled by the site PLC. The priority valve panel control system shall direct the compressor discharge gas to the dispensers, to the storage, or to the tube trailer fueling posts. Control logic for gas flow is summarized as follows:
    - a. First priority: Direct flow to direct-fill dispensers if storage is depleted.
    - b. Second priority: Replenish fast-fill storage.
- I. The valve panel shall offer two 1/2 inch supply lines to fill a tube trailer and a return line from the tube trailer as the low bank storage for vehicle fueling.
- J. ESD valves shall be normally closed as required by Code.
- K. The inlet from the compressors shall pass through a manual display MicroMotion CNG050 flow meter. This meter will record the biogas used by the System. The display should be easily viewed when the enclosure door is open.
- L. One dual-hose, 1,200 scfm, 3,600 psig CNG dispenser with integrated controls is required for the fast-fill system with the following features:
1. Dual Hose, 3/8 inch supply, 1/411 vent with breakaways.
  2. NGV1 Type II Nozzles, Staubli P36.
  3. LCD display with backlight per hose.
  4. Full-ported actuated sequencing valves.
  5. Stainless steel enclosure and pit frame.
  6. Approved for weights and measures.

- M. Two (1) single hose, 2,500 scfm, 3,600 psig tube trailer post assemblies are required. The hose post assembly shall have the following features:
1. Single hose post with 1 inch construction.
  2. Individual feed line from the valve panel.
  3. Oasis HC 208 6NDDN-F coupler.
- N. The Oasis coupler shall mate with an Oasis HC208-6NDDN-M adapter:
1. 3/4 inch CNG hose x 15-foot kong with OPW breakaway.
  2. Steel base mounting bracket.
- O. Alternate Metered Time Fill: In addition to providing one fast-fill dual-hose, 1,200 scfm, 3,600 psig CNG dispenser with integrated control an alternate bid shall be provided to supply and install a metered time fill fueling station for up to 12 CNG vehicles. This time fill station would be supplied by the two new CNG compressors, take priority over all other fueling needs, and integrate with the fuel management system.
1. This alternate bid is to include all high-pressure tubing, valves, miscellaneous fixtures, concrete footings, and balusters to supply a complete, workable time fill fueling station.
  2. Time Fill Components:
    - a. Hose post assembly.
    - b. Dual hose posts.
    - c. NGV1 Type II nozzles, 3600 (Staubli P36).
    - d. Twin Synflex CNG hose x 15-foot-long with breakaways.
    - e. Steel base weldment or K-rail mounting bracket.
    - f. Electronic metered time fill panel.
    - g. Temperature compensated fills I controlled by master PLC.
    - h. Appropriately sized stainless steel tubing.
    - i. Includes gas meter with manual display window in a NEMA 3R enclosure.
    - j. Welded steel stand.
- P. A fuel management system (FMS) is required. The CNG FMS shall have the ability to use major credit cards and fleet customer specific identification cards. The FMS shall incorporate the following major features:
1. One island terminal with both modem and Ethernet connection capability.
  2. Use either the existing ProKees or major credit and fleet cards.
  3. The island terminal shall be equipped with a receipt printer.

4. Compatibility with the proposed CNG dispenser.
5. Initial Set-up and orientation of client software by a certified technician.
6. The Owner shall supply a computer and an internet connection.
7. The Owner shall supply credit card network services and required hardware.

#### 2.04 PROGRAMMABLE LOGIC CONTROLLER (PLC)

- A. A PLC-based control system shall be installed for each compressor to provide full redundancy which should incorporate the following major features:
  1. Automatic start/stop.
  2. Automatic shutdown for specified faults.
  3. Remote fault annunciation.
  4. Compressor lead/lag.
  5. Compressor operation timer.
  6. Emergency shutdown.
- B. The PLC and other electronic components shall be of a non-proprietary brand.
- C. The PLC shall include provisions for ESD. In the event an ESD button is depressed, the ESD system shall shut off the power supply to the compressor(s), close valves between the main gas supply and the compressor(s), and close valves between the storage containers and the dispensers. Control circuits shall be arranged so that when an ESD is activated, systems that shut down shall remain down until manually activated or reset after a safe situation is restored.
- D. Each PLC shall have the ability to communicate with the communication panel to provide automatic remote notification in the event of a fault or ESD button activation and to permit limited remote monitoring.
- E. One site PLC control assembly is required for lead/lag operation of the compressors and operation of the valve panel, including but not limited to priority filling and tube trailer filling. This assembly shall be housed in a NEMA 3R self-standing enclosure.
- F. The PLC shall be programmed for all site related operations as well as the valve panel fueling functions.

#### 2.05 FACTORY ACCEPTANCE TESTING (FAT)

- A. The packaged compressors shall be tested with natural gas by the manufacturer prior to shipment. The Owner will have the option of witnessing this test and be given a minimum of 2 weeks' notice. The test shall prove the mechanical

operation of the compressors, ancillary equipment, and control systems. A copy of the completed FAT report shall accompany the Operations and Maintenance (O&M) Manuals.

- B. In addition to the standard compressor testing procedure, additional tests shall be performed to prove the logic of the valve panel as well as correct operation of the site PLC functions.
- C. Acceptance by NRSWA of witnessed test shall not release the supplier from any of its warranty obligations or any other obligation under this specification.

## 2.06 EXECUTION AND DELIVERY

- A. Install all equipment described above to create a fully functional integrated System, including:
  - 1. Coordinating the scheduling of the installation.
  - 2. Ordering equipment and supplies for the placement and connection of equipment at the site, including but not limited to conduit, wire, tubing, piping, etc.
  - 3. Site signage, extinguishers, ESD buttons, and miscellaneous site related items as required by Code.
  - 4. Assistance to the Owner's Engineer.
  - 5. Site survey staking and construction documentation.
  - 6. Site grading for the equipment pads only. (BY OWNER)
  - 7. Pad construction for the equipment only.
  - 8. Pipe connections between the gas processing system, storage tanks, and CNG fueling station. Assume the Owner extends all piping within 50 feet of the System.
  - 9. Electrical and communication connections between panels and equipment. Assume the Owner provides suitable electrical power supply and internet cable terminations within 50 feet of the System.
  - 10. Gravity condensate routing. Assume the Owner provides all connections within 50 feet of the System.
  - 11. Coordinate all equipment deliveries, unloading, and placement.
- B. Startup of the System and train the Owner in its operation including the following:
  - 1. Provide one technician from the equipment supplier a minimum of 3 days on site.
  - 2. Provide one site engineer for final programming and debugging of the site PLC.

3. Provide one time gas testing of inlet and discharge gas to confirm compliance with the assumptions made in this RFP and SAE J1616.
4. Provide 3 days of classroom and hands-on training for the operators.
5. Provide O&M manuals: One hard copy and two electronic copies.
6. Provide as-built construction plans.

## 2.07 DELIVERY SCHEDULE

- A. Propose a schedule for all of the tasks. Completion time should be based upon weeks after Authorization to Proceed.

Deliverable	Completion Timeline
Design site layout completed and permit applications submitted	Weeks
Equipment deliveries	Weeks
Construction complete	Weeks
Start-up completed	Weeks

## 2.08 WARRANTY

- A. On-site full warranty including parts, labor, travel time, and mileage.
- B. All equipment furnished under this Specification must be warranted against defective materials and workmanship for 18 months from the date of startup.

END OF SECTION