



Waste Industry Experts

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February 15, 2011

Ms. Christine Ritter, P.G.
NCDENR, Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699

RE: Response to Additional Comments
Phase 3 Tuscarora Municipal Solid Waste Landfill (MSWLF) Craven County, North Carolina
Permit No. 25-09
JEI Project No. 618.0900.11, Task 05

Dear Christine:

Joyce Engineering, Inc. is submitting this letter on behalf of the Coastal Environmental Partnership (CEP) in response to the email received (January 13, 2011) from your review of the landfill gas monitoring plan submitted on December 14, 2010 for the Permit to Construct Phase 3 expansion. For your reference, the email comments are repeated below in *italicized print*, with the responses provided in **bold print**.

Following is a summary of our Tuesday January 11, 2011 conversation regarding the December 14, 2010 letter submitted by Joyce Engineering for future landfill gas monitoring at the Tuscarora Regional Landfill:

We will accept the request for no additional landfill gas monitoring at this time on the northern side of the Phase 3 expansion area provided Joyce Engineering states that the drainage ditch on the northern side of the property contains water all year round, thereby intercepting groundwater and eliminating the need for landfill gas monitoring in that particular area.

We request further information and investigation regarding the elevated methane readings detected in BP-2, BP-3, BP-4, and BP-5 located to the southwest of the closed IRL portion of the landfill. The letter stated that bar-hole punches were installed and readings taken 20 to 25 feet away from each of the detection probes showing elevated readings. The letter states that the subsequent bar-hole punches showed no elevated methane readings and concluded that there is "no evidence of gas migration". Please submit a map with the bar-hole punch locations and respective methane readings. A statement was also made in the letter attributing the elevated methane readings to "IRL leachate drainage penetrations through the liner, the leachate cleanout pipes and water level transducers penetrations through the cap". Please clarify this statement with explanations on whether the liner is leaking, whether gas probes were installed through the liner, etc.



The ditches around the Long-Term Regional Landfill contain water year round thereby intercepting the groundwater and eliminating the need for landfill gas monitoring. In addition, the landfill Sub-title D bottom liner system has been constructed above surrounding land surface eliminating landfill gas migration through the soil.

The gas probes *BP-3, BP-4, and BP-5* with elevated methane readings on the southwest side of the IRL are not well understood and further investigation is warranted. The elevated readings are merited to the gas probes immediate proximity to the landfill and adjacent wetland with organic decay and production of swampgas.

The IRL is a separate landfill unit from the Regional Long-Term Facility, and we propose further investigation, as requested by the Section, during the Phase 3 construction to gain an understanding to the elevated methane readings from the IRL probes. Attached map depicts the gas probe and the bar-hole probes locations. The leachate cleanout pipes and the pressure transducers penetrate the closure cap; therefore, the penetrations do not pose threat to leachate leakage through the bottom liner.

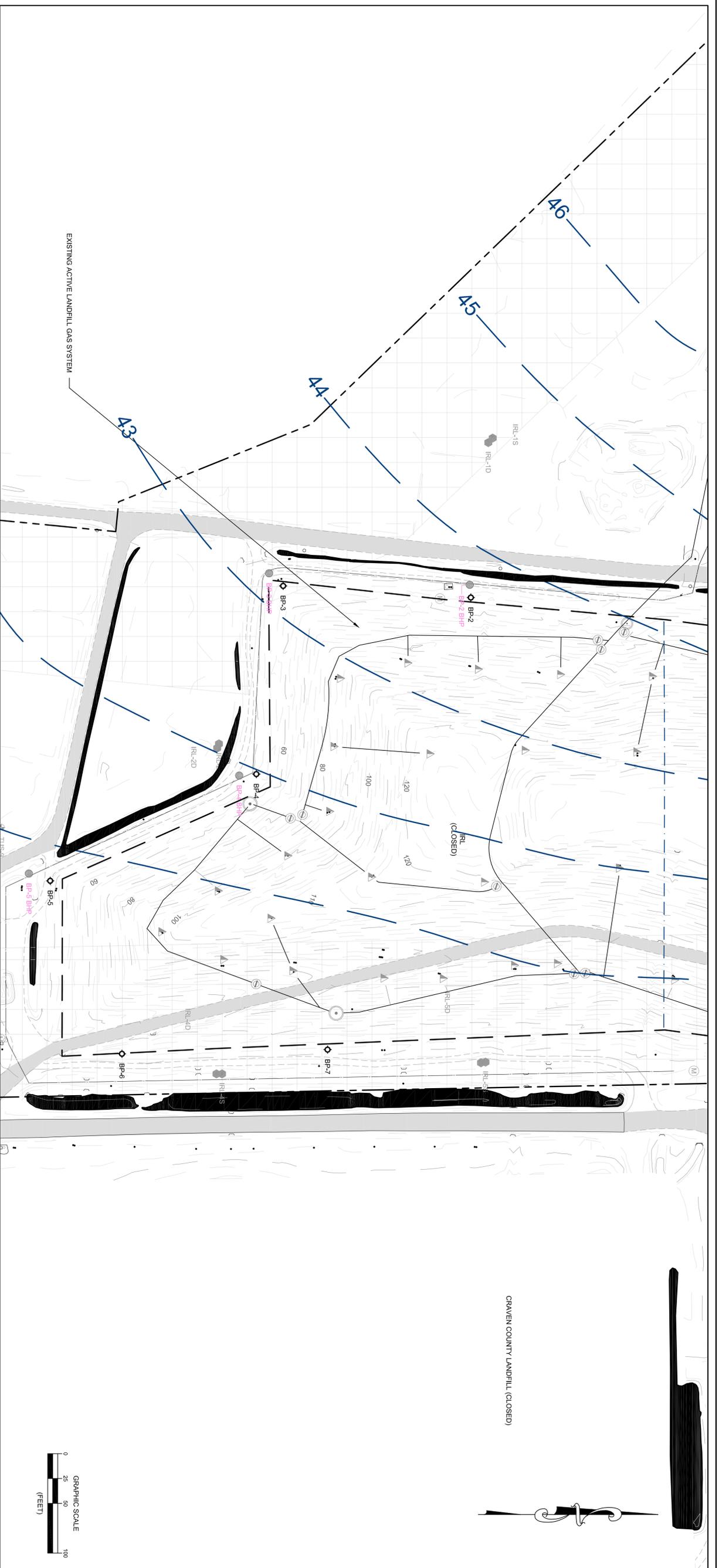
Answers to the questions will be looked into this year and we hope to solve them to the satisfaction of all parties. If you have further comments to this letter of response, please contact me at your convenience by telephone 336-790-2252 or email hannu@joyceengineering.com.

Sincerely,
JOYCE ENGINEERING, INC.



Hannu Kemppinen, P.G.
Senior Project Consultant

C Allen Hardison, CEP



IFG MONITORING RESULTS SUMMARY

Monitoring Point	9/14/2010	Jun-10	3/5/2010	12/14/2009	9/14/2009	6/17/2009	3/26/2009	12/11/2008	9/3/2008	5/15/2008	3/13/2008
GNP-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GNP-2	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
GNP-2 BHP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
GNP-3	0.0%	0.0%	0.0%	25.2%	27.0%	39.0%	27.2%	14.0%	1.9%	0.0%	0.0%
GNP-3 BHP	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
GNP-4	35.2%	32.4%	2.6%	11.6%	13.5%	18.2%	4.8%	21.0%	42.8%	9.0%	0.0%
GNP-4 BHP	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
GNP-5	15.3%	22.0%	0.3%	0.3%	0.3%	6.1%	28.8%	28.0%	22.8%	23.0%	0.0%
GNP-5 BHP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
GNP-6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
GNP-7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

1. Methane measured 0-100% by volume.
2. Pressure measured in inches of water column.
3. GNP= gas monitoring point, installed LFG MW
4. BHP= bar-hole probe

PROJECT NO. 618,0900.11	CRSWMA - TUSCARORA LANDFILL CRAVEN COUNTY, NORTH CAROLINA INTERIM REGIONAL LANDFILL GAS MONITORING LOCATIONS	 ENGINEERING, INC. 2211 W. MEADOWVIEW ROAD GREENSBORO, NC 27407 PHONE: (336) 323-0092 NC CORP LIC: C-0782	DESIGNED _____ DRAWN CTM CHECKED _____ APPROVED _____ DATE 01/28/11	© 2010 Joyce Engineering, Inc. All rights reserved.													
SCALE AS SHOWN DRAWING NO.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">DATE</th> <th style="width: 60%;">REVISIONS AND RECORD OF ISSUE</th> <th style="width: 10%;">NO</th> <th style="width: 10%;">BY</th> <th style="width: 10%;">CK</th> <th style="width: 10%;">APP</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>					DATE	REVISIONS AND RECORD OF ISSUE	NO	BY	CK	APP						
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