

Board of County Commissioners

DEPARTMENT OF PUBLIC WORKS

SOLID WASTE MANAGEMENT DIVISION

P.O. Box 340, Lecanto, Florida 34460

Telephone: (352) 527-7670 FAX: (352) 527-7672

email: landfillinfo@bocc.citrus.fl.us

TDD Telephone: (352) 527-5303

Citrus Springs/Dunnellon/Ingles/Yankeetown area Toll Free (352) 489-2120

December 4, 2015

Mr. Steve Morgan
Solid Waste Section
Department of Environmental Protection
13051 N Telecom Pkwy
Temple Terrace, FL 33637-0926

**Re: Citrus County Central Landfill – Permit No. 21375-018-SO/01
Landfill Gas Monitoring (Electronically Submitted)**

Dear Mr. Morgan,

The attached report was prepared by SCS Engineers for the County and reports the results of gas monitoring for the Fourth Quarter of 2015. This monitoring is in accordance with Specific Conditions F2 and F3 of the referenced permit.

No methane was detected in any of the probes or monitoring points.

Please contact me if you have questions or require additional information.

Sincerely,

Henry C. Norris, Jr.
Director, Division of
Solid Waste Management

CC: Jeff Rogers, P.E., Director, Dept. of Public Works (electronic copy)
Ed Hilton, SCS Engineers, Tampa (electronic copy)
Ed Gough – Withlacoochee Technical Institute (electronic copy)
Mike Penn – Division of Forestry (hard copy)

SCS ENGINEERS

November 13, 2015
File No. 09210021.24

Henry Norris
Solid Waste Director
230 W. Gulf to Lake Hwy.
Lecanto, Florida 34461

Subject: Landfill Gas Monitoring Report, Fourth Quarter 2015
Central Landfill, Citrus County, Florida

Dear Henry:

SCS Engineers (SCS) is pleased to submit the results of the Fourth quarter landfill gas (LFG) monitoring at Citrus County Central Landfill. Provided below is a description of our activities, summary of the monitoring results, and recommendations.

BACKGROUND

In April 2007, the Florida Department of Environmental Protection (FDEP) approved extending the compliance boundary for LFG migration monitoring at the site to coincide with the boundaries of the 2006 lease agreement between Citrus County and the Florida Division of Forestry. As a result, 18 LFG monitoring probes installed along the new property boundary were to serve as the compliance points for migration monitoring. The remaining 62 permanent LFG probes and 12 interim probes have been abandoned in place and are no longer monitored on a quarterly basis. In November 2010, as part of the Phase III cell expansion, GP-19 was installed. Figure 1 in Attachment 1 includes a site map that shows all LFG monitoring probe locations.

Rule 62-701.530(1)(a) of the Florida Administrative Code (F.A.C.) requires the following:

- The methane concentration may not exceed 25 percent of the lower explosive limit (LEL) in structures on- or off-site. The LEL for methane is five percent by volume in air. Therefore, the maximum allowable concentration in on-site or off-site structures is 1.25 percent methane by volume.
- The methane concentration at or beyond the landfill property boundary may not exceed the LEL (i.e., five percent (5.0%) methane by volume).

This quarterly monitoring was conducted in accordance with Rule 62-701.530(2)(c), F.A.C.

MONITORING RESULTS

On November 4, 2015, SCS personnel monitored the LFG monitoring probes and on-site structures. SCS used a Landtec GEM-2000 gas monitor to measure gas composition in the

monitoring probes and on-site structures. The GEM-2000 measures gas by percent volume of methane, carbon dioxide, oxygen, and balance gas, which is considered to be composed primarily of nitrogen. The instrument was calibrated prior to use during the sampling event and the calibration sheets are included in Attachment 3.

LFG Monitoring Probes

Table 1 of Attachment 2 shows the readings obtained from the 19 probes along the property boundary. As shown in Table 1, no methane was detected in the gas monitoring probes. A site plan showing the probe locations is included in Attachment 1.

Monitoring of On-Site Structures

No methane was detected in the scalehouse, administration building, shop, leachate treatment facility, or firing range as shown in Table 1 of Attachment 2. Floor plans of the scale house and the administration building are included in Attachment 1.

SCS monitored in the restrooms of the administration building, as well as in select closets, the break room, conference room, and hallways. In the scalehouse, SCS monitored the main work area, cabinets, the restroom, and at electrical outlets. Monitoring of the leachate treatment facility included around the base of structures, at the control panel, and inside the electrical room.

At the firing range, SCS monitored the floor joints, electrical outlets, and the base of slabs or posts that penetrated the ground.

Methane Monitor

A new methane monitor was installed in the leachate treatment plant electrical building in May. This monitor was found functioning upon inspection. SCS monitored the leachate treatment plant electrical building for methane gas, and confirmed that no gas was present in the building.

CONCLUSIONS

No methane was detected during this monitoring event in the 19 probes, which are the compliance points for migration or within any of the buildings monitored on-site.

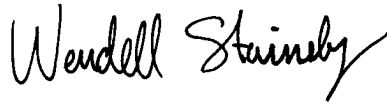
SCS is providing you two signed and sealed originals of this submittal. Please keep one for your files and forward the other to the FDEP Southwest District office at the following address:

Florida Department of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, Florida 33637-0926

Henry Norris
November 13, 2015
Page 3

SCS appreciates the opportunity to assist you with this work. Please call us at (813) 621-0080 if you have any questions or would like additional information.

Sincerely,



Wendell Stainsby, E.I.
Staff Professional
SCS ENGINEERS



Daniel R. Cooper, P.E.
Project Director
SCS ENGINEERS

DRC/WJS: wjs

Attachments

ATTACHMENT 1
MONITORING LOCATIONS

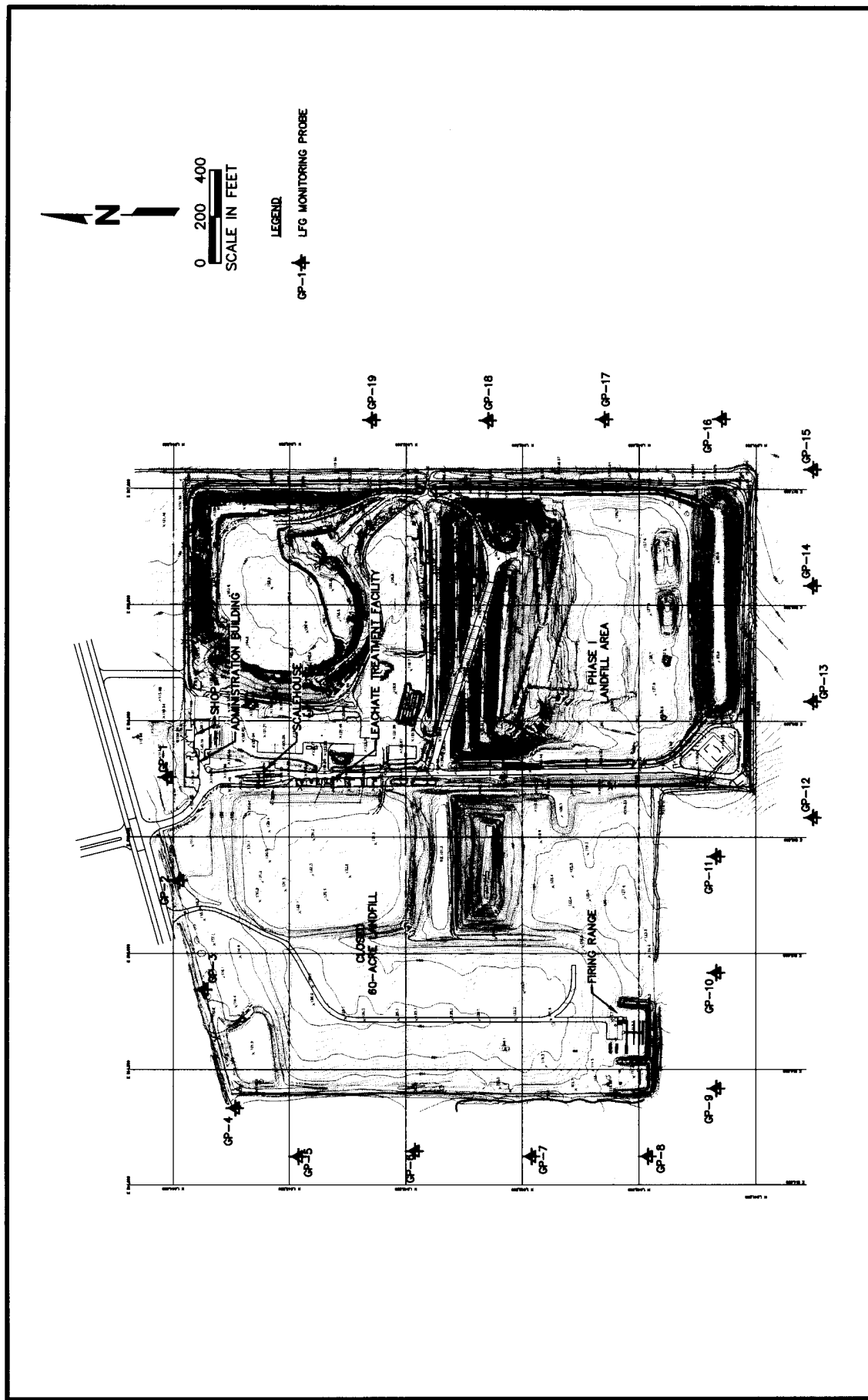


Figure 1. Landfill Gas Monitoring Probe Locations, Central Landfill, Citrus County, Florida

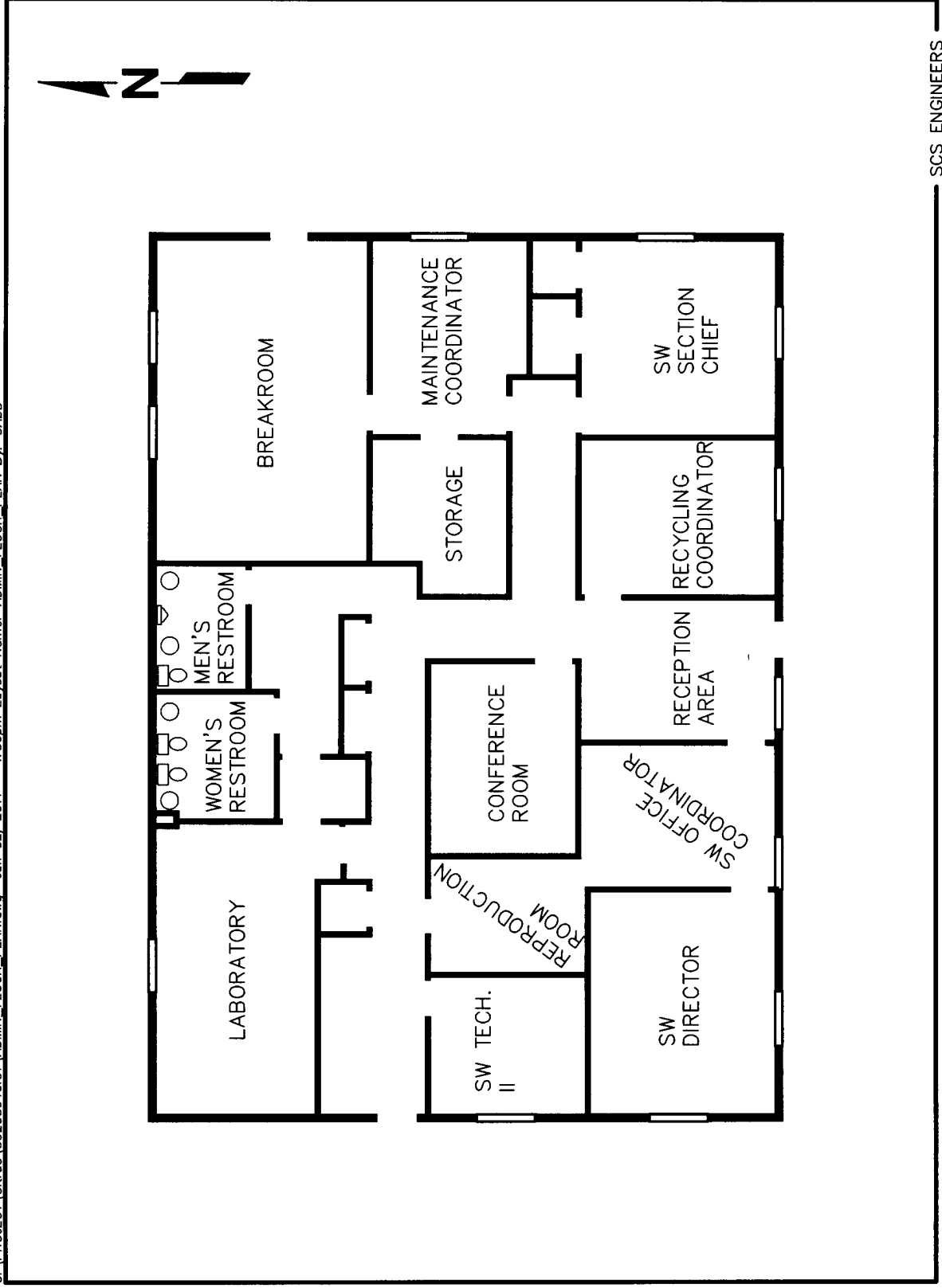


Figure 2. Administration Building Floor Plan

G:\PROJECT\Citrus\09208040.01\SCALEHOUSE_FLOOR_PLAN.dwg Jun 02, 2011 -- 4:36pm Layout Name: SCALEHOUSE_FLOOR_PLAN By: CADD

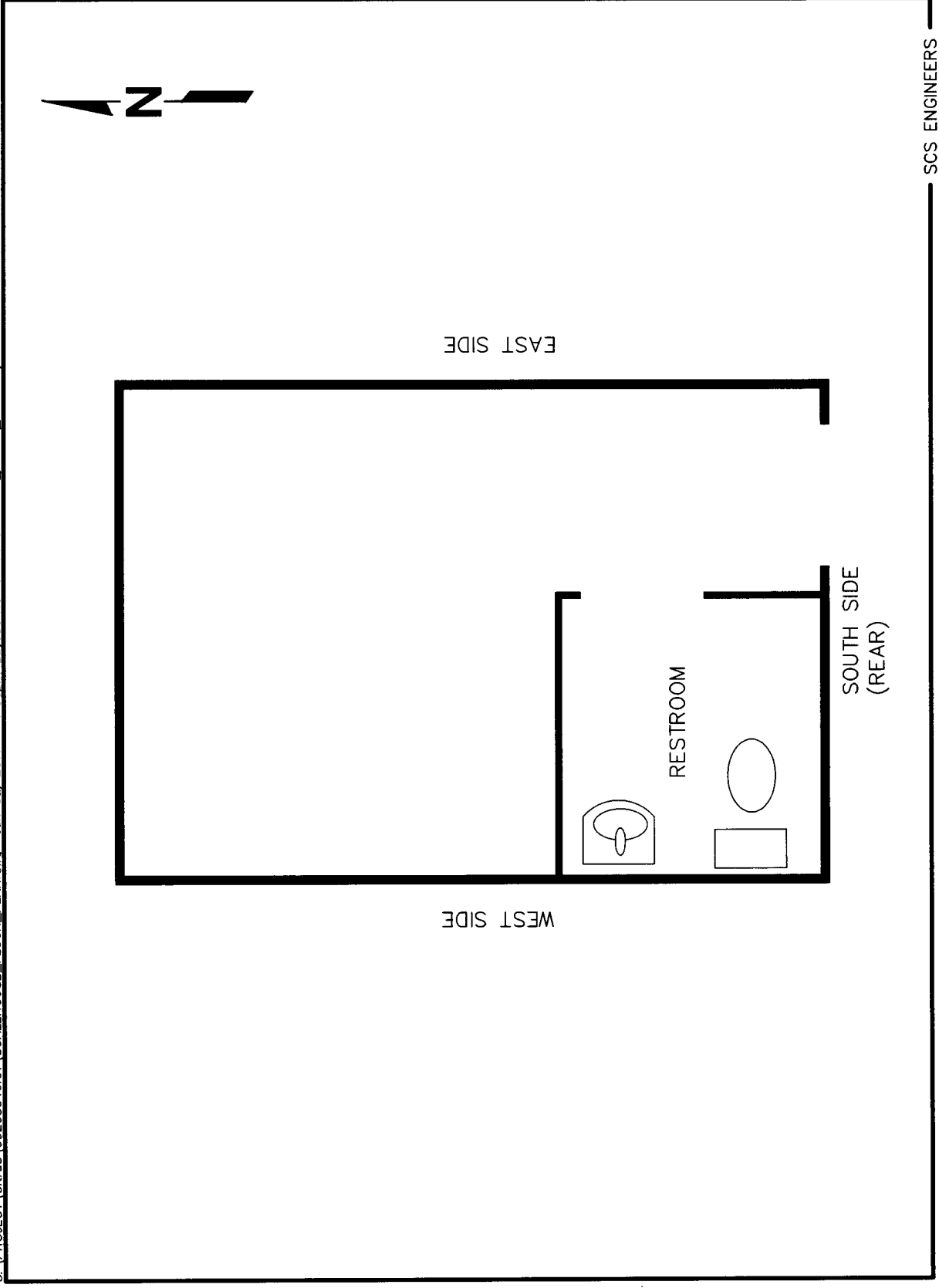


Figure 3. Scalehouse Floor Plan

ATTACHMENT 2
LFG MONITORING RESULTS

TABLE 1
LANDFILL GAS MIGRATION MONITORING, FOURTH QUARTER 2015
CENTRAL LANDFILL, CITRUS COUNTY

Probe No.	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Balance (%)	Comments
GP-1	0.0	0.0	20.8	79.1	
GP-2	0.0	0.4	20.4	79.1	
GP-3	0.0	0.0	20.7	79.3	
GP-4	0.0	1.2	19.9	78.8	
GP-5	0.0	0.5	20.2	79.2	
GP-6	0.0	1.4	19.7	78.8	
GP-7	0.0	0.1	20.6	79.1	
GP-8	0.0	0.3	20.5	79.2	
GP-9	0.0	0.7	20.1	79.0	
GP-10	0.0	0.0	20.7	79.2	
GP-11	0.0	0.0	20.6	79.3	
GP-12	0.0	0.1	20.7	79.2	
GP-13	0.0	0.0	20.7	79.2	
GP-14	0.0	0.4	20.2	79.3	
GP-15	0.0	0.9	20.0	79.0	
GP-16	0.0	0.1	20.5	79.3	
GP-17	0.0	2.9	16.8	80.1	
GP-18	0.0	0.1	20.6	79.2	
GP-19	0.0	0.3	20.4	79.2	

On Site	CH ₄ (%)	% LEL
Scalehouse	0.0	0.0
Shop	0.0	0.0
Administration Building	0.0	0.0
Treatment Facility	0.0	0.0
Firing Range	0.0	0.0

Notes:

1. Monitoring performed by SCS Engineers (813) 621-0080 on: 11/4/2015
2. Temperature: 85 deg F
3. Barometric Pressure: 29.87 in. Hg

ATTACHMENT 3
INSTRUMENT CALIBRATION DATA

GEM-2000 Field Calibration Data Sheet

GEM-2000 Instrument Data

Instrument Serial No.: GM08790
Technician Name: Wendell Stainsby
Date and Time: 11/4/15 08:45
Last Factory Calibration Date: March 17, 2015

Calibration Gas Manufacturer's Data

Manufactured by: Landtec
Manufactured date: _____
Lot Number: LAN-399-2
Expiration Date: March 2018

Prior to taking any measurements the instrument must undergo a full calibration according to manufacturer's instructions. This should then be followed by a calibration verification using ambient air and calibration gas to verify instrument performance prior to measurement.

Tabulated below are the acceptable gas concentrations that should be demonstrated when zeroing the instrument and calibrating the span gas concentrations.

Zero Gas Composition			
CH ₄ (%)	CO ₂ (%)	N ₂ (%)	O ₂ (%)
0.0	0.0	0.0	0.0 (Calibration Gas)

Span Gas Composition			
CH ₄ (%)	CO ₂ (%)	N ₂ (%)	O ₂ (%)
50.0	35.0	15.0	20.1 (Ambient Air)

Calibration must be verified by conducting the following procedures:

- 1) Turn on the instrument and allow it to run and purge with ambient air for 3 minutes and then record the gas concentration readings.
- 2) Apply calibration gas to the instrument, wait 1 minute for the readings to stabilize and then record the gas concentration readings.
- 3) Determine if the reading is within 10% of calibration gas concentration. If so indicate that the instrument "Passes" the field calibration for that gas.
- 4) If any of the sensors display a reading outside of the acceptable range, then a full manufacturer's calibration must be performed.

Target Gas (%)	Ambient Air Purge Gas Readings (%)	Acceptable Ambient Air Range (%)	Calibration Gas Instrument Readings (%)	Acceptable Calibration Gas Range (%)	Pass/Fail
CH ₄	0.0	0.0 - 0.3	48.9	47.0 - 53.0	Pass
CO ₂	0.1	0.0 - 0.3	37.2	32.0 - 38.0	Pass
O ₂	20.7	19.9 - 21.9	0.4	0.0 - 1.0	Pass

CERTIFICATION OF CALIBRATION

ISSUED BY: Landtec North America Instrument Services Facility

Date of Calibration: March 17, 2015

Certificate Number: 05408790_6/15/15



Page 1 of 2

Approved By: [Signature]

Landtec Instrument Services Facility, 850

GA 30134

Description: Gas Analyzer

Accredited Results:

Methane (CH ₄)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.7	0.43
15.0	14.8	0.80
50.0	49.0	1.39

Carbon Dioxide (CO ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.7	0.49
15.0	14.3	0.99
50.0	49.2	1.46

Oxygen (O ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
21.0	21.2	0.27

Gas cylinders are traceable and details can be provided if requested.

CH₄, CO₂ readings recorded at: 33.0 °C/93.0 °F

Barometric Pressure: 28.87 "Hg

O₂ readings recorded at: 24.2 °C/75.5 °F

Method of Test: The analyzer is calibrated in a temperature controlled chamber using reference gases. All analyzers are calibrated in accordance with our procedure 18P-17 using high purity grade gas.

All calibrations are performed in accordance with ISO 17025 at LANDTEC, an ISO 17043:2005 - accredited service facility through PILA.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with ISO requirements.

This certification is valid for the period of time stated on the certificate and is subject to the terms and conditions of the Landtec Instrument Services Facility. The certificate is valid for the period of time stated on the certificate and is subject to the terms and conditions of the Landtec Instrument Services Facility.

CERTIFICATION OF CALIBRATION

PJLA ACCREDITED CALIBRATION LABORATORY NO. 66916

Certificate Number
GM08790_6/15143

Page 2 of 2

Non Accredited results:

Pressure Transducers (inches of water column)					
Transducer	Certified (Low)	Reading (Low)	Certified (High)	Reading (High)	Accuracy
Static	0"	0.00"	40"	40.02"	2.0"
Differential	0"	0.00"	4"	4.02"	0.7"

Barometer (mbar)	
Reference	Instrument Reading
0978 mbar / 28.87 "Hg	0976 mbar / 28.81 "Hg

As received gas check readings:

Methane (CH ₄)	
Certified Gas (%)	Instrument Reading (%)
5.0	5.3
15.0	15.9
50.0	52.8

Carbon Dioxide (CO ₂)	
Certified Gas (%)	Instrument Reading (%)
5.0	5.2
15.0	15.8
50.0	51.1

Oxygen (O ₂)	
Certified Gas (%)	Instrument Reading (%)
21.0	20.5

As received Gas readings recorded at: 33.9 °C/93.0 °F

As received Barometric Pressure recorded at: 24.2 °C/75.5 °F

End of Certificate

LP015ENANIST-11

WWW.LANDTECNA.COM

LANDTEC North America Instrument Services Facility - 850 South Via Lata, Suite 112, Colton, CA 92324



Quality Control Check List

Options

- Software Version: ☒
Key 3 Cold Start: ☐
Key 8 Options: ☐
Service Date: ☒

Display

- Function: ☒
Contrast Adjustment: ☒
Company Name: ☒
'Ex' Warning Screen: ☐

Time/Date

- Current Time: ☐
Current Date: ☒
Date Format: ☒

Display

- Cal Cert Figure Check: ☒
Baro. Press. Reading: ☒
Temp Reading: ☒
Gas Pod Registers: ☒
Flow Pod Registers: ☐
CH4 Zero: ☒
Raw Values CH4 CO2: ☒

Gas Check

- O2 Air: ☒
O2 5%: ☒
O2 0%: ☒
0.5% CH4/CO2: ☒
5.0% CH4/CO2: ☒
15.0% CH4/CO2: ☒
60.0/40.0% CH4/CO2: ☒
(GEM Only) Balance%: ☒

Model No.: GEM-2000

Serial No.: 8790

RA No.: 46454

Technician: dvenditto

Date: 3/18/2015

Repair Tech: aarambula

Time: 11:26 AM

Transducer Check (GEM Only)

- Differential Leak Test: ☒
Static Leak Test: ☒
Differential Press. Test: ☒
Static Pressure Test: ☒
Side To Side: ☐

Memory Comms.

- Store Readings: ☒
Reading View: ☒
Down Load: ☒
Memory Clear: ☐

MK II Batt. & Charger

- MKII Charging: ☐
MKII Off Current: ☐
MKII On Current: ☐
MKII Display: ☐
Battery Voltage Correct: ☐

Completed? ☒

N/A ☐

Physical Condition

- Case: ☒
Membrane: ☒
Case Fittings: ☒
Case Back Fitting: ☒
Lemo Plug: ☒
Carrying Strap: ☐
Inlet Filter: ☒
Housings Secure: ☒

Labels

- Unit Label: ☒
Serial Number: ☒
Battery Warning: ☐
GI (UK): ☐
Void Labels: ☒
'CE' Label: ☒
Case Screen Printing: ☒

Flow

- Vacuum: ☒
Flow > 300cc: ☒
200cc Check: ☐
Flow fail Occurs: ☒
Affect on Baro. Press: ☐
Calibration Certificate: ☒

Western Region/Corporate Offices
850 South Via Lata, Suite 112, Colton, California 92324
Telephone: (909) 783-3636 Fax: (909) 825-0591
WWW.CES-LANDTEC.COM