

**CCNA2018 WORK ORDER 44**

**Landfill Gas Flare Skid Improvements and Pipeline Extension**

This Work Order Number 44 is entered into as of this \_\_\_ day of \_\_\_\_\_, 2021, pursuant to that certain Continuing Consulting Engineering Services Agreement for Professional Services entered into as of the 18<sup>th</sup> day of May, 2021 (the "Agreement"), by and between INDIAN RIVER COUNTY, a political subdivision of the State of Florida ("COUNTY") and Kimley-Horn and Associates, Inc. ("Consultant").

The COUNTY has selected the Consultant to perform the professional services set forth on Exhibit A (Scope of Work), attached to this Work Order and made part hereof by this reference. The professional services will be performed by the Consultant for the fee schedule set forth in Exhibit B (Fee Schedule), attached to this Work Order and made a part hereof by this reference. The Consultant will perform the professional services within the timeframe more particularly set forth in Exhibit C (Time Schedule), attached to this Work Order and made a part hereof by this reference all in accordance with the terms and provisions set forth in the Agreement. Pursuant to paragraph 1.4 of the Agreement, nothing contained in any Work Order shall conflict with the terms of the Agreement and the terms of the Agreement shall be deemed to be incorporated in each individual Work Order as if fully set forth herein.

IN WITNESS WHEREOF, the parties hereto have executed this Work Order as of the date first written above.

**CONSULTANT:**  
**Kimley-Horn and Associates, Inc.**

**BOARD OF COUNTY COMMISSIONERS  
OF INDIAN RIVER COUNTY**

**By:** \_\_\_\_\_  
**Brian Good, P.E.**

**By:** \_\_\_\_\_  
**Joseph E. Flescher, Chairman**

**Print Name:** \_\_\_\_\_

**Title:** Senior Vice President

**BCC Approved Date:** \_\_\_\_\_

**Attest: Jeffrey R. Smith, Clerk of Court and Comptroller**

**By:** \_\_\_\_\_  
**Deputy Clerk**

**Approved:** \_\_\_\_\_  
**Jason E. Brown, County Administrator**

**Approved as to form and legal sufficiency:** \_\_\_\_\_  
**Dylan T. Reingold, County Attorney**

**WORK ORDER NUMBER 44**  
**LANDFILL GAS FLARE SKID IMPROVEMENTS AND PIPELINE EXTENSION**

**EXHIBIT A**  
**SCOPE OF WORK**

**PROJECT UNDERSTANDING**

Indian River County (County) solid waste disposal district (SWDD) currently relies on a candlestick flare for landfill gas (LFG) emissions. The current blower flare skid was installed in 2004 and is in need of updating and reconfiguration for overall performance and efficiency, and to accommodate the renewable natural gas (RNG) project that is in development with the Indian River Eco District (IREC). In addition, SWDD is working with a third-party to install a leachate evaporation system that may utilize landfill gas as a fuel source. To accommodate the RNG and evaporation projects, modifications to the LFG skid and an extension to the LFG pipeline are required. The proposed modifications will improve the LFG collection and control system by providing reliable vacuum pressure to the gas wellfield and ensure continuous delivery of dry, pressurized LFG to the evaporation and RNG projects.

Kimley-Horn and Associates, Inc. (Consultant) has partnered with BioGas Engineering (BioGas) to design, permit and bid the proposed improvements. The BioGas proposal is incorporated herein and provided as Attachment 1 to this Scope of Work for informational purposes. The Consultant team will design, permit, and prepare a bid package for the proposed improvements as outlined in the following Scope of Services. Services during construction are not included in this Scope of Services.

**SCOPE OF SERVICES**

**Task 1: Landfill Gas Pipeline Design**

The Consultant will prepare the design of an LFG pipeline to deliver LFG from the flare skid to the proposed location of the evaporation system (adjacent to the existing biosolids dewatering facility). The route of the pipeline will be identified in Task 1 and utilized as the basis of this design. The design will provide for a common utility trench that will house:

1. LFG transmission line from flare to the evaporation system;
2. Compressed air line for pneumatic valves and pumps (if required);
3. Any other future lines required by the County; and
4. Any control conduits required to communicate between new flare skid and the evaporation system.

This task will include route analysis, site survey, geotechnical data collection, site survey details, trench detail, pipe sizes, conduit types/sizes, roadway crossing details, pavement restoration cross sections/details, maintenance of operations/traffic information, erosion

control details, and miscellaneous details needed to complete the construction of the project, as outlined in the following subtasks.

***Subtask 1.1 Preliminary Design Activities***

1.1.1 Alignment for Survey Purposes

This task will include a kickoff meeting with SWDD staff to discuss project objectives, scope, schedule and coordination of related tasks/projects not included in this Scope of Services (i.e. environmental and operational impacts, leachate force main, etc.). During the kickoff meeting, the Consultant will present options for finalization of the pipeline route to extend the LFG from the existing flare location to the evaporation system location (north of the biosolids dewatering facility).

1.1.2 Survey

Using the route identified in Subtask 1.1.1, Consultant will proceed with the collection of survey data to serve as the basis of design. The Consultant will subcontract with a local consultant who routinely performs work for the County on the SWDD property to perform these services. Survey of the proposed LFG pipeline extension corridor will include documentation of surface features, location of underground piping in the vicinity of the evaporation system (leachate forcemain and wastewater forcemain), trees and other notable features. Ground penetrating radar is not included. Underground utilities will be approximated from prior surveys, record drawings and visible surface features (valves, meters, etc.) and will be noted for the selected contractor to field-verify prior to construction. Consultant will review the survey data upon receipt and incorporate into the design plans.

1.1.3 Geotechnical Data

The consultant will subcontract with a local consultant who routinely performs work for the County on the SWDD property to perform these services. The Consultant anticipates the collection of geotechnical data (soil borings) from approximately seven (7) hand augers to a depth of six (6) feet to determine the suitability of soils and establish the seasonal high water table elevation. The Consultant will review the geotechnical report for incorporation into the design documents.

***Subtask 1.2 Landfill Gas Pipeline Design***

1.2.1 30 Percent Design

The Consultant will prepare 30 percent plans detailing the proposed modifications. Two 11 x 17 hardcopy sets of review documents will be provided to the County along with an electronic (PDF format) copy. A review meeting will be conducted with SWDD staff to capture comments and concerns relative to the proposed 30 percent design to ensure the design is compatible with the proposed RNG and evaporation system projects. Comments received will be documented and incorporated as appropriate for use in preparing the 60 percent design documents.

### 1.2.2 60 Percent Design

The Consultant will prepare 60 percent plans and specifications to serve as the bid package for use by the County in soliciting competitive bids for construction of the project. The 60 percent design will incorporate comments received on the 30 percent design and will also include detailed design of civil (paving, grading, drainage), structural, electrical, instrumentation (based on information provided by others), demolition, tree relocations and site restoration components (if needed). Environmental services related to surface water impacts, gopher tortoise relocation, etc. are not included in this scope of services. These services can be provided, if needed, under separate authorization or amendment to this Work Order. Two full size sets of plans and two hardcopy sets of draft technical specifications will be provided, along with an electronic copy (PDF format) for the County's review.

A design review meeting will be conducted with SWDD staff to discuss comments on the 60 percent design documents. Comments received will be documented and incorporated as appropriate for use in preparing the 90 percent design documents.

### 1.2.3 90 Percent Design and Final Bid Package

The Consultant will incorporate comments received during the 60 percent review and advance the plans and specifications to the 90 percent completion level. Two full size sets of plans and two hardcopy sets of draft technical specifications will be provided, along with an electronic copy (PDF format) for the County's review. An additional review meeting will be conducted with SWDD staff to discuss review comments and final modifications to be made to the bid package. The consultant will incorporate final comments and coordinate with procurement to prepare the final bid package for use in advertising the project. The Consultant will provide a final PDF of the bid documents to SWDD and procurement for use in soliciting bids.

### 1.2.4 Bidding and Project Management

The Consultant will prepare for and participate in a pre-bid site visit meeting with prospective bidders. An attendee list will be prepared, and questions asked will be documented with written responses for procurement to distribute to plan holders. The Consultant will prepare up to two addenda to the bid, providing clarifications and additional information as needed. Consultant will coordinate with procurement on all bid-related matters.

The Consultant will then review bids received, verify references and prepare a recommendation of award to provide to SWDD. Upon award, procurement will complete the preparation of conformed documents. No services are included for preparing the conformed contract documents.

This task will also include Project Management services for those tasks necessary to monitor and maintain project scope, schedule and budget, prepare invoices,

prepare progress summaries and review/process subconsultant contracts and payment.

### ***Subtask 1.3 Coordination with Heartland***

The Consultant will work closely with the County and Heartland to review the overall design, equipment specifications and construction plan of the evaporation system. The Consultant will serve as the Owner's representative and will review the details of the system integration between the Heartland Facility equipment and SWDD's proposed landfill assets. This task will include the following activities:

- Allocate and assign key engineering resources (such as controls, mechanical, and process engineers) as necessary to support the project during critical design review stages;
- Review detailed drawings, calculations and other information submitted by the Heartland engineering team. These may include natural gas and LFG piping designs, mechanical piping drawings, electrical and controls designs for valves, instruments and other electrical equipment that could affect the landfill assets.
- Review the master project schedule and provide comments to SWDD regarding risks in achieving critical milestones by the developer. Please note that to do this, the Consultant will request monthly schedule updates from Heartland and provide comments as necessary.
- The Consultant will monitor the engineering and coordination performed by developer/contractor of the facility.
- The Consultant will review all design and equipment specifications regarding the integration of piping with the landfill system.
- Perform site visits if necessary (travel expenses to be invoiced as incurred for the necessary number of site visits).

### **Task 2: Landfill Gas Skid Design**

Design of the landfill gas skid modifications will include coordination with the RNG (IRED) and evaporation system (Heartland Technologies) providers to ensure that the proposed modifications meet the needs (pressure, moisture content, flow, etc.) of each project. Anticipated modifications are as follows:

1. Coordination of integration and controls between the LFG skid and the evaporation system, including automation suitable to adjust for operational changes by either the landfill or evaporation system. Anticipate addition of various sensors, modulating valves and a variable frequency drive.
2. New Control panel.
3. New high pressure blowers.

Design will include the preparation of:

- Process and Instrumentation Diagrams (P&IDs)
- Process flow diagram including high pressure blowers;
- Detailed mechanical drawings for the blower system;
- Structural drawings as necessary to support new installation;

- Electrical drawings incorporating design for BFS;
- A complete set of construction drawings for the procurement and construction of the new BFS;
- Controls integration and network drawings for the integration of the Heartland Facility; and
- Civil details for grading and drainage as needed.

#### ***Subtask 2.1 Request for Information***

The Consultant will prepare a request for information needed to prepare the design and support the preparation of a basis of design memorandum. Data requested will include, but not be limited to, historical operational data of the LFG collection system and flare, operational needs of the RNG project (IRED) and operational needs of the evaporation system (Heartland). The Consultant will review and evaluate the data received to formulate a basis of design memorandum, which will then be reviewed with SWDD staff in a virtual meeting to gain concurrence prior to advancing to the design phase.

#### ***Subtask 2.2 30 Percent Design***

The Consultant will prepare 30 percent plans detailing the proposed modifications. Two 11 x 17 hardcopy sets of review documents will be provided to the County along with an electronic (PDF format) copy. A review meeting will be conducted with SWDD staff to capture comments and concerns relative to the proposed 30 percent design to ensure the design is compatible with the proposed RNG and evaporation system projects. Comments received will be documented and incorporated as appropriate for use in preparing the 60 percent design documents.

#### ***Subtask 2.3 60 Percent Design***

The Consultant will prepare 60 percent plans and specifications to serve as the bid package for use by the County in soliciting competitive bids for construction of the project. The 60 percent design will incorporate comments received on the 30 percent design and will also include detailed design of civil (paving, grading, drainage), structural, electrical, instrumentation (based on information provided by others), demolition, tree relocations and site restoration components (if needed). Environmental services related to surface water impacts, gopher tortoise relocation, etc. are not included in this scope of services. These services can be provided, if needed, under separate authorization or amendment to this Work Order. Two full size sets of plans and two hardcopy sets of draft technical specifications will be provided, along with an electronic copy (PDF format) for the County's review.

A design review meeting will be conducted with SWDD staff to discuss comments on the 60 percent design documents. Comments received will be documented and incorporated as appropriate for use in preparing the 90 percent design documents.

#### ***Subtask 2.4 90 Percent Design and Final Bid Package***

The Consultant will incorporate comments received during the 60 percent review and advance the plans and specifications to the 90 percent completion level. Two full size sets

of plans and two hardcopy sets of draft technical specifications will be provided, along with an electronic copy (PDF format) for the County's review. An additional review meeting will be conducted with SWDD staff to discuss review comments and final modifications to be made to the bid package. The consultant will incorporate final comments and coordinate with procurement to prepare the final bid package for use in advertising the project. The Consultant will provide a final PDF of the bid documents to SWDD and procurement for use in soliciting bids.

***Subtask 2.5 Bidding and Project Management***

The Consultant will prepare for and participate in a pre-bid site visit meeting with prospective bidders. An attendee list will be prepared, and questions asked will be documented with written responses for procurement to distribute to plan holders. The Consultant will prepare up to two addenda to the bid, providing clarifications and additional information as needed. Consultant will coordinate with procurement on all bid-related matters.

The Consultant will then review bids received, verify references and prepare a recommendation of award to provide to SWDD. Upon award, procurement will complete the preparation of conformed documents. No services are included for preparing the conformed contract documents.

This task will also include Project Management services for those tasks necessary to monitor and maintain project scope, schedule and budget, prepare invoices, prepare progress summaries and review/process subconsultant contracts and payment.

***Subtask 2.6 Permitting***

The Consultant does not anticipate the need for local (i.e. County) or jurisdictional permits (FDEP, Army Corps of Engineers, etc.) for the work being proposed. The existing LFG collection system and flare will remain operational until such time as the new flare system is placed into service. Under this task, the Consultant will prepare and submit a request for determination to FDEP to obtain confirmation of permitting needs (or lack thereof) for modifying the LFG flare. If permitting is determined to be necessary, an amendment to this scope of services will be required. This task will also include minor coordination with the successful bidder to respond to any design-related questions from the building department as the contractor obtains the necessary construction permits.

## EXHIBIT B

### FEE SCHEDULE

The Consultant will provide these services in accordance with our Continuing Consulting Engineering Services Agreement for Professional Services dated May 18, 2021, by and between INDIAN RIVER COUNTY, a political subdivision of the State of Florida (“COUNTY”) and Kimley-Horn and Associates, Inc., (“Consultant”).

Kimley-Horn will perform Tasks 1 and 2 for the total lump sum fee of \$226,420, as detailed below. Individual task amounts are informational purposes only. All permitting, application, and similar project fees will be paid directly by the County.

Task Description	KHA Labor Subtotal	Subs			Expenses	Task Total
		BioGas	Survey	Geotech		
<b>Task 1 - Landfill Gas Pipeline Design</b>	<b>\$ 31,280</b>	<b>\$ 56,500</b>	<b>\$ 2,000</b>	<b>\$ 2,000</b>	<b>\$ -</b>	<b>\$ 91,780</b>
1.1 Preliminary Design Services	\$ 5,330	\$ -	\$ 2,000	\$ 2,000	\$ -	\$ 9,330
1.2 Landfill Gas Pipeline Design	\$ 20,550	\$ 37,100	\$ -	\$ -	\$ -	\$ 57,650
1.3 Coordination with Heartland	\$ 5,400	\$ 19,400	\$ -	\$ -	\$ -	\$ 24,800
<b>Task 2 - Landfill Gas Skid Design</b>	<b>\$ 14,340</b>	<b>\$112,300</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 8,000</b>	<b>\$ 134,640</b>
2.1 Request for Information	\$ -	\$ 9,210	\$ -	\$ -	\$ -	\$ 9,210
2.2 30% Design	\$ 1,570	\$ 27,630	\$ -	\$ -	\$ 8,000	\$ 37,200
2.3 60% Design	\$ 2,020	\$ 27,630	\$ -	\$ -	\$ -	\$ 29,650
2.4 90% Design and Final Bid Package	\$ 2,620	\$ 27,630	\$ -	\$ -	\$ -	\$ 30,250
2.5 Bidding and Project Management	\$ 6,180	\$ 20,200	\$ -	\$ -	\$ -	\$ 26,380
2.6 Permitting	\$ 1,950	\$ -	\$ -	\$ -	\$ -	\$ 1,950
<b>Lump Sum Total</b>	<b>\$ 45,620</b>	<b>\$ 168,800</b>	<b>\$ 2,000</b>	<b>\$ 2,000</b>	<b>\$ 8,000</b>	<b>\$226,420</b>

\*Expenses will be invoiced as incurred, not on a lump sum basis.

Lump sum fees will be invoiced **twice monthly** based upon the overall percentage of services completed. Payment will be due per the contract terms.

### ADDITIONAL SERVICES

The following services are not included in the Scope of Services for this project but may be required depending on circumstances that may arise during the execution of this project. Additional services may include, but not be limited to the following:

- Environmental Services (surface water impacts, gopher tortoise relocation, etc.)
- Construction Services
- Design of the RNG or evaporation system projects
- Design of any dehydration equipment or chiller skid slab

## **EXHIBIT C**

### **TIME SCHEDULE**

Design of the project will be completed within 4 months of receipt of Notice to Proceed. Advertisement of bid will be dependent upon the Procurement Department's workload. Bids will be received 30 days from advertisement. The Consultant will review bids and provide a recommendation of award within 15 days of bid opening.

**WORK ORDER NUMBER 44**  
**LANDFILL GAS FLARE SKID IMPROVEMENTS AND PIPELINE EXTENSION**

**EXHIBIT A**  
**SCOPE OF WORK**

**PROJECT UNDERSTANDING**

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### ***Subtask 1.1 Preliminary Design Activities***

#### **1.1.1 Alignment for Survey Purposes**

This task will include a kickoff meeting with SWDD staff to discuss project objectives, scope, schedule and coordination of related tasks/projects not included in this Scope of Services (i.e. environmental and operational impacts, leachate force main, etc.). During the kickoff meeting, the Consultant will present options for finalization of the pipeline route to extend the LFG from the existing flare location to the evaporation system location (north of the biosolids dewatering facility).

#### **1.1.2 Survey**

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### ***Subtask 1.2 Landfill Gas Pipeline Design***

#### **1.2.1 30 Percent Design**

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- Review detailed drawings, calculations and other information submitted by the Heartland engineering team. These may include natural gas and LFG piping designs, mechanical piping drawings, electrical and controls designs for valves, instruments and other electrical equipment that could affect the landfill assets.
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## EXHIBIT B

### FEE SCHEDULE

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Task Description	KHA Labor Subtotal	Subs			Expenses	Task Total
		BioGas	Survey	Geotech		
<b>Task 1 - Landfill Gas Pipeline Design</b>	<b>\$ 31,280</b>	<b>\$ 56,500</b>	<b>\$ 2,000</b>	<b>\$ 2,000</b>	<b>\$ -</b>	<b>\$ 91,780</b>
1.1 Preliminary Design Services	\$ 5,330	\$ -	\$ 2,000	\$ 2,000	\$ -	\$ 9,330
1.2 Landfill Gas Pipeline Design	\$ 20,550	\$ 37,100	\$ -	\$ -	\$ -	\$ 57,650
1.3 Coordination with Heartland	\$ 5,400	\$ 19,400	\$ -	\$ -	\$ -	\$ 24,800
<b>Task 2 - Landfill Gas Skid Design</b>	<b>\$ 14,340</b>	<b>\$112,300</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 8,000</b>	<b>\$ 134,640</b>
2.1 Request for Information	\$ -	\$ 9,210	\$ -	\$ -	\$ -	\$ 9,210
2.2 30% Design	\$ 1,570	\$ 27,630	\$ -	\$ -	\$ 8,000	\$ 37,200
2.3 60% Design	\$ 2,020	\$ 27,630	\$ -	\$ -	\$ -	\$ 29,650
2.4 90% Design and Final Bid Package	\$ 2,620	\$ 27,630	\$ -	\$ -	\$ -	\$ 30,250
2.5 Bidding and Project Management	\$ 6,180	\$ 20,200	\$ -	\$ -	\$ -	\$ 26,380
2.6 Permitting	\$ 1,950	\$ -	\$ -	\$ -	\$ -	\$ 1,950
<b>Lump Sum Total</b>	<b>\$ 45,620</b>	<b>\$ 168,800</b>	<b>\$ 2,000</b>	<b>\$ 2,000</b>	<b>\$ 8,000</b>	<b>\$226,420</b>

\*Expenses will be invoiced as incurred, not on a lump sum basis.

Lump sum fees will be invoiced **twice monthly** based upon the overall percentage of services completed. Payment will be due per the contract terms.

### ADDITIONAL SERVICES

The following services are not included in the Scope of Services for this project but may be required depending on circumstances that may arise during the execution of this project. Additional services may include, but not be limited to the following:

- Environmental Services (surface water impacts, gopher tortoise relocation, etc.)
- Construction Services
- Design of the RNG or evaporation system projects
- Design of any dehydration equipment or chiller skid slab

## **EXHIBIT C**

### **TIME SCHEDULE**

Design of the project will be completed within 4 months of receipt of Notice to Proceed. Advertisement of bid will be dependent upon the Procurement Department's workload. Bids will be received 30 days from advertisement. The Consultant will review bids and provide a recommendation of award within 15 days of bid opening.

IRC– Professional Services

October 4, 2021

Jill Grimaldi, BCES  
Kimley-Horn  
445 24<sup>th</sup> Street, Ste # 200  
Vero Beach, FL - 32960



**Subject:** Proposal to Provide Engineering Design Services for a New LFG Blower Flare Skid at Indian River County Landfill, Vero Beach, Florida.

Dear Mr. Mehta:

Provided herein is Biogas Engineering's (BGE's) proposal to provide engineering design, project management and Owner's Engineer (OE) services for the proposed blower flare skid replacement and leachate evaporation projects at the Indian River County Landfill (Landfill). The Landfill is owned by the Indian River County Solid Waste Disposal District (IRC) and Kimley-Horn (Prime) is retained by the IRC to provide professional services to the IRC. BGE will be working as a subcontractor to the Kimley-Horn to perform this work.

It is our understanding that IRC is working with Heartland Water Technology (Heartland), which is providing a turnkey solution for design and installation of a leachate evaporation facility (Heartland Facility) utilizing landfill gas (LFG) as a heat source to evaporate the leachate generated at the Landfill. IRC will also be selling LFG to the Indian River Eco District (IRED) for their future renewable natural gas (RNG) Facility (IRED Facility). Heartland Facility require LFG to be pressurized and dried (moisture removed). Currently, only the engineering design of the new BFS is being funded as Phase I of the project.

Additionally, BGE has been asked to provide engineering design and project management services to ensure the Heartland Facility can be seamlessly integrated with the new BFS. The Heartland Facility will be located within the landfill property which is located at 1325 74th Ave SW, Vero Beach, FL 32960. The success of the Heartland Facility will be dependent on successful integration with the Landfill's existing LFG collection and control system (GCCS). IRC has decided to install a new BFS which to provide reliable vacuum to the wellfield and ensure continuous delivery of dry, pressurized LFG to the Heartland and IRED Facilities.

## **OVERVIEW OF THE LEACHATE EVAPORATION PROJECT**

The intent of the evaporation project is to take the leachate from the Landfill and evaporate it using LFG as a fuel, instead of hauling the leachate off site for treatment and disposal. The Heartland Facility will utilize LFG, if adequate supply is available, or natural gas from a nearby public utility gas line (Florida City Gas), or both, as the fuel source(s) for the system. The Heartland Facility will have two incoming pipelines -- the LFG line and the liquid leachate line. It is our understanding that the leachate line is already being installed by IRC. BGE has been asked to provide an engineering proposal to design both the new BFS and a trench (to carry LFG and any required service connections, e.g., pressurized air, communications cable etc.) for the Heartland Facility.

Provided below is the detailed scope of work

## SCOPE OF WORK

The scope of work within this proposal is divided into the following tasks.

### TASK 1: New Blower Flare Skid Design – Phase 1

As mentioned previously, the IRC county plans on replacing the existing blower flare skid with a new BFS which can produce the pressure required by the Heartland and IRED Facilities and providing them conditioned LFG which is free of moisture. It is our understanding that IRC and IRED are planning on jointly funding the engineering design, procurement, and construction of the new BFS. Currently, only the engineering design phase (Phase I) of the project is being funded.

Under this task, BGE will work with IRC, Heartland representatives to determine the ideal design for the integration of the BFS and controls communication between the LFG and the Heartland systems. This BFS will be designed to automatically adjust to account for changes at the Landfill and at Heartland's operations. To achieve this the design will likely require multiple sensors, modulating valves and utilization of a variable frequency drive (VFD) to maintain steady state operations and limit shutdowns on both systems.

As mentioned above, the BFS design will include a new control panel which will be able to read inputs and control the necessary valves and blower settings at the desired frequency (for controlling the speed of the blowers). The BGE team will perform the following activities under this task:

- Engage BGE's design engineering team to work with Heartland controls engineering team for the integration of the project;
- Review design basis requirements from the Heartland team to specify a new high pressure blower flare skid;
- Review Heartland's control strategy and provide input as necessary to protect IRC's interests and to successfully integrate the Heartland system with the new control panel.
- Once the operational requirements for both systems are confirmed, prepare a design basis for all parties to review and approve prior to proceeding with the design;
- Once the design basis has been approved, prepare detailed engineering design drawings in order to procure and construct a new BFS; and
- Under the design package of a new BFS, the following drawings will be provided
  - P&ID;
  - Process flow diagram including high pressure blowers;
  - Detailed mechanical drawings for the blower system;
  - Structural drawings as necessary to support new installation;
  - Electrical drawings incorporating design for BFS equipment (aftercooler, chiller and heat exchangers);
  - A complete set of construction drawings for the procurement and construction of the new BFS; and
  - Controls integration and network drawings for the integration of the Heartland Facility.

- Material and construction specifications as necessary for the fabrication of the BFS and construction of the project.

It is our understanding that the current structural pad might be adequate for the proposed installation and no Civil improvements will be required, however, if additional pad footprint is required to house new BFS, we will rely on Kimley-Horn to provide following items

- Topographic survey drawings;
- Geotechnical report (if necessary);
- Civil drawings including grading and drainage drawings;
- Structural drawings for the pad design; an.
- Permitting assistance to get local building permits;

It is our understanding that these items will be billed to IRC separately outside the scope and cost identified in this proposal.

We propose a lump sum cost of **\$92,100** for the engineering design of the BFS. This will be billed on the following schedule:

- 10% at the issue of request for information;
- 30% at 30% design completion phase (basis of design);
- 30% at completion of 60% design;
- 25% at the completion of 90% design; and
- 5% at the delivery of final Issued-for-Construction Drawings

This cost excludes any travel expenses, which will be billed per the attached rate schedule. At this point, we anticipated two trips (two personnel crew) and an expected expense of about **\$8,000**. Expenses will be billed monthly as the cost is incurred. We propose a total budget of **\$100,100** for this task.

## **TASK 2: BFS Design Related Project Management and Procurement Services**

Under this task, BGE will prepare a separate package to receive bids for the procurement and construction of the blower flare skid. Provided below is the list of activities covered under this task.

- Conduct bidding for the procurement and installation upgrades.
- Hold pre-bid meeting with the perspective bidders and provide project information
- Answer contractors' questions pertaining to the design.
- Prepare bid comparison spreadsheet and present to the client for review
- Hold bid review call and provide recommendation for the selection of the contractor

We propose a lump sum cost of **\$20,200** for this task. This task will be billed on an agreed upon percent completion basis at the end of each month.

## **TASK 3: Utility Trench Engineering Design**

Under Task 2, BGE will work with Kimley-Horn (Prime, Client) to design the utility trench between the New BFS and Heartland Facility. BGE will design a common utility trench which will house:

- LFG transmission line from BFS to the Heartland Facility;
- Compressed air line for pneumatic valves and pumps (if required);
- Prepare material and construction specifications as necessary for the installation of the utility trench;
- Any other future lines required by IRC; and
- Any control conduits required to communicate between new BFS and Heartland Facility; and

Under this task, BGE team will design the trench detail, pipe sizes, conduit sizes etc. and will rely on Kimley-Horn to perform the survey of the site and prepare the trench alignment drawings which will also address the traffic requirements to keep landfill operations going without interruption. BGE will review the design drawings once the design is complete.

We propose a lump sum estimate of **\$21,800** for the design and engineering of the transmission lines and associated utilities. This will be billed on the following schedule:

- 20% at the issue of request for information;
- 60% at 60% design completion phase (alignment);
- 20% upon the completion of the draft design drawings.

This cost does not anticipate a separate travel will be required to complete this task, therefore, no travel expenses are included in this task.

#### **TASK 4: Utility Trench Related Project Management and Procurement Services**

Under this task, BGE will prepare a separate package to receive bids for the procurement and construction of the Utility Trench. Provided below is the list of activities covered under this task.

- Conduct bidding for the alignment of the trench.
- Hold pre-bid meeting with the perspective bidders and provide project information
- Answer contractors' questions pertaining to the design.
- Prepare bid comparison spreadsheet and present to the client for review
- Hold bid review call and provide recommendation for the selection of the contractor

We propose a lump sum cost of **\$15,300** for this task. This task will be billed on an agreed upon percent completion basis at the end of each month.

#### **TASK 5: Hartland Related Owner's Engineer and PM Services**

BGE will work closely with IRC and Heartland to review the overall design, equipment specifications and construction plan of the Heartland Facility. As the owner's engineer (OE) and project manager, BGE will review the details of the system integration between the Heartland Facility equipment and the Client's proposed landfill assets. BGE will perform the following activities under this task:

- Allocate and assign key engineering resources (such as controls, mechanical, and process engineers) as necessary to support the project during critical design review stages;
- Review detailed drawings, calculations and other information submitted by the Heartland engineering team. These include natural gas and LFG piping designs, mechanical piping drawings, electrical and controls designs for valves, instruments and other electrical equipment that could affect the Client’s Landfill assets.
- Review the master project schedule and provide comments to the Client regarding risks in achieving critical milestones by the developer. Please note that to do this, BGE will request monthly schedule updates from Heartland and provide comments as necessary.
- As the OE, BGE will monitor the engineering and coordination performed by developer/contractor of the facility.
- As the OE, BGE will review all design and equipment specifications regarding the integration of piping with the Client landfill system.
- Perform site visits if necessary.

We propose a lump sum of **\$19,400** for this task. This task will be billed at the end of each on an percent completion basis at the end of each month. We will allocate resources as necessary to support project progress. Any travel expenses will be billed per the attached rate schedule as well. This cost estimate is based on our project understanding at this time, BGE will inform the Client if additional budget is necessary to support ongoing activities.

### COST SUMMARY

Provided below is the summary of the costs proposed in this proposal.

Table 1: Cost Summary			
Task #	Detail	Type	Cost
1	New Blower Flare Skid Design – Phase 1		
	Engineering Design	LS	\$92,100
	Expenses	T&M	\$8,000
2	BFS Design Related PM and Procurement Services	LS	\$20,200
3	Utility Trench Engineering Design	LS	\$21,800
4	Utility Trench Related PM and Procurement Services	LS	\$15,300
5	Heartland Related OE and PM Services	LS	\$19,400
		<b>Total:</b>	<b>\$176,800.00</b>

We propose a total cost of **\$176,800** for the project, which will be billed per the payment scheduled described above. We propose a net 30 payment terms from the date of the invoice.

### EXCEPTIONS

The following items are excluded from this scope of work:

- Review of environmental impact assessments or traffic studies and reports;
- Design to provide any service connections to the site (electrical, natural gas, communication, etc.);
- Site visits in addition to what is covered under this proposal;

- Permitting (or any permit fees) of any kind is excluded unless requested by IRC in writing;
- Site surveys, geotechnical exploration and utility location services; we understand this will be made available to BGE prior to the start of the project (performed by Kimley-Horn);
- Construction support during installation. This service can be offered if requested by IRC; and
- Any items or work which are not clearly stated or identified in this document.

## CLOSING

We are excited about this opportunity and are looking forward to assisting IRC on this project. Should you have any questions, please do not hesitate to contact me.

Sincerely,



Gautam Arora, PE

President

**BIOGAS ENGINEERING**

APPENDIX A

**BIOGAS ENGINEERING**  
2021 Hourly Rate Schedule

Principal_____	\$230
Project/Technical Director_____	\$210
Sr. Process Engineer/Sr. Controls Engineer_____	\$190
Project Manager/Lead Engineer_____	\$180
Project Engineer_____	\$175
Process Engineer/ Controls Engineer_____	\$165
Construction Supervisor/Manager_____	\$140
Autocad Designer/Drafter_____	\$115
Field Technician_____	\$145
Admin_____	\$80

**General Terms**

1. Travel costs, expenses (fees) and Sub consultant costs will be billed at cost.
2. All costs are in United States Dollar.
3. All invoices are due within 30 days of issuing the invoice.