NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW 576C

PERMIT AMENDMENT APPLICATION

PART III:
Attachment G – Landfill Gas Management Plan
Attachment H – Closure Plan
Attachment I – Postclosure Plan
Attachment J – Cost Estimate for Closure and Postclosure Care
PART IV – SITE OPERATING PLAN

Volume 5

Prepared for

Waste Management of Texas

July 2013

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW 576C

PERMIT AMENDMENT APPLICATION

VOLUME 5 OF 5

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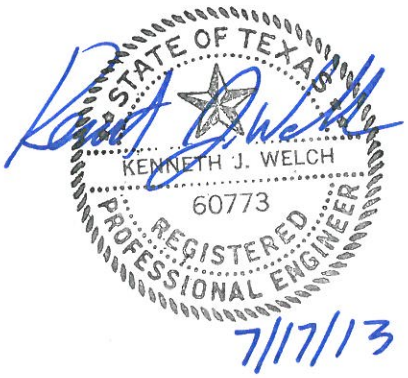
July 2013



Prepared by

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TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

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CONTENTS

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PERMIT AMENDMENT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT G
LANDFILL GAS MANAGEMENT PLAN

Prepared for

Waste Management of Texas, Inc.

July 2013

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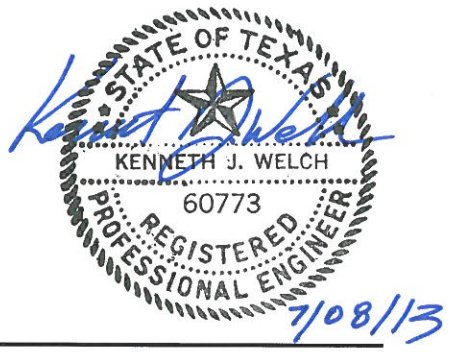


CONTENTS

CONTENTS (Continued)

1 INTRODUCTION

30 TAC §§330.63(g), 330.371

1.1 Scope

This landfill gas (LFG) management plan has been developed for the New Boston Landfill as required by 30 TAC §330.63(g). This LFG management plan is consistent with the requirements set forth in §330.371. The LFG management plan provides a site-specific approach to implementing LFG monitoring. This plan describes the existing (576B) and proposed (576C) LFG monitoring network and discusses the operation and monitoring of this network, the verification of monitoring results, notification procedures, and outlines possible remediation activities, if required.

The New Boston Landfill will comply with all applicable federal and state regulations. These include the Environmental Protection Agency's (EPA) – Clean Air Act, Section 111(b), New Source Performance Standards (NSPS) for municipal solid waste (MSW) landfills, and the applicable requirements of the TCEQ Office of Air Quality, including the standard permit requirements and 30 TAC Chapter 330, Subchapter U.

The NSPS for MSW landfills applies to landfills with design capacities greater than 2.5 million megagrams (2.75 million tons) and 2.5 million cubic meters. Since the design capacity of the New Boston Landfill will exceed 2.5 million megagrams and 2.5 million cubic meters (see Part III, Site Development Plan, Appendix IIIA – Site Life Calculations), the non-methane organic compound (NMOC) emissions at the site may eventually exceed 50 megagrams per year, requiring installation of a LFG collection and control system per the NSPS. Consistent with the NSPS, the New Boston Landfill will make the necessary submittals to the TCEQ, which administers the NSPS. If required per the NSPS, the LFG collection and control system will be operated and monitored per the NSPS requirements.

The site currently operates and monitors a voluntary active LFG collection and control system for completed waste disposal areas. Refer to Section 6 of this attachment for discussion on the active LFG collection and control system.

1.2 Purpose

Compliance with §330.371 requires landfills to implement a routine LFG monitoring program to verify that (1) the concentration of methane does not exceed 1.25 percent methane by volume in facility structures (excluding LFG collection and control system components), and that (2) the concentration of methane does not exceed 5 percent methane by volume in monitoring points, probes, subsurface soils, or other matrices at the facility permit boundary.

The purpose of this LFG management plan is to provide guidance for management of LFG at the site. These guidelines cover the evaluation of LFG migration at the points of compliance (permit boundary) and in structures on the permitted site. This will be verified by monitoring LFG concentrations at or within the facility permit boundary and within on-site buildings. Various options for LFG migration mitigation are discussed in Section 5 of this attachment.

1.3 General

Consistent with §330.371(d), the executive director may establish alternative schedules for demonstrating compliance with methane monitoring as required by §330.371(b), and with action plan activities as required by §330.371(c).

Consistent with §330.371(e), the landfill gas monitoring and control program will continue for a period of 30 years after certification of final closure of the facility, or until Waste Management of Texas, Inc. (WMTX) receives written authorization to reduce the program. Authorization to reduce gas monitoring and control shall be based on a demonstration by the owner or operator that there is no potential for gas migration beyond the permit boundary or into on-site structures. The demonstration will be supported by data collected and additional studies, as required.

Consistent with §330.371(f), gas monitoring and control systems will be revised as needed to maintain current and effective gas monitoring and control systems. Postclosure land use of the facility will not interfere with the function of gas monitoring and control systems.

2 SITE CHARACTERISTICS

30 TAC §330.371

2.1 Introduction

Eleven permanent LFG monitoring probes and four gas vents have been installed along the perimeter of the active waste fill area to detect potential LFG migration under the active 576B configuration. The proposed LFG monitoring network consists of a total of 24 probes. The installed and proposed LFG monitoring probes serve as the point of compliance regarding LFG migration. The existing and proposed LFG monitoring probe and gas vent locations are shown on Drawing G1.1 in Appendix G1.

2.2 Geologic Conditions

The site geologic conditions present at the New Boston Landfill are discussed in Attachment E, Section 4.4.

2.3 Hydrogeologic Conditions

The hydrogeologic conditions present at the New Boston Landfill are discussed in detail in Attachment E, Section 5.6.

2.4 Hydraulic Conditions

Hydraulic conditions at the New Boston Landfill are discussed in Attachment C1 – Permit Boundary Drainage Analysis and Design.

2.5 Facility Structures within the Property Boundary

The New Boston Landfill has a proposed permit boundary encompassing approximately 332 acres, of which approximately 132 acres will be available for waste placement. There are several existing structures within the New Boston Landfill permit boundary. These structures include a gatehouse, storage facility, three existing structures, and maintenance and office facility. The gatehouse, storage building, and maintenance and office facility are enclosed and have continuous methane monitors. The three existing structures, if left intact, may have continuous methane monitors installed. All enclosed structures will be monitored for the presence of LFG as described in Section 3.2.1 of this attachment. Refer to Appendix G1, Drawing G1.1 and G1.3 for location of structures.

2.6 Underground Utilities

As shown on Drawing G1.1 in Appendix G1, a 15-foot gas line easement is located along the south, east and west permit boundary of the existing West Disposal Area and running through the center of the expansion bisecting the North and South Disposal Areas of the site. The pipeline was installed directly in the in situ clays with no transmissive bedding or transmissive backfill materials. This clay backfill was utilized to preclude the utility easement from becoming a gas migration pathway.

There are no utility lines or easements within the disposal footprint of the landfill. Refer to Drawing G1.1 for locations of the existing and proposed passive vents where the utility trenches cross the permit boundary.

2.7 Offsite Structures

All New Boston Landfill facility structures are located within the permit boundary. All known habitable structures located off site within 1/4 mile (1,320 feet) of the permit boundary are depicted on Drawing G1.3.

3 MONITORING

30 TAC §330.371

3.1 Perimeter Monitoring

3.1.1 Perimeter Monitoring Network

The LFG monitoring probe network for the existing landfill includes a total of eleven existing LFG monitoring probes and four existing gas vents located along the perimeter of the active waste fill area. The proposed LFG monitoring probe network includes a total of 24 LFG monitoring probes. Locations of the existing and proposed LFG monitoring probes and gas vents are shown in Appendix G1, on Drawing G1.1. The existing LFG monitoring probes will remain as the monitoring probe locations for the existing West Disposal Area. Two probes, GMP-4 and GMP-5, and one gas vent, GV-4, will be relocated. Copies of the available installation logs for the existing permanent LFG monitoring probes are included in Appendix G3.

Proposed gas probes GMP-4R, GMP-5R, GMP-12 through GMP-24, and gas vent GV-4A will be added along the permit boundary. Refer to Appendix G1, Drawing G1.1 for the proposed LFG monitoring probe and gas vent network. The proposed LFG monitoring probes will be installed in phases as the waste footprint develops. The following table shows the probe installation schedule.

Gas Probe Installation Schedule	
Prior to Accepting Waste in Sector	**Gas Probes To Be Installed**
1A	GMP-4R, 5R, 12, 13, 21, 22, 23, and 24
3A	GMP-19 and 20
4A	GMP-17 and 18
5A	GMP-15 and 16
South Disposal Area	GMP-17, 18, 19, 20, 21, 22, 23, and 24

It should be noted that gas probes GMP-17 through GMP-24 are listed twice in the table above. This is because these probes will be installed at the earlier of waste acceptance in the South Disposal Area or their triggering sector in the North Disposal Area.

3.1.2 Landfill Gas Monitoring Probes

LFG monitoring probes have been installed along the perimeter of the waste fill area. Boring logs and typical construction details for the LFG probes were submitted to the TCEQ as part of the Gas Monitoring Probe Installation Report. Copies of the available installation logs for the existing permanent LFG monitoring probes are included in

Appendix G3. Proposed LFG monitoring probes will be installed in accordance with the detail shown on Appendix G1, Drawing G1.2.

As shown on Drawing G1.2 and installation logs included in Appendix G3, the existing and proposed gas monitoring probes are designed to consist of solid piping within a concrete pad, bentonite seal, and filter sand packs for a depth of approximately 5 to 10 feet below ground surface. Below this depth, the gas monitoring probes are designed to consist of screened piping within gravel or sand packs through the remaining depth of the probes to intercept migrating gas.

Each proposed gas monitoring probe is designed to monitor the soil strata above the lowest planned future elevation of waste. The interprobe spacing for the proposed gas monitoring probes will be less than 1,000 feet, with closer spacing in areas with nearby offsite structures.

3.1.3 Utility Vents

Utility vent GV-4 will be relocated to the new permit boundary within the Atmos Energy easement within 120 days from the issuance of the permit for this expansion. Refer to Appendix G1, Drawing G1.1 for proposed utility vent locations and Drawing G1.2A for details of the utility vents.

3.1.4 Monitoring Procedures

Monitoring will be conducted by a qualified landfill representative or a qualified consultant. To avoid artificially impacting the probe static pressure during the induction of the gas sample into the instrument, the static pressure will be measured and recorded prior to measuring gas composition. Static gas pressure will be measured and recorded in inches of water column. The calibration and operation of the monitoring equipment will be as recommended by the instrument manufacturer.

During each monitoring event, the probes will be monitored for the following parameters:

- Static pressure, as measured in inches of water column, gauge
- Methane concentration, as measured in percent by volume
- Oxygen concentration (optional), as measured in percent by volume
- Depth to groundwater, as measured in feet

During each monitoring event, the gas vents will be monitored for methane concentration, as measured in percent by volume.

Monitoring for gas composition and gas pressure will be performed using a portable Landtec® GEM-2000, or equivalent instrument, capable of measuring the required parameters. The monitoring equipment will be calibrated and maintained in accordance with the manufacturer's recommended procedures. Manufacturer's maintenance and

calibration requirements for the monitoring instruments will be maintained on site with the LFG monitoring records described in Section 3.3.

After these parameters are measured, the probe of a liquid level indicator will be lowered into the LFG probe through an opening located on the top of the LFG probe to measure water level (if any) inside the LFG probe. If no water is present, the level indicator will be used to verify and report total depth of probe to assure that a probe is not obstructed.

3.1.5 Maintenance Procedures

Each time LFG monitoring is conducted, the sampler will inspect the integrity of the LFG monitoring probes or vents. The sampler will record pertinent information on the Quarterly Landfill Gas Monitoring Report (see Appendix G2) or similar forms. The Quarterly Landfill Gas Monitoring Report will be kept in the site operating record. The sampler will perform the following at each monitoring event:

- Verify that the LFG monitoring probe or vent is clearly labeled on the outer casing or lid.
- Verify that the protective casing is intact and is not bent or excessively corroded.
- Verify that the concrete pad is intact (no evidence of cracking or heaving).
- Verify that the padlock is functional.
- Verify that the inner casing is intact.

If damage to the LFG monitoring probe or vent is observed, it will be reported to the landfill manager. If it is not possible to repair the LFG monitoring probe or vent and the damage can potentially affect the accuracy of future monitoring results, the LFG monitoring probe or vent will be decommissioned and replaced with a new LFG monitoring probe in accordance with Sections 3.1.2, and 3.4 of this attachment.

3.2 Facility Structures Monitoring

3.2.1 Monitoring Procedures

On-site buildings and structures designed for human occupation will be monitored, at a minimum, quarterly with either a portable combustible gas indicator or a continuous LFG monitor/alarm that will provide an audible alarm if methane concentrations exceed 1.25 percent methane by volume.

If allowable methane concentration limits are exceeded within structures, the building will be immediately evacuated and ventilated by opening doors and windows. Notification consistent with procedures in Section 4.2 of this attachment will be implemented immediately.

3.2.2 Maintenance Procedures

If continuous LFG monitors/alarms are used, they will be calibrated and maintained in accordance with the manufacturer's recommendations. Continuous LFG monitors/alarms will be tested following the manufacturer's testing specifications.

3.3 Recordkeeping/Reporting

Field monitoring data records will be maintained for the methane monitoring and kept in the site operating record. Field data will be recorded on the Quarterly Landfill Gas Monitoring Report form (or similar form) shown in Appendix G2.

Quarterly monitoring results will be placed in the site operating record. LFG monitoring points, probes, subsurface soils, or other matrices will be monitored quarterly. The LFG monitoring program will continue for a period of 30 years after the final closure of the facility or until the owner or operator receives written authorization from the TCEQ to revise or discontinue the program. Gas monitoring records will be maintained in the site operating record.

3.4 Backup Plan for Monitoring Probes, Vents and Continuous Monitors

The following is a back-up plan to be used if any installed LFG monitoring probes or continuous monitoring devices become unusable or inoperative.

Stationary Perimeter Probes/Vents

1. Damaged or inoperative perimeter probes or vents will be repaired within 30 days of the date of damage or replaced within 60 days from the TCEQ approval date of the permit modification requesting replacement.

2. Upon completion of the replacement probe or vents, an installation report including boring logs and construction details will be submitted to the TCEQ.

3. Should a monitoring event occur prior to replacement of a damaged probe or vent, a barhole will be placed next to the damaged probe or vent and a portable gas monitor used until the probe or vent is replaced.

Stationary Combustible Gas Monitor

1. Damaged or inoperative stationary combustible gas monitors will be repaired within 30 days of the date of damage.

2. A portable gas indicator will be used until the damaged or inoperative stationary unit is replaced.

3.5 Monitoring Frequency

LFG monitoring points, probes, subsurface soils, or other matrices and facility structures are monitored quarterly, at a minimum. The facility will monitor more frequently those locations where monitoring results indicate that LFG migration is occurring or is accumulating in structures.

4 ACTION PLAN

30 TAC §330.371

4.1 Initial Response Measures

As required under 30 TAC §330.371, this action plan has been prepared for the protection of human health in the event concentrations of methane exceed allowable limits either within on-site buildings or at the permit boundary of the site. The appropriate emergency response is different for each situation; therefore, this plan addresses buildings and permit boundaries separately.

This plan also recognizes that a single event exceedance of allowable limits on a gas indicator or alarm does not necessarily mean that the concentration of methane has actually exceeded allowable levels.

4.1.1 Emergency Action

The initial action in the event methane is detected at levels above regulatory limits is to protect human health. The specific response depends on the circumstances of the situation.

Buildings/Structures. If the monitoring device in a facility building/structure is triggered, or if gas monitoring equipment indicates that the methane concentration has exceeded the regulatory limit, the building/structure is to be evacuated of all personnel immediately and the landfill manager will be notified. Personnel (except for authorized monitoring personnel) will not be allowed to re-enter the affected building/structure until additional measures are taken. Notification consistent with procedures in Section 4.2 of this attachment will be conducted immediately.

Permit Boundary. If methane levels above the regulatory limit are detected at the permit boundary in the LFG monitoring points, probes, subsurface soils, or other matrices, the landfill manager will be notified. The immediate emergency response measure will be for the landfill manager to determine if any nearby buildings or structures (including off-site) are at risk and if evacuation of the buildings or structures should be requested.

Once immediate actions have been completed to protect human health, notification consistent with procedures in Section 4.2 of this attachment will be conducted.

4.2 Notification Procedures

When methane concentrations above the regulatory limit have been detected in the monitoring points, probes, subsurface soils, or other matrices, or within any on-site structures, the monitoring personnel will notify the landfill manager, who in turn will immediately take steps to ensure the protection of human health. Notification will be made immediately in accordance with §330.371. Notification will be made to the executive director of the TCEQ; the TCEQ Region 5 Office; appropriate city, county, and local government officials and emergency officials; and any residents, tenants, and owners of property within ¼ mile of the reading.

When methane levels above the regulatory limit have been detected (refer to Section 4.1.1 of this attachment), the landfill manager will place in the site operating record documentation of the methane gas levels detected and a description of the steps taken to ensure protection of human health within seven days of detection in accordance with §330.371. Written notification will also be sent to the TCEQ Region 5 Office within seven days outlining the steps taken.

5 REMEDIATION PLAN

30 TAC §330.371

If methane levels above regulatory limits are encountered in the buildings/structures or in one or more LFG monitoring points, probes, subsurface soils, or other matrices, remediation actions will be implemented within 60 days. The first remediation action will be an investigation of the cause of the methane levels. The investigation may include some or all of the following elements, depending on the circumstances:

- Bar-hole probe or hydropunch testing in the vicinity of the impacted monitoring probe
- Sampling and laboratory analysis of LFG monitoring probe samples to determine concentration of methane and trace compounds
- Additional LFG probe monitoring
- Installation of additional monitoring probes

Using accumulated data, an assessment will be made to determine an appropriate course of action to mitigate the migration of LFG. Such actions will vary with the specific incident. An incident-specific remediation plan, based on results of the investigation, will be submitted within 60 days of detection. Copies of the remediation plan will be placed in the operating record and provided to the executive director of the TCEQ along with notification that the plan has been implemented. The executive director may establish an alternative schedule for demonstrating compliance.

6 LFG SYSTEM

30 TAC §330.371

6.1 Existing LFG Collection and Control System

Currently, the site has an active LFG collection and control system (GCCS), as shown in Appendix G5-A on Drawing G5-A-1. The site has a design capacity greater than 2.5 million megagrams and 2.5 million cubic meters, but has a nonmethane organic compound (NMOC) emission rate of less than 50 megagrams per year. As a result, the existing GCCS is not required, but has been voluntarily installed.

The existing GCCS consists of vertical LFG extraction wells, a piping network, a condensate management system, and a blower/flare facility. The existing blowers provide vacuum to the extraction wells through the LFG collection piping network. The extracted LFG is routed from the collection points to the on-site flare, where the gas is combusted.

As additional waste is placed, the existing LFG extraction wells will be extended and/or redrilled.

6.2 Future GCCS Expansions

As the site develops, additional extraction wells will be installed as needed to reduce the buildup of internal gas pressures caused by the increased generation of LFG. The locations of the anticipated future vertical extraction wells are shown on Drawing G5-A-1. Future wells are not planned for the Type IV disposal area due to the lack of expected gas generation in this area.

The LFG extraction wells will be constructed as shown on Drawing G5-A-2. Each extraction well will consist of a perforated pipe within a gravel backfill. The LFG extraction wells will be installed in phases as needed as the landfill develops. The exact number and location of wells, piping, and future LFG facilities will be determined based on field conditions at the time of installation. Upon completion of each phase of GCCS expansion, record drawings suitable for inclusion in this permit will be submitted to TCEQ and a copy placed in the site operating record.

Using the EPA Landfill Gas Emissions Model, it is estimated that the site will generate a maximum of approximately 1,726 standard cubic feet per minute (scfm) of LFG in 2053 (Appendix G5-B). As such, additional blowers and piping network will be installed as needed to provide the vacuum and capacity to handle the predicted maximum flow rate of LFG. In addition, each extraction well will be equipped with a control valve and monitoring port, as shown on Drawing G5-A-2. These control valves and monitoring ports, used in conjunction with controls on the blower, will allow the site to regulate

vacuum and LFG levels at each individual extraction well. This will allow the site to make adjustments in order to effectively collect LFG.

The operation and maintenance of the proposed LFG system will be performed consistent with industry guidelines and practices. Wellhead and system monitoring will be performed on a routine basis to monitor overall system performance. As needed, system adjustments will be made to optimize the extraction of LFG from the landfill to control LFG migration, odors, and greenhouse gases. In addition, the system will be routinely visually inspected for any evidence of needed repairs or other maintenance. General maintenance procedures will include the following:

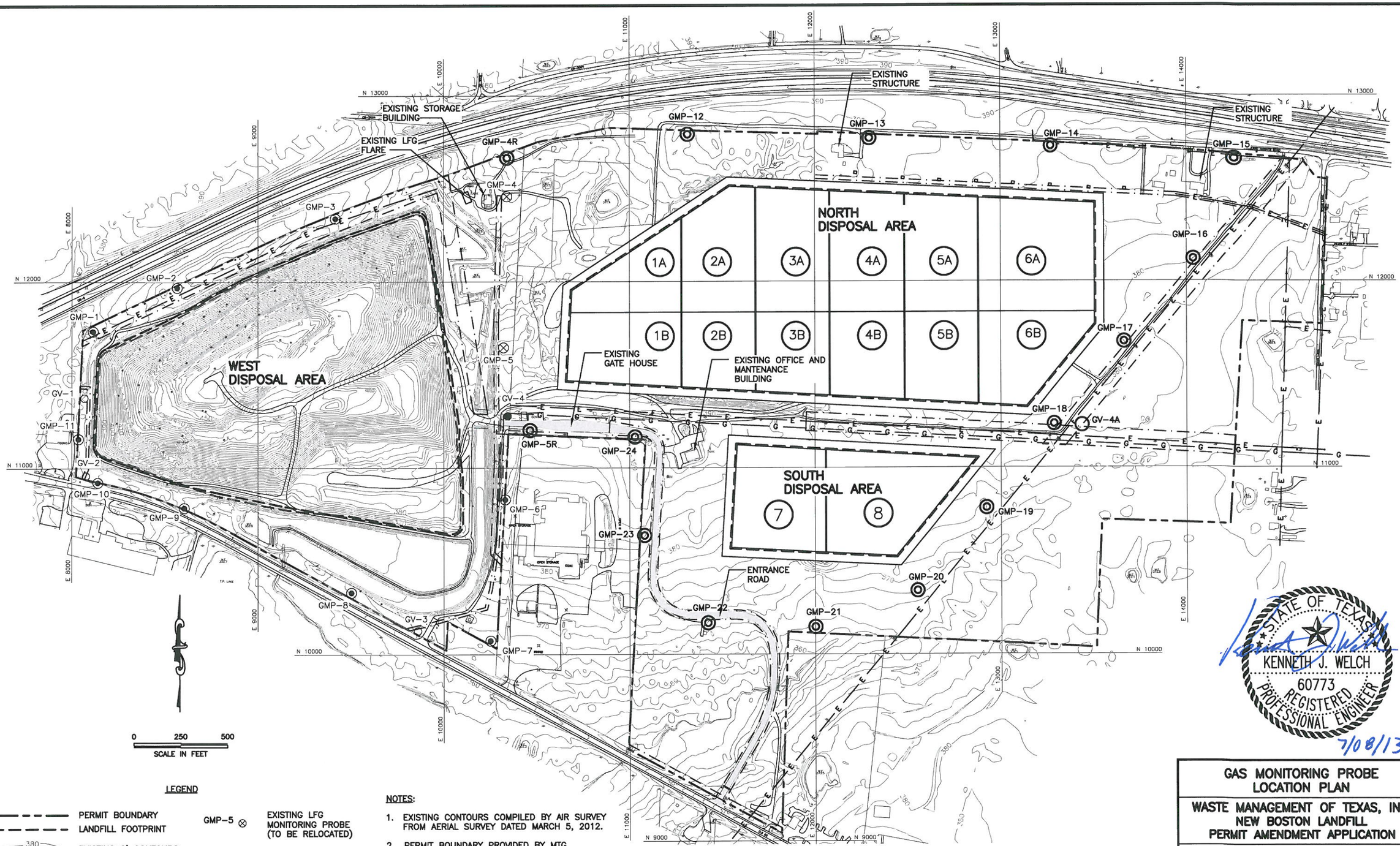
- Each wellhead will be monitored and adjusted as needed to control LFG while reducing oxygen intrusion into the landfill.
- Condensate sumps will be checked for proper operation.
- Blowers and flares will be inspected for proper operation.

The system has been designed to include isolation valves and a looped piping network to allow the site to be adjusted, maintained, and quickly repaired.

NEW BOSTON LANDFILL

APPENDIX G1
LANDFILL GAS MONITORING PROBE LOCATIONS AND DETAILS

30 TAC §330.371



LEGEND

- PERMIT BOUNDARY
- LANDFILL FOOTPRINT
- 380 EXISTING 2' CONTOURS
- N 11000 SITE GRID
- CELL BOUNDARY
- (5) CELL DESIGNATION
- GMP-8 EXISTING LFG MONITORING PROBE
- GMP-5 EXISTING LFG MONITORING PROBE (TO BE RELOCATED)
- GMP-19 PROPOSED LFG MONITORING PROBE
- GV-3 EXISTING LFG VENT
- GV-4A PROPOSED LFG VENT
- GV-4 EXISTING LFG VENT (TO BE RELOCATED)

NOTES:

1. EXISTING CONTOURS COMPILED BY AIR SURVEY FROM AERIAL SURVEY DATED MARCH 5, 2012.
2. PERMIT BOUNDARY PROVIDED BY MTG ENGINEERS AND SURVEYORS, INC.
3. REFER TO DRAWING G1.2 FOR LANDFILL GAS MONITORING PROBE DETAIL AND INFORMATION.
4. ENCLOSED STRUCTURES INCLUDE GATEHOUSE, OFFICE AND MAINTENANCE BUILDING, AND STORAGE BUILDING. ALL ENCLOSED STRUCTURES HAVE PERMANENT GAS MONITORS.

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED PROFESSIONAL ENGINEER
7/08/13

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

GAS MONITORING PROBE LOCATION PLAN

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL
PERMIT AMENDMENT APPLICATION

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD ◆ WICHITA FALLS
817-563-1144

TBPE FIRM NO. F-256 | TBPG FIRM NO. 50222

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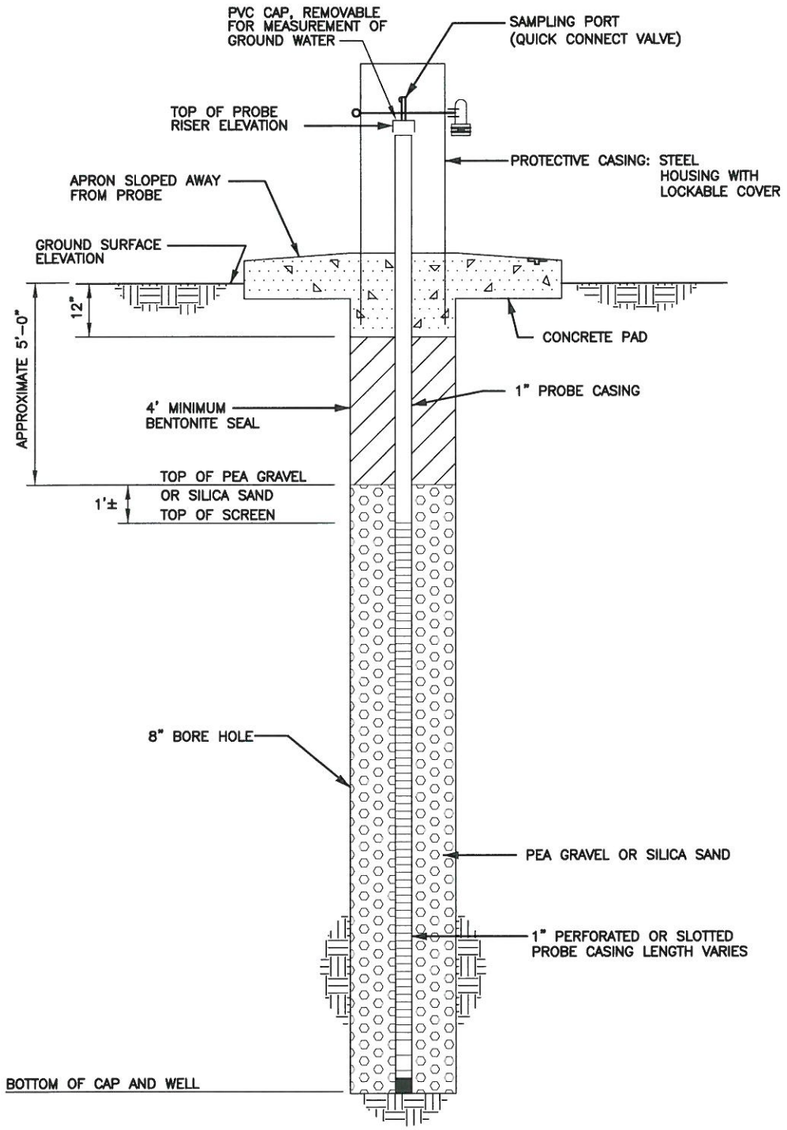

MONITORING PROBE DETAILS (MP-1) G1.2

NOTES

1. ALL SIZES AND DIMENSIONS ARE APPROXIMATE.
2. REFER TO APPENDIX G3 FOR INSTALLATION LOGS OF EXISTING PROBES GMP-1 THROUGH GMP-11.

GAS MONITORING PROBE INFORMATION			
GAS PROBE	GROUND ELEVATION (FT-MSL)	PROBE DEPTH (FT-BGS)	BOTTOM OF PROBE ELEVATION (FT-MSL)
EXISTING GAS MONITORING PROBES			
GMP-1	371.3	25	346.3
GMP-2	384.1	38	346.1
GMP-3	377.8	30	347.8
GMP-4	376.8	30	346.8
GMP-5	374.4	26	348.4
GMP-6	383.6	32.5	351.0
GMP-7	364.4	15	349.4
GMP-8	364.4	20	344.4
GMP-9	363.9	20	343.9
GMP-10	371.3	24.5	346.8
GMP-11	369.8	25	344.8
PROPOSED GAS MONITORING PROBE INFORMATION			
GMP-4R	380	50	330.0
GMP-5R	386	56	330.0
GMP-12	387	57	330.0
GMP-13	389	59	330.0
GMP-14	387	57	330.0
GMP-15	384	54	330.0
GMP-16	380	50	330.0
GMP-17	380	50	330.0
GMP-18	379	49	330.0
GMP-19	374	44	330.0
GMP-20	369	39	330.0
GMP-21	364	34	330.0
GMP-22	370	40	330.0
GMP-23	384	54	330.0
GMP-24	390	60	330.0

STATE OF TEXAS
KENNETH J. WELCH
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PROFESSIONAL ENGINEER
7/08/13

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REVISIONS							
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	

MONITORING PROBE DETAIL

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL
PERMIT AMENDMENT APPLICATION

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144
TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

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94°26'

33°29'

33°28'

33°27'30"

1/4 MILE RADIUS

0 500 1000
SCALE IN FEET

LEGEND

PERMIT BOUNDARY

LANDFILL FOOTPRINT

1/4 MILE RADIUS

NOTE:

1. AERIAL PHOTOGRAPH IMMEDIATELY SURROUNDING THE PROPERTY PROVIDED BY AERO-METRIC FROM AERIAL PHOTOGRAPHY FLOWN MARCH 5, 2012.

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED
PROFESSIONAL ENGINEER
7/08/13

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REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

STRUCTURES WITHIN 1/4 MILE OF PERMIT BOUNDARY

WASTE MANAGEMENT OF TEXAS, INC. NEW BOSTON LANDFILL PERMIT AMENDMENT APPLICATION

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
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DALLAS • WICHITA FALLS
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NEW BOSTON LANDFILL

APPENDIX G2
REPORTING AND RECORDING FORMS

30 TAC §330.371

NEW BOSTON LANDFILL MSW 576C
LANDFILL GAS MONITORING REPORT

INSTRUMENTATION INFORMATION

Combustible Gas Instrument Type: _____
Pressure Instrument Type: _____
Water Level Instrument Type: _____

Field calibration report is in accordance with instrument manufacturer's recommended procedures within factory calibration tolerances.

	Time/Date	Methane	CO2	O2	Balance
Field Calibration					

ADDITIONAL INFORMATION

Weather Conditions: _____
Barometric Pressure: _____ Temperature: _____
Sampling Date: _____ Sampler: _____
Time: Start: _____ Finish: _____

ON-SITE STRUCTURES

ON-SITE STRUCTURE	*Verify if Continuous LFG Alarm is Operational*	*Continuous LFG Alarm Activated (LEL>25%) During This Quarter*	*Continuous LFG Alarm have current calibration sticker; date on sticker*
	Circle One	*Circle One*	*Circle One*
Gate House	Yes No	Yes No	Yes No Date:
Office/Maintenance Building	Yes No	Yes No	Yes No Date:
Storage Building	Yes No	Yes No	Yes No Date:

GENERAL COMMENTS:

_____
_____
_____
_____

NEW BOSTON LANDFILL MSW 576C
LANDFILL GAS MONITORING REPORT

GAS MONITORING PROBES

PROBE #	SURFACE ELEV. *Ft-msl*	BOTTOM ELEV. *Ft-msl*	TIME SAMPLED	STATIC PRESSURE *"w.c.*[1]	% CH_4 *0-100*	% *LEL*[2] *0-100*	%[4] O_2 (0pt.) *0-100*	DEPTH TO WATER	WATER ELEV. *Ft.-msl*	PROBE INTEGRITY VERIFIED *YES/NO*[3]
1										
2										
3										
4R										
5R										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

[1] *"w.c. - inches Water Column*
[2] *% LEL=(20) X (observed % methane) - Note: Record>100% in LEL column if % methane is >5%*
[3] Note any problems with the probes in the general comments section above.
[4] Optional

GENERAL COMMENTS:

_____

_____

Sampler: _____

Company: _____

Date: _____

Gas Operations Mgr: _____

Landfill Site Mgr: _____

NEW BOSTON LANDFILL

APPENDIX G3
INSTALLATION INFORMATION
AND TCEQ PERMIT MODIFICATION APPROVALS –
EXISTING LANDFILL GAS MONITORING PROBES

30 TAC §330.371

INSTALLATION OF LANDFILL GAS MONITORING PROBES

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TNRCC PERMIT NO. 576A

Prepared for

Western Waste Industries, Inc.

May 1995

5-2-95

Prepared by

EMCON
5701 East Loop 820 South
Fort Worth, Texas 76119
817 / 478-8254

Project 61118-001-070

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

EMCON
5701 East Loop 820 South • Fort Worth, Texas 76119-7051 • (817) 478-8254 • Metro (817) 572-3411 • Fax (817) 478-8874

May 2, 1995
Project 61118-001-070

Mr. H. Thomas Collins, P.E.
Compliance and Enforcement Section
Municipal Solid Waste Division
Texas Natural Resource Conservation Commission
P.O. Box 13087
Austin, Texas 78711-3087

Re: Installation of Landfill Gas Monitoring Probes
New Boston Landfill, Permit No. 576A
Bowie County, Texas

Dear Mr. Collins:

On behalf of Western Waste Industries, Inc., we are submitting one original and two copies of the report documenting installation of the Landfill Gas (LFG) Monitoring probes for the New Boston Landfill. The probes were installed on April 13, 14, & 17. Installation of the gas probes and preparation of the installation were completed in accordance with the requirements of 30 TAC §330.56(n)(8)(B) and the Methane Monitoring Handbook published by Texas Natural Conservation Commission.

Please do not hesitate to contact us if there are any questions.

Sincerely,

EMCON

STATE OF TEXAS
THOMAS D. BAKER
40960
REGISTERED
PROFESSIONAL ENGINEER
5-2-95

Thomas D. Baker, P.E.
Director, Technical Services

Enclosure: Installation of Landfill Gas Monitoring Probes Report (3)

cc: Mr. John Carrington - Western Waste Industries, Inc.
Mr. Keith Durrett - Western Waste Industries, Inc.
Mr. Kent Wiken - EMCON

CONTENTS

1 INTRODUCTION

This report documents the landfill gas (LFG) monitoring probe installation for the New Boston Landfill. Included in this report are a LFG probe location map, construction details, borings logs, and State of Texas well reports. This report is submitted in accordance with the requirements of the Methane Monitoring Handbook published by the Texas Natural Resource Conservation Commission (TNRCC).

The LFG Management Plan provides for a LFG monitoring network consisting of probes located around the perimeter of the site. The LFG Management Plan, TNRCC Methane Monitoring Handbook, and subsequent discussions with TNRCC staff personnel, provided the guidance for the probe installation.

2 LANDFILL GAS MONITORING PROBE NUMBER AND LOCATION

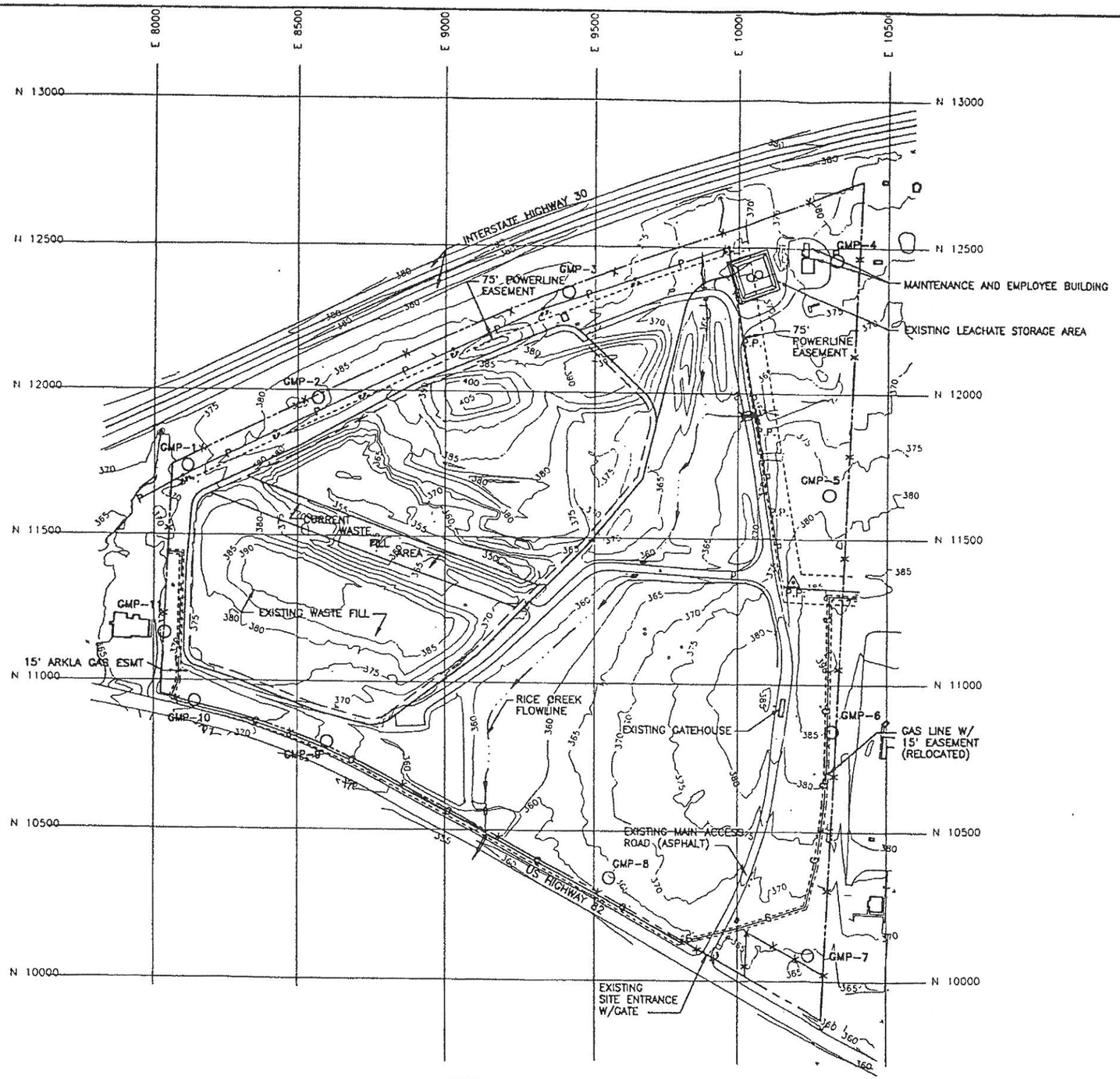
Eleven LFG monitoring probes were installed at this site. The number of probes and their locations were outlined in a plan sent to H. Thomas Collins, P.E., Team Leader, Landfill Remediation Team, Compliance and Enforcement Section, dated March 24, 1995. Approval of the installation plan by TNRCC was documented in an April 25, 1995, letter from Mr. Collins.

3 LANDFILL GAS MONITORING PROBE INSTALLATION

The LFG monitoring probes were installed on April 13, 14, and 17, 1995, and consisted of 1-inch diameter PVC pipe with slotted screens. Probe locations are shown on Figure A.1. The screens generally extended from the bottom of the hole to 4 feet below the ground surface. A gravel pack was placed from the bottom of the hole to approximately the top of screen, and 6 inches of sand was placed over the gravel pack. The installation was completed with 2 feet of hydrated bentonite and a concrete apron. The boring depth for each probe was selected to extend to the higher of the seasonal low water level at the monitoring point or the lowest elevation of waste within 1000 feet of the monitoring point. Groundwater and waste elevations, as well as bottom of probe elevations and screen elevations are listed on Figure A.2. The borings were drilled with continuous flight augers which resulted in a nominal 8-inch diameter hole.

A typical LFG monitoring probe construction detail is shown on Figure A.2 along with a schedule of specific information for each probe. Logs of borings which include soil descriptions and a probe construction detail are presented on Figures A.3 through A.13. The LFG monitoring probes were installed under the supervision of a well driller licensed in the State of Texas. Well logs for each probe are provided on Figures B.1 through B 11.

APPENDIX A



LEGEND

- 380 — 5' CONTOUR LINE (FT-MSL)
- PROPERTY LINE AND PERMIT BOUNDARY
- P — POWER LINE
- G — GAS MAIN
- FENCE LINE
- EASEMENT LINE
- N 10000 — SITE GRID
- GMP-3 ○ — GAS MONITORING PROBE LOCATION

NOTES:

1. EXISTING CONTOURS COMPILED FROM AN AERIAL SURVEY PERFORMED BY INTERA, DECEMBER, 1994.
2. GAS MONITORING PROBE DETAILS PROVIDED ON FIGURE A.2.

STATE OF TEXAS
THOMAS D. BAKER
40060
REGISTERED PROFESSIONAL ENGINEER
5-2-95

FOR PERMITTING PURPOSES ONLY

REV	DATE	DESCRIPTION	DRN BY	DES BY	CHK BY	APP BY
DATE OF ISSUE 5-95		DRN BY JLM DES BY TDB	CHK BY TDB APP BY TDB			

EMCON

Western Waste Industries

GAS MONITORING PROBE LOCATION PLAN

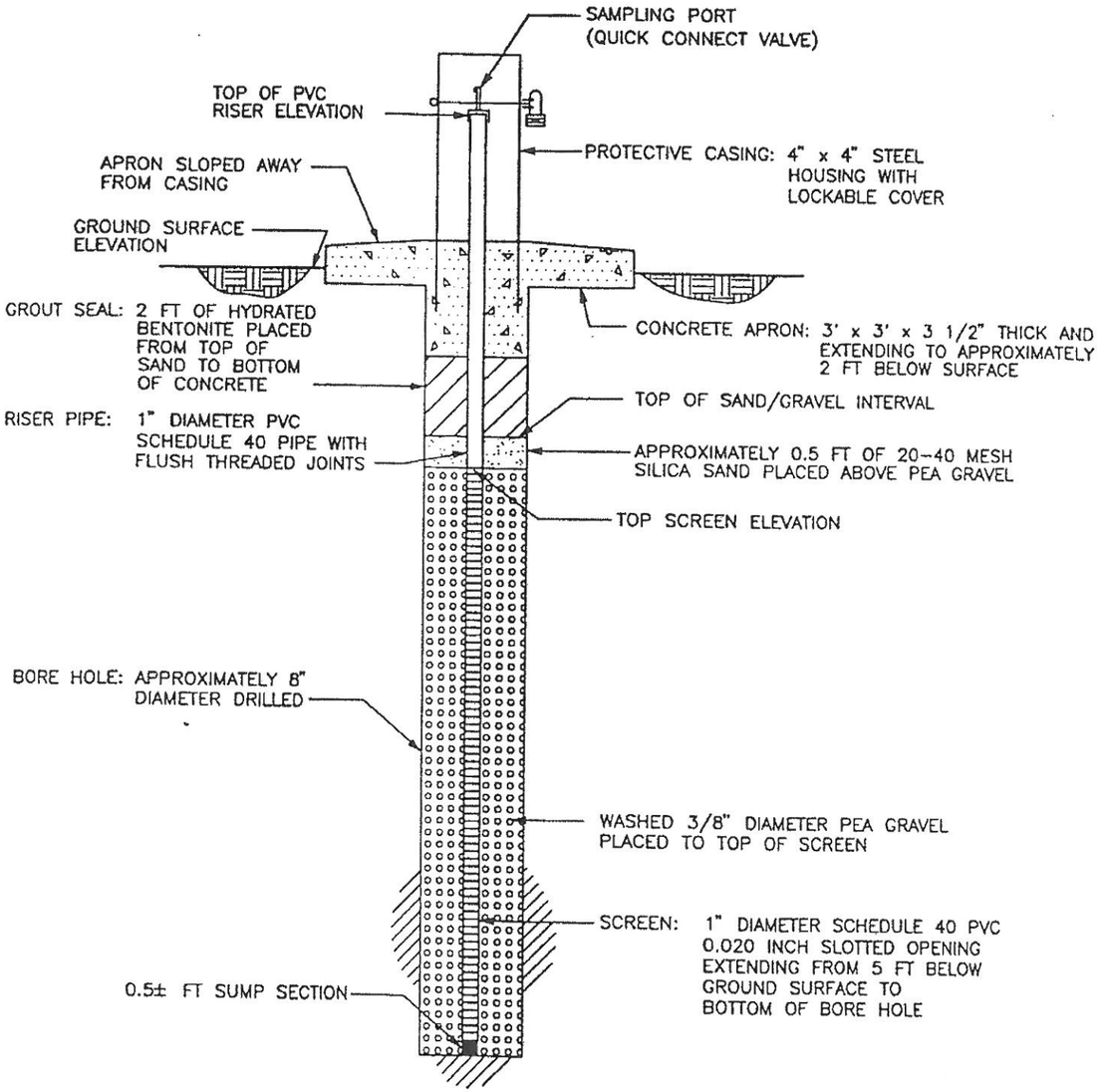
NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS

G3-8

FIGURE A.1

PROJECT NO

M:\PJM\WESTERN\FIGA1



GMP	SURFACE ELEVATION (FEET)	TOP OF RISER ELEV (FEET)	GAS PROBE COORDINATES		GROUNDWATER SEASONAL LOW	MSW LOW ELEVATION	BOTTOM OF PROBE ELEVATION	PROBE SCREEN INTERVAL	PROBE DEPTH (FEET)
			NORTHING	EASTING					
1	371.3	374.0	11737.97	8114.78	323	350	346.3	346/365	25
2	384.1	386.8	11972.61	8570.08	335	350	346.1	346/379	38
3	377.8	380.3	12343.72	9410.92	347	350	347.8	348/373	30
4	376.8	379.5	12463.63	10329.75	356	352	346.8	347/372	30
5	374.4	378.9	11653.46	10314.16	353	352	348.4	348/370	26
6	383.6	386.2	10840.27	10323.66	346	356	351.0	351/378	32.5
7	364.4	367.2	10086.59	10246.05	340	353	349.4	350/359	15
8	364.4	366.8	10342.45	9500.58	346	348	344.4	345/359	20
9	363.9	366.5	10794.47	8602.78	321	347	343.9	344/359	20
10	371.3	374.0	10929.98	8141.74	321	347	346.8	347/367	24.5
11	369.8	372.4	11162.89	8036.52	322	347	344.8	345/365	25

REMARKS:

1. SURFACE ELEVATION AT MONITORING POINT DETERMINED BY SURVEY.
2. GROUNDWATER ELEVATIONS AT MONITORING POINT ESTIMATED FROM NEAREST SHALLOW PIEZOMETER OR INTERPOLATED FROM NEAREST TWO PIEZOMETERS USING LOWEST STABILIZED WATER LEVEL.
3. MSW LOW ELEVATION WITHIN 1000 FEET OF MONITORING POINT IS BASED ON TOP OF LINER ELEVATIONS DETERMINED FROM AVAILABLE PLANS.

STATE OF TEXAS
THOMAS D. BAKER
40060
REGISTERED
PROFESSIONAL ENGINEER
Thomas D. Baker
5-2-95

N:\PJW\WESTERN\GEO\M-PROBE2

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
	DATE OF ISSUE 5-95	DWN BY PJW DES BY TDB			CHK BY TDB APP BY KMW	

EMCON

Western Waste Industries

GAS MONITORING PROBE DETAIL

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS

G3-9

FIGURE
A.2
PROJECT NO

LOG OF GAS PROBE NO. GMP- 1

Project Description: NEW BOSTON LANDFILL
Gas Monitoring Probes

Location: E 8114.78 N 11737.97
Surface El.: 371.33' MSL

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Gas Probe Construction Detail	Hand Penetrometer tsf	Penetration Blows / Foot	Moisture Content, %	Unit Dry Weight, lb/cu ft.	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf
0	U-1		CLAYEY SAND (SC), dark olive gray										
			369.3										
			CLAY (CL), sandy, red, orange & gray										
5	U-2		365.3										
			CLAYEY SAND (SC), grayish tan w/gray clay seams										
			363.3										
			CLAYEY SAND (SC), reddish tan to red										
10	U-3												
15	U-4		- w/red clay seams below 17 ft.										
20	U-5												
			346.3										
25													
30													
35													
40													

Completion Depth: 25.0 ft.
Date Boring Started: 4/14/95
Date Boring Completed: 4/14/95
Engineer/Geologist: M. Brown
Project No.: 61118-001-070

Remarks:

gcol.lid: NB070

EMCON

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

FIGURE A.3
NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

LOG OF GAS PROBE NO. GMP- 2

Project Description: NEW BOSTON LANDFILL
Gas Monitoring Probes

Location: E 8570.08 N 11972.61
Surface El.: 384.10' MSL

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Elevation	Gas Probe Construction Detail	Hand Penetrometer tsf	Penetration Blows / Foot	Moisture Content, %	Unit Dry Weight, lb/cu ft.	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf
0	U-1		SANDY CLAY (CL), tan & olive	382.1										
5	U-2		CLAY (CL), silty & sandy, reddish tan w/iron stains & w/occasional light gray sandy clay seams - reddish gray below 7.5 ft.	372.1										
10	U-3		CLAYEY SAND (SC), silty, light reddish tan	368.1										
15	U-4		SANDY CLAY (CL), silty, dark reddish tan	364.1										
20	U-5		CLAYEY SAND (SC), reddish tan - thin sandstone layers 25 to 30 ft.	354.1										
25	U-6													
30	U-7		CLAY (CL), reddish tan	346.1										
35	U-8													
40														

Completion Depth: 38.0 ft.
Date Boring Started: 4/13/95
Date Boring Completed: 4/13/95
Engineer/Geologist: M. Brown
Project No.: 61118-001-070

Remarks:

EMCON

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

FIGURE A.4
NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

LOG OF GAS PROBE NO. GMP- 3

Project Description: NEW BOSTON LANDFILL
Gas Monitoring Probes

Location: E 9410.93 N 12343.72
Surface El.: 377.77' MSL

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Gas Probe Construction Detail	Hand Penetrometer tsf	Penetration Blows / Foot	Moisture Content, %	Unit Dry Weight, lb/cu ft.	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf
0	U-1		CLAYEY SAND (SC), silty, tan										
			375.8										
			CLAYEY SAND (SC), silty, tan w/gray sandy clay seams										
5	U-2		371.8										
			CLAY (CL), silty & sand, reddish tan w/gray clay seams & iron stains										
			367.8										
10	U-3		CLAY (CL), red, silty										
			364.8										
			SHALY CLAY (CL), red w/tan sand clay seams										
15	U-4												
20	U-5												
25	U-6												
30			347.8										
35													
40													

Completion Depth: 30.0 ft.
Date Boring Started: 4/13/95
Date Boring Completed: 4/13/95
Engineer/Geologist: M. Brown
Project No.: 61118-001-070

Remarks:

EMCON

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

FIGURE A.5
NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

LOG OF GAS PROBE NO. GMP- 4

Project Description: NEW BOSTON LANDFILL
Gas Monitoring Probes

Location: E 10329.75 N 12463.63
Surface El.: 376.81' MSL

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Gas Probe Construction Detail	Hand Penetrometer tsf	Penetration Blows / Foot	Moisture Content, %	Unit Dry Weight, lb/cu ft.	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf
0	U-1		CLAYEY SAND (SC), brown										
			374.8										
			SANDY CLAY (CL), reddish tan & gray										
5	U-2		371.8										
			SANDY CLAY (CL), silty, reddish gray										
10	U-3		366.8										
			SHALY CLAY (CH), red w/iron staining										
15	U-4												
20	U-5												
25	U-6												
30			346.8										
35													
40													

Completion Depth: 30.0 ft.
Date Boring Started: 4/13/95
Date Boring Completed: 4/13/95
Engineer/Geologist: M. Brown
Project No.: 61118-001-070

Remarks:

EMCON

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

FIGURE A.6

LOG OF GAS PROBE NO. GMP- 5

Project Description: NEW BOSTON LANDFILL
Gas Monitoring Probes

Location: E 10314.16 N 11653.46
Surface El.: 374.40' MSL

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Gas Probe Construction Detail	Hand Penelrometer tsf	Penetration Blows / Foot	Moisture Content, %	Unit Dry Weight, lb/cu ft.	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf
0	U-1		SANDY CLAY (CL), reddish tan & gray (Fill) 373.4										
			SANDY CLAY (CL), silty, olive brown 369.4										
5	U-2		SANDY CLAY (CL), silty, reddish tan w/iron staining & gray sandy clay seams										
10	U-3		362.4										
			SHALY CLAY (CH), red w/tan sandy clay seams & iron staining										
15	U-4		356.4										
			CLAY (CH), silty, red w/shaly clay seams & w/calcareous cemented mudstone seams below 20 ft.										
20	U-5												
25	U-6		348.4										
30													
35													
40													

Completion Depth: 26.0 ft.
Date Boring Started: 4/14/95
Date Boring Completed: 4/14/95
Engineer/Geologist: M. Brown
Project No.: 61118-001-070

Remarks:

proj.id: NB070

EMCON

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

FIGURE A.7

LOG OF GAS PROBE NO. GMP- 6

Project Description: NEW BOSTON LANDFILL
Gas Monitoring Probes

Location: E 10323.66 N 10840.28
Surface El.: 383.55' MSL

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Gas Probe Construction Detail	Hand Penetrometer tsf	Penetration Blows / Foot	Moisture Content, %	Unit Dry Weight, lb/cu ft.	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf
0	U-1		CLAYEY SAND (SC), brown to dark brown w/iron ore particles										
			381.6										
			SANDY CLAY (CL), silty, tan										
5	U-2		376.6										
			SANDY CLAY (CL), silty, reddish tan w/gray clay seams										
			373.6										
10	U-3		CLAY (CL), reddish tan & gray										
			368.6										
15	U-4		CLAYEY SAND (SC), tan, silty										
			366.6										
			CLAY (CL), reddish tan										
			363.6										
20	U-5		CLAY (CH), red, w/iron stains										
			358.6										
25	U-6		SANDY CLAY (CL), red, silty										
			351.1										
30	U-7												
35													
40													

Completion Depth: 32.5 ft.
Date Boring Started: 4/13/95
Date Boring Completed: 4/13/95
Engineer/Geologist: M. Brown
Project No.: 61118-001-070

Remarks:

EMCON

The stratification lines represent approximate strata boundaries In situ, the transition may be gradual.

NEW BOSTON LANDFILL TECHNICALLY COMPLETE JUNE 10, 2002

FIGURE A.8

LOG OF GAS PROBE NO. GMP- 7

Project Description: NEW BOSTON LANDFILL
Gas Monitoring Probes

Location: E 10246.05 N 10086.59
Surface El.: 364.35' MSL

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Gas Probe Construction Detail	Hand Penetrometer tsf	Penetration Blows / Foot	Moisture Content, %	Unit Dry Weight, lb/cu ft.	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf
0	U-1		CLAYEY SAND (SC), brown & olive										
			361.4										
5	U-2		CLAY (CL), tan & olive w/yellow & red iron staining										
			358.4										
10	U-3		CLAY (CL), reddish tan & gray w/manganese dioxide stains										
			353.4										
15	U-4		CLAY (CH), reddish tan & gray										
			349.4										
20													
25													
30													
35													
40													

Completion Depth: 15.0 ft.
Date Boring Started: 4/13/95
Date Boring Completed: 4/13/95
Engineer/Geologist: M. Brown
Project No.: 61118-001-070

Remarks:

proj.id: NB020

EMCON

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

FIGURE A.9

LOG OF GAS PROBE NO. GMP- 8

Project Description: NEW BOSTON LANDFILL
Gas Monitoring Probes

Location: E 9500.58 N 10342.45
Surface El.: 364.42' MSL

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Gas Probe Construction Detail	Hand Penetrometer tsf	Penetration Blows / Foot	Moisture Content, %	Unit Dry Weight, lb/cu ft.	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf
0	U-1		SANDY CLAY (CL), silty, tan & light brown										
5	U-2		357.4										
			SANDY CLAY (CL), reddish tan w/gray clay seams										
10	U-3		354.4										
			SHALY CLAY (CH), red w/iron staining & gray clay seams										
15	U-4												
20			344.4										
25													
30													
35													
40													

Completion Depth: 20.0 ft.
Date Boring Started: 4/14/95
Date Boring Completed: 4/14/95
Engineer/Geologist: M. Brown
Project No.: 61118-001-070

Remarks:

pcal_id: NB070

EMCON

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

FIGURE A.10

LOG OF GAS PROBE NO. GMP- 9

Project Description: NEW BOSTON LANDFILL
Gas Monitoring Probes

Location: E 8602.78 N 10794.47
Surface El.: 363.86' MSL

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Elev.	Gas Probe Construction Detail	Hand Penetrometer tsf	Penetration Blows / Foot	Moisture Content, %	Unit Dry Weight, lb/cu ft.	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf
0	U-1		CLAY (CL), brown to dark brown	362.9										
5	U-2		SANDY CLAY (CL), yellowish tan, silty w/occasional gray clay seams w/iron staining	355.9										
10	U-3		SANDY CLAY (CL), reddish orange w/red shaly clay seams	352.9										
15	U-4		SHALY CLAY (CH), red w/occasional gray clay seams & yellow iron stains											
20	U-5			342.4										
25														
30														
35														
40														

Completion Depth: 21.5 ft.
Date Boring Started: 4/17/95
Date Boring Completed: 4/17/95
Engineer/Geologist: M. Brown
Project No.: 61118-001-070

Remarks:

EMCON

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

FIGURE A.11

LOG OF GAS PROBE NO. GMP-10

Project Description: **NEW BOSTON LANDFILL**
Gas Monitoring Probes

Location: E 8141.74 N 10929.99
Surface El.: 371.34' MSL

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Gas Probe Construction Detail	Hand Penetrometer tsf	Penetration Blows / Foot	Moisture Content, %	Unit Dry Weight, lb/cu ft.	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf
0	U-1		CLAYEY SAND (SC), reddish tan										
			369.3										
5	U-2		CLAY (CL), reddish tan & gray - blocky below 5 ft.										
			364.3										
10	U-3		CLAYEY SAND (SC), silty, light reddish tan w/dark red shaly clay seams										
15	U-4		- increase in clay seams below 15 ft.										
20	U-5		SHALY CLAY (CH), red w/sand & iron staining										
			346.3										
25													
30													
35													
40													

Completion Depth:	25.0 ft.
Date Boring Started:	4/14/95
Date Boring Completed:	4/14/95
Engineer/Geologist:	M. Brown
Project No.:	61118-001-070

Remarks:

proj.id: NB0020

EMCON

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

FIGURE A.12

LOG OF GAS PROBE NO. GMP-11

Project Description: NEW BOSTON LANDFILL
Gas Monitoring Probes

Location: E 8036.52 N 11162.89
Surface El.: 369.81' MSL

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Elev.
0	U-1		CLAYEY SAND (SC), tan & brown	368.8
			CLAY (CL), w/sand, red & tan	
5	U-2		SANDY CLAY (CL), reddish brown & gray	364.8
			CLAYEY SAND (SC), silty, tan to reddish tan w/gray clay seams	362.8
10	U-3		- dark red calcareous mudstone seams @ 12 ft.	
15	U-4			
			SHALY CLAY (CH), red w/some silt & iron staining	351.8
20	U-5			
25				344.8
30				
35				
40				

Gas Probe Construction Detail

Hand Penetrometer tsf	Penetration Blows / Foot	Moisture Content, %	Unit Dry Weight, lb/cu ft.	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf

Completion Depth: 25.0 ft.
Date Boring Started: 4/14/95
Date Boring Completed: 4/14/95
Engineer/Geologist: M. Brown
Project No.: 61118-001-070

Remarks:

EMCON

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 1997

FIGURE A.13

APPENDIX B

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

GMP - 1

Please use black ink.

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Western Waste Industries (Name) ADDRESS Hwy. 82 at I-30 (Street or RFD) New Boston, TX 75501 (City) (State) (Zip)

2) LOCATION OF WELL:
County Bowie, 1 miles in West (NE, SW, etc.) direction from New Boston, Texas (Town)
New Boston Landfill

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): Gas Probe
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Driven ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 4-14 19 95 Completed 4-14 19 95

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	completion

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed ☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 4.5 ft. to 25 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	2	CLAYEY SAND, gray
2	6	CLAY, red, tan & gray
6	8	CLAYEY SAND, gray & tan
8	25	CLAYEY SAND, red

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
1	N	PVC Screen	5	25	0.02
1	N	PVC casing	0	5	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 4.5 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Bentonite
Cemented by GM Enterprises

10) SURFACE COMPLETION 3' x 3' surface slab
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL: N/A
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: N/A Type _____ Depth _____

13) TYPE PUMP: N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: N/A
Type Test ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY: N/A
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME GM Enterprises (Type or print) WELL DRILLER'S LICENSE NO. 3006 M

ADDRESS 7098 Mansfield Highway (Street or RFD) Kennedale (City) Texas (State) 76060 (Zip)

(Signed) _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

FIGURE B.1

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

GMP - 2

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Western Waste Industries (Name) ADDRESS Hwy. 82 at I-30 (Street or RFD) New Boston, TX 75501 (City) (State) (Zip)

2) LOCATION OF WELL: County Bowie, 1 miles in west (NE, SW, etc.) direction from New Boston, Texas (Town)

New Boston Landfill

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an offical Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): Gas Probe
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 4-14 19 95 Completed 4-14 19 95

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	completion

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval ... from 4.5 ft. to 38 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	2	SANDY CLAY, tan & olive
2	12.5	SANDY CLAY, red & tan
12.5	16	CLAYEY SAND, red-tan
16	20	SANDY CLAY, dk red
20	30	CLAYEY SAND, red-tan
30	38	CLAY, red & tan

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
1	N	PVC Screen	5	38	0.02
1	N	" Riser	0	5	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 4.5 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Bentonite
Cemented by GM Enterprises

10) SURFACE COMPLETION 3' x 3' surface slab
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL: N/A
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: N/A Type Depth

13) TYPE PUMP: N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: N/A
Type Test: ☐ Pump ☐ Baller ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY: N/A
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME GM Enterprises (Type or print) WELL DRILLER'S LICENSE NO. 3006 M

ADDRESS 7098 Mansfield Highway (Street or RFD) Kennedale (City) Texas (State) 76060 (Zip)

(Signed) _____ (Licensed Well Driller)

(Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentially*
Privilege Notice on Reverse Side

State of Texas WELL REPORT

GMP - 3

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Western Waste Industries (Name) ADDRESS Hwy. 82 at I-30 (Street or RFD) New Boston (City) TX (State) 75501 (Zip)

2) LOCATION OF WELL:
County Bowie, 1 miles in west (NE, SW, etc.) direction from New Boston, Texas (Town)
New Boston Landfill

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): Gas Probe
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 4-13 19 95 Completed 4-13 19 95

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	completion

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval ... from 4.5 ft. to 30 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	2	clayey SAND, tan
2	6	clayey SAND, tan-gray
6	10	SANDy CLAY, red-tan
10	13	SANDy CLAY, red
13	30	SILTY CLAY, red

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
1	N	PVC Screen	5	30	0.010
1	N	" Riser	0	5	

9) CEMENTING DATA [Rule 267.44(1)]
Cemented from 0 ft. to 4.5 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Bentonite
Cemented by GM Enterprises

10) SURFACE COMPLETION 3' x 3' surface slab
☐ Specified Surface Slab Installed [Rule 267.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 267.44(3)(A)]
☐ Pitless Adapter Used [Rule 267.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 267.71]

11) WATER LEVEL: N/A
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: N/A Type Depth

13) TYPE PUMP: N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: N/A
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY: N/A
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME GM Enterprises (Type or print) WELL DRILLER'S LICENSE NO. 3006 M

DDRESS 7098 Mansfield Highway (Street or RFD) Kennedale (City) Texas (State) 76060 (Zip)

(Signed) _____ (Licensed Well Driller)

(Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

FIGURE B.3

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

GMP - 4

Please use black ink.

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Western Waste Industries (Name) ADDRESS Hwy. 82 at I-30 (Street or RFD) New Boston, TX 75501 (City) (State) (Zip)

2) LOCATION OF WELL:
County Bowie, 1 miles in west (NE, SW, etc.) direction from New Boston, Texas (Town)
New Boston Landfill

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): Gas Probe
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 4-13 19 92 Completed 4-13 19 92

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	completion

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval ... from 4.5 ft. to 30 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	2	CLAYEY SAND, brown
2	5	SANDY CLAY, red, tan, gr
5	10	SANDY CLAY, red & gray
10	30	SHALY CLAY, red

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
1	N	PVC Screen	5	30	0.02
1	N	" Riser	0	5	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 4.5 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Bentonite
Cemented by GM Enterprises

10) SURFACE COMPLETION 3' x 3' surface slab
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL: N/A
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: N/A Type _____ Depth _____

13) TYPE PUMP: N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: N/A
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY: N/A
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME GM Enterprises (Type or print) WELL DRILLER'S LICENSE NO. 3086 M

ADDRESS 7098 Mansfield Highway (Street or RFD) Kennedale (City) Texas (State) 76060 (Zip)

(Signed) _____ (Licensed Well Driller)

(Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

GMP - 5

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Western Waste Industries (Name) ADDRESS Hwy. 82 at I-30 (Street or RFD) New Boston, TX 75501 (City) (State) (Zip)

2) LOCATION OF WELL:
County Bowie, 1 miles in west (NE, SW, etc.) direction from New Boston, Texas (Town)
New Boston Landfill

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): Gas Probe
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Drive ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other

6) WELL LOG:
Date Drilling: Started 4-14 19 95 Completed 4-14 19 95

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	completion

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other
If Gravel Packed give interval ... from 4.5 ft. to 26 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	1	SANDY CLAY, red, tan,
1	5	SANDY CLAY, olive brown
5	12	SANDY CLAY, red-tan
12	18	SHALY CLAY, Red
18	26	SANDY CLAY, red, silty

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
1	N	PVC Screen	5	26	0.0.
1	N	" Riser	0	5	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 4.5 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Bentonite
Cemented by GM Enterprises

10) SURFACE COMPLETION 3' x 3' surface slab
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL: N/A
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: N/A Type Depth

13) TYPE PUMP: N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: N/A
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY: N/A
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME GM Enterprises (Type or print) WELL DRILLER'S LICENSE NO. 3006 M

ADDRESS 7098 Mansfield Highway (Street or RFD) Kennedale (City) Texas (State) 76060 (Zip)

(Signed) _____ (Licensed Well Driller)

(Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

GMP - 6

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

Please use black ink.

1) **OWNER** Western Waste Industries (Name) **ADDRESS** Hwy. 82 at I-30 (Street or RFD) New Boston, TX 75501 (City) (State) (Zip)

2) **LOCATION OF WELL:** County Bowie, 1 miles in west (NE, SW, etc.) direction from New Boston, Texas (Town)
New Boston Landfill

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an offical Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP**

3) **TYPE OF WORK (Check):** ☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):** Gas Probe ☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):** ☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) **WELL LOG:**

Date Drilling: Started 4-13 19 95 Completed 4-13 19 95

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	completion

7) **BOREHOLE COMPLETION:** ☐ Open Hole ☐ Straight Wall ☐ Underreamed ☒ Gravel Packed ☐ Other _____

If Gravel Packed give interval . . . from 4.5 ft. to 32.5 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	2	CLAYEY SAND, brown/BK
2	7	SANDY CLAY, tan
7	10	SANDY CLAY, Red-tan
10	15	SANDY CLAY, red-gr.
15	20	CLAYEY SAND/CLAY, tan-Red
20	25	CLAY, red
25	32.5	SANDY CLAY, red

(Use reverse side if necessary)

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
1	N	PVC Screen	5	32.5	0.02
1	N	" Riser	0	5	

9) **CEMENTING DATA** [Rule 287.44(1)]

Cemented from 0 ft. to 4.5 ft. No. of Sacks Used 3

_____ ft. to _____ ft. No. of Sacks Used _____

Method used Bentonite

Cemented by GM Enterprises

10) **SURFACE COMPLETION** 3' x 3' surface slab

☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]

☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]

☐ Pitless Adapter Used [Rule 287.44(3)(B)]

☒ Approved Alternative Procedure Used [Rule 287.71]

13) **TYPE PUMP:** N/A ☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other _____

Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:** N/A Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated

Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

11) **WATER LEVEL:** N/A

Static level _____ ft. below land surface Date _____

Artesian flow _____ gpm. Date _____

15) **WATER QUALITY:** N/A

Did you knowingly penetrate any strata which contained undesirable constituents?

☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"

Type of water? _____ Depth of strata _____

Was a chemical analysis made? ☐ Yes ☐ No

12) **PACKERS:** N/A

Type	Depth

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME GM Enterprises (Type or print) **WELL DRILLER'S LICENSE NO.** 3006 M

ADDRESS 7098 Mansfield Highway (Street or RFD) Kennedale (City) Texas (State) 76060 (Zip)

(Signed) _____ (Licensed Well Driller)

(Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

FIGURE B.6

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

GMP - 7

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Western Waste Industries (Name) ADDRESS Hwy. 82 at I-30 (Street or RFD) New Boston, TX 75501 (City) (State) (Zip)

2) LOCATION OF WELL:
County Bowie, 1 miles in west (NE, SW, etc.) direction from New Boston, Texas (Town)
New Boston Landfill

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): Gas Probe
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Drive ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 4-13 19 95 Completed 4-13 19 95

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	completion

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval ... from 4.5 ft. to 15 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	3	Clayey SAND, brown
3	6	Clay, tan & olive
6	11	SANDY Clay, red-tan
11	15	Clay, Red, tan, gray

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
1	N	PVC Screen	5	15	0.02
1	N	" Riser	0	5	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 4.5 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Bentonite
Cemented by GM Enterprises

10) SURFACE COMPLETION 3' x 3' surface slab
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL: N/A
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: N/A Type Depth

13) TYPE PUMP: N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: N/A
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY: N/A
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME GM Enterprises (Type or print) WELL DRILLER'S LICENSE NO. 3006 M

ADDRESS 7098 Mansfield Highway (Street or RFD) Kennedale (City) Texas (State) 76060 (Zip)

(Signed) _____ (Licensed Well Driller)

(Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

GMP - 8

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Western Waste Industries (Name) ADDRESS Hwy. 82 at I-30 (Street or RFD) New Boston, TX 75501 (City) (State) (Zip)

2) LOCATION OF WELL:
County Bowie, 1 miles in west (NE, SW, etc.) direction from New Boston, Texas (Town)
New Boston Landfill

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): Gas Probe
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 4-14 19 95 Completed 4-14 19 95

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	completion

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 4.5 ft. to 20 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	7	SANDY CLAY, tan silty, silty
7	10	SANDY CLAY, red-tan
10	20	SHALY CLAY, red

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
1	N	PVC Screen	5	20	0.02
1	N	" Riser	0	5	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 4.5 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Bentonite
Cemented by GM Enterprises

10) SURFACE COMPLETION 3' x 3' surface slab
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL: N/A
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: N/A Type Depth

13) TYPE PUMP: N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: N/A
Type Test ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY: N/A
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME GM Enterprises (Type or print) WELL DRILLER'S LICENSE NO. 3006 M

ADDRESS 7098 Mansfield Highway (Street or RFD) Kennedale (City) Texas (State) 76060 (Zip)

Signed _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002

FIGURE B.8

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

GMP - 9

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Western Waste Industries (Name) ADDRESS Hwy. 82 at I-30 (Street or RFD) New Boston, TX 75501 (City) (State) (Zip)

2) LOCATION OF WELL:
County Bowie, 1 miles in west (NE, SW, etc.) direction from New Boston, Texas (Town)
New Boston Landfill

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): Gas Probe
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Drive ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 4-17 19 95 Completed 4-17 19 95

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	completion

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 4.5 ft. to 21.5 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	1	Shaly Clay, brown/DKbr
1	8	Sandy Clay, yellow & tan silty
8	11	Sandy Clay, red-org.
11	21.5	Shaly Clay, red

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
1	N	PVC Screen	5	20	.010
1	N	" Riser	0	5	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 4.5 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Bentonite
Cemented by GM Enterprises

10) SURFACE COMPLETION 3' x 3' surface slab
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL: N/A
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: N/A Type _____ Depth _____

13) TYPE PUMP: N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: N/A
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY: N/A
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME GM Enterprises (Type or print) WELL DRILLER'S LICENSE NO. 3006 M

ADDRESS 7098 Mansfield Highway (Street or RFD) Kennedale (City) Texas (State) 76060 (Zip)

(Signed) _____ (Licensed Well Driller)

(Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

ATTENTION OWNER: Confidentiality Privilege Notice on Reverse Side

State of Texas WELL REPORT

GMP - 10

Please use black ink.

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Western Waste Industries (Name) ADDRESS Hwy. 82 at I-30 (Street or RFD) New Boston, TX 75501 (City) (State) (Zip)

2) LOCATION OF WELL:
County Bowie, 1 miles in West (NE, SW, etc.) direction from New Boston, Texas (Town)
New Boston Landfill

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): Gas Probe
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other ☐ Driven

6) WELL LOG:
Date Drilling: Started 4-14 19 95 Completed 4-14 19 95

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	completion

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed ☒ Gravel Packed ☐ Other
If Gravel Packed give interval ... from 4 ft. to 25 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	2	CLAYEY SAND, red-tan
2	7	CLAY, red, fm, SL.
7	20	CLAYEY SAND, red-tan
20	25	SHALY CLAY, red

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing	Gage Screen
1	N	PVC Screen	4.5	24.5		0.02
1	N	" Riser	0	4.5		

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 4.5 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Bentonite
Cemented by GM Enterprises

10) SURFACE COMPLETION 3' x 3' surface slab
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL: N/A
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: N/A Type Depth

13) TYPE PUMP: N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: N/A
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY: N/A
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME GM Enterprises (Type or print) WELL DRILLER'S LICENSE NO. 3006 M

ADDRESS 7098 Mansfield Highway (Street or RFD) Kennedale (City) Texas (State) 76060 (Zip)

Signed _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

NEW BOSTON LANDFILL
TECHNICALLY COMPLETE JUNE 10, 2002 FIGURE B.10

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

GMP - 11

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) **OWNER** Western Waste Industries (Name) **ADDRESS** Hwy. 82 at I-30 (Street or RFD) New Boston, TX 75501 (City) (State) (Zip)

2) **LOCATION OF WELL:**
County Bowie, 1 miles in west (NE, SW, etc.) direction from New Boston, Texas (Town)
New Boston Landfill

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☒ **SEE ATTACHED MAP**

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):** Gas Probe
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):**
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) **WELL LOG:**
Date Drilling: Started 4-14 19 95 Completed 4-14 19 95

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	completion

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 4.5 ft. to 25 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	1	Clayey SAND, tan & brn.
1	5	Clay, red-tan
5	7	SANDy Clay, red, brn & gray.
7	18	CLAYEY SAND, tan-red
18	25	SHALY CLAY, red

(Use reverse side if necessary)

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
1	N	PVC Screen	5	25	0.02
1	N	" Riser	0	5	

9) **CEMENTING DATA** [Rule 267.44(1)]
Cemented from 0 ft. to 4.5 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Bentonite
Cemented by GM Enterprises

10) **SURFACE COMPLETION** 3' x 3' surface slab
☐ Specified Surface Slab Installed [Rule 267.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 267.44(3)(A)]
☐ Pitless Adapter Used [Rule 267.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 267.71]

11) **WATER LEVEL:** N/A
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) **PACKERS:** N/A Type Depth

13) **TYPE PUMP:** N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:** N/A
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) **WATER QUALITY:** N/A
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME GM Enterprises (Type or print) WELL DRILLER'S LICENSE NO. 3006 M

ADDRESS 7098 Mansfield Highway (Street or RFD) Kennedale (City) Texas (State) 76060 (Zip)

(Signed) _____ (Licensed Well Driller)

(Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

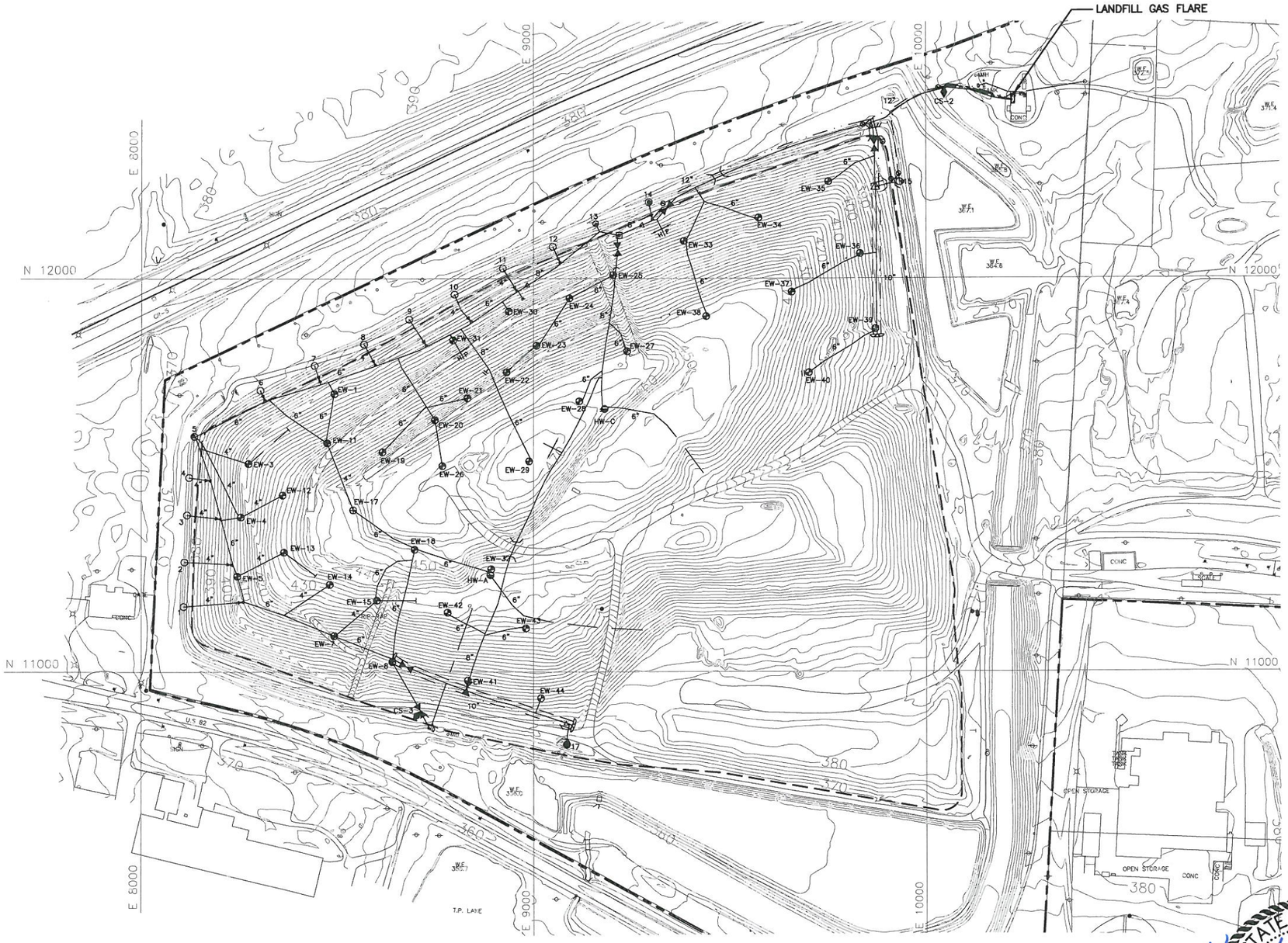
TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

NEW BOSTON LANDFILL

APPENDIX G4
LANDFILL GAS COLLECTION AND CONTROL SYSTEM PLAN

30 TAC §330.371



0 150 300

SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- APPROXIMATE LIMIT OF WASTE
- N 11000 — SITE GRID
- 370 — EXISTING CONTOUR
- 400 — FINAL CONTOUR
- EW-24 — EXISTING LFG EXTRACTION WELL
- EXISTING LFG COLLECTION PIPING
- EXISTING REMOTE WELLHEAD
- CS-2 — EXISTING CONDENSATE SUMP
- EXISTING ISOLATION VALVE
- EXISTING LCS WELLHEAD
- 13 — EXISTING LEACHATE CLEAN-OUT RISER (FOR CONDENSATE DRAINAGE)
- 15 — EXISTING LEACHATE CLEAN-OUT RISER (FOR LFG EXTRACTION)
- 17 — EXISTING U-TRAP TO LEACHATE CLEANOUT RISER CONNECTION
- EXISTING CONDENSATE FORCEMAIN
- EXISTING AIR SUPPLY LINE
- EXISTING HORIZONTAL COLLECTOR

NOTES:

1. EXISTING CONTOURS COMPILED BY AIR SURVEY FROM AERIAL SURVEY DATED MARCH 5, 2012.
2. PERMIT BOUNDARY PROVIDED BY MTG ENGINEERS AND SURVEYORS, INC.
3. REFER TO DRAWING G1.2 FOR LANDFILL GAS MONITORING PROBE DETAIL AND INFORMATION.

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED
PROFESSIONAL ENGINEER

7/08/13

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

EXISTING GCCS

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS ◆ WICHITA FALLS
817-563-1144

TBPE FIRM NO. F-256 | TBPG FIRM NO. 50222

DSN. KAW	DATE : 06/13	DRAWING	
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CHK. JHP	DWG : G4.1-GasProbes.dwg		

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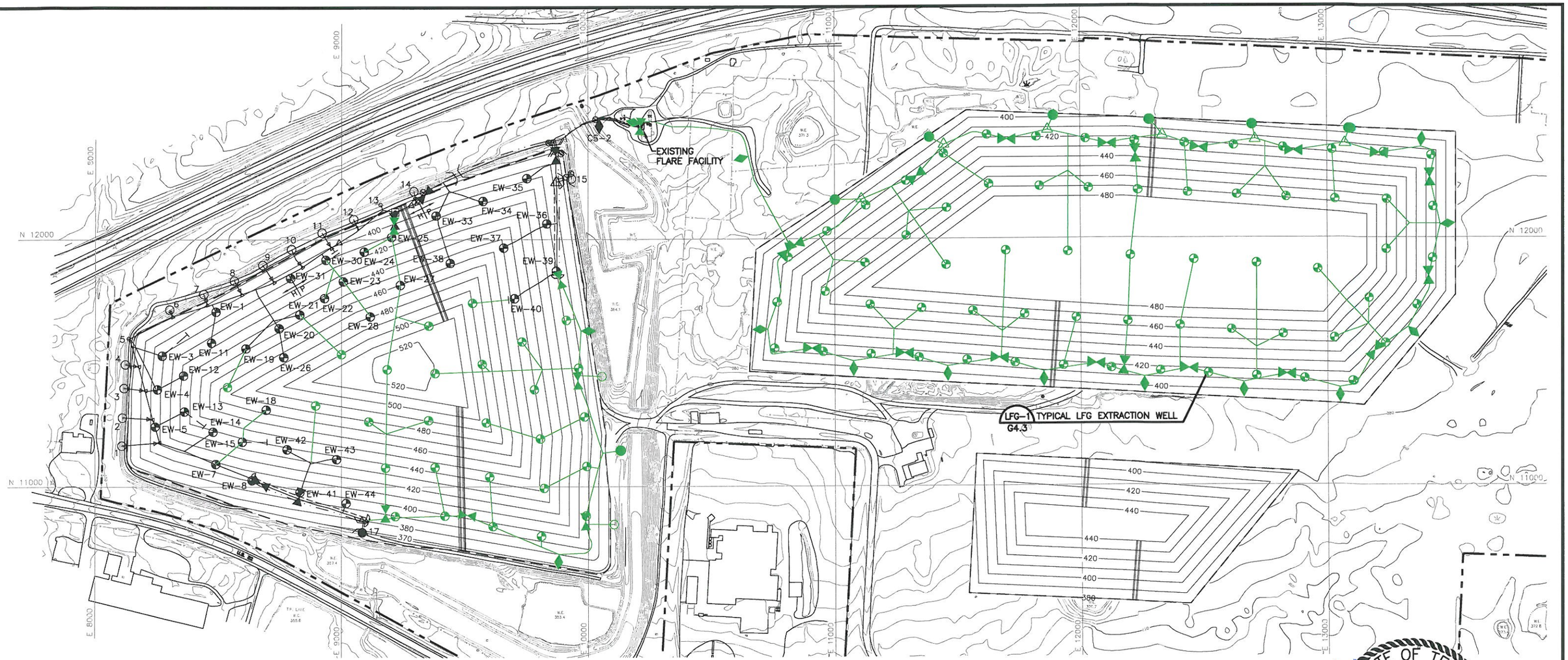

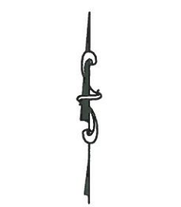

LEGEND

- PERMIT BOUNDARY
- APPROXIMATE LIMIT OF WASTE
- N 11000 SITE GRID
- 370 EXISTING CONTOUR
- 400 FINAL CONTOUR
- EW-24 EXISTING LFG EXTRACTION WELL
- EXISTING LFG COLLECTION PIPING
- EXISTING REMOTE WELLHEAD
- CS-2 EXISTING CONDENSATE SUMP
- EXISTING ISOLATION VALVE
- EXISTING LCS WELLHEAD
- 13 EXISTING LEACHATE CLEAN-OUT RISER (FOR CONDENSATE DRAINAGE)
- 15 EXISTING LEACHATE CLEAN-OUT RISER (FOR LFG EXTRACTION)
- 17 EXISTING U-TRAP TO LEACHATE CLEANOUT RISER CONNECTION
- EXISTING CONDENSATE FORCEMAIN
- EXISTING AIR SUPPLY LINE
- PROPOSED LFG EXTRACTION WELL
- PROPOSED LFG COLLECTION PIPING
- PROPOSED REMOTE WELLHEAD
- PROPOSED CONDENSATE SUMP
- PROPOSED ISOLATION VALVE
- PROPOSED LEACHATE CLEANOUT RISER CONNECTION
- PROPOSED U-TRAP TO LEACHATE CLEANOUT RISER CONNECTION

NOTES:

1. EXISTING CONTOURS AND ELEVATIONS PROVIDED BY AERO-METRIC FROM AERIAL PHOTOGRAPHY FLOWN MARCH 06, 2013.
2. THE LOCATION AND NUMBER OF PROPOSED FUTURE EXTRACTION WELLS AND GCCS COMPONENTS ARE APPROXIMATE. EXACT NUMBER AND LOCATION WILL BE DETERMINED BASED ON SITE CONDITIONS AT THE TIME OF INSTALLATION. EXISTING WELLS MAY BE EXTENDED OR REDRILLED TO ACCOMMODATE FUTURE FILLING.

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED
PROFESSIONAL ENGINEER
7/08/13

FINAL GCCS PLAN

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL
PERMIT AMENDMENT APPLICATION

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144
TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DSN. KAW	DATE : 06/13	DRAWING
DWN. SRC	SCALE : GRAPHIC	G4.2
CHK. JHP	DWG : G4.2-FINAL GCCS.dwg	

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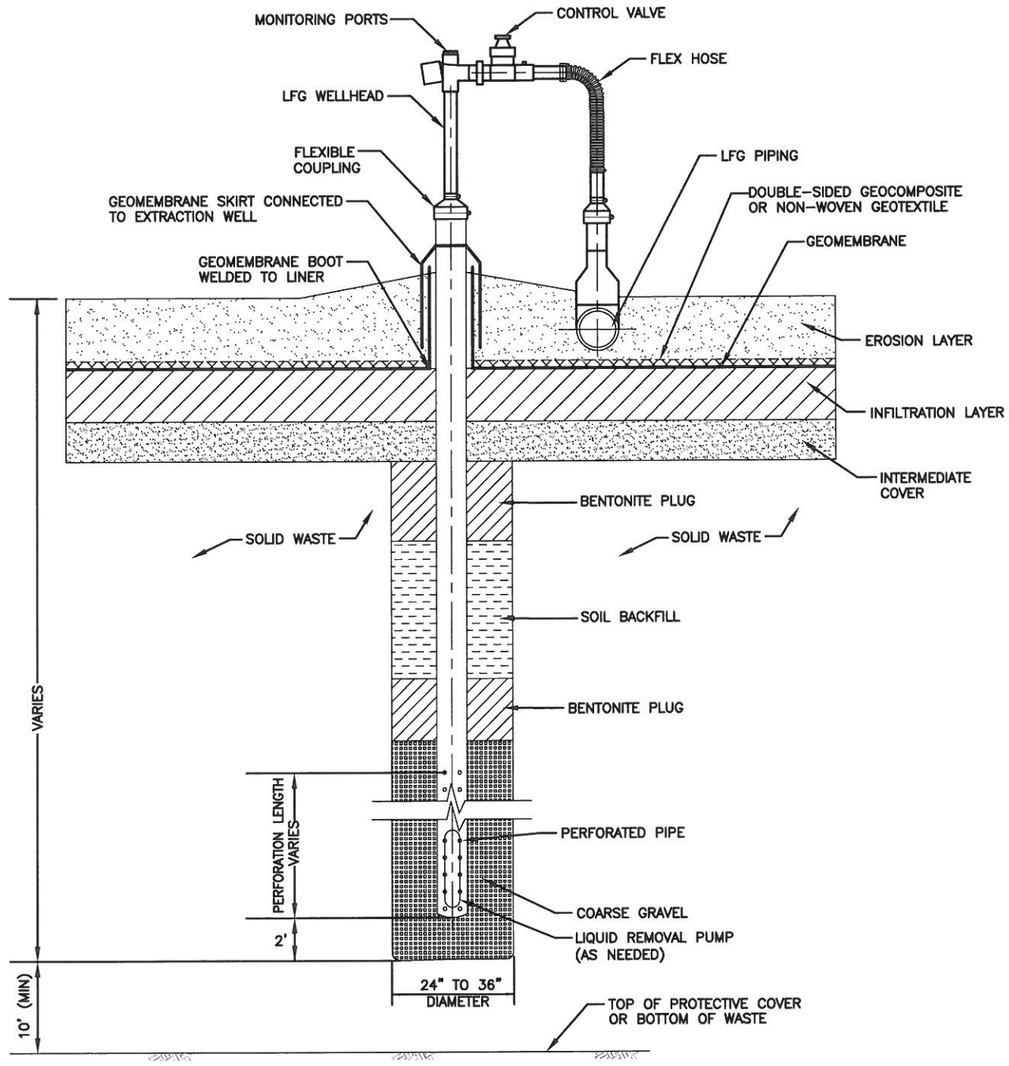

TYPICAL LFG EXTRACTION WELL (LFG-1)

NTS G4.3

NOTES:

1. ALL SIZES AND DIMENSIONS ARE APPROXIMATE.
2. THE EXACT WELLHEAD CONFIGURATION DEPENDS ON MANUFACTURER.
3. THE ELEVATION OF THE EXISTING LINER SYSTEM WILL BE VERIFIED PRIOR TO CONSTRUCTION. THE VERIFICATION PROCESS WILL INCLUDE THE REVIEW OF EXISTING AS-BUILT LINER CERTIFICATION INFORMATION.

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED PROFESSIONAL ENGINEER
7/08/13

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

EXTRACTION WELL DETAIL

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL
PERMIT AMENDMENT APPLICATION

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
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DSN. KAW	DATE : 06/13	DRAWING	G4.3
DWN. SRC	SCALE : GRAPHIC		
CHK. JHP	DWG : G4.3-WELL DETAIL.dwg		

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NEW BOSTON LANDFILL

APPENDIX G5
LANDFILL GAS GENERATION MODEL

30 TAC §330.371

Includes Pages G5-1 through G5-4

LANDFILL GAS GENERATION MODEL

Table G5-1 presents the results of a LFG generation estimate prepared for the New Boston Landfill. The estimate was generated using the U.S. Environmental Protection Agency (EPA) Landfill Gas Emissions Model (LandGEM), Version 3.02. The modeling results reflect the estimated waste quantities accepted over the operating life of the site, including the proposed landfill expansion.

Gas generation parameters used in the model were those established by the EPA in AP-42, Compilation of Air Pollutant Emission Factors, including a methane generation potential (L_o) of 100 cubic meters per megagram of solid waste, and a methane generation constant (k) of 0.04 $year^{-1}$. For converting methane to LFG, a methane content of 50 percent was assumed.

The results suggest the LFG generation rate will continue to increase with time as more waste is placed in the landfill. Peak LFG generation is expected to be achieved at site closure with a maximum generation rate of approximately 1,726 standard cubic feet per minute in 2053.

TABLE G5-1
Estimated Landfill Gas Generation Rate
New Boston Landfill

Year	Waste In Place (Mg)	Landfill Gas Generation	
		m^3/yr	scfm
1968	0	0	0
1969	54,065	424,834	29
1970	107,968	831,736	56
1971	161,710	1,221,412	82
1972	215,236	1,594,120	107
1973	268,816	1,952,634	131
1974	321,914	2,293,301	154
1975	375,808	2,626,869	176
1976	431,426	2,960,910	199
1977	487,824	3,287,971	221
1978	544,842	3,607,082	242
1979	602,316	3,917,266	263
1980	660,594	4,221,609	284
1981	719,339	4,517,683	304
1982	778,730	4,807,225	323
1983	838,715	5,090,080	342
1984	899,959	5,371,743	361
1985	961,694	5,646,212	379
1986	1,024,540	5,918,651	398
1987	1,087,448	6,180,901	415
1988	1,150,546	6,434,351	432
1989	1,214,148	6,681,830	449
1990	1,277,495	6,917,605	465
1991	1,341,223	7,147,123	480
1992	1,405,716	7,373,650	495
1993	1,470,982	7,597,376	510
1994	1,537,162	7,819,509	525
1995	1,604,203	8,039,693	540
1996	1,671,780	8,255,458	555
1997	1,740,302	8,470,197	569
1998	1,808,962	8,677,592	583
1999	1,877,966	8,879,553	597
2000	1,947,521	9,077,932	610
2001	2,017,215	9,269,627	623
2002	2,086,979	9,454,352	635

TABLE G5-1
Estimated Landfill Gas Generation Rate
New Boston Landfill
(Continued)

Year	Waste In Place (Mg)	Landfill Gas Generation	
		m^3/yr	scfm
2003	2,156,883	9,632,931	647
2004	2,255,709	10,031,772	674
2005	2,393,750	10,723,119	720
2006	2,526,458	11,345,451	762
2007	2,666,606	12,001,851	806
2008	2,809,232	12,651,978	850
2009	2,956,391	13,312,233	894
2010	3,115,103	14,037,383	943
2011	3,234,494	14,425,115	969
2012	3,360,116	14,846,613	998
2013	3,497,617	15,344,927	1,031
2014	3,635,118	15,735,406	1,057
2015	3,773,169	16,114,543	1,083
2016	3,911,773	16,482,798	1,107
2017	4,050,931	16,840,614	1,132
2018	4,190,645	17,188,417	1,155
2019	4,330,918	17,526,614	1,178
2020	4,471,753	17,855,599	1,200
2021	4,613,150	18,175,750	1,221
2022	4,755,114	18,487,428	1,242
2023	4,897,645	18,790,983	1,263
2024	5,040,746	19,086,748	1,282
2025	5,184,420	19,375,047	1,302
2026	5,328,668	19,656,189	1,321
2027	5,473,494	19,930,470	1,339
2028	5,618,899	20,198,176	1,357
2029	5,764,885	20,459,583	1,375
2030	5,911,455	20,714,952	1,392
2031	6,058,612	20,964,540	1,409
2032	6,206,357	21,208,588	1,425
2033	6,354,693	21,447,331	1,441
2034	6,503,623	21,680,994	1,457
2035	6,653,148	21,909,794	1,472
2036	6,803,271	22,133,938	1,487
2037	6,953,995	22,353,626	1,502

TABLE G5-1
Estimated Landfill Gas Generation Rate
New Boston Landfill
(Continued)

Year	Waste In Place (Mg)	Landfill Gas Generation	
		m^3/yr	scfm
2038	7,105,322	22,569,050	1,516
2039	7,257,254	22,780,395	1,531
2040	7,409,793	22,987,838	1,545
2041	7,562,943	23,191,550	1,558
2042	7,716,706	23,391,695	1,572
2043	7,871,083	23,588,430	1,585
2044	8,026,078	23,781,906	1,598
2045	8,181,693	23,972,270	1,611
2046	8,337,931	24,159,661	1,623
2047	8,494,793	24,344,214	1,636
2048	8,652,283	24,526,058	1,648
2049	8,810,403	24,806,564	1,667
2050	8,969,156	25,081,426	1,685
2051	9,128,543	25,350,501	1,703
2052	9,288,568	25,614,034	1,721
2053	9,425,950	25,689,219	1,726
2054	9,425,950	24,681,930	1,658
2055	9,425,950	23,714,138	1,593
2056	9,425,950	22,784,293	1,531
2057	9,425,950	21,890,908	1,471
2058	9,425,950	21,032,554	1,413
2059	9,425,950	20,207,855	1,358
2060	9,425,950	19,415,494	1,305
2061	9,425,950	18,654,202	1,253
2062	9,425,950	17,922,760	1,204