

Scope of Services
Fiscal Year 2018
Operation, Monitoring, Maintenance, and Reporting
for the
Landfill Gas Collection and Control System
at the
West Nassau Class I Landfill

County Contract Number: CM2096-WA--
S2Li Project Number: 17-738

Work Authorization Service Period: Fiscal Year 2018 (October 1, 2017 through September 30, 2018)

This Work will provide for the operation, monitoring, maintenance, and reporting of the Landfill Gas (LFG) Collection and Control System (CCS or LFGCCS) at the West Nassau Landfill. The existing systems at the Landfill consist of approximately 50 vertical gas wells, 5 condensate pump station, 12 condensate connections to the leachate collection system risers, LFG header and lateral piping, control valves, 2 air compressors, blower and control station, and 1 candlestick flare. Under the scope of work for this Contract, S2L, Incorporated (S2Li) and its team of subconsultants shall perform four categories of service during a service time period, beginning on the contract date, which includes the following:

- Task 1
 - a) Routine operation and monitoring of the blower flare station, extraction well system and conveyance piping;
 - b) Annual LFG Flare Visible Emission Testing; and
 - c) Reporting.
- Task 2 Non-routine scheduled maintenance.
- Task 3 Non-routine unscheduled emergency services.
- Task 4 Parts and subcontractors for non-routine services.
- Task 5 Miscellaneous Services.

It should be noted that this scope of services is for the period of October 1, 2017 through September 30, 2018.

County Responsibilities

In general, the County shall:

1. Provide access to the site at reasonable times.
2. Provide S2Li with records and copies of previous operations and monitoring reports, permits, maintenance reports, past semi-annual and annual reports to regulatory agencies, operation and maintenance manuals, operations plans, and correspondences to and from regulatory agencies.
3. Provide a Landtec GEM2000, GEM5000, or equivalent to measure LFG flow rates, composition, and pressures at each wellhead, header/lateral piping and at the flare stations. The County is responsible for satisfying the manufacturer's recommended factory maintenance of the instrument (every six months for the GEM2000 or every 12 months for the GEM5000), as well as any unscheduled repair or maintenance of the instrument). If the County cannot provide a calibrated gas measuring unit, S2Li will provide a unit and bill the County as a rental unit under Task 4.

4. Provide, replace, and store the Flare Station LFG flow chart. A continuous LFG flow monitoring system and recorder must continue to be provided and be maintained in order to comply with monthly greenhouse gas (GHG) monitoring.
5. Respond to system dialer alert and alarms such as flare outages, blower shutdown, etc. and attempt to determine system fault and, if possible, restart the system. If the system cannot be restarted to normal continuous operations, notify S2Li to assist as provided under Task 3.
6. Record information into Startup, Shutdown, and Malfunction (SSM) Plan forms and provide to S2Li. Report to S2Li any necessary changes.
7. By March 1st of each year, provide S2Li any necessary records for the Title V annual operating report (due April 1st of each year).
8. Provide monitoring and reporting of the landfill's perimeter gas probes to Florida Department of Environmental Protection (FDEP) per Section 2 -Specific Condition No. E4 (July 2015 Permit) of the closure and long-term care permit.
9. Check the air compressor systems.
10. Replace or maintain compressed (nitrogen or air) gas canisters for operation of the automatic control valves and propane gas canisters for operation of the flare.
11. Provide for additional spare parts or other equipment if not sufficiently budgeted under this work authorization.
12. Pay for any required permit fees.

The West Nassau LFG Collection System is operated to vent all collected LFG to an open flare operated in compliance with New Source Performance Standards (NSPS) requirements. In the event that the collection system is inoperable, it will be shut down and any valves in the LFGCCS contributing to the venting of gas to the atmosphere will be closed within one hour. NSPS operational and testing requirements apply at all times, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction does not exceed five days for collection systems and does not exceed one hour for treatment and control devices (i.e. flares).

Schedule

Work under the Scope of Services provided below will begin October 1, 2017 and run through this service period ending September 30, 2018.

Cost Estimate

The cost estimate to conduct the Work as described in the below listed Scope of Services is \$176,868.55. A detailed breakdown for each task with the estimated labor hours and expenses is included in the attached Exhibit 1. Costs will be invoiced on a time and materials basis. The County will be notified when the overall project budget is nearing its limit.

Scope of Services

Task 1 – Routine Operation, Monitoring, Adjustments, and Reporting

The LFG collection and control systems for the West Nassau Landfill will be operated, maintained, and monitored in accordance with NSPS requirements per 40 Code of Federal Regulations (CFR) 60 Subpart WWW, including pertinent calibrations, monitoring, and reporting. Operation and monitoring will include, but not be limited to, the following schedule:

1.1 Blower/Flare Station

A. Monthly Blower/Flare Station Checks

S2Li will visit the site once per month to perform the following services:

1. Measure and record LFG composition (methane, carbon dioxide, oxygen, and balance gas percent by volume), pressure, and temperature at the flare inlet. This information will be utilized as part of the annual GHG reporting requirements.
2. Record LFG flow rate to the flare and thermocouple temperature as displayed on the chart recorder or control panel indicator.
3. Measure and record pressure at the condensate knockout pot, the blower inlet and outlet, the flame arrester inlet and outlet, and the pressure drop across the flame arrester.
4. Adjust the system to increase or decrease the LFG flow depending on the monitoring data to maintain proper gas quality and provide sufficient vacuum to the extraction system.
5. Minor items such as damaged monitoring ports and temperature gauges will be repaired or replaced when encountered. Major repair problems will be reported to the County immediately and covered under Task 2 as appropriate.
6. Check flare pilot system and propane cylinder levels.
7. Check compressed nitrogen or air cylinder levels for operation of the main automatic control valves.
8. Observe and record any problems with equipment including any flare shutdowns. Check and adjust controller set points.
9. Check air compressors' operation including above ground air lines.
10. Check and add grease (if needed) for the blower bearings.

B. Quarterly Blower/Flare Station Checks

S2Li will visit the site quarterly (may be conducted during a normal monthly visit) to do the following:

1. Compressors' belt replacement (as needed).
2. Blow out compressors' airline (as needed).
3. Replace blower bearing grease. Services required will be addressed under Tasks 2 and 4.

C. Annual Blower/Flare Station Checks

S2Li will visit the site once per year to do the following:

1. Conduct a system test in cooperation with the County. Test all blower/flare controls, meters, chart recorders, and automatic feature functions including startup and shutdown checks, emergency shutdown valve function, and emergency call out check.
2. Calibrate gas flow meters. (Provide County with calibration certification documentation.)
3. Check and clean the flare arrestor and knock-out pot.
4. Clean the UV eye in the flare stack.

1.2 LFG Extraction System

A. Monthly LFG Extraction Systems Checks and Tuning

S2Li will visit the site at least once per month to do the following:

1. All system components shall be checked for proper operation in accordance with NSPS requirements 40 CFR 60.
2. Perform preventive and corrective maintenance relative to the LFG Extraction Systems in accordance with applicable federal and state laws, regulations, and permits and generally accepted or recommended industry maintenance practices, procedures and standards. Additional adjustments may be required to address odor concerns. Note: This service may be required under Tasks 2, 3, and 4.
3. At each well extraction point, the following shall be measured and/or observed and recorded.
 - a. LFG flow rate.
 - b. LFG composition (methane, carbon dioxide, oxygen, and balance gases). Oxygen levels above 5 percent shall be noted and addressed per NSPS requirements.
 - c. LFG pressure - Pressures shall be noted and addressed per NSPS requirements. *(Note: Since the landfill was closed with the use of geomembrane or synthetic cover, positive pressures are allowed. However, the facility will be tuned such that each well will be pulling a vacuum, if possible).*
 - d. LFG temperature - Temperatures equal to or above 131 degrees Fahrenheit shall be noted and addressed per NSPS requirements.
 - e. The condition of the well head piping and well bore seal condition at the landfill surface.
 - f. In conjunction with the once per month monitoring, adjustments to the system shall be made as required to maintain odor control, system balance, and NSPS compliance. If pressure, composition, and temperature exceedances as noted above cannot be corrected within 15 days by adjusting the system, S2Li will notify the County and the FDEP. A plan will be developed by S2Li with County input and with the Subcontractor's assistance, to correct the exceedance within 120 calendar days. Any such corrective actions shall be conducted in accordance with Tasks 2, 3, and 4.
 - g. Check condensate handling system for proper operation. Perform an external inspection of condensate sumps, condensate traps, pump stations, and condensate discharge locations. Where the pumps discharge to an above ground well riser or below ground injection system, visually confirm that liquid is being pumped.
 - h. Report to the County within 24 hours of measurement or observation, any abnormal readings of LFG temperature (131 degrees Fahrenheit or greater, oxygen levels above 5 percent) or other observations (such as a smoky odor or substantial waste settlement) which may be indicative of a subsurface landfill fire. This reporting procedure is not necessary for wells operating under an "Alternative Operating Procedure (AOP)" as allowed under the Title V permit.

There may be a need for follow-up work related to retesting after adjustment to the wellfield system, per NSPS requirements, or for any corrections to the system. One additional day per month has been budgeted for retesting of wells and connections points found to be out of compliance during the routine monthly monitoring event. This work does not include any non-routine services included under Tasks 2, 3 and 4.

B. Annual LFG Extraction System Checks

S2Li will visit the site once per year to perform the following services:

1. Condensate pumps shall be pulled and inspected.

2. Exercise all valves annually.

The wellhead valves will be exercised on an annual basis. If it reaches a point where five valves failed the exercising procedure, the exercising of the valves will be discontinued until after the valves are either repaired or replaced. Upon approval by the County, work to repair or replace the items identified under this task will be billed under Tasks 2 and 4 assuming sufficient funds are available.

3. Surface Emission Testing (Annual Testing)

The West Nassau Landfill gas extraction and flaring system is operated to prevent methane concentrations from exceeding 500 parts per million by volume (ppm_v) above background levels at the surface of the landfill. To determine if this level is exceeded, surface testing is performed around the perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals including at each well location, and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. A surface monitoring design plan has been developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30 meter intervals. A monitoring probe will be kept within 2 to 4 inches of the landfill surface while continuous sampling is performed. Surface emissions testing is performed using an NSPS-compliant portable monitor and in compliance with all NSPS procedures. Results from the surface monitoring will be included in the semi-annual NSPS report submitted to FDEP. The testing day will be scheduled during typical weather conditions for the time of year but may need to be changed due to forecasted heavy rains or unseasonably high winds.

Because no exceedances have occurred in at least the past three quarterly surface emission monitoring periods, the County is allowed to reduce the frequency of surface testing to once per year, as long as there are no additional exceedances recorded during subsequent testing periods. If exceedances do occur, additional testing periods will be required. These additional testing or retesting events are not included in this scope of services and can be provided as an additional service or provided as a component of unscheduled maintenance, as described within Task 2.

Any reading of 500 ppm_v or more above background measured at any location during the surface emissions testing is recorded as a monitored exceedance. In the event of an exceedance, the County will be notified, and corrective actions implemented as described below. The exceedance is not a violation of the NSPS operational requirements as long as the following actions are taken:

- The location of each monitored exceedance will be marked and the location recorded;
- Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the LFG collection in the vicinity of each exceedance will be made and the location will be retested within ten calendar days of the initial exceedance;
- If retesting of the location shows a second exceedance, additional corrective action(s) will be taken and the location will be monitored again within ten days of the second exceedance;
- Any location that initially showed an exceedance but has a methane concentration less than 500 ppm_v methane above background at the time of the ten-day retesting, will be retested one month from the initial exceedance. If the one-month retesting shows a concentration less than 500 ppm_v above background, no further monitoring is required until the next quarterly monitoring period. If the one-month retesting shows an exceedance, corrective

action will be taken and the location will be monitored within ten days of the second exceedance, or additional corrective actions (listed below) will be taken; and

- For any location where monitored methane concentrations equal or exceed 500 ppm_v above background three times within a quarterly period, corrective actions will be taken. Corrective actions will include a new well or other collection device that will be installed within 120 days of the initial exceedance. An alternative remedy, if approved, may include upgrading the blower(s), header pipe(s), and/or control device(s).

1.3 Annual LFG Flare Visible Emission Testing and Reporting (by August 2017)

For the flare, the following is to be completed:

- A. Prepare a notification letter for submittal by the County to the FDEP. Notification is required to be submitted 15 days before testing begins.
- B. Conduct a visible emissions test for each flare in accordance with U.S. Environmental Protection Agency (USEPA) Method 22. The maximum allowable visible emissions may not exceed 20 percent.
- C. Prepare a test report summarizing the test requirements, conditions during the test, and test results. The report shall include the information required by Chapter 62-297, Florida Administrative Code (F.A.C.), and U.S. EPA Method 22. A draft of the report will be submitted to the County for review within 15 days of completion of the test. After review and approval by the County, the final report will be submitted to FDEP within 30 days of the test.

1.4 Reporting

A. Monthly Reporting

- i. A summary report shall be submitted to the County around the 15th of each month summarizing the previous month of operation including the NSPS report utilizing an online data base program.
- ii. All wellhead monitoring data required under the NSPS shall be kept on file. The monthly report shall include wellhead readings of gas composition (methane, carbon dioxide, oxygen, and balance gas), pressure, temperature, and flow rate. Readings and comments shall also be included for rechecks of wells that are out of compliance with the NSPS wellhead operating criteria. The report shall detail the cause of the non-compliance, all remedial actions taken to correct the non-compliance, any future work that may be necessary to keep the wells in compliance with the NSPS requirements, and any other information as required under this Task.
- iii. Flare station data to be included in the report shall include gas composition and temperature, vacuum applied to the header system, and flow rate.
- iv. Any condensate management system monitoring data shall also be provided in the monthly report.
- v. The monthly report shall detail all work conducted and confirm the system is being maintained in compliance with the NSPS. Any corrections conducted on the system or required to be conducted shall be listed. The report shall include a narrative summary of any significant trends in the monitoring data and explanations of anomalous data. Recommendations shall also be provided regarding potential non-routine repairs that are anticipated.

B. Semi-Annual Reporting

This task addresses the semi-annual reports required by the facility's Title V Operation Permit. These reports will be prepared for submittal by the following dates:

- 2017 Second Semi-Annual Report (July 1 through December 31, 2017): by January 30, 2018.
 - 2018 First Semi-Annual Report (January 1 through June 30, 2018): by July 30, 2018.
- i. Semi-Annual NSPS Report
- S2Li will prepare semi-annual reports required under 40 CFR 60.757(f) and (g), and will include the following information:
- Value and length of time for exceedance of applicable monitoring parameters.
 - Description and duration of all periods when the control device was not operating for a period exceeding one hour and the length of time the control device was not in operation.
 - List of periods when the collection system was not operating in excess of five days.
 - Description and duration of all periods when the gas stream was diverted from the control device through the bypass line.
 - The location of each exceedance of the 500 ppm_v volatile organic compounds (VOC) as methane surface emission criteria.
 - A diagram of the collection system showing all wells and collectors, including the areas excluded from collection and the areas into which the system are added in the future. This diagram will be provided by the County and include all new work that occurred during the reporting period.
- ii. Semi-Annual SSM Report
- S2Li will prepare semi-annual reports which will include the number of SSM events and whether or not SSM Plan procedures were followed. This information will be incorporated into the semi-annual NSPS report. Any changes required to be made to the SSM Plan are not included in this scope of services.
- iii. Report Submittal
- S2Li will provide one draft copy of the NSPS report for the County's review. Upon receipt of comments from the County, S2Li will submit one copy of the signed and sealed semi-annual reports to FDEP, and one copy for the County's files. Additionally, an electronic copy of the report will also be provided to each recipient.

C. Annual Reporting

1. GHG Reporting. West Nassau Landfill has been subject to the requirements of Title 40 of the Code of Federal Regulations (CFR), Part 98: Mandatory GHG Reporting because it emits GHG in amounts greater than 25,000 metric tons or more of carbon dioxide equivalent (MTCO_{2e}) per year. As a result, the County has been collecting data and submitting GHG emission reports every year before March 31st following the year of data collection. S2Li shall utilize the eGGRT reporting tool available on-line from the USEPA to report GHG emissions. S2Li shall respond to any questions from USEPA related to this submittal.
2. Annual Title V Operating Report Submission and Emissions Fee. S2Li shall prepare the required annual operating report for the West Nassau Landfill, and submit the report prior to April 1, 2018 for the reporting year 2017. A draft of the report shall be submitted to the County for its review, any improvements implemented, and the final submitted electronically via the FDEP electronic annual operating report (EAOR) submittal process. S2Li shall respond to any questions from FDEP related to this submittal.

As part of the new process developed by the FDEP, the emissions fee will be calculated by FDEP's EAOR software at the time of submission of the annual operating report. S2Li shall provide the County with a copy of the fee invoice to be paid to FDEP at least three weeks prior to the April 1st deadline to assist in the payment of the fees. S2Li shall respond to any questions from FDEP related to this submittal.

3. Annual Title V Statement of Compliance. S2Li shall prepare the Statement of Compliance report and associated documentation and calculations demonstrating/documenting the site's compliance with its Title V permit during calendar year 2017. This report will be submitted prior to the April 1st deadline and will list any deviations of the regulatory requirements. The report and associated back-up material shall be reviewed in draft form by County representatives, improvements implemented, and the final statement submitted to FDEP. S2Li shall respond to any questions from FDEP related to this submittal.
4. On-Line Data Management System. S2Li is to provide and maintain an online data management system. S2Li is to input data in the data management system collected during the services conducted under Task 1. County staff will be given access to the system.

Task 2 – Non-Routine Scheduled Maintenance

- A. S2Li's duties under this section shall include non-routine scheduled maintenance consisting of corrective repair or maintenance work identified during the monthly monitoring. This work shall include but not be limited to:
1. Header and lateral pipe realignment.
 2. Determining water levels in wells.
 3. Adding pumps to wells.
 4. Resetting of pipe supports.
 5. Repairing of broken valves.
 6. Replacing well heads.
 7. Replacing flex hoses (e.g., torn, degraded, needs extension).
 8. Overseeing the repair of all items associated with the landfill cap which resulted from the repair or movement of header pipes and/or lateral lines.
 9. Overseeing the repair of landfill closure liner cap system.
 10. Adding new monitoring ports as needed to measure pressure levels.
 11. Repairing or replacing damaged or broken monitoring ports, valves, couplings, thermometers, and clamps.
 12. Cleaning and adjusting of the flame arrester.
 13. Cleaning and adjusting condensate pumps and components.
 14. UV eye cleaning.
 15. Replacing flare station components such as thermocouples, etc.
 16. Replacing or cleaning the filter within the Knockout Pot at the Flare Station.
 17. LFG analytical sampling.
 18. Replacing or maintaining propane tanks for operation of the ignition systems.
 19. Providing rental equipment.
 20. Changing bearing grease for the blower (quarterly).

21. Having LFG flow meter removed, calibrated, and reinstalled. A temporary rental meter may be required to be installed and removed.
22. Assessing, ordering, and/or replacement of parts.

B. This type of work under Task 2 is critical for system operation and the required services are difficult to predict during a contract service period. Some of these services under Task 2 may be provided by a specialized subcontractor. The number of authorized hours may exceed the amount budgeted for this work authorization due to the level of effort required under this Task 2. These additional hours may potentially utilize a portion of the budget allocated for parts or other services. Payment for Task 2 shall be billed at the contract hourly rate. All parts and/or rental equipment are to be paid at the delivered cost. S2Li shall submit a copy of the invoice for the parts used for price verification along with the invoice submitted to the County for payment under Task 4 – Parts and Subcontractors for Non-Routine Services, unless the County elects to provide a Purchase Order for the direct purchase of a part. Should a Subcontractor be required for construction related work, it must be authorized in writing by the County under Task 4 – Parts and Subcontractors for Non-Routine Services. The total costs for the services provided under this task is limited to the budgeted amount under this task. If the costs for services is expected to exceed the budget amount or amount remaining under this task, S2Li will notify the County and alternative funding will be obtained.

Task 3 – Non-Routine Unscheduled Emergency Services

S2Li duties under this task include events that require immediate response to assist County personnel. Due to the urgent nature of these items, they cannot be scheduled. The events and services under this task could include, but are not limited to:

- a. Blower/Flare Station shut down;
- b. Repair of main header or lateral line breaks;
- c. Response to odor complaints;
- d. Installing replacement extraction wells;
- e. Repair/maintenance and troubleshooting of the blowers and flare; and
- f. The detection of LFG migration.

Sampling of LFG composition and pressures within various locations of the header pipe may also be necessary to diagnose problems within the LFG collection system, such as condensate accumulation, pipe obstructions, broken valves, etc.

S2Li is available to be contacted 24 hours a day, 7 days a week and if required, can be on-site within 24 hours of notification.

S2Li Contact: Omar E. Smith, P.E., V.P.,
Regional Manager
Tel: 770-517-9759
Cell: 770-330-1638
Alt. Tel: 407-475-9163

Work under this task shall be conducted upon authorization by the County and shall be billed at the hourly contract rate for Task 3. All parts are to be paid at the delivered cost. Should a Subcontractor be required for specialty related work, it must be authorized in writing by the County under this Task 3 or Task 4 – Parts and Subcontractors for Non-Routine Services.

The total costs for the services provided under this task is limited to the budgeted amount under this task. If the costs for services is expected to exceed the budget amount or amount remaining under this task, S2Li will notify the County and alternative funding will be obtained.

Task 4 - Parts and Subcontractors for Non-Routine Services

- A. Required parts and/or rental equipment provided by S2Li's services under Tasks 2 and 3 are to be paid under Task 4. All parts or equipment are to be paid at the delivered cost. S2Li shall submit a copy of the invoice for the parts or rental equipment used for price verification along with the invoice submitted to the County for payment from the funds allocated for Task 4 – Parts and Subcontractors.
- B. Should S2Li require a Subcontractor for specialty related work such as realignment of lateral and headers lines, repairs to the Flare Station, or repair to the liner cap system, etc., an estimate for the Subcontractor's work must be submitted to the County for review and approval. The Subcontractor's work must be authorized by the County. No work shall be conducted under this task unless authorized, in writing, by the County.
- C. S2Li shall submit a copy of the Subcontractor's invoice for price verification along with S2Li's invoice. The total costs for the services provided under this task are limited to the budgeted amount under this task. If the costs for services are expected to exceed the budget amount or amount remaining under this task, S2Li will notify the County and alternative funding will be obtained.

Task 5 – Miscellaneous Services

S2Li is to provide miscellaneous services to address assignments by the County including updating of existing reports, preparation of new reports, addressing rule changes, etc. The total work effort is limited to the budget limit provided in this work authorization.

2-Aug-17

EXHIBIT 1

Service Period Estimate

Fiscal Year 2018 (October 1, 2017 through September 30, 2018)

Operation, Monitoring, Maintenance, and Reporting

Landfill Gas Collection and Control System

West Nassau Class I Landfill

Nassau County, Florida

S2Li No.: 17-738
Nassau County No.: CM2096-WA--

Total Project Costs
S2Li Fee Estimate

LABOR		LABOR CATEGORY AND RATE										TOTAL HOURS	SUBTOTAL LABOR
		Project Dir./ Principal	Regional Manager/ QC Officer	Principal Engineer	Senior Engineer	Associate Engineer	CAD Technician				Office Manager		
TASK	DESCRIPTION	\$225.00	\$208.88	\$171.38	\$122.51	\$47.47	\$47.47				\$68.46		
1	Routine Operation, Monitoring, Adjustments, and Reporting	29	145	0	160	420	0				40	794	\$79,090.00
1.1	Blower/Flare Station (2/month; 12 total)	0	26	0	3	24	0				0	53	\$6,937.69
1.2	LFG Extraction System (2/month; 12 total)	12	42	0	113	336	0				12	515	\$42,088.03
1.3	LFG Flare Emission Test and Reporting- Method 22 (1 event)	1	3	0	4	0	0				2	10	\$1,478.60
1.4	Reporting												
1.4A	Monthly (12 events)	12	48	0	28	48	0				12	148	\$19,256.60
1.4B	Semi-Annual (2 events)	2	16	0	4	4	0				12	38	\$5,293.52
1.4C	Annual Title V Operating Report/GHG Report	2	10	0	8	8	0				2	30	\$4,035.56
2	Non-Routine Scheduled Maintenance	2	24	0	24	96	0				0	146	\$12,960.48
3	Non-Routine Unscheduled Emergency Services	2	8	0	8	0	0				0	18	\$3,101.12
4	Parts and Subcontractors for Non-Routine Services	0	0	0	8	8	0				0	16	\$1,359.84
5	Miscellaneous Services	1	16	0	8	0	0				2	27	\$4,684.08
	SUBTOTALS:	34	193	0	208	524	0	0	0	0	42	1001	\$101,195.52

EXPENSES		Field Vehicle (\$90/day)	Lab Testing (est.)	Equipment Rental (est.)	Parts (est.)	Landtec Web Data Base	Grove Scientific (see	Subcontractors (est.)					SUBTOTAL EXPENSES
		(Attach. 2)		(Attachment 2)	(Attachment 2)	(Attachment 2)	(Attachment 1)	(Attachment 2)					
1	Routine Operation, Monitoring, Adjustments, and Reporting												
1.1	Blower/Flare Station (2/month; 12 total)												\$ -
1.2	LFG Extraction System (2/month; 12 total)	\$ 2,160.00					\$6,392.76						\$ 8,552.76
1.3	LFG Flare Emission Test and Reporting- Method 22 (1 event)						\$1,981.32						\$ 1,981.32
1.4	Reporting												
1.4A	Monthly (12 events)					\$ 6,000.00							\$ 6,000.00
1.4B	Semi-Annual (2 event)						\$13,246.76						\$ 13,246.76
1.4C	Annual Title V Operating Report/GHG Report						\$10,602.19						\$ 10,602.19
2	Non-Routine Scheduled Maintenance	\$ 1,080.00			\$ 500.00								\$ 1,580.00
3	Non-Routine Unscheduled Emergency Services				\$ 2,900.00			\$ 10,560.00					\$ 13,460.00
4	Parts and Subcontractors for Non-Routine Services			\$ 3,100.00	\$ 5,050.00			\$ 12,100.00					\$ 20,250.00
5	Miscellaneous Services												\$ -
	SUBTOTALS:	\$ 3,240.00	\$ -	\$ 3,100.00	\$ 8,450.00	\$ 6,000.00	\$ 32,223.03	\$ 22,660.00					\$ 75,673.03

				COST SUMMARY				
Estimated Fee By Landfill for County Accounting Purposes:				TASK	DESCRIPTION	SUBTOTAL LABOR	SUBTOTAL EXPENSES	TASK TOTAL
West Nassau Class I Lined Landfill (42 acre area):	\$	136,188.78	77%	1	Routine Operation, Monitoring, Adjustments, and Reporting	\$79,090.00	\$40,383.03	\$119,473.03
West Nassau Unlined Landfill (11 acre area):	\$	40,679.77	23%	2	Non-Routine Scheduled Maintenance	\$12,960.48	\$1,580.00	\$14,540.48
Total:	\$	176,868.55	100%	3	Non-Routine Unscheduled Emergency Services	\$3,101.12	\$13,460.00	\$16,561.12
				4	Parts and Subcontractors for Non-Routine Services	\$1,359.84	\$20,250.00	\$21,609.84
				5	Miscellaneous Services	\$4,684.08	\$ -	\$4,684.08
				TOTALS		\$101,195.52	\$75,673.03	\$176,868.55

Service Period Estimate
Fiscal Year 2018 (October 1, 2017 through September 30, 2018)
Operation, Monitoring, Maintenance, and Reporting
Landfill Gas Collection and Control System
West Nassau Class I Landfill
Nassau County, Florida

Attachment 1 - GROVE Scientific Fee Estimate - Subconsultant

EXPENSES		Field Vehicle (\$90/day)	Lab Testing (est.)	Equipment Rental (est.)	Parts (est.)	Landtec Web Data Base (\$500/m)		Subcon- tractors (est.)					SUBTOTAL EXPENSES
TASK	DESCRIPTION												
1	Routine Operation, Monitoring, Adjustments, and Reporting	\$ 450	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$450
1.1	Blower/Flare Station (2/month; 12 total)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
1.2	LFG Extraction System (Surface Emission Testing, 1 event)	\$ 360	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ 360
1.3	LFG Flare Emission Test and Reporting- Method 22 (1 event)	\$ 90	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ 90
1.4	Reporting												
1.4A	Monthly (12 events)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
1.4B	Semi-Annual (2 event)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
1.4C	Annual Title V Operating Report/GHG Report	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
2	Non-Routine Scheduled Maintenance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
3	Non-Routine Unscheduled Emergency Services	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
4	Parts and Subcontractors for Non-Routine Services	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
5	Miscellaneous Services	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ -
	SUBTOTALS:	\$ 450	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					\$ 450
	TOTAL \$32,223.03												

Service Period Estimate
Fiscal Year 2018 (October 1, 2017 through September 30, 2018)
Operation, Monitoring, Maintenance, and Reporting
Landfill Gas Collection and Control System
West Nassau Class I Landfill
Nassau County, Florida

Attachment 2 - Estimate of Parts, Rental Equipment, Sullivan Environmental, Subcontractors, Misc.

Parts, Rental Equip., Subcontractors, Misc. Cost Estimate												FY2016
No.	Item/Event	Manufacturer or Subcontractor	\$/Item or Event	Item or Event Type	No. of Items or Events	Total Cost	Costs Under Task 1	Costs Under Task 2	Costs Under Task 3 -Exp	Costs Under Task 3 -Sub	Costs Under Task 4-Exp	Costs Under Task 4-Sub
1.	GEM2000 Rental		\$ 250	per day	4	\$ 1,000					\$ 1,000	
2.	Blower/Motor Belt (est)		\$ 600	ea.	0	\$ -					\$ -	
3.	Blower Replacement Grease & Disposal	Sullivan Envir.	\$ 1,275	per event	2	\$ 2,550						\$ 2,550
4.	Flow Meter Calibration											
	- Manufacturer Calibration & Rental Costs	Thermal Instr.	\$ 1,200	per event	1	\$ 1,200					\$ 1,200	
	- Field Removal and Install Costs	Sullivan Envir.	\$ 1,275	per event	2	\$ 2,550						\$ 2,550
5.	Flare Station Check/Maintenance											
a.	- UV Eye Cleaning and visual inspection											
	Rental - Manlift	Rental	\$ 900	per event	1	\$ 900					\$ 900	
	Labor	Sullivan Envir.	\$ 2,100	per event	1	\$ 2,100						\$ 2,100
	- Mob/Demob	Sullivan Envir.	\$ 1,200	per event	1	\$ 1,200						\$ 1,200
b.	- Cleaning of knock-out pot filter	Sullivan Envir.	\$ -	per event	1	\$ -						\$ -
c.	- Cleaning of flare arrestor	Sullivan Envir.	\$ -	per event	1	\$ -						\$ -
d.	- System Check - Mics Equipment & Parts	Sullivan Envir.	\$ 200	per event	1	\$ 200						\$ 200
6.	Condensate Pumps - Check	Sullivan Envir.	\$ 2,500	per event	1	\$ 2,500						\$ 2,500
7.	GW-6 or 11 Type Repair	Sullivan Envir.										
a.	Parts	Isco	\$ 800	per event	3	\$ 2,400			\$ 2,400			
b.	Labor	Sullivan Envir.	\$ 1,020	per event	3	\$ 3,060				\$ 3,060		
8.	Sullivan Envir. Mob/Demob	Sullivan Envir.	\$ 1,200	per event	1	\$ 1,200				\$ 1,200		
9.	Emergency Subcontractor Services		\$ 3,000	ea.	1	\$ 3,000				\$ 3,000		
10.	Miscellaneous Costs (air release, GW-37)	Sullivan Envir.	\$ 1,300	per event	1	\$ 1,300				\$ 1,300		
	Total Cost Estimate					\$ 25,160	\$ -	\$ -	\$ 2,400	\$ 8,560	\$ 3,100	\$ 11,100
	Other											
1.	Truck Rental		\$ 90	per day	36	\$ 3,240	\$ 2,160	\$ 1,080				
2.	Landtec Database	Landtec	\$ 500	per month	12	\$ 6,000	\$ 6,000					
3.	Spare Parts											
a.	Parts - Miscellaneous		\$ 2,000	ea.	1	\$ 2,000					\$ 2,000	
b.	Parts - Wellheads		\$ 425	ea.	6	\$ 2,550					\$ 2,550	
	Total Parts		\$ 2,425			\$ 4,550	\$ -	\$ -	\$ -		\$ 4,550	
4.	Miscellaneous Costs					\$ 4,500	\$ -	\$ 500	\$ 500	\$ 2,000	\$ 500	\$ 1,000
TOTAL						\$ 43,450	\$ 8,160	\$ 1,580	\$ 2,900	\$ 10,560	\$ 8,150	\$ 12,100

Operation, Monitoring, Maintenance, and Reporting

**Landfill Gas Collection and Control System
West Nassau Landfill, Nassau County , Florida**

Form Date: 7/28/17

Contract Service Period: October 1, 2017 through September 30, 2018		FY2018											
Fiscal Year Month		Oct 17	Nov 17	Dec 17	Jan 18	Feb 18	Mar 18	April 18	May 18	June 18	July 18	Aug 18	Sept 18
Routine Operation, Monitoring, Adjustments, and Reporting													
1. Blower/Flare Station													
<u>A. Monthly Blower/Flare Station Checks</u>													
Measure and record LFG composition		•	•	•	•	•	•	•	•	•	•	•	•
Record LFG flow rate to the flare and thermocouple temperature		•	•	•	•	•	•	•	•	•	•	•	•
Measure and record pressure		•	•	•	•	•	•	•	•	•	•	•	•
Adjust the system to increase or decrease the LFG flow		•	•	•	•	•	•	•	•	•	•	•	•
Repair or replace damaged monitoring ports and temperature gauges		•	•	•	•	•	•	•	•	•	•	•	•
Check flare pilot system and propane cylinder levels		•	•	•	•	•	•	•	•	•	•	•	•
Check compressed nitrogen or air cylinder levels		•	•	•	•	•	•	•	•	•	•	•	•
Observe and record any problems with equipment		•	•	•	•	•	•	•	•	•	•	•	•
Check air compressors' operation		•	•	•	•	•	•	•	•	•	•	•	•
Check and add grease		•	•	•	•	•	•	•	•	•	•	•	•
<u>B. Quarterly Blower/Flare Station Checks</u>													
Blow out compressors' airline (as needed).		•			•			•			•		
Change blower bearing grease			•			•			•			•	
<u>C. Annual Blower/Flare Station Checks</u>													
Conduct a System test						•							
Calibrate gas flow meter								•					
Check and clean the flare arrestor						•							
Check and clean knock-out pot						•							
Check and clean the UV eye in the flare stack						•							
Pull, inspect, and clean pneumatic pump						•							
2. LFG Extraction System													
<u>A. Monthly LFG Extraction Systems Checks and Tuning</u>													
All system components shall be checked for proper operation		•	•	•	•	•	•	•	•	•	•	•	•
Perform preventive and corrective maintenance		•	•	•	•	•	•	•	•	•	•	•	•
At each well: measured and/or observed and record the following:		•	•	•	•	•	•	•	•	•	•	•	•
LFG flow rate		•	•	•	•	•	•	•	•	•	•	•	•
LFG composition		•	•	•	•	•	•	•	•	•	•	•	•
LFG pressure		•	•	•	•	•	•	•	•	•	•	•	•
LFG temperature		•	•	•	•	•	•	•	•	•	•	•	•
The condition of the well head piping and well bore seal condition		•	•	•	•	•	•	•	•	•	•	•	•
Adjustments to the system		•	•	•	•	•	•	•	•	•	•	•	•
Check condensate handling system		•	•	•	•	•	•	•	•	•	•	•	•
Report within 24 hours of measurement or observation any abnormal readings		•	•	•	•	•	•	•	•	•	•	•	•
<u>B. Semiannual LFG Extraction System Checks</u>													
Condensate pumps shall be pulled and inspected			•						•				
<u>C. Annual LFG Extraction System Checks</u>													
Exercise all valves annually							•						
Surface Emission Testing							•						
3. Annual LFG Flare Visible Emission Testing and Reporting													
4. Reporting													
<u>A. Monthly Reporting to County</u>		•	•	•	•	•	•	•	•	•	•	•	•
<u>B. Semi-Annual Reporting to FDEP</u>													
Semi-Annual NSPS Report					•						•		
<u>A. Annual Reporting to FDEP</u>													
GHG Reporting							•						
Annual Title V Operating Report Submission and Emissions Fee							•						
Annual Title V Statement of Compliance							•						