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September 9, 2013

Jaclynne Drummond
Compliance Hydrogeologist
Solid Waste Section
Division of Waste Management
1646 Mail Service Center
Raleigh, NC 27699-1646

Re: **Landfill Gas Migration Corrective Action Plan**
Town of Kernersville Landfill (#34-04)
Forsyth County, NC

Dear Ms. Drummond:

This letter serves as a Corrective Action Plan (CAP) for the Town of Kernersville Landfill (Permit #34-04) and is provided in response to the North Carolina Department of Environment and Natural Resources (NC DENR) correspondence dated July 16, 2013. In that correspondence, NC DENR stated that monthly methane monitoring indicated that landfill gas migration beyond the property boundary was likely occurring and that a CAP was needed in response to that condition.

BACKGROUND INFORMATION

The Town of Kernersville Landfill is a closed, unlined municipal solid waste (MSW) landfill located on approximately 58.2 acres in Forsyth and Guilford Counties, North Carolina, approximately 10 miles north of the City of Kernersville. The waste disposal area comprises approximately 13.8 acres. The facility was issued a Permit to Operate on May 15, 1985 and a letter of closure was issued on December 10, 1991.

The area surrounding the landfill is zoned residential/agricultural and contains open fields and woodlands. The landfill is separated to the north from the Waste Management Piedmont Landfill and Recycling Center Facility by Freeman Road. The landfill is bounded to the south by an unnamed tributary of Belews Creek.

Gas monitoring probes were installed at the Kernersville Landfill in August 2012, as required by NC DENR. Probe locations are shown on Drawing 1. The first landfill gas monitoring event utilizing the new probes took place on September 26, 2012, after which a report of the findings was submitted to NC DENR.

Monthly monitoring event revealed landfill gas (methane) concentrations that exceeded the lower explosive limit (LEL) in the three probes on the north boundary of the facility (Probes GW-1, GW-2 and GW-3). Monthly monitoring results are summarized on Table 1.

The Kernersville Landfill is just south of and across Freeman Road from the closed Waste Management Piedmont Landfill. Landfill gas monitoring is performed at the Piedmont Landfill as well. All methane results from the Piedmont Landfill gas probes are 0% LEL, with the exception of probe GP-10, which is located approximately 100 feet northwest of Kernersville probe GW-2. In the most recent monitoring event at the Piedmont Landfill, (July, 2013) the result at probe GP-10 was 51.9% of methane. In their reporting to NC DENR, Waste Management contended that the gas in GP-10 was likely attributable to the Kernersville Landfill. The Piedmont Landfill is lined, reducing the likelihood of gas migration, plus, GP-10 is the only Waste Management gas probe with methane present. In response to findings from the Piedmont gas testing and their own gas testing, Kernersville has agreed to further assess gas migration from the Kernersville Landfill.

In response to the elevated results, NC DENR required a gas assessment program in correspondence dated November 1, 2012. On November 12, 2012, the Town of Kernersville provided a Gas Assessment Plan to NC DENR. The Gas Assessment Plan called for the installation of three additional gas probes, one to the east of the existing north boundary probes to assess migration in that direction and two on Waste Management property to the north of the north boundary probes. On March 8, 2013, the three additional probes were installed. Monthly monitoring continued, utilizing the original probes, the three new probes, and during limited monitoring events, probes owned by Waste Management. Methane results exceeded 100% LEL have consistently been obtained in probes GW-1, GW-2, GP-10 and GW-8.

In response to those results, NC DENR has required the Town of Kernersville to develop a CAP to manage gas migration at the site. This letter serves as the CAP.

CORRECTIVE ACTION PLAN

Kernersville will initiate a gas migration corrective action program. Kernersville is proposing to install three new passive gas vents along the northern limits of buried refuse at the site. The approximate refuse limit and the proposed vent locations are shown on Drawing 1. Vents will be located far enough south of the northern limit of refuse to place the vents where they will most effectively limit the northward migration of landfill gas.

Anticipated depth of the vents is approximately 25 feet, but that assumption is based on limited information. Depth of waste will be determined at the time of vent installation.

Gas vents will be installed by using a bucket auger to advance a 30-inch diameter boring through waste. Removed waste will be staged in roll-offs and transported off-site to the facility currently accepting Kernersville's municipal solid waste.

Upon completion of the borings, gas vents will be constructed by setting a 6-inch diameter PVC perforated pipe in the hole from the total depth of the boring to a depth of approximately ten feet below grade, with a blank riser pipe extending from ten feet below grade to approximately four feet above grade. The annular space will be filled with #57 stone from the

total depth to two feet above the perforated portion of the pipe. A two-foot thick bentonite pellet seal will be placed in the annular space above the stone. Soil will be backfilled around the vent and the vent will be completed with two 90-degree elbows. A schematic drawing of the proposed gas vents is provided on Drawing 1.

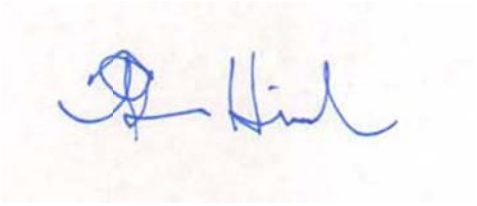
The proposed vents will be installed within 90 days of receipt of NC DENR approval of this plan.

Monitoring and Further Action

Monthly landfill gas monitoring will continue at the site. Following one year of monthly gas monitoring, the Town will make an assessment regarding the effectiveness of the three new passive vents.

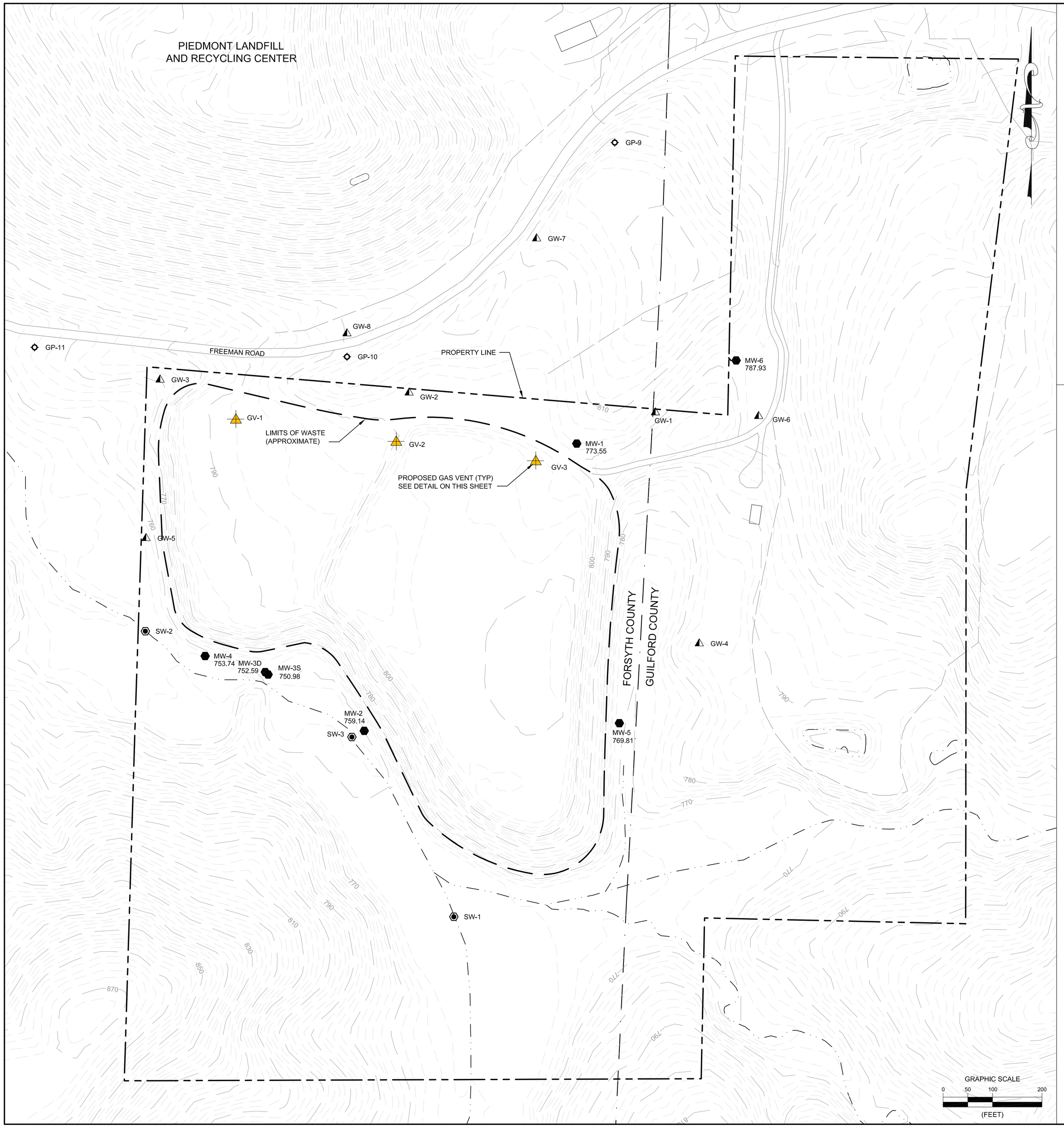
Upon NC DENR review comment and approval of this plan, Kernersville will proceed with the installation of the vents.

Sincerely,
JOYCE ENGINEERING, INC.



Larry Hineline, PG
Technical Consultant

Cc: Doran Maltba, Kernersville, NC
Thad Buck, Kernersville, NC

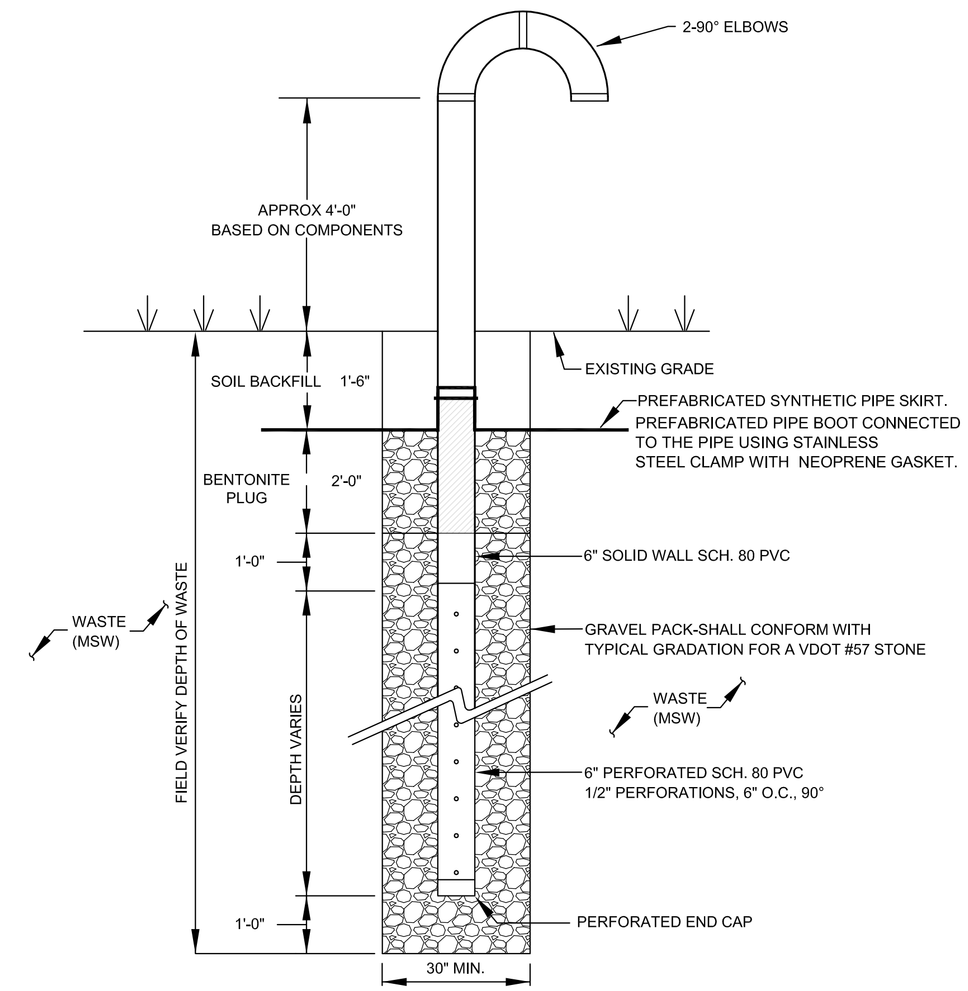


LEGEND

1130	EXISTING 10' TOPOGRAPHIC CONTOUR
	EXISTING 2' TOPOGRAPHIC CONTOUR
	PROPERTY LINE
	EXISTING ROAD
	APPROXIMATE LIMITS OF WASTE
	CENTERLINE OF STREAM
SW-1	APPROXIMATE SURFACE WATER SAMPLING POINT LOCATION AND IDENTIFICATION
MW-1 773.55	MONITORING WELL IDENTIFICATION AND WATER LEVEL READING
GW- 1	EXISTING LANDFILL GAS WELL
GP- 1	WASTE MANAGEMENT LANDFILL GAS PROBE
GV-1	PROPOSED LANDFILL PASSIVE GAS VENT

NOTES:

1. SURVEY DATA FOR GUILFORD COUNTY DATED SEPTEMBER 2009, AND MARCH 2010.
2. SURVEY DATA FOR FORSYTH COUNTY DATED OCTOBER, 2010.
3. ALL SURVEY DATA OBTAINED FROM COUNTY GIS FILES.
4. LIMITS OF WASTE ARE APPROXIMATE.



LFG PASSIVE VENT
N.T.S.

NO	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

DESIGNED TLH
DRAWN RWH
CHECKED TLH
APPROVED TLH
DATE 08/14/13

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TOWN OF KERNERSVILLE LANDFILL
FORSYTH COUNTY, NORTH CAROLINA

PROPOSED PASSIVE GAS VENT LOCATIONS

PROJECT NO.
838.1301.12

SCALE
AS SHOWN

DRAWING NO.
1

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